An Investigation of User Experience Design for Learning (UXDL) Principles in Online Learning

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Darcy completed her MA and Ph.D. in Cognitive Psychology at the University of Waterloo. She has always been passionate about education, and is able to pursue this interest in her current position as an Online Learning Consultant at the University of Waterloo’s Centre for Extended Learning. In her time at the University of Waterloo, Darcy has had the opportunity to work with a variety of diverse research teams, been involved in all aspects of the research process, and disseminated findings in the form of reports, publications in peer-reviewed scientific journals, and presentations at national and international conferences.

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Matt has been supporting university faculty in their use of instructional web technologies for over twenty years, with a career path that spans Oxford Brookes University, Ryerson University and since 2009, the University of Waterloo. As Production Manager at the Centre for Extended Learning (CEL), Matt is responsible for managing the scheduling, resourcing, production, and quality control of all digital media assets for all CEL projects, from prototype through to full production. Matt has been a vocal advocate for user experience and web accessibility throughout his career, and has presented on associated best practices at the global user
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Paul’s passions are for undergraduate instruction/support and pedagogically-oriented research. Originally trained as a researcher in Evolutionary Psychology at the University of British Columbia (Ph D) and Hokkaido University in Sapporo, Japan (2-year Post Doc), Paul transitioned to teaching full time in 2006. Since then he has developed expertise in delivering and managing a large number of core undergraduate courses including Introductory Psychology, Research Methods, Statistics, and Evolutionary Psychology, and has extensive experience with classroom-based, online, and blended learning for class sizes as small as 10 students and as large as 600. Currently, Paul is a Lecturer in the Psychology Department at the University of Waterloo where he is developing pedagogical techniques that help students cultivate a variety of transferable skills, as well as experience a sense of community.
Executive Summary

Introduction in Brief
The aim of this study was to qualitatively examine undergraduate learners’ perspectives of online learning through a cross-disciplinary lens of user experience design and pedagogy. The results of this research contribute to the ongoing development, validation, and operationalization of an open source User Experience Design for Learning (UXDL) design framework. To this end, we asked learners at the University of Waterloo to report on their prior and current experiences with online learning (i.e., what they like, dislike, hope, and expect) using a survey. We conducted follow-up qualitative interviews to better understand learners’ experiences with online learning. To address the question of how the UXDL principles impact learners, we conducted user research sessions and observed learners as they interacted with lessons designed using the UXDL principles.

Methods Summary
Our research project consisted of two phases. In the first phase, we sent out a large-scale qualitative survey to second-year undergraduate learners at the University of Waterloo to explore their perceptions of and experiences with online learning. The second phase involved a subset of the survey participants, and consisted of two sub-phases: qualitative interviews and user research sessions. We conducted the qualitative interviews to get a more in-depth picture of learners’ perspectives of, and experiences with, online learning, and ran the user research sessions to observe learners as they interacted with content designed using UXDL principles.

Results Summary
Our qualitative analysis of the surveys and interviews revealed 7 themes that figure prominently in learners’ experiences of online learning: Flexible Learning; Instructional Format & Environment; Technology; Assessment; Humanizing Learning; Affective Learning; and Intuitive Design. Within these themes are important insights into learners’ experiences, desires, assumptions, behaviours, and expectations, which can be used to guide and shape the instructional design of online courses.

The results of the user research sessions help validate the UXDL framework, as we found that while learners were not explicitly aware of the UXDL framework, they identified several UXDL principles as features of the course they enjoy and matter to them. Learners identified that they value several principles that fall under the Useful cell in the UXDL framework. These include coherence, signaling, pre-training, segmenting, multimedia, embedded examples. They also value several principles that fall under the Desirable cell of the UXDL framework. Specifically, visceral design, behavioural design, and reflective design.

Many of the themes that emerged in the surveys and interviews also appeared in the user research sessions; however, two factors in particular only emerged in the surveys and interviews: Assessments and Humanizing Learning. These two themes, while highly important to learners, are not currently addressed in the UXDL framework. This is a potential place for growth of the framework, which we look forward to exploring further.
Conclusions in Short
The results of this research reveal several dimensions of online learning that really matter to learners and greatly influence their experience of online learning: Flexible Learning; Instructional Format & Environment; Technology; Assessments; Humanizing Learning; Affective Learning; and Intuitive Design. These results are largely consistent with the UXDL framework, but also reveal places of growth, where the framework may be expanded upon. The user research sessions provided confirmatory data, supporting the framework, showing that many of the principles outlined in the UXDL framework are desirable and enjoyable for learners, and support learning.

Introduction
Institutions of learning across Ontario invest a lot of resources in online teaching and learning. Many use quality metrics to guide course design processes, similar to the CEL Quality Guidelines (2012). Standards like these provide excellent guidelines for developing quality online courses, but typically embody a top-down approach to course design, in which design decisions are, in the main, informed by instructors, instructional designers, and multimedia developers.

What this type of approach to quality typically excludes are the people at the other end of the learning experience – our students. How valuable do they find the experiences being designed for them? If our goal is to create quality online learning experiences for our students, it is essential that we tap into the first-hand learning experiences of the students enrolled in our courses. With this in mind, course designers at the Centre for Extended Learning (CEL) have launched the User Experience Design for Learning (UXDL) framework, a research-based set of guidelines that aim to incorporate learner perspectives into course design. Our research project bolsters this initiative with data from our students. Specifically, we investigated the following questions:

1. What kinds of learning experiences do students want and expect in an online context?

2. What are students’ impressions of online experiences (e.g., a module or course) designed with UXDL principles in mind? In what ways, if any, do their impressions manifest? What do they find appealing? What do they find engaging? What do they find meaningful?

3. What impact do intentionally-designed UXDL principles (principles of value, usability, desirability, accessibility) have on learner experience in an online course?

One of the primary goals of our research is to gain a better understanding of students’ perspectives on “quality learning experiences.” By giving voice to the learners in online courses, our understanding of what qualifies as quality in online learning was enhanced. We better understand, for example, the features of the online learning environment that motivate and engage learners, and what they find meaningful to learning. This enhanced understanding has helped us to develop and validate design principles that increase student engagement in online learning, which will ultimately improve learning outcomes. Knowledge arising from this study continues to inform the evolution of the Waterloo-developed UXDL framework, which is currently licensed under CC BY-NC-SA 4.0 International. We hope that both the research, and the design framework informed by the
research, inspires further work in this vein, so that online learners continue to reap the benefits of quality experiences when they learn online.

