

Higher Education Instructor Perception of Helpfulness of Inclusive and Equitable Online Teaching Strategies

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Abstract

Online learners are increasingly diverse (NCES, 2022), which underlines the need for instructors to be inclusive and equitable in online teaching. Inclusion refers to providing opportunities for all learners in the online course, so they can actively participate and feel welcomed and belong in the course, and equity ensures that all learners have fair treatment and access to the opportunities and resources needed to succeed. In this survey-based research, we developed an Inclusive and Equitable Online Teaching Strategies (IEOTS) instrument with 45 strategies and examined instructor perceptions of the helpfulness of these strategies. These strategies focused on instructor self-awareness and commitment, getting to know the learners, course design, course facilitation, and evaluation. Based on the 478 online instructor survey responses, descriptive statistics showed that the instructors rated the strategies between somewhat helpful and helpful. In the open-ended question, student choice was described as an important aspect of the online course being inclusive and equitable. Analysis conducted based on the learner (student level), instructor (gender, ethnicity, teaching experience and teaching expertise), course (delivery modality), and organizational differences (required training, collaboration with instructional designer) found that instructor perceptions of helpfulness was higher for the course design subscale for instructors who taught online asynchronously rather than synchronously; higher for the *know your learner* subscale for instructors who taught graduate students rather than those who taught undergraduate students, and between those who attended training for online teaching compared to those who had not. In addition to supporting diverse online students, this study has implications for online instructors, instructional designers, and administrators who provide support to integrate these strategies effectively.

Keywords: Inclusive online learning, equitable online learning, online teaching strategies, higher education

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The onset of the COVID-19 global pandemic has broadened the use of online teaching and learning but also highlighted the inequities in education. Ongoing systemic racism towards marginalized groups of individuals and immigrants also brought to light the continuing struggles for equity and inclusion. Though college campuses have focused on inclusion and equity efforts on campuses recently, there is still limited research on equity and inclusion strategies in online teaching (Martin et al., 2020). Research has shown that there are equity issues in online learning regarding attendance and achievement for low-income and minority students (Tate & Warschauer, 2022). It is critical for instructors to be intentional in order for online teaching and learning to be inclusive and equitable to all learners. For online instructors to develop competency in inclusion and equity, strong foundations in multicultural education, social justice, and critical inquiry (Grant & Lee, 2014) are required and also build effective technological competence (Montelongo & Eaton, 2020). Though some university centers for teaching and learning recommend inclusive and equitable strategies for online teaching, there is limited research that has proven that these strategies are effective. To address this need, this research study focuses on identifying inclusive and equitable online teaching strategies that instructors could intentionally use in online courses.

Literature Review

Inclusive and Equitable Strategies in Online Learning

The term inclusion is defined as “the act or practice of including and accommodating people who have historically been excluded or marginalized (because of their race, gender, sexuality, or ability)” (Merriam-Webster, n.d). In online learning, this can refer to providing opportunities for all learners in the online course, so they can actively participate, feel welcome and belong in the course. Equity is defined as “justice according to natural law or right and freedom from bias or favoritism” (Merriam-Webster, n.d). In online learning, this can refer to ensuring that all learners have fair treatment and access to the opportunities and resources needed to succeed. Therefore, inclusive and equitable strategies in online teaching and learning would provide opportunities for all learners to become active and engaged learners and have equal treatment.

Research has identified some opportunities and challenges regarding inclusion and equitable strategies in online learning. For instance, Passey (2017) conducted a literature review on online learning inclusive practice and found that instructors might be better served with teaching and learning strategies that move beyond cognitive outcomes and strategies to include social and emotional teaching and learning. Specific strategies mentioned are collaborative learning, active learning, and problem-based learning and are student-centered and structured for learners to have autonomy and flexibility. Online course discussions provide both students and instructors an opportunity to be included and share perspectives about race, class, disabilities, and gender. However, these online discussions can perpetuate microaggressions and bias incidents (Licona & Gurung, 2011; Ortega et al., 2018). When these discussions are effectively facilitated, they can present opportunities for learners to co-construct new meanings around various identities (Grant & Lee, 2014). However, perceptions of anonymity also provide room for increased offensive statements in online discussions (Ortega et al., 2018), which can exclude learners from participating in the online course. This research highlights the need for online

learners to engage with one another through instruction that is designed and facilitated to create meaningful interaction.

Inclusive strategies that have been recommended in online courses are to get to know the learner's identity, such as their preferred pronoun, and understand the learner's needs if they have the essential technology devices and reliable internet so that the instructor can support them accordingly (Comer et al., 2015). Instructors are also advised to create a welcoming environment by using a caring tone and cultivating a sense of connectedness that fosters inclusion (Martin et al., 2018). Furthermore, it is critical for instructors to include instructional materials that are accessible to all learners (e.g., closed captioned, transcripts, image descriptions, alt-text) through various devices such as desktops, tablets, and smartphones (Bolliger & Martin, 2021) while including diverse representation and perspectives (e.g., varied race, gender, religion, ability, multicultural) (Howard & Navarro, 2016). It is also important to ensure that all cultural references utilized can be meaningfully interpreted by all students, opportunities are provided for autonomy (Passey, 2017), and resources are provided to support their learning (Pedro & Kumar, 2020).

