

Inclusive considerations for optimal online learning in times of disasters and crises

Optimal online
learning

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Abstract

Emergencies can create situations where traditional face-to-face courses need to quickly be transferred to be online. When transitioning, it is easy to focus on simply moving content into an online learning management system quickly and training instructors and students in the basics of how to use the platform in a pared-down learning structure. However, this article argues that approaching emergency course redesign with accessibility in mind at the start of the transition will ensure that more students, including students with disabilities, succeed in the online learning environment. This also helps ensure the course is designed for optimal student learning outcomes.

Keywords Diversity, pedagogy, Inclusion, Learning environment, Equity, Evidence-based practice, Universal design for learning, Course design, Inclusive pedagogy

Paper type Conceptual paper

Introduction

Worldwide, national and local civil crises, pandemics and disasters can create situations where traditional face-to-face courses need to be transferred quickly to online teaching mode for days, weeks or entire semesters. In high school and university settings, when transitioning from traditional face-to-face to online course delivery in times of emergency, the first consideration for organizations and instructors is likely to be a focus on moving content into an online learning management system, training instructors and students in the basics of how to use the platform and simply getting through the crisis. In this process, we risk overlooking considerations of inclusive course design and delivery thus reducing the effectiveness of our teaching and possibly disadvantaging all students, including students with physical or cognitive disabilities or variations.

Online classrooms can be excellent equalizers, allowing students to perform in the classroom and engage with peers and the instructor without ever needing to disclose a disability if they choose not to. Assistive technologies can amplify sound and magnify text, for example. Students with mobility limitations may no longer have to carry heavy textbooks, find reasonable parking accommodations or navigate an inaccessible physical campus. However, online classrooms can also present new challenges that were never considered in the face-to-face setting including but not limited to internet connectivity



This paper is part of the special issue, "A Response to Emergency Transitions to Remote Online Education in K-12 and Higher Education" which contains shorter, rapid-turnaround invited works, not subject to double-blind peer review. The issue was called, managed and produced on short timeline in Summer 2020 toward pragmatic instructional application in the Fall 2020 semester.

issues, ergonomic strain when sitting at a computer for long periods and other challenges we will discuss throughout this paper.

Accommodation and accessibility in course design can ensure that all students have a robust and supportive learning environment and experience (Thompson and Copeland, 2020). There are legal reasons for this as well; in Australia, the [Disability Discrimination Act \(1992\)](#) of 1992 protects everyone in Australia from discrimination based on disability, including the provision of goods, services or facilities. In the USA, Section 504 of the Rehabilitation Act states that all schools and universities that receive federal funding are required to make our programs accessible to students with disabilities, and Section 508 of the same law notes that all online materials must be accessible. In fact, the United Nations Department of Economic and Social Affairs website lists 153 laws used in 122 countries to protect, promote and regulate inclusive practices in society regarding disability. Our paper argues that approaching emergency course redesign with inclusive learning best practices in mind at the start of the transition to online-only course delivery will not only ensure that more students can be successful in the online learning environment and boost retention, but it also will allow the institution and instructor of record to feel confident that the course is well designed for optimal student learning outcomes in general.

Basic considerations

When designing and preparing a course for online delivery, one of the primary considerations is will students in my class have the required technology, hardware and software needed to view course materials and participate? Are there patches they will need to download or purchases of software packages or peripheral hardware to enable them to use and keep up with course content? Many students in any given course may rely on campus access to technology and other learning resources. For students with disabilities, there may be universal design for learning centers on campus that have provided assistive technology access and supports. When a course changes mid-semester, however, this can add additional stress and worry to students who may have thought they had signed on for a course that they could navigate with this on-campus supported assistive technology. This can be particularly problematic for students with low vision or hearing, neurodiversity or limited mobility. A student who did not need accommodation for a face-to-face class may find the need for accommodation in an online learning environment, which could lead to additional costs, paperwork and disclosure of a disability the student had not expected or intended to disclose.

