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Call for Special Publication Book Chapters

Bridging the XR Technology-to-Practice Gap: Methods and Strategies for Blending Extended Realities into Classroom Instruction

Abstracts Due August 10, 2022 by email to tcherner@unc.edu

Extended reality (XR) technologies include a range of applications, websites, and devices that modify individuals' physical reality in some way (Raunschnabel et al., 2017). For example, augmented reality (AR) is a type of XR that layers one or more pieces of digital content onto an individual's physical environment, such as a classroom, sports field, or neighborhood. Virtual reality (VR) is another type, and it immerses users in a virtual environment generated by a computer. Mixed reality (MR) is a third type of XR, and it uses AR and VR to create immersive experiences based on an individual's physical environment.

With these three examples of XR being large categories that exist on a continuum (Milgram et al., 1994), there are nuances within them, such as VR experiences that use 360° images and videos. While those experiences are not necessarily generated by a computer, their content is hosted in a digital space with the goal of immersing users, which qualifies them as a form of VR. Across their different types, XR technologies are being developed at an exponential rate, creating a "technology-to-practice" gap. Though research suggests that XR technologies have educational benefits, generalizable pedagogical strategies that can be applied across platforms, contexts, and XR types have not yet been developed.

Currently, multiple case studies have demonstrated that XR technologies can provide educational benefits to students, including boosting their engagement levels and motivation to learn (Chen et al., 2017; McKenzie et al., 2019). However, these studies can have tight scopes, and they often center on a specific XR technology, such as a certain application for a smart device (Georgiou et al., 2021) or testing a prototype in a controlled setting (Weser et al., 2021). This limited focus on a granular aspect of XR technology results in a lack of generalizability for best practices when using AR, VR, and MR to create learning experiences. Therefore, the concern exists that XR technologies are being developed so quickly that the researchers developing data-driven practices for integrating them into learning experiences are playing catch-up (Chuah, 2019).

CHAPTER GUIDELINES

In response to the technology-to-practice gap that exists around XR technologies, this edited book seeks chapters that address one or both of the following larger aspects across PreK-12 and/or secondary education contexts:

1. Research that has generalizable, pedagogical implications for XR, and
2. Detailed strategies based on implications that identify a specific type of XR technology and describe its utilization using examples drawn from different contexts, content areas, and learning outcomes

For example, a chapter with pedagogical implications could explain strategies for leveraging AR for teaching mathematics or using VR field trips to build awareness of the humanities. Another chapter can explain methods for differentiating instruction using a piece of XR. The possibilities for chapters are plentiful; however, the focus must be on combining a certain set or type of XR technologies within an instructional context, academic discipline, or skillset of some kind.

TOPICS
We encourage chapters that consider a range of topics. Below is a sample of possible topics:

- Innovative teaching methods using XR in one or more content areas
- Strategies for students communicating and collaborating in XR environments
- Repeatedly engaging and motivating students using XR over sustained periods of time
- Procedures for blended instructional methods that utilize XR-based activities
- Leveraging XR to teach about poverty, inequality, and issues of race, ethnicity, immigrant status, gender identity, and sexual orientation
- Facilitating foreign language conversation simulations in XR
- Immersing students in lectures and presentations by instructors and classmates using XR
- Utilizing XR to host hi-flex/hybrid learning experiences
- Improving pre-service teachers' classroom management skills using XR
- XR for teaching design of all kinds (e.g., engineering, fashion)
- Gamifying the learning experience by using XR
- Using XR to facilitate interactive museum activities, field trips, or other simulations that overcome barriers of space and time
- The use of XR to develop students' empathy, compassion, and drive towards equity
- Using XR for critical and traditional perspectives and methods in education
- Strategies for adopting one piece of XR and then using it in multiple contexts
- Methods for increasing equity, inclusivity, and access when using XR

Because XR is an emerging technology, authors are also encouraged to employ a range of methodologies to study it, such as conducting a content analysis that discusses the common functionalities of a type of XR technology, implementing a case study that documents the use of the technology with a specific population, or writing vignettes that describes the use of an XR technology in different authentic settings. That way, in addition to the pedagogical strategies for using XR, this book will also model multiple research methodologies that can be used to study it. After describing, analyzing, or experimenting with the technologies, authors must generate pedagogical implications and strategies for using them based on their description. Important within this work is that authors keep an equity mindset. While it is acknowledged that access to XR technologies is still limited in many instructional contexts, ranging from PreK-12 classrooms, educator preparation programs, and post-secondary institutions, authors can make suggestions for increasing that access, with examples being do-it-yourself VR headset construction, classroom headset sharing rotational models, and bring-your-own-device initiatives.

Importantly, the primary audiences for this book include PreK-12 and teacher educators and the secondary audience extends to instructors working in post-secondary institutions who are interested in using XR for teaching and learning. The key is to identify and describe a specific educational context and include methods for using XR to foster learning within it.

SUBMISSION
For interested authors, the timeline below will be used to guide the production of this book. Abstracts are to be 250 words and final chapters are not to exceed 15 single spaced pages (not including references and appendices). Both the abstract and chapter must follow the current edition of APA formatting guidelines. The final book will be published jointly by the Association for the Advancement of Computing in Education and Society for Information Technology and Teacher Education, and it will be available as an open-education resource on LearnTechLib (https://learntechlib.org/). For any additional questions, please reach out to Dr. Todd Cherner at tcherner@unc.edu.

PUBLICATION TIMELINE

Date	Action
August 10, 2022	Interested authors are to submit a 250-word abstract of the work they are proposing for this book to Dr. Todd Cherner via email, tcherner@unc.edu. All authors will receive a confirmation response once their abstract is received.
September 1, 2022	Authors are notified if their abstract has been accepted, rejected, or if the editors would like a revision to it. (Revisions will be handled on a case-by-case basis.)
December 1, 2022	Full chapters are due to the editors via email.
January 1, 2023	Feedback from editors will be sent to authors.
February 1, 2023	Authors will send revised chapters back to editors via email.
March 1, 2023	Final book will be published online in time for the SITE 2023 conference in New Orleans.

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