Research has shown that to deliver an equitable course, it is important to support learners with disabilities or English language learners who need specialized instruction and related services (Ortiz et al., 2020). Online instructors should also collectively establish communication norms such as netiquette guidelines for equitable participation (Stephens & Roberts, 2017). Since learners have various needs, it is important to record lectures and virtual meetings to be viewed later since some of them may not be able to attend live synchronous sessions. Additionally, these recordings can benefit some students who may prefer to re-watch them again (Martin et al., 2017). It is also critical to provide multiple opportunities for learners to improve their work based on instructor feedback and provide flexible deadlines for learners in need (e.g., technology challenges). Being available to support learners using various communication channels (e.g. virtual office hours; being responsive to learner emails, chats, or messages; and periodically checking in with learners) grading anonymously to reduce bias, and collecting feedback from learners anonymously or privately for their concerns and course improvement will make the online course more equitable and engaging (Bolliger & Martin, 2018). This emphasizes the instructor's need to commit to the values of equity and inclusion while designing the course to meet learner needs.

Specific marginalized groups have expressed how they feel online learning is inequitable. For instance, Reedy (2019) called for new online course design methodologies to ensure equity after yarning with 19 indigenous students. *Yarning* is a colloquial term used to describe chatting or talking. Some specific concerns that emerged were that students were having difficulty establishing relatedness with others, university services being not attainable, course content not reflecting diverse perspectives, cultural identity and racism impacting their learning, and poverty and poor internet service impacting their success.

Equitable and inclusive definitions and online teaching strategies may vary due to different perspectives, disciplines, and populations of learners. For example, Ismailof and Chiu (2022) implemented Universal Design for learning strategies to develop a 15-week asynchronous online course to provide a more inclusive and equitable learning environment. Although the

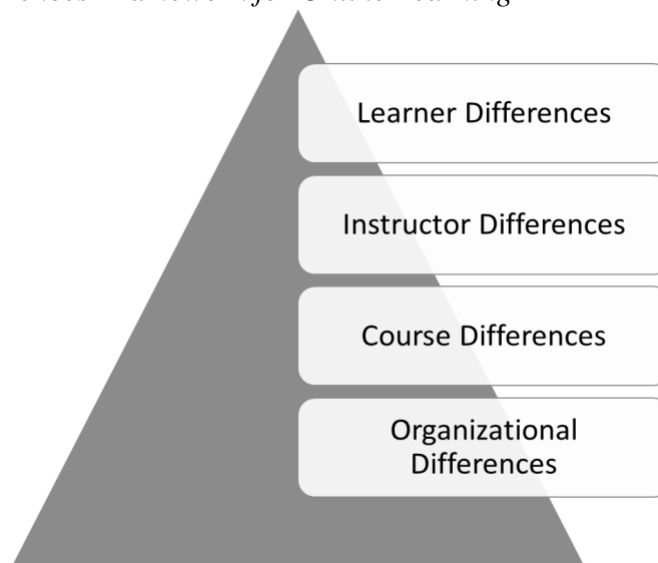
strategies were found to be useful for inclusion and equity, the learning outcomes were different due to varying disciplines. No set of strategies will result in a perfectly inclusive and equitable learning environment, but the effort of the instructor to use some of these strategies will create an environment in which students feel comfortable to express their individual needs.

Differences Based on the Learner, Instructor, Course, and Organization

The following section details inclusion and equity research examining differences around various levels of characteristics: learner, instructor, course, and organizational levels. These levels are aligned with the Martin et al. (2020) review, which categorized research on online teaching and learning on the learner, instructor and course, and organizational levels.

Figure 1.

Inclusion and Equity Differences Framework for Online Learning



Focusing on learner characteristics, Baker et al. (2022) examined bias through field experimentation and found evidence of both race and gender bias in discussions in a Massively Open Online Course (MOOC). White male learners were most likely to get responses, followed by white female learners. Baker and colleagues encourage exploring various designs that promote equitable forms of engagement. Researchers have also examined and found differences in how students from different ethnic groups perceive the effectiveness of online courses differently. Garris and Fleck (2020) found that Black students rated course quality significantly lower than students from other ethnic groups. Similarly, Ober et al. (2021) examined undergraduates' perceptions and experiences in a fully online course and found student attitudes toward online learning varied by ethnicity; Black/African American and Hispanic/Latinx students held a more negative attitude than students in other ethnic groups.

Focusing on instructor differences, Conoway and Bethune (2015) examined instructor implicit bias toward stereotypical student names and found that implicit bias existed to a small degree. They recommend that instructors face and explore biases as awareness creates the avenue to training and resources to help overcome existing implicit biases. It is important for instructors to examine their own biases and the cultural backgrounds of their students (Tapanes et al., 2009).

Focusing on course design when engaging around complex topics like identity, equity, and social justice, researchers suggest that synchronous modalities are most effective, allowing for important interpersonal connections (Grant & Lee, 2014; Licona & Gurung, 2011) rather than using written modalities which can exclude some learners (Madden, 2020). However, researchers have found that asynchronous online discussions provide both students and instructors an opportunity to be included and share their personal viewpoints (Licona & Gurung, 2011; Ortega et al., 2018).

Focusing on organizational differences, such as working with an instructional designer, may introduce faculty to concepts related to equity and inclusivity issues and help them learn about the appropriate teaching approaches to promote the inclusion of students (Hanson & Burke, 2021). Stone et al. (2019) examined the experiences of online students in rural settings and found that university policies and processes prevent students from a distance from accessing university services. Recommendations included more flexibility in terms of access to materials and university policies to allow for equal treatment of all students, including those in other locations.

