Developing Scales of Learner Modality Preferences and Perspectives on Online Learning

Valerie Irvine ⓘD
University of Victoria

Mariel Miller ⓘD
University of Victoria

Okan Bulut ⓘD
University of Alberta

Jean-Paul Restoule ⓘD
University of Victoria

George Veletsianos ⓘD
University of Minnesota

Correspondence:

Valerie Irvine
University of Victoria
Email: virvine [at] uvic.ca

Abstract

While the COVID-19 pandemic significantly transformed post-secondary course delivery formats, little attention has been paid to post-pandemic learner preferences. To address this gap, we designed two scales to advance our understanding of learner preferences for online learning modalities: the Modalities of Education–Learner Preferences and Intentions (MODE–LPI) scale and the Perceptions of Online Learning Scale (POLS). In this proceeding, we describe the development and piloting of these scales, including how they can provide a nuanced understanding of learner preferences for online programs, courses, and course designs and the key underlying factors that impact them. We conclude with a snapshot of preliminary results and a discussion of future research.

Keywords: online learning, learner preferences, blended learning, hybrid learning, multi-access learning, higher education

Introduction

COVID-19 forced post-secondary institutions (PSI) to shift how they offered courses, often from predominantly face-to-face to primarily online. Learners currently enrolled in post-secondary institutions experienced this shift for a majority—if not all—of their educational programming. The course delivery format and pedagogy they experienced changed continuously from the beginning of the pandemic to today as the system and instructors adapted. With those adaptations, learner perceptions and expectations likely also shifted. Much of the learner preference literature, however, has been conducted in the context of mainstream face-to-face institutions, using learner participants who are a self-selected subset of the larger population. Furthermore, in a recent study conducted by some members of this team (Veletsianos et al., 2023), institutional administrators reported learner preferences differed across various learner profiles and learner contexts. Therefore, it is critical to gain a current and in-depth understanding of learner perceptions as they relate to modality in order to support an inclusive, diverse, and responsive post-secondary system. To address this gap, we developed two scales that go in depth to learn more about what influences preferences in its default, or typical, state, and the current preferences when learners experience temporary or continuing shifts or barriers in their lives. Modalities of Education—Learner Preferences and Intentions.

Theoretical Framework and Literature Context

In the development of this survey, we considered a few frameworks, including the Community of Inquiry Framework (Garrison et al., 2007), the Multi-Access Learning Framework (Irvine, 2009; Irvine et al., 2013), the 5Rs of Indigenous Education (relationships, respect, relevance, responsibility, and reciprocity; Restoule, 2019; Restoule & Chaw-win-is, 2017), and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003). A full literature review is not provided due to space constraints and will be expanded on in a forthcoming journal article; however, themes include merging modality terminology, trends in post-secondary enrolment, and learner modality preferences, including diverse representation in learner modality preferences research.

Understanding learner modality preferences requires a nuanced approach. As diverse options for courses and programs have continued to emerge since the global pandemic, it is necessary to examine student preferences beyond the binary of online vs. face-to-face to include hybrid, multi-access, and offline modes (Irvine, 2020). Thus, it is important to acknowledge that learners' modality preferences are multi-faceted.

First, while learners may have a preferred mode, it does not necessarily mean they prefer to engage in this mode exclusively during their program or courses. Thus, we must parse exploration down further into preferences at the program, course, and class level. This includes partitioning the face-to-face mode into indoor, outdoor, and land-based classrooms and considering preferences for learning design across modalities (e.g., lecture vs. discussion-oriented pedagogies).

Second, exploring modality preferences requires understanding the factors that shape them. We posit that learner modality preferences are both dynamic and static based on multiple factors, which may influence how learners aggregate in different types of educational institutions and programs. Static learner preferences are stable and enduring across time, while dynamic learner modality preferences vary based on situation or context. For example, online programs or institutions may have a greater representation of learners with certain demographic traits, such as anxiety, which may result in a static modality preference in favour of online learning. In contrast, a dynamic preference may be conditional, so as to shift a static preference for in-person learning to that of online due to the length of the commute to class (Irvine et al., 2013). Both static and dynamic learner modality preferences can be impacted by factors ranging from perceptions (e.g., their beliefs around the performance of online learning or how difficult it is to their assessment of risk for transmissible illnesses) to experiences (e.g., previous online learning courses taken) and demographics.

Understanding students' modality preferences is critical for institutional planning and for enhancing learning effectiveness and retention. However, a notable gap exists in instruments providing comprehensive measures of student modality preference as a multi-faceted phenomenon. The UTAUT (Venkatesh et al., 2003) provides one option for assessing learners' acceptance of online learning by focusing on factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions. While Birch and Irvine (2009) adapted the UTAUT for education, it does not focus specifically on online learning modalities and lacks the inclusion of affective and Indigenous principles. Furthermore, predicting students' preference for learning modalities requires determining how some of these constructs, such as the 5Rs, instructor quality, performance expectancy, and self-efficacy, map onto intentions but also to each other. The development of more nuanced instruments is needed to adequately guide administrators and educators to meet institutional and learner needs effectively.

