

Designing for Digital Wellness: Videoconferencing Guidelines for Inclusion

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Abstract

Digital wellness intends to promote academic achievement and holistic wellbeing while avoiding the potential harms of technology in the application of videoconferencing solutions. Drawing from extant literature in a systematic review, we found six design themes for course designers to utilize, create, and plan inclusive learning experiences in videoconferencing learning spaces. Based on our examination of the following themes, accessibility, active learning strategies, multimodal communication, readiness, social presence, and socio-cultural sensitivity, we have provided guiding questions to inform design considerations for digital wellness and inclusive learning through videoconferencing technologies.

Keywords: Digital Wellness, Videoconferencing Guidelines, Inclusive Design

Introduction

Advances in videoconferencing technology have been leveraged as a solution to extend in-person learning across geographical distances synchronously and efficiently. Notably, videoconferencing technology was often the only or preferred method to facilitate learning and readily transition from in-person to distance learning as a reaction to COVID-19 (Crawford et al., 2020). The global pandemic exposed the inequalities in both education and technology solutions, and videoconferencing-enabled learning was not immune to deficient conditions and factors. As more educational communities continue to leverage the affordances of videoconferencing technology to facilitate learning, the digital wellness of learners should be addressed through design considerations that support equitable access, usability, and inclusive learning experiences for all participants, as part of their holistic wellbeing. Based on preliminary findings from a multiple-phased research study and building upon the work of Palalas (2019) and Palalas et al. (2020), we have summarized six design considerations from a systematic review to facilitate inclusive videoconferencing learning experiences.

Digital Wellness

In our exploration of videoconferencing guidelines for inclusion, we applied a digital wellness lens that emerged from our previous studies of digital learning design that respects the wellbeing of participants (Palalas, 2019; Palalas et al., 2020; Pegrum & Palalas, 2021). We define digital wellness as “the optimum state of health and wellbeing that each individual using technology is capable of achieving” (Digital Wellness Institute, 2020); in the videoconferencing setting, this implies using technology that promotes learners’ success and holistic health, both individual and societal, considering the human, natural and digital communities. In short, digital wellness refers to taking advantage of benefits and avoiding potential harms of technology and how it’s used regarding these eight dimensions and their interdependence: cognitive, social, emotional, spiritual, physical, digital identity, environmental, and productivity. Accordingly, we aim to create inclusive learning environments that are conducive to learners’ growth and minimize digital disarray (Pegrum & Palalas, 2021) characterized by digital distraction, digital disorder (e.g., misinformation, disinformation, and fake news), and digital disconnection “with digital users being superficially present online but in actuality disconnected from the self ...and, relatedly, from others” (Pegrum & Palalas, 2021, p. 3). Other challenges that negatively impact student wellbeing include technical difficulties, limited digital literacy skills, low learner capability and confidence levels, temporal challenges, motivational and emotional impediments, lack of support, and barriers that reduce access and the ability to participate (e.g., Irawan et al., 2020; Moawad, 2020; Saxena, 2020).

Methodology

Our research is framed with a holistic lens aligned to digital wellness to understand evidence-based approaches for online distance learning course designers using videoconferencing tools in higher education contexts. Drawing from the literature in a phased study, we employed a systematic review to “examine secondary data by retrieving, synthesizing, and assessing existing knowledge on a subject in a logical, transparent, and analytical manner” (Martin

et al., 2020, p. 1613), to address, *what are the inclusive design considerations that promote digital wellness in videoconferencing learning environments?*

By using the preferred reporting items for systematic reviews and meta-analyses (PRISMA) to explore empirical research findings and address our primary research question (Moher et al., 2009; Zawacki-Richter et al., 2020), we aimed to reduce bias and draw reliable conclusions to summarize inclusive design practices for videoconferencing spaces. First, we explored five databases, including Discover, Google Scholar, Science Direct, Springer, and Taylor and Francis, with a Boolean operator as a search strategy to evaluate peer-reviewed video conferencing studies conducted in formal higher education settings and published in English between 2020 and 2022. Next, we used Rayyan (<https://www.rayyan.ai/>) to screen and negotiate meaning from 72 potential articles and synthesized 36 articles; we identified six main themes that emerged from the literature.