Frameworks for Inclusion and Equity

Some frameworks and models have emerged to guide the design of inclusive and equitable practices in online and face-to-face instruction, including Universal Design for Learning (UDL) (CAST, 2018) and culturally responsive teaching (Gay, 2018). UDL includes three main principles that guide learners to become purposeful and motivated, knowledgeable and resourceful, and strategic and goal-directed principles and has been most frequently utilized for supporting learners with disabilities. The principles require multiple means of representation, action and expression, and engagement. The UDL principles relate to the culturally responsive pedagogies of multiple pathways to success and student agency of choice. Ismailov and Chiu (2022) examined UDL strategies in online courses and found that the framework supported autonomy and competence but failed to satisfy all learners' needs. Morong and Desbiens (2016) conducted a literature review and proposed guidelines for culturally responsive pedagogies in online learning. The guidelines are categorized into strategies for outcomes, assessment, facilitation, learning resources, and scheduling. Explicit instructions include affective learning outcomes, self-assessing cultural awareness, attitudes, and values, and cultural safety criteria are some of the recommended pedagogies. Additionally, Woodley et al. (2017) identified best practices for incorporating culturally responsive teaching in online learning environments. They recommend validating students' prerequisite knowledge with relevant activities, providing comprehensive and multi-dimensional learning opportunities, transforming student learning with synchronous opportunities, and empowering students with leadership opportunities.

Though these frameworks exist, there is still a need for practical, inclusive, and equitable strategies that can be directly used by instructors in their online courses to support learner differences based on language, race, ethnicity, gender, and other identities. Kieran and Anderson (2018) suggest that these frameworks overlap, and blending the strategies could be useful in creating equitable and inclusive online learning courses. In addition, there is a need for research to examine inclusion and equity based on learner, instructor, course and organizational differences. We use the inclusion and equity differences framework (Figure 1) focusing on

learner, instructor, course, and organizational differences to understand inclusion and equity for online teaching to guide the analysis in this study.

Purpose of the Study

Though there are best practices recommended by several universities, and a few frameworks proposed for universal design for learning and culturally responsive pedagogies, there is limited research examining strategies for inclusive and equitable online teaching. There is a need to identify inclusive and equitable online teaching strategies that are helpful specifically for online instructors. Survey-based research is a commonly used research methodology for identifying human social behavior and attitudes (Nardi, 2018). Hence, a cross-sectional survey was used to collect instructor perception on the helpfulness of IETO strategies. In this survey-based research, we examine inclusive and equitable online teaching strategies by developing an Inclusive and Equitable Online Teaching (IEOTS) instrument and implementing it with online instructors. The following research questions are addressed in this survey-based study.

1. How do instructors rate their perception of helpfulness on the inclusive and equitable online teaching strategies?
2. What differences exist in instructor responses based on learner differences (graduate vs undergraduate); instructor individual differences (gender, ethnicity, teaching experience, teaching expertise), course differences (course modality) and organizational differences (organizational training for online teaching, and for inclusion and diversity and collaboration with instructional designer) for Inclusive and Equitable Online Teaching (IEOT)?

Methods

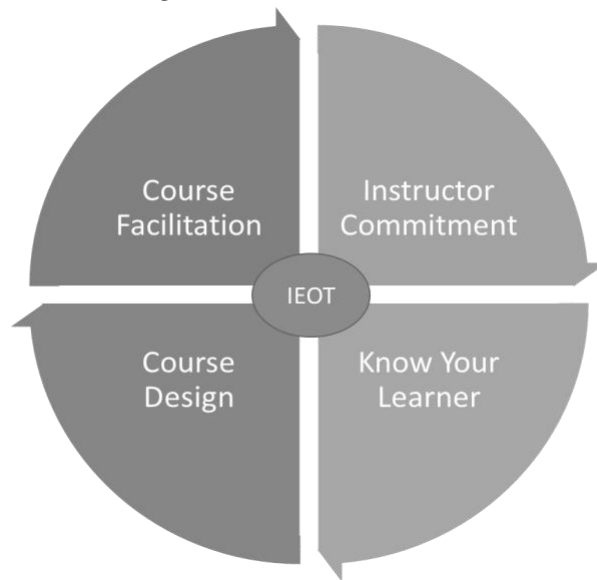
A cross-sectional survey with several quantitative and one qualitative item was used to examine instructors' perception of helpfulness of the IEOT strategies. The first research question focused on descriptive research whereas the second research question focused on exploratory research (Nardi, 2018). Descriptive research helped us understand basic information through descriptive statistics on instructors' perception of helpfulness of IEOT strategies, and exploratory research assisted in understanding relationships through the lens of differences. Thus, survey-based research was used to be able to perform both descriptive and exploratory research (Nardi, 2018). This survey-based research with online instructors was carried out in two phases. The first phase focused on the development of the IEOTS instrument, and the second phase focused on implementing the survey.

Survey Development

During the first phase, the research team developed the instrument. The inclusive and equitable online teaching strategies instrument was developed for this study after reviewing the research literature and existing guidelines from centers for teaching and learning or similar centers from eight universities. Several centers for teaching and learning were leading efforts in IEOTS in online learning during the initial search that was conducted at the time of survey development. These universities were identified to include a combination of private and public institutions and institutions with very high research activity and high research activity. Seven universities were identified and these included the University of Michigan, Iowa State

University, University of North Carolina Charlotte, Columbia University, New York University, Rice University, and Stanford University. From reviewing the guidelines proposed by these universities and from research, an IEOTS instrument with 47 items was initially drafted. This draft instrument was then shared with nine experts for an expert review process. This included four instructional design experts, three DEI experts, and two research methodology experts. All nine of them had expertise in online teaching and practice. A few items were collapsed, dropped and added during the expert review process. The final instrument included a total of 45 items in four categories: Instructor self-awareness and commitment, know your learner, course design, course facilitation and evaluation (Figure 2). From the initial implementation of the survey, Cronbach alpha was found to be high at 0.977 for the 45 items, and for each of the four subscales suggested reasonable internal consistency, instructor self-awareness and commitment (0.926), know your learner (0.859), course design (0.933), and course facilitation and evaluation (0.930). There were also 10 demographic and background questions and one open-ended question. The open ended question read “Are there any inclusive and equitable strategies that has been helpful to you that was not included in this survey?”