Research Objective

The purpose of this paper is to describe the conceptual development and initial piloting of two instruments designed to advance understanding of learner preferences of modality in post-secondary education. Instruments aim to advance knowledge of post-secondary students' perspectives and preferences for learning modality format in specific regions, program areas, and course outcomes. The development of these scales contributes to research and practice in three critical ways. First, we provide current definitions of modality that cover the complexity that exists today. Second, we embed constructs and items that support diversity/inclusion. Third, we update UTAUT to understand the underlying reasons for modality preferences.

Conceptual Development of the Instruments

The measurement or assessment of online learning preferences is a critical concern in both research and practice. Scholarly understanding of the factors that shape learner's preferences is limited (O'Neil et al., 2020). Furthermore, there is a lack of research capturing the diverse array of learners and the types of institutions and programs they participate in. Critical areas include student preferences for course delivery with a special focus on Indigenous students' access and preferred choices; factors (regional, program, demographic) that influence students'

choices and preferences; and successful practices in course and program planning to allow flexibility in delivery that aligns with student preferences. We have created two scales to address this need plus demographic items:

MODE-LPI, for *Modalities of Education–Learner Preferences and Intentions* scale, measures learner preferences of different modes or "delivery modes" of learning (e.g., online and in-person).

Perceptions of Online Learning Scale (POLS) measures perceptions that learners hold around online learning related to their individual experiences, their support, and their instructional context.

Demographic Items examine individual context (e.g., age, gender, sexual orientation, and ethnicity, but also caregiving commitment and context as new items) and educational context (e.g., prior online course experience, voluntariness, commute)

MODE-LPI Scale

The MODE-LPI scale contains 23 items (rank, checkbox, and Likert-type) assessing learners' multi-faceted modality preferences and includes optional conditional questions based on logic branching). Items include modality preferences by different layers (program, course, class) and typical vs. current modality preferences (*typical* meaning without barriers like commute, geography, etc., and *current* incorporating barriers experienced in the present time). Additional items assess preferences at the learning design level, including the level of synchronicity desired, the importance of class recordings based on learning design, privacy preferences, comfort with merging with open online learners, importance of open educational resources, preferences for engagement for different contexts (e.g., whole class vs. instructor vs. peers), importance that choice is provided for mode for different layers (program, course, class), modality preferences by different layer (program, course, class), flexibility experienced in courses to date, preference changes since the pandemic, impact of risk of transmissible illness on modality preferences, perceived availability of desired programs and their barriers, and interest in taking courses at other institutions in preferred modality with intent to transfer into their program.

POLS

The POLS assesses factors that contribute to modality preferences, includes 41 Likert-type items (including conditional questions based on logic branching), and draws from a mix of conceptual approaches within the contemporary literature of online learning previously mentioned. The preliminary POLS model includes nine constructs hypothesized to influence learner preference and behavioural intent to learn online. Constructs are listed and defined in Table 1.

Table 1

Online Learning Acceptance Scale Constructs and Definitions

Construct	Definition
Performance expectancy	Degree to which an individual believes learning online will help them to attain gains in learning and academic performance
Effort expectancy	Degree of ease associated with online learning
Social influence	Degree to which an individual perceives that others who are important to them believe they should learn online
Facilitating conditions	Degree to which an individual believes that an organizational and technical infrastructure exists to support online learning
Self-efficacy	Level of confidence of an individual in their ability to learn online
Anxiety	Degree to which an individual experiences feelings of fearfulness, apprehension, and uneasiness towards online learning
Modality bias	Degree to which an individual perceives that online education is inherently inferior to traditional face-to-face learning or vice versa.
Instructional quality	Degree to which an individual believes that online learning can offer high quality interactions with content, instructors, and peers
5Rs	Degree to which an individual believes that online learning can support Indigenous approaches to education, which include respect, relevance, reciprocity, responsibility, and relationships

Demographic Items

The 15 demographic items include a wide array of factors that are hypothesized to impact learner modality preferences. Some of these items are conditional based on participant responses using logic branching, so the actual number of items completed by a participant could be fewer. Demographic items include education level, age, place of residence, relocation status, disability or chronic health status, gender identity, sexual orientation, caregiving status, ethnicity, relationship status, and income. Notably, these demographics extend key moderators UTAUT (gender, age, voluntariness, and experience) with additional variables listed above. We would like to highlight the novelty of the caregiving status items, given that little attention has been paid to this profile on a demographic scale. Note that we modified the experience moderator to include previous experience with online learning and rated the quality of experience with online learning.