Findings and Discussion

We interpreted six common themes within the literature, which include accessibility, active learning strategies, multimodal communication, readiness, social presence, and socio-cultural sensitivity to support inclusive design considerations in videoconferencing spaces.

Accessibility

We define accessibility as the practice to provide access to equitable learning experiences for all. Boerngen and Rickard (2021) recommend educators evaluate content delivery methods to provide an inclusive and accessible learning environment. The broadband disparities of the rural-urban digital divide create complex challenges that course designers need to assess when designing online instruction since not all participants will have robust internet connection speeds. Sufirmansyah et al. (2021) present digital access challenges, including limitations in network access, data plans, and hardware storage devices that prevent students from engaging in high-quality learning experiences through videoconferencing platforms. These obstacles impact not only the learner but also the instructor and other classmates, as determined by the learning design intended for the videoconferencing session. For example, an instructor may develop a partner learning activity; however, one partner of the pair may experience network issues that disrupt their learning, their partner's learning and diminish the activity's learning objectives. Pal and Patra (2021) suggest that video sessions should be held for a shorter duration to reduce fatigue and be accessible on mobile and desktop devices that provide optimal resolution for those with limited data plans and internet access.

In addition to the digital divide, Leiba and Gafni (2021) recommend course designers evaluate the diversity of needs and abilities of learners, including attention and concentration disorders and second language learners. Dolamore (2021) claims that "most technology platforms for hosting classes assume the attendees' hearing status and visual preference" (p. 377). Assistive technologies are required to assist learners and create more equitable experiences in the learning process. Other tools and videoconferencing functions such as spotlight, speaker view, share screen, and backchanneling techniques allow learners of all abilities to engage with the material equitably. Finally, course designers should embed accessibility functions and third-party technologies into videoconferencing platforms before all learning experiences to ensure equitable access for all learners.

Active Learning Strategies

Online learning modalities, including videoconferencing, can provide learner-centred experiences through active learning strategies. Active learning strategies in distance education are instructional designs that employ action and reflection to stimulate critical thinking to address relevant and meaningful ill-structured problems (Heiser & Ralston-Berg, 2018). In videoconferencing learning environments, Roth et al. (2021) encourage course designers to intentionally create activities to build social presence since the videoconferencing platforms reduce communities of learning to visual and auditorial relationships. These activities may include icebreakers and active learning strategies such as role-play or group learning experiences (Saldanha et al., 2021) designed to support collaboration, interaction and learner autonomy (Souhila, 2021). By enabling multiple forms of communication, Dhala and Johnson (2021) recommend learning designs that take time for students to reflect, then articulate their expressions in creative forms such as poetry. Additionally, a learner-centered approach for interaction in a videoconferencing platform incorporates integrated functions such as polling tools, discussion boards, shared resources, and cooperative annotations to support student preferences and abilities while enabling more equitable learning opportunities (Castelli & Sarvary, 2021). Furthermore, active learning strategies can inherently be embedded in the learning process through videoconferencing systems. For example, instructors who model effective facilitation in videoconferencing learning environments and

allow learners to practice online facilitation in group work, create learning opportunities for all participants to improve their communication skills (Souhila, 2021) and witness instructional strategies by their peers and instructors (Bedenlier et al., 2021; Saldanha et al., 2021). Therefore, from our review of the literature, we recommend that course designers thoughtfully and purposefully plan and incorporate multimodal interactions that enable learners to actively engage and reflect on their learning.

Multimodal Communication

We define multimodal communication as inclusive modes to present information effectively. In the context of online distance education, learning technologies such as videoconferencing offer advantages to incorporating multimodal media enrichment (Bates, 2008), and course designers make equitable decisions to apply technologies to optimize learning (Heiser and Ralston-Berg, 2018). Multimodal learning design supports learners' preferences and abilities, thus creating a more inclusive learning experience. Videoconferencing is an example of a multimodal communication digital tool that hosts audiovisual stimuli in real-time to engage learners to interact with content, their peers, and instructor (Maimaiti et al., 2021; Wei & Tang, 2022). Also, course designers can incorporate multimodal communication in videoconferencing learning environments which "allows walls of exclusion to become bridges of opportunity" (Dolamore, 2021, p. 377). Arellano and Parks (2021) found that combining multimodal resources including video cameras, whiteboards, chat functions, visual images, audio tools, translation technologies, and text-based learning materials enhanced learners' ability to negotiate meaning, improve socio-affective degrees to build rapport, and support language learning. However, Maimaiti et al. (2021) caution that too much multimodal stimulation can cause fatigue and cognitive overload, ultimately disengaging learners if not thoughtfully or purposefully designed. In transitioning to videoconferencing tools, scholars Katz and Kedem-Yemini (2021) also found negative consequences to four dimensions of interpersonal communication. Specifically, learners and instructors perceived fewer cues to communicate, less availability to provide or receive feedback, and a feeling of reduced personalized interaction. Conversely, learners and instructors found value in documenting videoconferencing sessions for later reference to support access and learner preferences. As an interdisciplinary research team, we believe videoconferencing learning designs require intentional pedagogical and technological decisions in which essential content and learning activities are prioritized for meaningful learning processes and outcomes.