Figure 2
Inclusion and Equity Online Teaching Factors



Survey Implementation

The Institutional Review Board (IRB) approval for distributing this survey was obtained at the researchers’ institution. The survey was distributed through Qualtrics electronic survey administration tool to the distance education email list of students at a Southeastern research university of high research activity, to the email list at another southeastern research university with very high research activity, and to the division of distance learning email list of the Association for Educational Communications (AECT) Organization. Convenience sampling was used to collect data from accessible and available participant groups. The researchers had access to distribute surveys to the professional organization listed as well as the universities listed. The participants reviewed and provided their consent before completing the survey. The participants were asked to respond to the 45 items based on the following question “Please rate the

helpfulness of the following inclusive and equitable online teaching strategies.” The respondents rated the items based on a five-point Likert scale: 0=Not Used, 1=Not Helpful, 2=Somewhat Helpful, 3=Helpful, 4=Very Helpful.

Participants

There were a total of 540 responses received from online instructors. However, 62 responses had missing data, with more than 50% of the fields missing. These responses were deleted, which resulted in 478 responses that could be used. Among the responses that were completed, only 168 respondents completed demographic information. Instructor participant demographics and characteristics are included in Table 1 for the 168 participants who provided their demographic and background information.

Table 1
Participant Demographics and Background Characteristics

Participant Characteristic	Frequency	Percentage
Gender		
Do not wish to respond	4	.8
Man	62	13.0
Other	2	.4
Women	100	20.9
Race		
African American	8	1.7
Asian or Asian American	20	4.2
Caucasian	84	17.6
Do not wish to respond	5	1.0
Latino or Hispanic	8	1.7
Multiracial	4	.8
Native American	24	5.0
Native Hawaiian or Pacific Islander	12	2.5
Other	3	.6

Rank		
Assistant Professor	20	4.2
Associate Professor	15	3.1
Clinical Faculty	7	1.5
Full Professor	32	6.7
Full-time Lecturer	58	12.1
Instructor	8	1.7
Other	11	2.3
Part-time Lecturer	17	3.6
Primary Teaching Method		
Blended or Hybrid (blending online and face to face)	49	10.3
Online asynchronously	31	6.5
Online bichronously (blending asynchronous and synchronous)	29	6.1
Online synchronously	55	11.5
Other	4	.8
Teaching Level		
Graduate courses	48	10.0
Other	7	1.5
Undergraduate courses	113	23.6
Worked with an Instructional Designer		
No	37	7.7
Not sure	7	1.5
Yes	124	25.9

Institutional Training for Online Teaching Required		
No	56	11.7
Not sure	6	1.3
Yes	106	22.2
Institutional Training Required for Inclusion and Diversity		
No	56	11.7
Not sure	6	1.3
Yes	106	22.2
Online Course Design Expertise		
Advanced beginner	47	9.8
Competent	65	13.6
Expert	18	3.8
Not sure	2	.4
Novice	3	.6
Proficient	33	6.9
Online Teaching Expertise		
0 years	2	.4
1-5 years	102	21.3
11-15 years	13	2.7
6-10 years	39	8.2
More than 15	12	2.5

Data Collection and Analysis

Data was collected anonymously through the online Qualtrics survey. Online instructor participants were invited to participate in a random drawing for three \$25 Amazon gift cards at the end of the survey. Data Analysis used primarily quantitative research methods with the exception of the one question that used qualitative research methods for analysis. Descriptive statistics (means and standard deviations) are reported both at the item level and the subscale level. Cronbach's alpha was used to check the internal consistencies of the responses to the

survey items. T-tests were used to examine the differences between gender and race. One-way Analysis of Variance (ANOVA) was used to compare teaching modality, teaching experience, and teaching expertise. A T-test was also used to compare teaching levels, required training, and collaboration with instructional designers. We used effect sizes (small = .01; moderate = .06; large = .14) to document the size of obtained differences (Cohen, 1988). An open-ended question on additional strategies that were helpful to the instructors was analyzed for themes.

Results

The results from the various analyses of the survey data are included in this section.

Data Screening

From the initial sample of 540 online instructor responses, missing data was screened. Little MCAR's test was conducted, and it was found that data was missing at random. Sixty-two responses were missing more than 50% of the data; these were deleted, and this resulted in 478 responses. However, among the 478 responses, only 168 instructor respondents provided demographic data. For the descriptive analysis, we report the data from the 478 responses (Table 2). For the inferential analysis based on demographics, we use the data from the 168 respondents who provided the demographic data.

Descriptive Statistics of Inclusive and Equitable Online Teaching Strategies

Means (M) and standard deviations (SD) for the 45 inclusive and equitable online teaching strategies are included in Table 2. Aggregate means are also provided for each of the four categories, instructor self-awareness and commitment, know your learners, course design, and course facilitation and evaluation.

Table 2

Descriptive Statistics of Inclusive and Equitable Online Teaching Strategies

IEOTS (n=478)	Not Used Frequency	Mean	SD
Instructor Self-Awareness and Commitment			
1. Examine own assumptions and expectations about learner behavior and performance	18	2.91	1.03
2. Participate in professional development on diversity, equity, and inclusion	17	2.86	1.01
3. Include a diversity, equity, and inclusion statement in your syllabus	19	2.79	1.05
4. Review syllabus and consider what changes might be needed to make it equitable (e.g., grading weights and course policies)	17	2.85	1.01