**Brief Overview of the UXDL Framework**

The UXDL Honeycomb framework is an adaption, with permission, of Peter Morville’s [UX Honeycomb](http://cel.uwaterloo.ca/honeycomb/). Based on user research and aimed largely at product and web designers, Morville’s UX Honeycomb is a widely-accepted UX framework for defining valuable user experiences in many different contexts (Morville, 2007). According to Morville’s research, valuable user experiences are useful, desirable, usable, findable, accessible, and credible (Morville, 2004). Instructional designers at CEL have adapted Morville’s framework for an online teaching and learning context: the UXDL framework surfaces the literature on what constitutes useful, desirable, accessible, credible, and intuitive (findable and usable) learning experiences with online content. You can read more about the UXDL framework at [http://cel.uwaterloo.ca/honeycomb/](http://cel.uwaterloo.ca/honeycomb/).

An overarching goal of this study is to examine learners’ perspectives on what constitutes useful and desirable online learning experiences; in other words, to validate the Useful and Desirable UXDL principles with data from our own learners. Below we offer a quick summary of these principles.

**Creating Useful Learning Experiences with Online Content**

Here we surface the cognitive psychology literature, specifically Richard Mayer’s cognitive theory of multimedia learning (2009). Mayer and his colleagues outline several instructional design principles designed to encourage cognitive activity that builds understanding, and to minimize cognitive processing that interferes with learning (Mayer, 2009; Sweller, 1999; 2003; 2005). The cognitive processes that build understanding include selecting relevant information, organizing it into a coherent representation, and integrating it with prior knowledge held in long-term memory (Mayer, 2006; 2009). Cognitive processes that interfere with learning are those that distract learners from the processes of selecting, organizing, and integrating relevant information. Minimizing these processes reduce cognitive load, which frees up resources for deeper learning. Useful design therefore aims to help learners select relevant information, organize it into a coherent representation, and integrate it with prior knowledge, and minimizes distractions from these key processes.

In the context of UXDL, these cognitive principles help to create useful online learning experiences with content. Some key principles are the following:

- **Coherence**: reduce unnecessary words, sounds, and pictures;
- **Signalling**: include cues to important information;
- **Segmenting**: present information in short chunks;
- **Pre-Training**: introduce key concepts first, before the lesson;
- **Multimedia**: present words with pictures rather than words alone.
Creating Desirable Learning Experiences with Online Content

If the Useful cell of the UXDL Honeycomb surfaces the cognitive literature, the Desirable cell surfaces the affective literature. And, the literature is quite clear on the importance of positive affect in learning (Heidig, Müller, & Reichelt, 2014; Mayer & Estrella, 2014; Park, Knörzer, Plass, & Brünken, 2015; Wang & Adescope, 2016). In particular, we highlight the work of Donald Norman (2004), who has studied emotional design extensively and concludes that designing for positive affect results in better learning.

In the context of UXDL, the following principles of emotional design help create desirable learning experiences with content:

- **Visceral Design:** beauty (i.e., content and activities look good);
- **Behavioural Design:** functionality (i.e., content and activities are easy to use);
- **Reflective Design:** cohesiveness (i.e., content and activities adhere to a cohesive design vision, connected to the course’s learning outcomes).

**Methodology**

805 2nd year undergraduate students responded to our survey, which included 4 open-ended questions about their experience with online learning. More specifically, we asked what they liked and disliked about their previous online learning experiences, and whether they had any expectations about, or hopes for, what they would experience when taking online courses in the future.

A subset (N=36) of self-selected survey respondents participated in the second phase of our study. First, they participated in a one-hour long qualitative interview with a member of our research team. The purpose of the interview was to gain a deeper understanding of learners’ perspectives and prior experiences in relation to online learning. The interviews were followed by two user research sessions, where learners worked through one of four course modules (Chemistry, Earth Sciences, Psychology, or English) designed using the UXDL principles. Participants used a think-aloud protocol to talk through their experience in the user research sessions (i.e., they told us what they were thinking or feeling as they worked through the content). A short interview was included at the end of each user research session to better understand learners’ experience with the online module. All surveys, interviews, and user research sessions were qualitatively coded by two members of our research team. Coding consistency and inter-coder agreement was established through joint-coding the same subset of the survey data (first 400 surveys) to establish and verify intercoder agreement. The coding phase involved qualitative coding, as well as a series of meetings aimed at defining codes, refining the codebook, resolving coding memos, and asking questions about the validity of the codes being used. The survey codebook was also used for the interviews and user research session. However, the codebook was expanded upon as unique codes emerged throughout the coding process. As with the surveys, coding consistency and inter-coder agreement was established through joint-coding a subset of the data. This process was much quicker for the interviews and user research sessions. Only 2 interviews and 2 user testing sessions were required to establish consistency between the two coders, as there was such strong agreement from the survey coding process.
Results

Phases I and II: Survey and Interview Data

In this stage of the study, researchers explored the following questions: What do Waterloo learners like or dislike about their online learning experiences? What do they hope for and expect in an online course?

Flexibility

Above all, our learners report liking the flexibility that arises from having content and assessments persistently available from the start of term. This allows them to learn anytime, anywhere, and at any pace. One learner termed this flexibility as “more learner-friendly.” They particularly enjoy the freedom of working through the course at their own pace, rather than being tied to the pace set by the professor or other learners. For example, they can pause and rewind or re-read material, move through it slowly or work ahead, and more easily make up missed weeks, as dictated by their personal circumstances:

“I just really like the flexibility and also having the chance to go back to parts of the course that I didn’t really understand as opposed to having to go to office hours and schedule out a good time to talk to the professor.”

“There is no need to wait for the professor or other learners in order to progress.”

Many learners also expressed enthusiasm for the autonomy and sense of ownership over their own learning that they experience in online contexts. For them, autonomy means that they can learn when they want to learn, rather than being tied to a scheduled class.

“I feel like because I am not forced to learn at a certain time, I can choose a time when I am alert and ready to learn, to tend to the lecture.”

In other words, online learning can have a motivational advantage over face-to-face learning since learners can choose to learn when they’re ready to learn:

“. . . not having someone there always is kind of like forces you to stay motivated and make sure you’re always on track, which is kind of awesome.”

Many learners find this control over their own learning less stressful:

“But with online learning, the whole syllabus is there for you, the course content is usually there for you, so you can just do whatever you want whenever you want. And that just relieves my stress later on when midterms are coming, because I do most of the work in the beginning of the semester.”
This kind of autonomy and flexibility also helps learners manage their other commitments and constraints and can result in deeper learning:

“So I’ll have to do a lot of my own learning too. Which in the long run helps me more because I’m learning everything by myself and it likes helps me remember it, but it’s a little bit more work to actually learn the material sometimes.”

However, autonomy has a dark side as well. The flexibility that learners enjoy so much online can work against productivity, making it easier to procrastinate and decreasing motivation to stay on task:

“I often forgot that I was even taking an online course because it was not something that had a specific time slot in my day/week”

“It’s really easy to get lazy since the course is very much independent.”

“[Dislike] feeling entirely unprepared at the end of term when you’ve got a cumulative final exam looming and half a course to teach yourself.”