Readiness

Scholars suggest that videoconferencing-enabled learning in higher education contexts requires thoughtful implementation and training to improve learner awareness, acceptance, and attitudes toward interacting in the virtual learning environment (Nguyen et al., 2021; Pedroso et al., 2021; Sobaih et al., 2021). Expanding on student perceptions, scholars argue that the technology user interface and personal characteristics shape the learning experience in videoconferencing platforms (Pal & Patra, 2021; Souhila, 2021). Similarly, Sharma and Saini (2021) found that the same factors exist for instructors adopting new digital technologies like videoconferencing solutions. Without attention to faculty development and training resources on videoconferencing software, learners and instructors experience cognitive overload, frustration, and lack of motivation to engage in a videoconferencing learning environment. Therefore, training sessions should be conducted for learners to increase understanding, self-efficacy and motivation to support the adoption of video-based learning (Alfadda & Mahdi, 2021; Zulherman et al., 2021), and instructors should be able to explain to their learners the purpose of the videoconferencing tool to meet intended learning outcomes. In addition to learner awareness and comfort of learning in a videoconferencing environment, task-orientated activities have a higher perception of usefulness. Finally, these challenges and solutions must be navigated by institutional administrators who can support the conditions, institutional culture, readiness, and resources for learners and instructors to be successful (Alfadda & Mahdi, 2021; Pal & Patra, 2021; Sharma & Saini, 2021; Sufirmansyah et al., 2021; Vandenberg & Magnuson, 2021).

In order to support stakeholder readiness to utilize videoconferencing systems for learning and support inclusive design, we suggest scholars, educators, and decision-makers employ readiness and implementation frameworks to boost comfort levels with the technology and fully leverage the affordances of the software. Expanding upon Mpungose (2021), who presents a framework for instructors to incorporate critical, technical and practice reflection, can offset digital fatigue and regain feelings of autonomy and emotional connectedness. He categorizes technical reflection as subject-level needs such as course content and learning activities, critical reflection as personal needs including self-identification and self-direction, and practical reflection as macro-level needs of society, including access to technologies and socio-economic factors used to provide practical interventions to the implications of distance digital learning. We believe these reflective practices extend beyond the instructor population and are

universal to all critical stakeholders in higher education. Therefore, more empirical research on readiness and implementation frameworks with embedded layers of reflective practice is necessary to guide inclusive design practices in videoconferencing learning spaces.

Social Presence

Boardman et al. (2021) assert that “humans want to have a feeling of connectedness with each other” (p. 25). Within synchronous videoconferencing sessions, the feeling of connectedness can be developed through social presence. Darr et al. (2021) claim that interactions through videoconferencing platforms alter the nature of both peer-to-peer and student-instructor communication. Genuine interactions may be fostered using video cameras and microphones, resulting in students feeling more motivated and confident to participate in online instruction and interaction (Boardman et al., 2021). According to Dhala and Johnson (2021), course designers should develop an interactive space where all participants feel valued and respected while “ensuring there are no essentialist claims to the classroom and that it ‘belongs’ equally to all participants” (p. 171). Engaging diversity through student facilitation highlights differences in tradition, culture, background, and personality while encouraging participants to develop a respectful and collaborative environment. However, Vandenberg and Magnuson (2021) found a significant disconnect between perceptions of social presence in videoconferencing learning environments, with a significant population feeling disconnected from their peers and instructor. As exemplified by Darr et al. (2021), “social disengagement, and an inability to concentrate, are all documented manifestations of prolonged exposure to synchronous content delivered using virtual platforms and have the potential to impact student performance and experiences” (p.1749). The notion of videoconferencing fatigue, as evidenced by Amponsah et al. (2022), is considered emotionally and mentally draining, impacting both the body and the mind. Recommendations for shorter sessions, frequent breaks, open dialogue, casual interactions, and relationship building have been documented through the literature to promote a more inclusive and collaborative learning environment. Developing social presence through these methods allows learners to feel a sense of connectedness and purpose within their learning environment and fosters open emotional and cognitive communication (Boardman et al., 2021; Dhala & Johnson, 2021; Katz & Kedem-Yemini, 2021).