Recordings and video lectures may be the way instructors envision continuing the “normalcy” of a traditional face-to-face lecture or seminar course. This means students will need internet access, a robust computer set-up with appropriate software and then also speakers/headphones and possibly microphones and webcams to engage in any group assignments and online activities. Many laptops have these as part of the basic package but not all do, and many desktops do not have these peripheral features built in. With laptops that do have speakers, video and microphones, not all have easily accessible volume controls that provide a range of volume boosting possibilities and not all have microphone options, and if they do have them, they may not always work. Asking students to purchase peripheral software and hardware to meet these needs can get complicated as well if they have an older machine that does not provide multiple USB or other ports. When moving online, best practice is to consider what technology students typically have been bringing to the classroom (smartphones, small laptops, tablets) and design course changes to be accessible for students who may still only have the same basic technology resources, or at

the very least, ask students if they need any additional technology support for full access to and participation in the course.

Factors of disability that may create variations in online student experiences

The following list of limitations is not exhaustive or all-inclusive of diversities, but it provides a broad categorization of some of the most commonly represented disabilities in the classroom. These diversities and their associated accommodations provide a foundation for structuring inclusive course design and delivery, particularly in emergency situations.

Visual limitations in the online classroom

Students with visual limitations may use tools and assistive technologies to provide access to digital course content. For students who use screen readers, the formatting of the written lecture text can be problematic. For example, if a PDF version of lecture content is one's preference for retaining a particular look to the content, uploading both the PDF and a Word version of written materials is best practice, so if a student has an issue with one format, they can try the second, as PDFs may not be accessible for students using screen readers. Formatting a document with the necessary structural integrity to be accessed by a screen reader is imperative. If using Microsoft Word, for example, using heading "style" formatting provides consistency in formatting, and it also allows the screen reader to skip from heading to heading as needed. Headings and subheadings determine the order in which content is read and ensure that the person accessing the document can "tab" through and navigate between and among sections of the document. Use of headings and subheadings is critical for ensuring that the document is read in the appropriate order, as if a reader were visually accessing the document. Using alt-text for images and graphs to describe the visual content is also critical. Without alt-text, the images and graphs do not "exist" except as a placeholder in the screen-read text.

Additional assistive tools also include high-contrast settings and magnification. Readers use these settings to increase readability of screen content. High-contrast settings may be a black background with a white or bright yellow font to make the text stand out and easier to view, for example, or a white background with black text. Because changes to the text coloration with these assistive technologies, it is best to use bold font rather than colorations to display emphasis. This also benefits students with color blindness who may otherwise have missed that emphasized words are in a different colored font. Principles of universal design recommend Sans Serif font (Arial, Calibri) at 12-point minimum for documents and larger font sizes for presentation slides. This also benefits students with dyslexia, dyscalculia and other vision-based learning differences.

Some learning platforms and software may provide accessibility check features that will rank your uploaded resources for basic accessibility (subheadings, alt-text, etc.). For example, Microsoft Word's Check Accessibility feature can provide a review of a document and provide basic feedback. You can also toggle your own computer's high contrast and magnification settings to view your content and make edits as needed before releasing to students.

Hearing limitations in the online classroom

While some students with low hearing may use hearing devices to boost audio, others may rely on lip-reading or other strategies for understanding spoken content. When shifting from a live lecture format to a recorded lecture format, we may sometimes opt to fill the screen with slides rather than our own faces. The slides can provide good structural guidance but including a visual of the speaker's face, with good resolution, is also important – particularly

if closed-captioning is not available. Speaking slowly and with a clear tone is key to aiding viewer understanding. Speaking loudly or shouting should be avoided.

Platforms are offering better and better automatic closed captioning features all the time (e.g. Adobe Connect, Camtasia, YouTube, Microsoft Teams). In some platforms, providing a transcript with the video recording may be a reasonable accommodation. Providing students access to slides or a lecture outline before the lecture can also be useful for note taking. Reinforcing verbal communications with written communications and vice versa will support multiple learning modalities and ensure higher audio–visual accessibility of learning content.

Neurodiversity in the online classroom

Although there is no “normal” brain or “typical” mental capacity with which all other brains are compared (Armstrong, 2012), neurodiversity is often discussed in terms of diagnosed or undiagnosed learning and processing differences that can disable students from having a successful learning experience in typical classrooms. This may include individuals on the autism spectrum and students with epilepsy, Tourette’s syndrome, dyslexia, attention deficit hyperactivity, brain injuries, obsessive compulsion, anxiety disorders and other diversities. These students are already at higher risk of non-completion, for example, while the number of students on the autism spectrum in college and university courses is increasing, only about 40% of autistic students successfully complete their programs of study (Gurbuz *et al.*, 2019). Students with neurodiversities may have difficulty following the structure of course materials, find ambiguous language to be a barrier to understanding or feel uncertain about communication and behavior expectations in the university classroom setting, for example. Every aspect of the course, from structure and content, to presentation and communication, should offer consistency and repetition and reinforcement and explicit statement of expectations is essential.