Several learners suggested that this tendency towards procrastination could be mitigated by the presence of both peer and instructor support, as well as the inclusion of regular activities and assessments:

“I attempted the first assignments early on. Which is, like, I don’t know, just kind of felt motivated to finish it, and then you could also see everyone else that was asking questions and getting involved in, like, working on their assignments. It kind of weirdly motivated me to work on it. Because, like, I didn’t want to fall behind. Like, and people were, like, asking questions and it kind of helped, and I kind of had the same questions and that, so in that kind of sense, that was different.”

“I kind of felt like I learned the whole course in the last, like, month of the term. Which, again, is mostly my fault. But, I think, like, should I take another online course in the future, I’d want there to be more regular assignments, or even not even assignments, just, like, maybe, like, weekly quizzes to kind of encourage me to keep up with the readings.”

**Online Assessment**

Our learners clearly prefer more frequent, lower-stakes assessments that take advantage of the online context rather than large summatives:

“The best way to succeed is to keep up with the course and the best way to help learners do so is to keep them accountable with small, weekly quizzes or assignments.”

“...basically the more assignments you have that are graded, the more feedback you’ll get from your professors and instructors, so that just helps you kind of develop as a learner towards the end.”

Heavily-weighted final exams are particularly disliked:
“I have dropped online courses where the final exam is worth the majority of my grade.”

“The weight of the final exam is also something that was frustrating as I find test situations to be very difficult.”

“Put some weight of final into quizzes so that learners won’t be so nervous when taking final exam.”

Our learners also report preferring authentic assessments that are relevant to the real world, and having options for written assignments.

“I liked the assignments because they would give you scenarios that would, that you could see happening in the real world and you would be expected to come up with solutions and strategies for navigating a particular communications challenge or scenario. So, it forced me to think about how I might handle the situation if it were really presented to me. And so that was helpful in terms of, you know, not just completing the, the assignment, but really thinking about how I might conduct myself in, in that situation”

“. . . it makes you want to do the course more because you get more choice.”

They desire flexibility with respect to deadlines (i.e., soft and hard due dates), and when quizzes can be taken (i.e., a window of availability). They like practice questions, interpolated quizzes, worked examples, and prompt and detailed feedback.

Our learners also report, however, that online assessment is not exempt from its challenges. By far the biggest assessment-related complaint from our learners concerned online group work:

“Group projects are sometimes next to impossible as people with online courses generally leave things until the last minute.”

“dealing with a learner who refuses to do their part is much more difficult when you can’t meet with them face to face”

A few learners also mentioned the academic integrity challenges that arise from untimed online quizzes:

“I found that the textbook was, like, more than sufficient in getting the answers to all the quizzes that I needed, and it was, like, a short answer, like, untimed quiz, if I recall correctly. So, you could browse through the textbook, like, forever if you wanted until you found an answer that you were happy with. So, I personally, like, didn’t, I guess, interact with the content. “

Instructional Format and Environment

Our survey data suggests that at a fundamental level, our learners expect their online courses to offer equivalent learning experiences to on-campus courses in terms of the quality of content and teaching, engagement, level of challenge, fairness of assessment, and peer and instructor support and interaction.
“I hope to get an experience that is as close to taking an on-campus course as possible: engaging and informative lectures, a dialogue with the instructor, clear instructions, extra help if needed and fair assessments.”

Despite this expectation, data gathered from learner interviews indicates a general preference for classroom learning vs. online learning when completing core components of their programs. Learners allude, for example, to increased rigor and engagement in the classroom context.

“I would at least like to have the option to go into a classroom or to come to campus and learn. I feel like there’s more engagement that way, not only just in the course, but you actually build a community of people with whom you’re working through your degree.”

“My learning is...I feel like wouldn’t be quite as in depth with an online course...as it would be for in a lecture.”

“Personally, I just don’t think they should have core courses online, I think you should have someone teach them to you, and be engaged in the classroom. I get the electives, like just to be able to offer them more. Maybe it reduces costs. That being said, I generally would prefer to take a course in person pretty much no matter what, unless it really felt like it was a course where it was a waste of time to show up in class.”

There was an overwhelming pattern that emerged in the data that indicated that learners wanted a mixed media approach in their online courses. They expected that courses would be explicitly designed for the online context, with more interaction and the use of a greater range of media and technologies than on-campus courses can offer.

“[T]ake advantage of media available that might not be possible in a normal class setting’’

“I hope to have a more interactive learning experience than I would taking courses in class.”

Their learning preferences were often expressed as being connected to multiples modes of interaction and engagement with content.

“A combination of everything. I like to have multiple options online.”

“It’s kind of a hybrid...the most effective way I’ve seen things presented is with the person on the screen, maybe superimposed over text, so might have text in the background, but then also incorporating visual aids to help illustrate concepts. So when we’re talking about something like... umm... what’s a good example... If we’re in the context of CS, for example, if we’re talking about a function. Having the function on the screen, and then editing it in real time as we’re talking about it, and then if we want to illustrate like a mistake, calling out the mistake in red. Things like that.”

“Combination for myself. I like having the audio lectures and I like having something to read because I don’t want the visual prof in front of me. I like having something to read either read along or content to read.”

Several learners reported their preference for text over multimedia in order to have more learner control
over the pace and nature of their learning.

“There was an audio kind of recording going through the slides and you had to wait until you went to the next slide for the audio to finish. I found that was a little bit slow, so I chose to do the alternative text, which was the exact same as the slide material.”

“I went to the alternative text, and I didn’t do the slides.”

“Text would be the most understandable, because sometimes when you’re listening and you miss something then you have to go back and listen to it again, and that’s just a waste of time, having to listen to the same thing over and over to be able to understand the same thing, so I’d rather read it out compared to video or audio on its own.”

Aspects of the UXDL framework associated with the Useful cell, such as the **segmenting**, **modality**, and **multimedia** principles, were also mentioned as desirable by several learners. They like having lectures divided into shorter chunks (segmenting):

“Interviewer: So, different headings, different subtitles and headings to break it up.
Participant: Yeah. Definitely less. For sure. And then that is just easier. You don’t have to go through the whole thing. But yeah, when there’s a lot of sections or, like, things divided up, for the most part that’s definitely helpful.”

“The longer the video content, the less inclined I am to look at it sometimes. Shorter videos seem to be more enticing to me.”

These learners also like having regular activities integrated throughout content segments. This kind of **interactivity** in the online environment is helpful as a way of both **increasing and maintaining engagement**, **interest, and focus**. Here, they express the value of these components and the reason for their inclination towards them:

“Sometimes when there are, like, interactive elements where there’s a video and then kind of a quiz built in, I find those help to keep my interest in the course.”

“... I was just crunching all these modules in, I’m just like ah this is so boring, and I just want it to be over, and then a little quiz popped up, and I’m like oh my gosh, I need to pay attention. So that was a really pleasant surprise.”

As reported earlier, our learners seek a variety of media in online courses, including text, images, infographics, video, and audio (commuters in particular appreciated having access to MP3 files). This speaks to the value that the **multimedia** and **modality** principles hold for our learners.