Socio-Cultural Sensitivity

We define socio-cultural sensitivity as consideration and respect given to learners' unique cultural, emotional, political, economic, and social diversity. To create an inclusive videoconferencing environment, course designers should acknowledge and accept learner differences to develop an environment that supports varied contexts. Katz and Kedem-Yemini (2021) claim that perspective-taking aids in communication and impacts students' emotional and cognitive understanding. Numerous scholars (Alasfor, 2021; Boerngen & Rickard, 2021; Cesare Schotzko, 2020; Joia et al., 2021; Katz & Kadem-Yemini, 2021) recommend that each student's unique social and cultural situation should be considered during synchronous video conferencing sessions. For example, Alasfor (2021) draws attention to the social barriers within gender-segregated institutions and advises instructors to allow the optional use of the video camera when instructing learners of the opposite gender. To facilitate female students' social presence, satisfaction, and comprehension, they explored the choice of sharing the video camera of the opposite gender, thus encouraging social-cultural sensitivity. Joia et al. (2021) recommend that course designers evaluate the environment's climate and context to customize an inclusive learning experience. Additionally, video camera usage potentially exposes personal environments and situations that learners may be hesitant to share, such as living arrangements, familial obligations, and societal restrictions. Therefore, instructors should be mindful of their learners' unique environments so as not to create social barriers revealing status or financial insecurity. Disclosing these hidden intimacies (Cesare Schotzko, 2020) leads to feelings of embarrassment and discomfort for learners and hinders their full engagement in the course content (p. 274). Katz and Kadem-Yemini (2021) urge empathy regarding diverse and discreet learning situations and flexibility towards active participation during synchronous sessions. Learners can interact within a synchronous environment through various channels without exposing their unique learning context.

Recommendations

Based upon the findings of the systematic review, we have delineated a set of guiding questions to help course designers create inclusive learning experiences in videoconferencing environments. Ideally, inclusive learning design is "knowing your audience" and follows the "less is more" philosophy. Furthermore, to create inclusive learning experiences, course designers should seek opportunities to employ needs assessments, data-informed personas, and low-stakes formative assessments to make informed design decisions that meet the needs and expectations of the learner population. Finally, we have distilled guiding questions into learning designs that foster digital wellness.

Does your learning design:

1. offer choice to learning activities that support universal design for learning (CAST, 2018) considerations?
2. moderate technology and digital barriers and promote ease of access for a simple and satisfying user experience?
3. encourage balanced engagement that holistically respects learners' preparedness and circumstances, including cognitive, social, emotional, spiritual, physical, digital identity, environmental, and productivity aspects?
4. support functional shared spaces with the feeling of safety within the learning community based on interdependence and reciprocity?
5. promote and stimulate connections and communications in formal and informal conversations (i.e. dialogue and feedback) to diminish isolation and disengagement?
6. provide support, training and guidance that foster confidence to aid anxiety and low self-efficacy?
7. incorporate technological features (i.e., video chat function) in a purposeful way that benefits learners holistically?
8. communicate roles and responsibilities within the community of learners so that all responsibilities and expectations are transparent?
9. build in "negotiated" flexibility within the structure that allows for adjustment to meet the needs and expectations of all?
10. reduce the "noise" and infuse simplicity with a clear sense of purpose and scaffolded instruction?
11. include pedagogy of care and empathy (Burke & Larmar, 2021)?
12. lessen stress by planning and communicating contingency plans?

As our final guidance, these guiding questions are intended to serve all stakeholders for inclusive, accessible and equitable learning and are consistent with the field of research in online distance education.

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