

Video game experience, gender may improve VR learning

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Students who used immersive virtual reality (VR) did not learn significantly better than those who used two more traditional forms of learning, but they vastly preferred the VR to computer-simulated and

hands-on methods, a new Cornell study has found.

"We didn't know exactly what we were going to see," said Jack Madden, doctoral [student](#) in astronomy at Cornell University and first author of "Ready Student One: Exploring the Predictors of Student Learning in Virtual Reality," which published March 25 in *PLOS ONE*. "But it's amazing that this brand-new technology performed just as well as these tried-and-true methods that are used today in classrooms. So at least we're not harming students by using VR."

Though the [virtual reality](#) experiment didn't change learning outcomes overall, the researchers found that students with more [video game](#) experience learned better using VR than those with little video game experience—a finding that correlated closely with gender.

The study—which has new implications as learning around the world shifts online to combat the spread of coronavirus—aimed to take a step toward determining whether new educational technology tactics, while popular, are actually effective.

"There's been a big push for enhanced technology in classrooms," Madden said. "I think we can be in awe of these fancy, shiny devices and it might feel like they're helping, but we need to know if they actually are."

Males were far more likely to have video game experience, the survey found, and also learned more in the VR simulation, suggesting that either gender or prior video game experience could impact the success of VR-based learning. Reviewing prior work, the researchers found that video games requiring players to navigate 3-D spaces are more popular among males than females.

"This is an interesting finding, because it could potentially imply that if

you can provide learners with that experience, then you could show broad benefits from immersive learning," said co-author Andrea Stevenson Won, assistant professor of communication and director of the Virtual Embodiment Lab at Cornell. "However, more study is definitely needed."

"If you're unfamiliar with navigating this kind of 3-D space, you're not going to learn as well in it, so that could be a barrier," Madden said. "One of the conclusions of our work is that we need to do a better job of asking questions around things that might be gendered, like video game experience. There's a lot of finer detail you need to know to make VR learning successful."

More information: Ready Student One: Exploring the predictors of student learning in virtual reality, arxiv.org/abs/1910.10939

Provided by Cornell University

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