“...visual is very important. It can’t just be words on a page. I feel like because you’re sitting there listening to some monotone person go on and on about some course content, there should be something differentiating each slide from the next.”

“I hope the instructors provide multiple medias in teaching, such as visuals and hearing.”
“...The infographics were another thing that I used to help me, like, find out more about a concept, like, as opposed to Googling it, I could also just look at the infographic because it’s just a visual . . . I could just look at it and be, like, "Oh, this is what it is."

A challenge related to the online format expressed by several learners was the impact that the physical absence of a professor delivering a lecture had on their learning: for many, the lack of this kind of presence impacted their ability to attend to and stay focused on the content. Some indicated disliking learning difficult concepts without a professor.

“I like being able to see the prof and focus on them during the lecture to keep me from being distracted so with it being online I don’t have that opportunity."

Monotone delivery in online presentations also contributed to this difficulty in attending:

“...hard to pay attention because the narrators are usually monotone”

This theme is explored more fully in the Humanizing Learning section of the report.

**Intuitive design**

**Findability** emerged as being very important to our online learners. They like being able to find information easily, especially assessment information, which they expect to be available at the start of term:

“One thing I do think is important for online courses is to put the assignments out, like, near the beginning so learners who actually don’t procrastinate and want to, you know, do them early, can because my biggest frustration was, “Hey, I feel ready to work. There’s nothing for me to work on.”

“I really hated when I had to search and hunt for information.”

When information is difficult to find, many learners choose to navigate outside of the online learning course to find what they need. Several learners searched Google for what they needed, or accessed Youtube or Ted Talk videos. These external resources provided learners with both content and clarification.

“If I didn’t find it I would go onto the Web and search.”

“I think more often I would just Google, Google for content.”

“I guess like Google if there was a general thing I wouldn’t understand I would Google it.”

Several learners expressed a preference for text-based content because of how easy it is to search text for specific information (i.e., by using keyword search, control+F/command+F function), which greatly enhances findability:

“...But they also had transcripts and the transcripts ended up being super helpful because I could kind of like skim through them and then when I was working on stuff I could go back and Control-F what I was looking for, and then find the information I needed, and be like okay, that’s how I do this, and then go back to the assignment. So having a transcript is one of the secret
helpful things because you just open it up, hit Control-F, search the word you’re looking for, find the section where the material you’re working on is, and there you go.”

Content presented in videos and tabs is harder to find and navigate:

Interviewer: “When you were looking for specific content, so if you were going back to find perhaps a specific concept, how did you find it? How did you go about searching?
Participant: “Very painfully. You almost had to watch the video again and you couldn’t make it faster or slower. And I believe [the LMS] didn’t really like it when you kept skipping, skipping, skipping. It would buffer, so it wasn’t very pleasant.”

“then you have all these tabs. It’s just nicer to have, like, for the most part just maybe the instructions and the assignment. Having too many tabs can also be...it’s not the most efficient sometimes.”

Transcripts make video content easier to find, but if transcripts don’t match the video, or if they are difficult to find, learners can get frustrated and revert to Google for information:

“It was frustrating for me because I thought okay, I don’t have to listen to this audio, I can just read the transcript. But the transcript didn’t have the same information.

. . .
Interviewee: No, I didn’t have any time, so I went to the Web.”

“I was able to use the content within the course for the most part, but if there was anything that wasn’t easy to find, I would immediately go and look elsewhere. So, if I couldn’t Control-F in the transcript and find it then I would immediately go elsewhere.
Interviewer: Okay, like Google? You’d Google something?
Interviewee: Yeah, I’d Google something”

Once learning materials are found, learners expect not to encounter usability obstacles that interfere with their learning. Video usability emerged as a common theme in this regard: learners like video to be segmented into shorter chunks; they like to be able to download it (useful if wifi isn’t robust), and to easily pause, restart, and rewind it. They are frustrated by slow-loading video, and the absence of YouTube features such as controlling the speed of delivery, and being able to rewind by 5-10 secs:

“[Dislike that] Speed of videos can not be increased as with YouTube”

“[Hope for ] media sources (i.e. video clips in psych courses) that load”

“I found from the past, at least I’ve really liked video explanations, video demonstrations, especially with speed control and maybe, like, like basically what...YouTube has that right now, the ten second rewind button, the really nice one.”

“[It would be easier to use the content] If the videos had, like, an option to change the speed that they played at. Like, if I could listen to it at 1.5 speed or two times speed even, like, then I'd probably be more willing to watch the videos because it goes by so much faster and I can still take in the content at that speed. Or, I'm finding kind of a rough concentration day, I could slow it down if I needed to.”
Finally, **structure and organization** also emerged as very important to our online learners. They like online information (both content and assessments) to be well-structured and intuitively organized. The Centre for Extended Learning (CEL)’s Course Schedule and standardized weekly structure are cited as good examples of this.

“[Hope for] Straightforward online set up with easy to find instructions and information”

“I want a highly structured course that is easy to follow”

“I like that most courses presented the Course Schedule in similar ways, so that it didn’t take a long time when starting a new course to determine where the materials and resources were.”

**Humanizing Learning**

Learners talked about the **inherent similarities and differences between classroom learning and online learning** and often made comparisons between the two. In terms of humanizing learning, learners depict a more connected and grounded online experience when the same **face-to-face feeling** experienced in the classroom is re-created online.

“Nobody’s holding you accountable because it’s just, like, your name on a list for whoever’s the course instructor. You don’t get the one on one, like, connection that you could get with a professor on an, like, an in person on campus course.”

“Interviewer: Was a video of the instructor in a lecture hall or at her desk? Interviewee: At her desk. At her desk and she was going through the content, and it was really nice because you could see her and kind of... I don’t know, it was the same feeling as you would have in a lecture class.”

One of the challenges that emerged for many learners was the **lack of communication and connection** with their instructors and a feeling that they were learning “from a distance.”

“Whenever prof we had that term barely checked the [LMS] boards.”

“I honestly don’t even know what my prof looks like.”

“The prof wasn’t as responsive.”

Some learners indicated significant challenges related to **learner support** and communication. A sense of **dissatisfaction** with the **lack of engagement** between learner and instructor and a sense of **isolation** emerges from these data.

“I feel like there is no one to turn to, to get clarification or help on questions.”

“Whatever prof we had that term barely checked the LEARN boards, so like there would be months’ worth of unanswered questions that a lot of people were like putting their thoughts together and trying to come up with an answer for, even though it was like something that only
the prof could answer, so like we would have questions about what we were supposed to do, ‘cause it wasn’t clear for that week’s assignment, so a bunch of people would just be like “well, I think I’m going to approach it this way,” and other people would be like, “um, yeah, that’s a good idea. Maybe add this in too?” So we sort of crowd-sourced what we were supposed to do. It was terrible...prof engagement was terrible, and there was no other resource to use, ‘cause it was stuff that only the prof could answer about what we were supposed to be doing.”