5. Identify any assumed prior knowledge, skills, or abilities that are embedded in the course assignments	15	2.87	1.01
6. Affirm commitment to each learner's ability to learn	16	2.90	1.01
7. Set an example by prominently displaying preferred pronouns in course (e.g., she/her, they/them)	27	2.67	1.09
8. Prepared to handle online class dynamics that perpetuate systemic inequities (e.g., microaggression in group projects)	21	2.77	1.07
9. Informed of the ways in which life events can impact learners in different ways	23	2.77	1.08
10. Model self-care practices (e.g., taking time off during breaks)	24	2.73	1.09
11. Prepared to handle learner requests for course flexibility equitably	15	2.87	0.98
12. Avoid making assumptions that may not include all learners (e.g., cultural references, prior knowledge)	15	2.84	1.02
Mean	18.92	2.82	0.77

Know Your Learners

13. Survey learners to identify learner characteristics (e.g., preferred name, preferred pronoun) and needs (e.g., technology devices; reliable internet)	23	2.87	1.06
14. Mindful about learner's privacy (e.g., not requiring to share video or disclose identity)	13	2.95	1.01
15. Support learners who need specialized instruction and related services (e.g., English language learners)	22	2.92	1.07
16. Cultivate learners' sense of connectedness (e.g., learner lounge to interact with peers; timely communication)	25	2.91	1.05
17. Support the learners that may have greater needs and fewer resources (e.g., differentiating assignments)	20	2.84	1.04

18. Support the social and emotional well-being of learners (e.g., promote learner self-care through reflection)	14	2.91	1.00
Mean	19.5	2.90	0.80
Course Design			
19. Create a welcoming environment that fosters inclusion (e.g., use a caring tone).	20	3.04	1.04
20. Collectively establish communication norms for participation (e.g., netiquette guidelines)	15	2.96	0.98
21. Include instructional materials (e.g., readings, visuals, videos, podcasts) that are accessible to all learners (e.g., closed captioned, transcripts, image descriptions, alt-text)	21	2.96	1.05
22. Ensure that the instructional materials are designed for use across devices (e.g., desktops, tablets, smartphones)	14	2.91	0.97
23. Ensure that the instructional materials include a diverse representation and perspectives (e.g., varied race, gender, religion, ability, multicultural)	26	2.92	1.10
24. Include free and accessible open educational resources (e.g., open access textbooks, open source software)	9	2.90	0.98
25. Ensure all cultural references (e.g. humor, metaphors, colloquialisms) utilized can be meaningfully interpreted by all students (e.g. international, non-traditional, minority)	16	2.85	1.02
26. Elicit a variety of learner perspectives in both asynchronous and synchronous discussions (e.g. cultural experiences)	22	2.83	1.03
27. Provide the purpose, task, and grading criteria for all assignments	17	2.92	1.01
28. Provide learners with the opportunity for autonomy (e.g., self-selected topics, differentiated assignments, choice of project)	24	2.87	1.06

29. Include multiple low-stakes (e.g., self-check quizzes) and high stakes assessments throughout the course (e.g., projects)	20	2.84	1.04
30. Include self-assessment opportunities (e.g., non-graded reflections, self-assessment with rubric, goal-setting activities)	15	2.87	0.99
31. Provide resources to learners that are necessary to support their learning (e.g., writing center, disability services, well-being resources)	19	2.85	1.04

Mean	18.31	2.90	0.76
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Course Facilitation and Evaluation

32. Encourage learners to introduce themselves to peers with preferred names and pronouns (e.g., she/her, they/them)	22	2.91	1.08
33. Communicate with prompts that encourage empathy and community-building	18	2.97	1.00
34. Ensure equitable participation in asynchronous and synchronous discussions (e.g., assigning roles to each learner)	24	2.85	1.08
35. Continually monitor learners and intervene when necessary (e.g., periodic check-in emails; check last logged in date)	19	2.92	1.00
36. Record lectures and virtual meetings to be viewed later	19	2.82	1.02
37. Verbally describe visual material during a synchronous session or when recording a lecture	19	2.83	1.03
38. Provide feedback using various modalities (e.g., text, audio, video)	18	2.87	1.02
39. Provide multiple opportunities for learners to improve their work based on instructor feedback	13	2.92	0.96
40. Provide flexibility on deadlines for learners in need (e.g., technology challenges)	14	2.90	1.00
41. Available to support learners using various communication channels (e.g., virtual office hours; being responsive to learner emails, chats, or messages; and periodically checking in with learners)	15	2.95	1.01

42. Provide opportunities for learners to engage in smaller group settings (e.g., using breakout rooms, collaborative assignments, and peer review)	13	2.96	0.98
43. Provide regular opportunities for learners to share their personal experiences (e.g. discussion)	17	2.85	1.02
44. Grade anonymously to reduce bias	31	2.77	1.14
45. Collect feedback anonymously or privately from learners for student concerns and course improvement	19	2.90	1.04
Mean	19.73	2.89	0.74

All four subscales had similar means, and online instructors rated these items between somewhat helpful and helpful. There was only one item that was rated above 3.0, which was “Create a welcoming environment that fosters inclusion (e.g., use a caring tone)” (M=3.04). The lowest rated item was “Set an example by prominently displaying preferred pronouns in the course (e.g., she/her, they/them)” (M=2.67).

Learner Differences

Learner differences between undergraduate and graduate students that online instructors taught were examined. A T-test was conducted based on the student level taught (graduate vs undergraduate). A significant difference was found between the two groups of respondents for the Know Your Learner subscale, $t(159) = -1.614$, $p = .045$, Cohen’s $d = 0.69$. Those who taught graduate students rated the Know Your Learner subscale strategies higher than those who taught undergraduate students (Table 3).

Table 3

Learner Level Differences of Inclusive and Equitable Online Teaching Strategies

IEOTS Subscale	Teaching Level	N	Mean	SD
Instructor Self-Awareness and Commitment	Undergraduate	113	2.82	0.64
	Graduate	48	3.04	0.66
Know Your Learners	Undergraduate	113	2.93	0.64
	Graduate	48	3.12	0.78
Course Design	Undergraduate	113	2.93	0.62
	Graduate	48	3.23	0.55
Course Facilitation	Undergraduate	113	2.90	0.58
	Graduate	48	3.11	0.61

Instructor Differences

Four instructor variables were examined, gender, ethnicity, teaching experience and teaching expertise.

