



PRESENTER
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Background

Supporting student agency with virtual reality (VR) is a promising way to increase motivation in online learning environments. While online and remote learning are becoming more prevalent (Martin et al., 2020), many learners struggle to persist and remain motivated with limited social interaction (Watts et al., 2016), and due to conflicting affordances of the platforms and the instructional models employed (Bell & Kozlowski, 2009). According to self-determination theory, supporting learners' agency and autonomy may improve motivation and learning (Ryan & Deci, 2000).

VR, a technology that surrounds the user in a digital image, has affordances that evoke a strong sense of immersion, feeling present in a different place (Slater, 2009), and heightened sense of agency, which can improve students' motivation in technology-enabled learning environments (Makransky & Petersen, 2021). However, little research to date has investigated students' experiences and motivation in VR learning environments, particularly in fully remote contexts and with repeated use of immersive technologies throughout a course.

How do students in two remote learning contexts describe feelings of agency when using VR for learning?

Methods

Case 1:
 16 high school science students

Google Cardboard VR viewers and 360-degree videos
 Watched and discussed 360 videos multiple times over Zoom in whole class meetings or with me one-on-one.

Interviews and focus groups
 Asked how they felt and what they learned immediately following using the VR. Transcribed and analyzed with flexible thematic coding.

Emergent Theme: Students' sense of agency is an important characteristic of learning with VR, even in environments that are not interactive.

Students in the high school classes described 360 videos engaging by having a sense of control and interactivity, due to being able to control where to look.

Graduate students described the benefit of VR as providing opportunities to explore and preferring control over the experiences.

Case 2:
 10 Masters of Education students

Oculus Quest headsets and various VR experiences and videos
 Used VR weekly in class meetings and as homework, at times being guided through videos and other VR experiences.

Interviews
 After class conclusion, asked to compare different VR experiences and implementations in terms of what they felt and preferred



Virtual reality impacts students' sense of agency in remote learning through feelings of control, interactivity, and exploration- even in non-interactive applications.

Graduate Students

"The point of VR, I see it as a chance to explore and give people more agency."

"[I] preferred being able to control the video...[and] have a bit more control over the experience."

"Particularly the ones that were more interactive were extremely memorable."



A screen shot of a Zoom class meeting of the graduate school course.

High School Students

The VR is engaging because "I can look at what I want to...and look at specific things I want to look at."

I liked that I could "follow them around... instead of talking at you, you get to see for yourself."



360 videos used in the high school class. Left: *Immerse: Journey into the Deep Sea* (The Hydrous). Right: *Aerospace Engineer Tiera Fletcher's Career* (Google).

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