“[Dislike the] Lack of immediacy, cannot just raise my hand to ask a question”

“[Dislike the] Lack of connection between peers. (Empathy, shared suffering, help with courses)”

One learner clearly resented the perceived lack of instructor support:

“I expect it to be a bad experience. I expect all the work to be on my shoulders and not the profs that I am paying thousands of dollars to have “teach me.”

However, there were also examples that indicate instances of positive engagement and connection created between instructors and learners during the online learning experience as a result of the instructor’s presence and timely availability. In some cases, this positively impacted learner motivation.

“we actually did have good professor engagement in that course. I felt like the professor was enthusiastic about teaching, which seems like it’d be a hard thing to communicate through computer, but somehow they did.”

“I think the professor extended some grace somehow. I missed something on a deadline, and after that it felt like okay yeah, I don’t want to screw up on the guy again. I’m going to try and do well. I’m not going to try and bomb the course because they are engaged and enthusiastic about it, and I actually am interested.”

In several instances, learners considered the discussion forum to be a potential hub for activity and connection with their professors and their peers and hoped for and expected timely and purposeful interactions that would deepen their learning and provide multiple perspectives.

“I think for an online course it’s important to have an active discussion board of just things you don’t understand or just a place to ask a question and have peers respond, or TAs or your prof respond.”

“I would definitely have an area where you can contact the professor that would guarantee prompt replies, because I know sometimes email isn’t the best way. So, one of the discussion forums, I think, would be good so that other people can see the responses as well.”

“I think some interaction is good because you always learn from dealing with other people — not just dealing with other people, but content just if they see it differently or have different questions than you do.”

Other learners felt that online discussion spaces do little to generate genuine community or authentic interactions:

“Next to no interaction with other learners except occasional forced and insincere interactions
on (mandatory) discussion boards.”

“They will use discussions to try and establish community. This doesn’t work. Nobody wants to challenge each other.”

Online learners clearly desire a greater and more genuine sense of community online. This includes the expectation of consistent, timely support from both professors and peers. Several learners pointed out the need for **multiple outlets for connection, support, and expression**. This finding supports the spirit of universal instructional design in that there should be **diverse ways of engaging and communicating** with the content, peers, and instructor throughout the course. One frequently-mentioned approach to increase communication and connection is the **use of synchronous tools**, such as Skype or chat.

“There should be a skype session where learners can register and talk to profs directly, hence clarifying any doubts that the learner may have.”

“[Hope for] Chat feature where the learners can anonymously talk to each other without grading involved.”

“I just wish there was some way I could interact face to face, either through a Skype call or video call, just because every time I’m emailing it I’m like this is a hassle to type out, I might as well just Google the answer instead. Whereas, I don’t know, with the… if I was able to talk face to face, I can get a conversation out of it and maybe learn something more than I intended to have answered, and that’s only going to benefit me. So I wish that was available.”

“I guess I would also provide ways of more communication, because I know that was one of the biggest things for me struggling, was I just wish there was more ways to contact the professor than just by emailing. So I wish like somehow you could maybe Skype them if there’s certain hours open, so that can act in place of like office hours.”

**Technology**

Our learners reported liking particular aspects of the learning management system, including quizzes and system-generated (or instructor-generated) notifications reminding them of upcoming due dates or important content. While they like using email to communicate with TAs and instructors, many find it difficult to use for clarifying course content:

“Sometimes it’s hard to explain what you need help on through emails.”

Our learners expect online courses to take advantage of the affordances of being online, and to use other technologies (beyond the LMS) to address issues surrounding interaction with professors, the provision of feedback, and engagement.

“[Hope for] innovative and forward-thinking methods to communicate.”

Several learners reported that mobile experiences with the LMS were less than satisfactory:
“I don’t like the online version of LEARN [LMS] on my phone. I sometimes access it to quickly check grades, but I find that just so much harder to use. So, I usually, even if I am on my phone, I’ll usually use the desktop version of it on my phone as opposed to the mobile app.”

**Affective Learning**

The affective state that a learner is in when working through course content plays a significant role in their motivation. The next few quotations reveal the dichotomous characterizations of best-to-worst online learning experiences and the affective dimension that learners attributed to those experiences. First, the learner describes a **sense of accomplishment** and **positive affect** as a result of connecting with the content:

“In terms of my best experience, I think just the course content itself. So, when I was able to watch that slide video and, like, or an animation and something and have it actually click, because it was content that was interesting, that was super gratifying to be able to understand it and, like, learn something cool and new. I liked that.”

“If there was something that I was able to understand well and clicked with quickly, that definitely motivated me to keep going because I felt like I was, like, being successful.”

Later, when describing other experiences from online learning, participants described feeling **overwhelmed** and **de-motivated** as a result of the sheer volume of content:

“And then those moments where I was getting overwhelmed because there was so much content, that definitely demotivated me and didn’t really give me the, the motivation to keep pushing forward and going through just because it was so overwhelming to look at.”

Another learner shared a similarly **overwhelming experience** due to the sheer amount of content in a course:

“I’d say my experience that’d be the worst, again it’s on me and not the course, was just kind of those last few weeks, like, leading up to the exam where I was just totally overwhelmed with the amount of content that I had, not only because I hadn’t stayed up with it, but just because it was just such a massive course. It was just kind of hard to sit there with like a pack of paper, like, three inches deep that I had and I had to have all this information in my head. It was just a little overwhelming.”

Learners reported feelings of **frustration to varying degrees** and indicated being annoyed when **technical issues** or **design flaws** got in the way of their learning experience.

“It was kind of annoying with the voiceovers, how sometimes you couldn’t hear them. And it was just muffled, like some of the content that I couldn’t get a huge grasp of, and that was just kind of annoying.”

“It was also kind of low quality. It’s not a big deal, but static-y. I think at times, like maybe they were too far away from the microphone, they got really quiet so I had to turn up the volume. It was just small quality things. It didn’t ruin anything, but was mildly annoying.”

“It was frustrating for me because I thought okay, I don’t have to listen to this audio, I can just read the transcript. But the transcript didn’t have the same information.”
“sometimes you get annoyed at the way they format things or how LEARN will be slow sometimes if everyone’s trying to get on, and that kind of just makes you want to go, "Ugh, whatever."

Several learners were **aggravated by the lack of communication and connection** with their instructors when needed, and one worried that they wouldn’t learn “without the benefit of a lecturer”:

“‘I was fearful that I wouldn’t absorb the content without the benefit of a lecturer’”

“it’s just a little bit annoying when you’re trying to work on an assignment and then you don’t get a reply.”

Another learner had to **painstakingly** go through videos to find content that was needed. This experience of findability generated negative affect that stands out as **particularly unpleasant**.