Gender. A T-test was run to examine respondent differences based on gender. Though there were a few respondents who responded as “other” or “do not wish to respond” these were very few in numbers, hence the comparison was run only between respondents who identified as male and female. There was no significant difference between male and female respondents though the female respondents rated the items higher on all the subscales.

Ethnicity. Another T-test was run on ethnicity. Due to the lack of variability among the different ethnicities, respondents were grouped into Caucasian and other. There were no significant differences between these two groups.

Teaching Experience. A one-way teaching experience. ANOVA was conducted to examine the respondents' differences based on their teaching experience (1-5 years, 5-10 years, 11-15 years, and more than 15 years). There was no significant difference between the groups.

Teaching Expertise. A one-way ANOVA was conducted to examine the respondents' differences based on their teaching expertise (Novice, Advanced Beginner, Competent, Proficient, Expert). There was no significant difference between the groups.

Course Differences

A one-way analysis of variance was conducted based on the course delivery modality (online asynchronous, online synchronous, online bichronous and blended). Among the four subscales, there was a significant difference for the course design subscales, $F(3,160) = 2.954$, $p = 0.034$, eta squared (η^2) = 0.052 based on delivery modality. A Tukey post-hoc analysis was conducted to identify differences between the modalities. IEOT course design strategies were rated differently by instructors who taught online asynchronous and online synchronous. Those who taught synchronously ($M = 2.87$) rated these strategies lower than those who taught asynchronous ($M = 3.27$). Table 4 summarizes the IEOTS by course modality.

Table 4

Course Level Differences of Inclusive and Equitable Online Teaching Strategies

IEOTS Subscale	Modality	N	Mean	SD
Instructor Commitment	Online Asynchronous	31	3.05	0.64
	Online Synchronous	55	2.83	0.58
	Online Bichronous	29	2.88	0.59
	Blended	49	2.88	0.75
Mean		164	2.90	0.64

Know Your Learner	Online Asynchronous	31	2.99	0.86
	Online Synchronous	55	2.99	0.59
	Online Bichronous	29	2.84	0.66
	Blended	49	3.13	0.69
	Mean	164	3.01	0.69
Course Design	Online Asynchronous	31	3.27	0.53
	Online Synchronous	55	2.87	0.62
	Online Bichronous	29	2.97	0.60
	Blended	49	3.06	0.64
	Mean	164	3.02	0.62
Course Facilitation	Online Asynchronous	31	3.03	0.69
	Online Synchronous	55	2.91	0.57
	Online Bichronous	29	2.86	0.51
	Blended	49	3.05	0.61
	Mean	164	2.97	0.60

Organizational Level Differences for Training and Support

Organizational level differences were examined through three variables, required training for online teaching, required training on inclusion and equity, and collaboration with an instructional designer.

Required Training for Online Teaching. A T-test was conducted to examine differences between those respondents where training for online teaching was required and those for whom it was not. A significant difference was found between these two groups of respondents for the Know Your Learner subscale, $t(166)=0.229$, $p=0.05$, Cohen's $d = 0.69$. Those who attended training for online teaching rated these items much higher than those who did not attend training.(Table 5).

Table 5
Organizational Level Differences for Training Required for Online Teaching

IEOTS Subscale	Training to Teach Online Required	N	Mean	SD
Instructor Self-Awareness and Commitment	Yes	106	2.84	0.60
	No	62	2.99	0.73
Know Your Learners	Yes	106	3.02	0.60
	No	62	2.99	0.83
Course Design	Yes	106	2.94	0.59
	No	62	3.17	0.63
Course Facilitation	Yes	106	2.96	0.57
	No	62	2.98	0.63

Required Training for Inclusion and Equity. A T-test was also conducted to examine differences between those respondents where training for inclusion and equity was required and those that were not. Significant differences were found between these two groups of respondents.

Collaboration with Instruction Designer. A T-test was also conducted to examine differences between those respondents who collaborated with an instructional designer and those that were not. Significant differences were found between these two groups of respondents.

Additional Inclusive and Equitable Online Teaching Strategies

An open-ended question “Are there any inclusive and equitable strategies that has been helpful to you that were not included in this survey?” was included in the survey. About 40% of the respondents (192 respondents) responded “no” to this survey. One of the respondents who responded “No” stated “No but these are all so great that I wish I had a copy of all 45!” This highlights the value of these strategies for instructors.

There were some responses with recommendations as helpful in addition to the other items on this survey. These were grouped into categories and then themes were identified. The highest mentioned strategy regarded student choice. This was mentioned five times and the instructors mentioned that to be inclusive and equitable, learners should be allowed to choose team members for group work. The next most mentioned strategy was course design strategy mentioned four times; it regarded the use of anonymous learning tools and included diverse representation in examples used. Course facilitation was also mentioned four times and included using terms that are respectful, communicating individually with students either in individual meetings or tutoring sessions, scheduled meetings with individual students apart from scheduled class sessions, and using a variety of communication channels. Course assessment strategies were mentioned three times and included items on clear expectations in rubrics, including DEI

parameters in rubrics, and using mastery learning approaches on assessments. This was followed by the course evaluation strategy mentioned three times on accepting anonymous feedback and providing opportunities for reflection and evaluation of peers in group work. Additional strategies mentioned once included acknowledging and discussing systemic inequities in the course content. Finally, one respondent mentioned the importance of embracing learners' cultural and linguistic backgrounds, and another respondent mentioned the importance of instructor presence for students to reach out for support with diversity needs.