Figure 1
Learner Modality Preferences Conceptual Framework
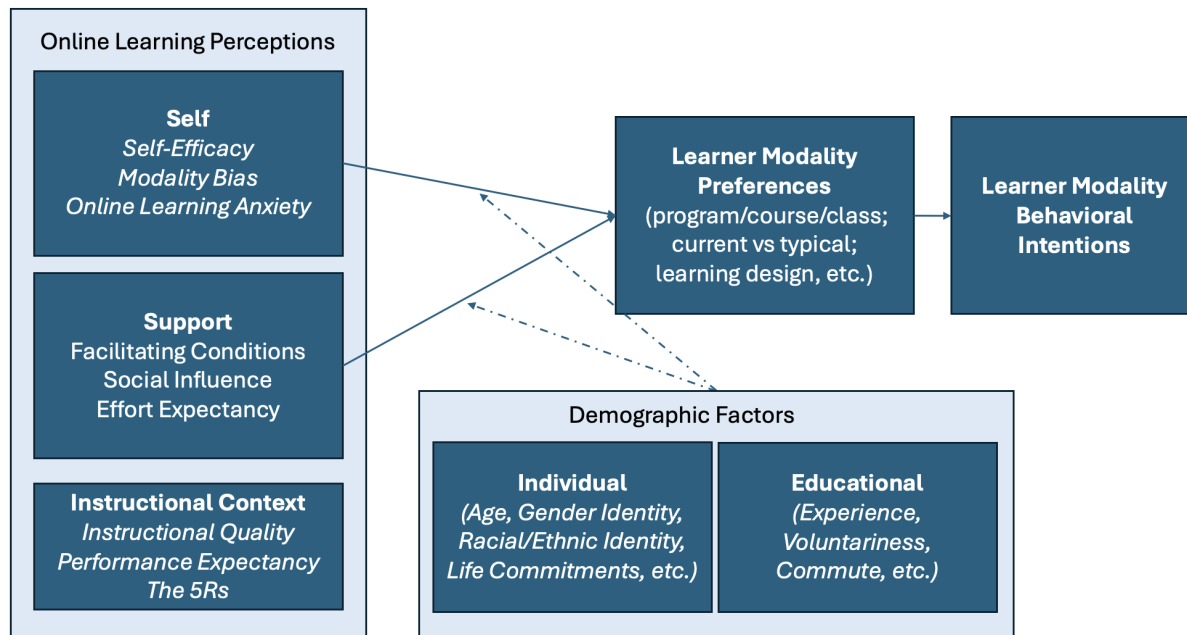
Methods

The MODE-LPI Scale and POLS were developed through a multi-phase process. Phases included (a) expert review of the draft instrument with professionals from a range of relevant disciplines, (b) a small-scale pilot with participants from diverse backgrounds, and (c) a large-scale pilot currently underway involving psychometric evaluation of the instruments.

Expert Review

The instrument was shared with six experts representing diverse backgrounds to ensure content validity and relevance. Three experts were from educational technology with deep expertise in online learning (one professor and two PSI managers). One expert from English language learning/international education and one expert from disability studies participated. One co-author is in Indigenous Education and provided input from an Indigenous perspective. Qualitative feedback was gathered from experts, and questions and items were added or modified based on input.

Small-Scale Pilot

The instrument was piloted in March of 2024 across students from different faculties and across undergraduate and graduate levels via four pathways: a core in-person undergraduate teacher education course, a first-year undergraduate blended course, online undergraduate elective courses drawing learners from across all faculties, and a Master's multi-access cohort of K-12

teachers. The survey was deployed with 17 complete responses. Open-ended fields were provided on each survey page for feedback on items. A final question at the end of the survey asked for overall feedback on the survey. Between 1–4 responses were received on each survey page, with minor revisions recommended. The four responses received on the overall feedback item all reported the survey was "good." The researchers modified some items based on the usage of "other, please specify" responses to match participant needs for the response category.

Large-Scale Pilot

A broader psychometric evaluation of items is currently being conducted on the first large dataset captured from the first large-scale rollout (N = 1,612). Participants included learners at several BC universities, colleges, and institutes primarily enrolled in credit diploma, bachelor's, and graduate programs. Analysis of the psychometric adequacy of the POLS, including through item analysis and exploratory factor analysis, is currently underway. However, preliminary results of the MODE-LPI indicate that under regular day-to-day conditions, less than half of learners ranked face-to-face course delivery as their top choice (46.58%, n = 559), with a significant proportion selecting course modalities with online components as their top choice (50.75%, online, hybrid, multi-access combined, n = 609).