*Interviewer: How did you go about searching?*
*Participant: Very painfully…[Videos] would buffer, so it wasn’t very pleasant.”*

Learners can also experience **anxiety** about having to use many different tools across courses, increasing the likelihood they may miss something. One learner explains how this use of different tools made it seem as though instructors are “experimenting” with learners:

“Interviewee: First of all, school can be pretty anxiety-inducing no matter what, but when you add in this idea of oh shit, I forgot to ask this, I missed something. And you’re constantly living in fear that the prof will make an announcement on one platform and not another, and therefore you will miss something — like it doesn’t help. And then on top of that it just interferes with your routine in terms of getting things done, because it’s just another thing. Like courses that use Piazza right now — and these are not online courses, these are on-campus courses — but like you have to check LEARN [LMS] to download material, you have to go to Piazza to participate in discussions, you have to do your actual coursework, and then I mean if you miss something on one of those platforms, you’re screwed.
*Interviewer: And so is that just any platform in general that’s external that you’re not a fan of, or is there something else you’re not?*
*Interviewee: Pick one and stick to it. Like just pick one and stick to it. Like it’s… experimenting with people who are paying you $2000 a course is bullshit.”*

A few learners find the online experience to be **worrysome** or **stress-inducing**:

“the worst would probably be also the English class because I felt everything was really spread out. So, I found it a little stressful to find information on each assignment.”

“I probably get a little bit more stressed out with online courses because I’m worried I won’t focus.”
Conversely, some learners find online learning to be less stressful; they feel less anxious about asking questions online, and about missing lectures or assessments. These learners also find online tests less anxiety-provoking, since there is usually a window of availability of several days in which to complete them:

“no anxiety with asking questions during class”

“[Liked] having several days open to do a test, since it reduces my anxiety about having to clear a specific day in order to do it.”

For these learners, online learning is associated with positive affect. For example, several learners report feeling pleased about doing their coursework in a comfortable environment, free of pressure:

“You are in a relaxing no pressure environment”

Overall, our survey data in particular indicates that many learners hope that online courses are pleasurable learning experiences; i.e., that they are engaging, interactive, well-written and well-designed, with a sense of community and interesting, creative assignments. These factors all contribute to motivation.

“I would like to experience the sense of enjoying the learning while it’s happening”

“I would like to be engaged and excited about my work like I do in my other courses.”

Phase III: User Research Data

The user research sessions were designed to gain further insight into the learner’s experience of online learning, to validate the UXDL principles in terms of learner experience, and determine whether the UXDL principles translate to more engaging, enjoyable, helpful, learning experiences for learners across a broad range of disciplines (i.e., English, Psychology, Earth Sciences, and Chemistry). Lessons from these 4 disciplines were included to ensure that our findings would apply to a variety of learners across disciplines. The results from these sessions were pooled across discipline. We focused these initial analyses on two of the most impactful cells in the UXDL framework, Useful and Desirable, as these two cells are rich in principles that can have a large impact on instructional design and learners’ experiences. It should be noted that although we focus on Useful and Desirable here, themes related to the other cells of the UXDL framework — i.e., Accessible, Credible, and Intuitive (findable & usable) — also emerged from our data. Additionally, in this section we do touch on how aspects of Useful and Desirable can contribute to findability and usability, as these principles are intimately interwoven with one another.

**Useful: Coherence**

Our participants commented on liking content that is to the point and concise (in other words, a lesson that excludes extraneous content) because it helps them maintain focus. When content is concise, it reduces distraction, which helps learners pay attention to important information, reduces confusion (since learner
attention isn’t being pulled away from key information), and keeps learners engaged while they’re working through content. Here’s what our participants said about the absence of coherence:

“I noticed sometimes when I’m reading stuff that they’ll start going off on a tangent and certain texts or articles about one thing, and that’s when I start to forget what I’m trying to learn about.”

“…when it’s a bit too, like I said, drawn out or repetitive, then I get distracted, bored, and disengage.”

As is evident in the above quotes, unnecessary words, sounds, and pictures, can pull learners off course. This can cause confusion and can even cause learners to forget what the main point of a lesson is. A lack of coherence is also intimately tied to the issue of distraction or boredom. When content seems too long or repetitive, learners tend to disengage.

**Useful: Signaling**

Many of our participants commented on the positive aspects of using signalling (i.e., including cues for learners). There are several reasons why learners appreciate it when important information stands out. First of all, they identify that it makes it easy for them to determine what the key information is in a given lesson. This, in turn, drives what learners pay attention to and helps them pull important information out of a lesson. The quote below illustrates how signalling can drive a learner’s attention:

“I feel like I always go back to the bolded text first when i’m taking notes, just because that’s probably the most important thing, that’s why it’s probably bolded.”

Signalling can also be used to determine what the main point of a lesson will be, as is evident in this participant’s response to the question “where would you go to find out what your instructor expects of you in a given lesson?”

“I will go by...the kind of header and main bolded titles...those bolded texts and all that I would assume that’s the big idea that the professor wants to convey...”

In addition to helping learners identify important information and directing their attention, participants identified that the visual treatment applied to signalled information makes it more memorable and findable for learners. Here’s what one of our participants said about signalling when they were trying to remember content that they had seen previously in a lesson:

“I knew that the excerpt was bolded. Like, I remember...seeing it. So, that’s how I kind of knew that, you know; what the text was specifically.”

Signalling also helps learners find key concepts when they’re first reading through content, and when they’re reviewing it. Many of our learners commented on how information that was signalled jumped out at them. This visual cue makes it easier for learners to find the information that they’re looking for:
“...all the key words were highlighted already. It would be really easy for me to find a term I didn’t understand and then have the text clarify it for me.”

Signalling has a variety of benefits for learners, but it should be noted that we always want to be mindful when implementing this principle. If signalling is overused, it can be distracting. It can also come at a cost for surrounding content. For example, some learners commented on jumping from signalled point to signalled point and ignoring the surrounding text in text-heavy sections of a lesson:

“I’m finding as I’m going through this and some of it is bolded, I’m kind of neglecting the parts that aren’t bolded.”

**Useful: Pre-Training**

Introducing important concepts at the beginning of a lesson can help offload some processing for our learners. We found that our participants like being provided with key concepts upfront because it lets them know what they’re expected to learn in a given lesson and helps them recognize what’s important. In turn, both of these aspects of pre-training help learners structure their learning. The quote included below describes one learner’s experience of pre-training.

“I did like that right at the beginning there was the list of all the vocabulary, because I knew right away that was going to be important...having that right at the beginning was also nice so I could kind of have that base, that concrete...understanding going through it.”

As the above quote illustrates, pre-training helps learners focus on what’s important and provides them the necessary base knowledge for a given lesson.

**Useful: Segmenting**

Learners find it easier to work or read through and learn content when lessons are segmented well and content is broken up into meaningful chunks. One learner says:

“I kind of like how there’s like photos and examples in between the text, so it kind of gives me, like, a break between reading information.”