Sample quotes are included in the table below for each of these themes.

Table 6
Respondents Quotes from Open-ended Question

Themes	N	Sample Quote
Student Choice	5	Freely choose team members to work with.
Course Design	4	Learning tools can be applied anonymously; Ensure diverse representation in scenarios or examples used within assignments (distinct from visual media depictions).
Course Facilitation	4	Using terms that are respectful; Can use a variety of communication channels; Scheduled meetings with individual students apart from scheduled class sessions; Providing individual tutoring session
Course Assessment	3	Create a rubric for discussion board posts that outlines the instructors' expectation for student; include diversity, equity, and inclusion as rubric parameters; Using mastery learning approaches to assignments
Course and Peer Evaluation	3	Any comments can be submitted anonymously; Provide opportunities for evaluation of peer participation and contribution for group projects
Course Content	1	Acknowledge and discuss systemic inequities that have existed and continue to exist within the discipline; Emphasize role students play in disrupting inequitable systems in their own context
Know Your Learner	1	Embrace learner's cultural and linguistic backgrounds
Instructor presence	1	I think something that wasn't mentioned was the ability to provide a strong social and teacher presence for the instructor. My learners get to know me through synchronous and asynchronous communications that are flavored with personality and personal details. This helps them know they can come to me for support to address any of their diversity needs

The participant responses to the open-ended question assisted in identifying additional IEOTS that are helpful for online instructors.

Discussion

A successful learning environment should create an inclusive and welcoming atmosphere in which learners feel valued, capable, and motivated to succeed (Lin & Kennette, 2021). With the increasing diversity of online students in higher education, it is critical for online instructors to use inclusive and equitable strategies to help online students feel a sense of belonging, ensure they can access course materials, and support them in achieving their learning goals. The results of our study showed that online instructors perceive inclusive and equitable online teaching strategies such as instructor's commitment, knowing their learners, course design, and course facilitation as equally important. However, the items were not very highly rated, showing that there are still areas for growth among online instructors with regard to using inclusive and equitable teaching strategies. In this section, we discuss the findings by organizing them based on the four IEOTS subscales and also by the learner, instructor, course, and organizational differences.

Instructor Self-Awareness and Commitment

Among 12 items of instructor commitment, "*Examine own assumptions and expectations about learner behavior and performance*" was highly rated by the online instructors. This suggests the helpfulness of reflecting on who the learners are in order to handle online class dynamics that may perpetuate systemic inequities. By considering learner variability in behavior and performance from the beginning of the course, online instructors can integrate flexible and supportive options to help reduce barriers and support a wide range of learners in achieving their learning goals (Rao, 2021). In this regard, the Universal Design for Learning (UDL) provides a framework to build in supports that address the learner variability and usability for all learners (Burgstahler, 2015; CAST, 2018). One of the respondents mentioned the importance of instructor presence in the open-ended response. Instructor presence can help the instructor connect with the students (Martin et al., 2018) so that they can reach for support to meet diversity needs.

Know Your Learner

Among six items of know your learners, being "*Mindful about learner's privacy*" received the highest percent of online instructors' rating in creating an online inclusive environment. Online instructors can give learners a choice to participate through verbal chat, audio, or video contributions. Lin and Kennette (2021) noted that although online instructors can encourage learners to turn on their web cameras during online sessions, they shouldn't make it mandatory in order to respect their privacy. Being mindful of the learner's privacy can help increase online engagement while being respectful of each individual learner's comfort level. In the open-ended response, one of the participants mentioned the importance of embracing learners' cultural and linguistic backgrounds. This helps the diverse learners with cultural and linguistic diversity feel included in the online course (Kerr et al., 2018).

Course Design

Among 13 items of course design, online instructors perceived "*creating a welcoming environment that fosters inclusion*" to be the most important strategy that can help establish inclusive and equitable online learning environments. When online instructors design an online course, they should strive to design an environment where all online learners are welcomed and feel respected, have a sense of belonging, and are able to participate in the course. To create an

inclusive online environment, Quinlan et al. (2012) suggested using teaching strategies focused on students' interests, accommodating different learners, and engaging with students to meet their needs to benefit all students. In addition, instructors can design and develop inclusive syllabuses based on the principles of inclusive education and UDL as a way to adjust teaching-learning practices to meet all students' needs (Carballo et al., 2021). From the open-ended response, applying learning tools anonymously and ensuring diverse representation in scenarios or examples was provided as a helpful strategy. The anonymity in peer assessments and peer discussions (Kumar et al., 2019) and diverse representation in instructional examples is helpful to increase equity and inclusiveness in the online courses.

Course Facilitation and Evaluation

Among 14 items regarding course facilitation, “*communicate with prompts that encourage empathy and community-building*” was perceived as the most helpful strategy to facilitate inclusive and equitable online learning. This is supported by the 2021 Faulkner et al., study that concluded that a personable and communicative instructor is important in “building a relationship where the student feels they can ask for help, go to office hours, share what is going on in their life, and, therefore, potentially get more from the class” (p. 107). Instructors' use of immediate and supportive communication was vital in creating an inclusive learning environment where students can feel safe to be themselves, express their views, and learn (Faulkner et al., 2021). From the open-end response, giving students the opportunity to freely choose team members to work with was the most mentioned strategy. This must be included in the design but also enforced during facilitation. During facilitation, using terms that are respectful; using a variety of communication channels (Martin et al., 2018); scheduling additional meetings with individual students and individual tutoring session were considered helpful facilitation strategies. Focusing on evaluation, creating a rubric for discussion board posts that outline the instructors' expectation for students (Wyss et al., 2014)—including diversity, equity, and inclusion as rubric parameters, using mastery learning approaches to assignments (Archambault et al., 2022), providing students opportunities for submitting comments anonymously, and evaluation of peer participation and contribution for group projects (Kumar et al., 2019) are all helpful strategies to support inclusion and equity.