Discussion

The multi-phase development of the MODE-LPI Scale and POLS represents a comprehensive process to best develop tools for understanding learning modality preferences for online learning. While analysis of the large-scale pilot is still underway, our findings will inform the refinement of the instruments and their future application in the next phases of this research.

Significance of the Study

The MODE-LPI Scale/POLS can be administered separately or in tandem to serve as (a) practical tools for collecting rich data for institutional decision-making, and (b) research instruments for modeling and predicting modality preferences (e.g., amongst diverse populations). Modality preferences are an important area of research to assist institutions in anticipating which modes to offer courses and programs. This is especially critical to match the alignment of offerings and preferred modes to maximize enrolments for institutions, as many are currently facing economic challenges. Consideration of key demographic factors such as caregiving status and level of commitment, will provide new insights into creating a more accessible campus. Furthermore, the survey data collected is open.

Future Research

Recommendations for future research include examining the psychometric adequacy of the POLS and modification based on findings collected from its first large data collection across a handful of universities and colleges. A second provincial rollout in the Fall of 2024 will include the revised survey with a broader number of institutions as well as more diversity in the type of institutions (primarily face-to-face as well as online institutions). We will also roll out a second phase of the first data collection as part of an explanatory mixed methods design, which is to conduct interviews and talking circles both online and in-person, while reserving one of each type for Indigenous learners specifically.

Since learner modality preference research often perpetuates the bias of sampling from a self-selected subgroup already enrolled in primarily face-to-face institutions, future research that collects data from the K-12 sector (including in-person and online modes) is recommended to access a broad representation of learners. Furthermore, learner modality preference research needs to consider methods to collect data from those who are excluded from traditional brick-and-mortar campuses, especially when the goal of our educational institutions is to educate society, our gross domestic product depends on attaining higher education.

Author's Contributions

VI and MM developed the survey items with input from OB and JPR. All contributed to study design and writing.

Open Researcher and Contributor Identifier (ORCID)

Valerie Irvine https://orcid.org/0000-0002-8067-1300

Mariel Miller https://orcid.org/0000-0002-1705-4350

Okan Bulut https://orcid.org/0000-0001-5853-1267

Jean-Paul Restoule https://orcid.org/0000-0001-6225-3773

George Veletsianos https://orcid.org/0000-0002-6579-9576

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Ethics Statement

Ethical approval was obtained by the University of Victoria Human Research Ethics Board.

Conflict of Interest

The authors do not declare any conflict of interest.

Data Availability Statement

The anonymized data is licensed under a creative commons license and can be shared on request.

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Appendix

Participant Demographic Data

Participants

	Pilot
n	17 (unless otherwise reported)
Working full-time/ Working part-time	13 (76.47%) 4 (23.53%)
Education level: - Highschool - Certificate or Diploma - Bachelor's Degree - Master's Degree - Doctorate Degree	- 6 (37.50%) - 2 (12.50%) - 5 (31.25%) - 2 (12.50%) - 1 (6.25%)
Undergrad Graduate	14 (82.35%) 3 (17.64%)
Registration Status: - Full-time - Part-time	13 (76.47%) 4 (23.53%
Identified as unpaid caregiver	2 (12.50%) identified as unpaid caregiver in the following contexts: - 2 (12.50% as full-time shared caregiving of a child as parent/guardian - 1 (12.50%) as full-time shared caregiving of a person with disabilities
Day-to-day activities were - Limited a little - Limited a lot - Preferred not to say - Had no limitations.	 4 (25%) 0 (0%) 2 (12.50%) 10 (62.50%)
Identify as a person with disability status, a disabled person, or a person with a chronic health condition (physical or mental)	7 (41.18%)

Urban Rural	15 (93.75%) 1 (6.25%)
Gender: *only categories with responses shown ** one person below identified as trans - Female - Male - Non-binary	 12 (75%) 3 (18.75%) 1 (6.25%)
Age - 18-24 - 25-34 - 35-44 - 45-54	 5 (31.25%) 7 (43.75%) 3 (18.75%) 1 (6.25%)
Cultural Background *only categories with responses shown - East Asian - West Asian or Arab - White (European Ancestry) - Multiracial &/or Mixed Race - Indigenous	 1 (6.25%) 1 (6.25%) 12 (75.00%) 1 (6.25%) 1 (6.25%)
Approximate Annual Household Income: *only categories with responses shown - $0-9,999 - $20,000-$29,999 - $30,000-$49,999 - $50,000-$74,999 - $100,000-$149,999 - Over $150,000 - Prefer not to answer	 3 (18.75%) 1 (6.25%) 1 (6.25%) 3 (18.75%) 5 (31.25%) 1 (6.25%) 2 (12.50%)