Segmenting also makes working through content feel less overwhelming. For example, when learners are faced with a large wall of text or dense content they are quickly demotivated. Breaking content into more easily digestible, meaningful pieces puts learners at ease, as this learners expresses:

“It was easy to read. It was all really organized and it wasn't too long. It was broken up into sections. So, it didn't seem, like, overwhelming.”
Learners also identified that breaking content up into small sections can help them see the structure of a lesson and understand how the material is organized. This structure and organization can help learners remember information and find content when returning to the material (e.g., to review for a test or assignment).

“I think breaking up the videos into chunks, with text separating them, is a good way of learning information and also helping you remember it.”

“If I'm going back to it and trying to find something... I'd probably just scroll because I'd already sort of be visually familiar with the page...I feel like I create a memory of just sort of where chunks are located.”

In the above quotes, the learners allude to how the use of multimedia can segment and breakup content and make it more memorable. As will be described in the next section, **Useful: Multimedia**, learners also identified several other benefits of multimedia use in a lesson.

**Useful: Multimedia**

Learners’ preference for the use of multimedia emerged strongly in these data. Specifically, learners really like to see a *variety* of formats used in their online courses. In other words, learners like it when a lesson includes a combination of text, visuals (i.e., organizational, explanatory, and representational images), and short videos (i.e., maximum 5 mins, but preference for < 2 mins). In part, the reason for this preference is that the variety of formats makes content more memorable and findable. For instance learners sometimes use images as landmarks when navigating through a lesson or returning to content to find information. Learners also tend to have format-anchored recall for content (i.e., they recall learning about a particular concept in a particular format, such as video), which guides their search when they return to the online material to find specific information. One learner says:

“I think having the mixture makes it easier to go back and find things you were looking for before... with the images and stuff here, I find that it stays in my head a little more, like, I remember kind of the layout of a page as well as the content of it. So, if I'm looking back for something, like, I can usually tell at a glance whether or not that was the exact lecture I was looking for.”

An important side note and consistent finding that emerged in the user research sessions is that, while some learners enjoy videos and others do not, learners generally expect important information to not be presented exclusively in a video. Learners see videos as tools that elaborate on or explain concepts in a different way, but expect that important information will also appear in text. This assumption comes from the ease of searching for information in text using students’ most dominant method of search: ‘control+F’ or ‘command+F’. This general point about presenting content exclusively in a video is highlighted in the below quote from a learner who just found out that some key information he was looking for was only present in a video, which he originally skipped:
“But this is important stuff. They should have put this in the main body, not in the video. That’s hidden away...”

Memorability and findability are not the only reasons that learners prefer the use of multimedia and various formats. They also report greater enjoyment, engagement, and enhanced attention when a variety of formats are used. Switching up formats can alter how information is processed, giving learners a break from processing in one format for another, which this learner alludes to:

“It’s engaging, it’s a nice way to just break up stuff, because... doing anything for a long period of time just becomes monotonous.”

Another learner speaks to the positive impact that a variety of formats in an online lesson has on attention:

“[H]aving the break with the pictures and the video, I stay more focused on it.”

Another feature of introducing a variety of formats into an online lesson is that it introduces an element of novelty, which can refresh attention and prevent off-task mind wandering and distraction behaviour. For instance, this learner explained that one motivation for leaving an online lesson and engaging in off-task distraction behaviours (i.e., checking one’s phone or facebook) was actually a novelty-seeking behaviour:

“...novelty is maybe what's missing from a lesson because that's maybe why I go to Facebook.”

Useful: Embedded Examples

Another theme that emerged in the user research sessions is that learners appreciate embedded and worked examples (that is, concept check questions with feedback and/or problems with worked solutions), because they provide learners with information about what is important and, therefore, where they should direct their attention and efforts. Here is an example of what learners are saying about embedded examples:

“I scrolled down to look at the quiz to see how much attention I had to pay to this video.”

Embedded examples and concept checks are also seen as a powerful tool for self-assessment, helping learners to identify gaps in their understanding and difficult-to-identify conceptual blind spots. Further, embedded examples and concept checks reinforce learning and can motivate learners to return to content and clarify their understanding when misunderstandings and blind spots are revealed. This is especially important in online courses, where accessing the instructor and learner support may be more difficult. Many learners expressed this sentiment:

“[It] was a nice way to check if you were actually paying attention. Because sometimes it's kind of like, oh, I feel like I learned enough, like I'm not going to go back, but then the quizzes tell you like, you know, you have to go back, you didn’t actually get any of the main points [smiling]”
Taken together the user research sessions provided nice support and validation for the principles identified under the Useful cell in the UXDL framework. Students consistently expressed preferences that aligned with the use of these principles across all four lessons.

Desirable: Visceral Design

We also find alignment between learners’ responses to the four sample lessons and the Desirable cell of the UXDL framework.

We found that our participants liked clean and simple visual design, and that they appreciated visually appealing and emotional design elements. Quality design is beneficial for learners, as it increases their motivation and engagement. These benefits are evident in the quote below, in which one of our participants indicated that they were so pleased with the visual appeal of the lesson, that they would be motivated to take the course in the future:

“So, when I went through the module, because of the images and how engaging it was, and how attractive it was, like, how it looked, and how the information was presented...it made me want to like actually take the course.”

Visceral design is also beneficial for learners because it draws them in using emotional content, which also ties back to motivation and engagement in a course.

“Emotionally, I think, the video just pulled at you. It was like ‘oh, we’re actually not like doing as well as we [think we] are in terms of conservation and stuff like that.’”

The above quote comes from a participant who went through our Earth Sciences module. The emotional pull of the opening video set the stage for the learning experience by emphasizing why the learner should care about the content, and why they should engage with it.

Desirable: Behavioural Design

The user research sessions revealed that learners like it when content is easy to use. On the surface, this finding may not be terribly surprising, however, our participants also articulated why ease of use matters to them and how it influences their experience. Easy-to-use content makes it easier for learners to find the information that they’re looking for. It is clear that when everything is working well, learners are less frustrated and feel more at ease. This same benefit of ease also applies to having all of the content in one location. Learners expressed that they enjoy being able to easily find all the information that they need on one page, as this self-contained aspect reduces stress for them. The two quotes included below speak to the feeling of ease and relief that learners experience when it’s easy to find information, and when information is all included on one page:
“I felt, ah, I guess a little more at ease. So calm. Um, because I’ve had other issues before with online content being kind of more stressful just to find the information. I think I felt relieved that this seemed pretty straightforward.”

“So, it flowed really well. It had the different media of the visual images, the video, and audio, and the written word all in one place for me, so yeah, I think that’s what I found easy about it. That it was just all in one place.”

The easy and intuitive nature of the content page reduced learners’ stress, and made them feel calm and at ease when they were working through content or looking for information.