Learner Differences

Previous research has recommended that the learning outcomes varied by learner disciplines when including the UDL strategies (Ismailof & Chiu, 2022). Among the four IEOTS subscales, instructors who taught graduate students rated the *Know Your Learner* subscale strategies higher than those who taught undergraduate students. This suggests that instructors teaching graduate students believe it is more helpful to use IEOTS to Know Your Learner at graduate level courses as compared to the instructors teaching undergraduate level courses. This may be due to the fact that graduate-level courses are smaller in size and it is easier to know the learners to be able to create an equitable and inclusive environment accordingly. Another interpretation can be that instructors teaching at the undergraduate level may need different kinds of strategies to know their learners other than the ones listed in this survey. In this regard, Comer et al. (2015) recommended using inclusive strategies to get to know the learner's identity, such as their preferred pronoun, and understand the learner's needs if they have the essential technology devices and reliable internet so that the instructor can support them accordingly. Other researchers recommend taking learner characteristics and needs into consideration when

designing online courses to optimize the impact of UDL strategies (Cai & Robinson, 2021; Jiang & Zhang, 2021).

Instructor Individual Differences

No significant differences were found between gender, ethnicity, teaching experience, and teaching expertise of instructors. This shows that regardless of their demographics, instructors perceive all four IEOTS subscales to be helpful for creating an inclusive and equitable online learning environment. Instructors understand that providing opportunities for all learners in the online course can help students actively participate, feel welcomed, and belong. This finding supports the literature that suggest the importance for instructors to commit to the values of equity and inclusion and to use design strategies that suit learner needs so that all learners have fair treatment of the opportunities and resources needed to succeed (Bolliger & Martin, 2021; Comer et al., 2015; Passey, 2017).

Course Modality Differences

Instructors who taught asynchronous courses rated IEOT course design strategies higher than those who taught synchronously. Differentiated strategies for course design might be essential in achieving inclusion and equity in different modalities. For instance, instructors teaching in an asynchronous modality find creating a welcoming environment that fosters inclusion more important than instructors teaching in synchronous modality. In this regard, researchers suggest that synchronous modalities are more effective for interpersonal connections when engaging around complex topics (Grant & Lee, 2014; Licona & Gurung, 2011). On the other hand, asynchronous modalities are effective in providing students with opportunities to work at their own pace and providing more time to reflect on what they are learning. Specifically, asynchronous online discussions provide both students and instructors an opportunity to be included and share their personal viewpoints (Licona & Gurung, 2011; Ortega et al., 2018).

Organizational Training and Support Differences

Instructors who attended training to teach online rated the IEOTS items much higher than those who did not. This suggests the importance of training to teach online that also provides strategies to be more inclusive and equitable. This finding is aligned with studies that show faculty training in inclusive practices such as those suggested in the UDL framework to have a very positive impact on the learning experience of all students (Davies et al., 2013; Lombardi & Murray, 2011). Besides learning about inclusive teaching practices, training allows faculty to gain practical knowledge about adjustments in online teaching strategies and in the design of accessible learning resources (Carballo et al., 2021). Conoway and Bethune (2015) found that implicit bias existed toward stereotypical student names and recommended instructors to use training and resources to help overcome existing implicit biases.

Limitations

A few methodological limitations exist. The instrument may not be an exhaustive list of all IEOTS though it was holistic, focusing on four factors: instructor commitment, know your learners, course design, and course facilitation. Also, though we received 478 responses, only 168 respondents provided demographic details. This resulted in not much variability for some of the variables that could have been analyzed for specific differences. Since this is survey-based

research on instructor perception of helpfulness, the responses could be biased. In addition, the respondents may be biased in their understanding of the IEOT strategies for teaching diverse learners online. Though learner, instructor, course, and organization differences were examined, there might be other differences that were not examined in this study. Since we used several email lists from two universities and a professional organization, we were unable to calculate the response rate.

Implications

The results of our study showed that online instructors perceive inclusive and equitable online teaching strategies such as instructor's commitment, knowing their learners, course design, and course facilitation as helpful. The overall findings based on descriptive statistics on the 45 items were rated between somewhat helpful and helpful. Thus, there is room for growth for the instructors to use these strategies to examine their helpfulness. There were differences in the perception of instructors who taught graduate students than those who taught undergraduate students for the Know your Learner subscale. Differentiated strategies and support might be needed for these two groups of learners. Instructors' perceptions of IEOT course design strategies differed from instructors who taught online asynchronously and synchronously. This shows that differentiated strategies might be essential in achieving inclusion and equity in these modalities. Also, those who attended training for online teaching rated the IEOTS items much higher than those who did not, which shows the importance of training for online teaching. Overall, the study has implications not only for online instructors but also for instructional designers who work with online instructors and for administrators to support the effective integration of IEOTS.

Future Directions

Future research could collect data from observations of online courses and interviews with online instructors on how these inclusive and equitable strategies are implemented. Additional studies are also needed to examine the various perspectives of equity and diversity with various populations. Future researchers should examine additional strategies as the IEOT strategies included are not exhaustive. This study focused on the helpfulness of IEOT strategies based on instructor perspective and other studies can examine them through different lenses such as the perspectives of instructional designer or student. Also, examining strategies by asynchronous, synchronous, and bichronous modalities will assist in identifying specific strategies for the type of online modalities that instructors might be teaching. In addition, research studying student perception of these strategies and what supports them will be helpful to design courses that meet the needs of diverse learners.

Declarations

Institutional Review Board Approval was received at the researcher institution before recruitment and data collection.

The authors declare that there is no conflict of interest in publishing this manuscript with this journal.

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