In a face-to-face setting, the student may quickly and easily be able to ask the instructor or another student for clarification if in doubt, but in an online context, the student may not know the best way to ask questions that they may not be sure are of general class interest or the wait time for the response on a discussion board may be discouraging. Setting up a “Questions about Assignments” discussion board that is checked at least daily or scheduling a chat or online meeting session once a week for questions about assignments will help to not only guide students who require the clear course structures but also will benefit the class as a whole.

A course that has been quickly shifted from face-to-face to online also disrupts student routines and schedules in general, and this can be an extra challenge for students with some neurodiversities. Learned in-class behaviors and strategies may need to be adjusted for the online environment, including what participation should look like, for example, on discussion boards is the tone of writing formal or informal? Are they expected to post daily, or more, or less often? Is it better to start new threads for each post or is replying to previous posts optimal behavior? Likewise, when participating in online lectures are side conversations and questions in the chat feature during the lecture acceptable or problematic? How often will the lecturer pause for questions? Should they expect to have to be visible with a video feed or not? Are they required to speak or can they participate only via chat features? Is lurking, or logging in but not actively commenting, considered attendance? If assignments have been altered, be very clear about what the changes are and how it might affect marking. When questions are asked – even if the same question seems to be asked multiple times – offer kindness and patience, realizing that while you have strategically thought through your course changes, the information is new to the students.

Mobility limitations in the online classroom

There may be a range of visible or invisible mobility limitations that may or may not be apparent in a traditional face-to-face classroom but that may raise barriers in online learning environments. A student with mobility limitations may have planned their semester anticipating that a small lightweight laptop they could easily carry from class to class would suffice, thinking that they would only need to use it for note taking and assignment writing. With the change to online learning, viewing lecture recordings, live-streamed classes and/or PowerPoint slides on the small laptop screen and at the same time taking notes digitally on the same laptop may not have been expected. Purchasing a larger computer or even a docking station and monitor may be out of the question on such short notice, so the change to the online classroom may create barriers that make them consider withdrawing from the course.

A student with chronic back or arthritic pain who could make it through a 50-min class lecture with pain medication or slight discomfort may now find themselves spending many hours a day seated in front of a computer to complete readings, watch lecture materials and write assignments. A student with low eye–hand coordination/dexterity or with shaking hands will likely have slower writing or typing speeds and perhaps need additional time to complete class activities and participate in online chats. Some students may be using speech-to-text, sticky keys or other assistive technologies to accommodate interactions with the electronic environment. Providing recordings and transcripts of online meetings and course sessions can be helpful to students who may need to review information a second time. Again, providing copies of a lecture outline, handouts, presentations and other materials can be useful. Instructors should also consider designating a note-taker for the online meeting sessions and those notes be shared among the class.

Conclusion

Online classes can provide fantastic benefits to all students, including students with disabilities. The flexibility provided in online classrooms can create an equitable and inclusive learning environment for students regardless of visible or invisible disability. At the same time, adjustments to course format, study routines and perhaps also work and home situations and expectations can sometimes feel overwhelming and may also induce anxieties among both students and instructors. Attempting to keep course pace, content, assignments and activities as similar as possible to how they were prior to the emergency can help retain students, as can consideration of individual students' needs, including students with visual, auditory, mobility and neurodiversities.

As we design and create inclusive online course materials and structures in emergency times, being explicit about what we are doing, for example, telling students what we have done to ensure accessibility, inviting students to communicate what they need to have an accessible learning experience, providing formative feedback on their progress as online learners and otherwise providing a positive face to the online learning experience will not only create a culture of awareness of differences in learning needs and student experiences but also will potentially encourage all students to feel comfortable communicating strategies for what they need to feel included in the classroom community, without the label of ability or disability. Communicating with students about this deliberate attention to equitable access and inclusion also fosters awareness of student diversities and models strategies that they might consider in their own professional endeavors after graduation.

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Further reading

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