**Desirable: Reflective Design**

Learners appreciate reflective design (i.e., an overarching vision/theme that is connected to the course’s learning outcomes) because it provides them with an immersive experience. This experience is beneficial for learners because it generates interest, motivates them, and encourages them to engage with content. These positive aspects of reflective design are evident in this quote from one of our participants who worked through the English course module:

“Whoever made this...focused on all the different elements...I did a Shakespeare class last year, and I’ve never had the playhouse or anything described...it’s giving you a sense of ‘okay, here I am back in 1599, watching this play,’ and it’s like ‘oh, this is how they would have experienced it’...so, I think that was really interesting.”

The above quote describes a few of the benefits of reflective design: it generates interest, puts learners in a mindset that helps them work through content, and creates an atmosphere that sets the stage for learning.

**Future Directions: Expanding the UXDL framework**

There is a lot of overlap in the themes that emerge from the surveys, interviews, and user research sessions. There are a couple of prominent survey and interview themes, however, which did not emerge in the user research sessions and are not directly addressed by the UXDL framework. These are important to mention here, as they play a crucial role in learners’ experience and feelings related to online learning. These unique themes will inform further development of the UXDL framework and innovation in online educational design. These two themes are **Assessments** and **Humanizing Learning**. While these themes have been comprehensively explored in the Survey and Interview Findings section of this report, here we offer a summary of how they might inform future development of the UXDL framework.

**Assessments**

Assessments factor heavily in learners’ experience of a course. How learning is measured can evoke strong
emotional responses, both positive and negative, and can really impact learners’ experience of a course, as well as their impression of their instructor and online learning more generally.

Based on our survey and interview findings, we suggest that online learning experiences should, where applicable, include opportunities for authentic assessment; this allows learners to practice and experiment with applying concepts and skills to relevant contexts, and helps prepare them for life beyond university.

Similarly, we suggest that online learning experiences should include more frequent, regularly-spaced, and low(er)-stakes assessments, such as weekly assignments or quizzes, as these provide opportunities for learners to receive feedback on learning, which enables them to make more informed choices about how to best direct their learning and use their time. Learners in our study report that frequent, low(er)-stakes assessments are especially important for online courses, which they feel require more self-direction and self-motivation than face-to-face courses. Weekly assessments can motivate learners to prioritize and keep up with the course, and can help them with time management.

While frequent assessments can help learners to remain engaged and motivated, and to prioritize their online courses, this challenge may still be more prevalent in online courses relative to face-to-face, due to a lack of another factor that really matters to learners: Humanizing Learning.

Humanizing Learning

In our survey and interview data, many learners identified factors that contribute to an absence of humanized learning in online courses. What is missing for many learners is a sense of connection with their instructor, the ability to easily interact with other minds, and a feeling of being supported by a community of peers and fellow learners. Learners are asking for more frequent, meaningful, and authentic ways of connecting with their instructors, TAs, and peers. When instructors are not responsive to queries, learners start to disengage, which can lead to a feeling of isolation or invisibility:

“nobody’s holding you accountable because it’s just, like, your name on a list… You don’t get the one on one, like, connection that you could get with a professor in an in person on campus course”

This kind of invisibility can impact a learner’s own sense of accountability in the course, and their subsequent experience of it.

We recognize that the kind of humanized learning experience we propose here, where learners feel connected to their instructor and supported by a community of peers, is challenging to implement. It is challenging simply because it is so reliant on both instructors’ and learners’ availability and willingness to “show up.”

Learners in this study have, however, already suggested some ways that instructors can ‘show-up’ for learners and boost the human component of learning in an online course. These include having an active presence on discussion boards, answering learner questions in a timely manner, being available in real time (for example,
holding virtual office hours), providing timely and helpful feedback on assessments, sending reminders of upcoming deadlines, and posting announcements that help learners see content in a different light (e.g., current events related to content or video that addresses difficult concepts that learners struggled with on an assessment).

Assessments and Humanizing Learning are an important part of online learners’ experiences in a course, and can have a considerable impact on their motivation to learn. While these are not currently included in the UXML framework, we intend to explore ways to incorporate them as an important next step in this work.

**Conclusion**

The research we have done at The University of Waterloo validates the principles we have shared in the report above. These principles are aimed at helping learners to learn more effectively online, and, at an affective level, to stay engaged with their learning. While this research project has provided confirmatory data to support the framework, it has also opened up new avenues for us to explore in order to create truly valuable learning experiences for our learners.

We close with a caveat: the UXML honeycomb framework is a good starting place for those interested in creating quality online teaching and learning experiences. However, it is also just a starting place. Learners’ needs and desires change over time; technology changes over time. As such, it is important for instructional designers and others involved in online learning to continue to connect directly with learners about what they find valuable. Otherwise, we’re simply designing our courses for ourselves.
Appendix I: Dissemination of Research

Our dissemination strategy involves sharing our multi-phase project in many forms, from posters to presentations to more hands-on, experiential learning opportunities. A diversity of approaches have been, and continue to be, taken by the team in an attempt to engage, connect, and build capacity with faculty, staff, and instructional designers alike, related to: (a) validating the principles of the UXDL framework and (b) implementing the principles in both blended and online teaching and learning contexts.

One of the primary ways of disseminating our work has been at conferences. To date, we have actively participated in conferences at local (EdTech Week and the Teaching and Learning conference at the University of Waterloo in 2017), national (STLHE 2017 and 2018), and international (ICDE 2017) levels. We also plan to disseminate our results at future conferences, including but not limited to Digital Pedagogy 2019, The University of Waterloo Teaching and Learning conference in 2019 and McMaster’s CogEd 2019.

The results of our study will directly influence and shape design and development practices: (a) at the Centre for Extended Learning, (b) at the Centre for Teaching Excellence, and (c) of administrators and faculty in all departments at the University of Waterloo. Additionally, the research findings continue to dynamically inform the development of the UXDL framework, which has been documented and shared broadly through the Centre for Extended Learning website (http://cel.uwaterloo.ca/honeycomb/), and which will hopefully be referenced on the eCampusOntario website in the future as an open resource for teaching and learning centres province-wide. In addition, these strategies can and will be demonstrated at upcoming Showcase events, such as the Ontario University Council for e-learning (OUCEL), and the Council for Ontario Educational Developers (COED).

Lastly, we intend to submit 2 papers for publication to the following academic, peer-reviewed journals: (1) The Canadian Journal of Scholarship for Teaching and Learning and (2) Online Teaching and Learning. One of the articles will build on data gathered about learners’ prior experiences of online learning (i.e., our survey and interview data) to highlight their likes, dislikes, hopes, and expectations related to online learning. In the second paper, we will focus on the dissemination of results from the user research sessions, which offer a view into the learner experience of modules that have been designed using the UXDL framework.
References


A full list of references and background research that contributed to our research questions and research design can be found on the UXDL site: http://cel.uwaterloo.ca/honeycomb/references.html.