foundry10 VR pilot 2015-16
Themes from student data
September 16, 2016

Our work with virtual reality (VR) in seven middle and high schools last year showed us just how valuable it can be to get students' input on emerging classroom technologies. We facilitated virtual reality experiences for 12- to 18-year olds across the country with a wide range of VR equipment, in order to understand their attitudes about VR, see how exposure to VR changes their perspective on the technology, and learn what kinds of VR content connects with students.

Student views of VR before encountering it in the classroom

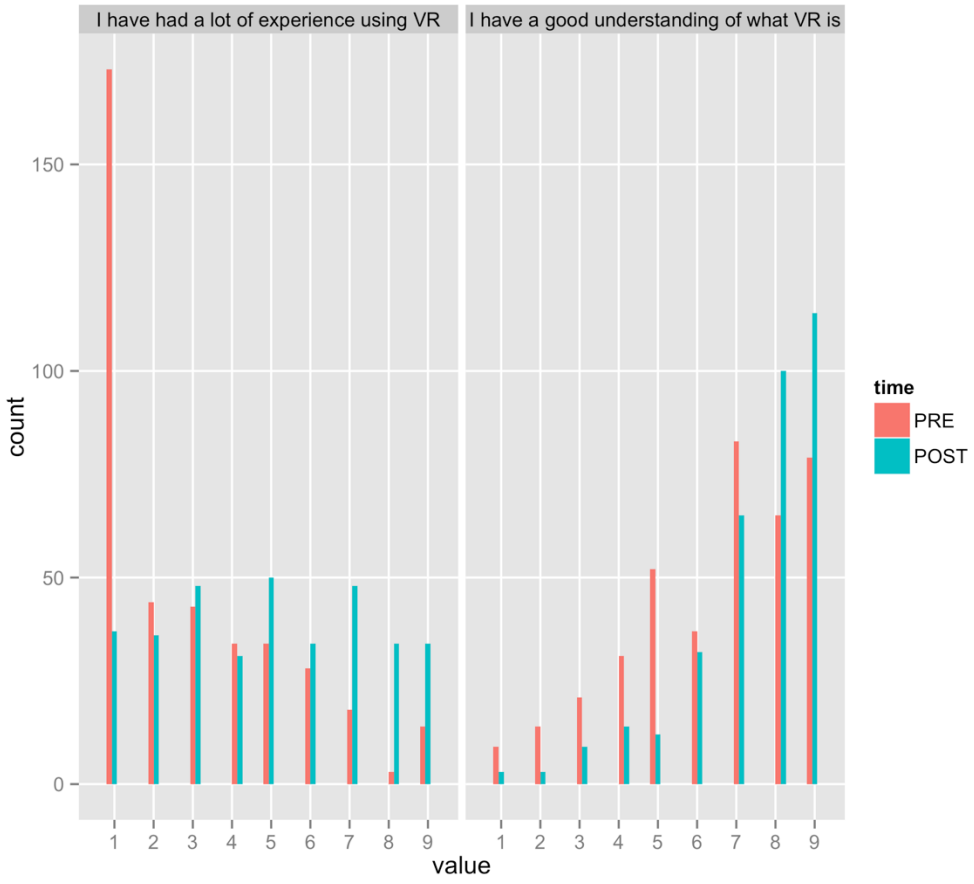
One of our goals for bringing VR to schools was to get an idea of how students thought about VR before they encountered a headset in the classroom. Even before a classroom introduction to the technology, students had novel ideas of how to utilize VR in school. When thinking about VR more generally, students tended to make an association between VR and gaming. But when asked specifically about potential uses of VR in school, they were able describe a myriad of creative uses. High numbers of students mentioned using VR to provide novel educational experiences, improve learning, have fun, and use in history class. Interestingly, students mentioned that they hoped VR could be used in the classroom for new perspectives and understanding, for specific learning types, and for creativity:

- "[VR] will allow kids to understand something more visually and will almost help kids understand new angles of what teachers are teaching."
- "I think virtual reality can enhance learning through essentially putting the VR user into someone else's shoes."
- "[VR] will help kinesthetic, audio, and visual learners by placing you in an area that feels like a real life situation."
- "[VR] will be an interesting way to share our creativity with the rest of the members of the class."

Results of VR exposure

Overall, it appears that classroom-related exposure to VR improved students' self-reported VR experience and understanding of VR. Introducing VR in the classroom enhanced students' understanding of the technology and tended to exceed students' expectations, even when they had previous experience with the technology.

Student agreement ratings for the statements "I have had a lot of experience using VR" and "I have a good understanding of what VR is", before and after the program

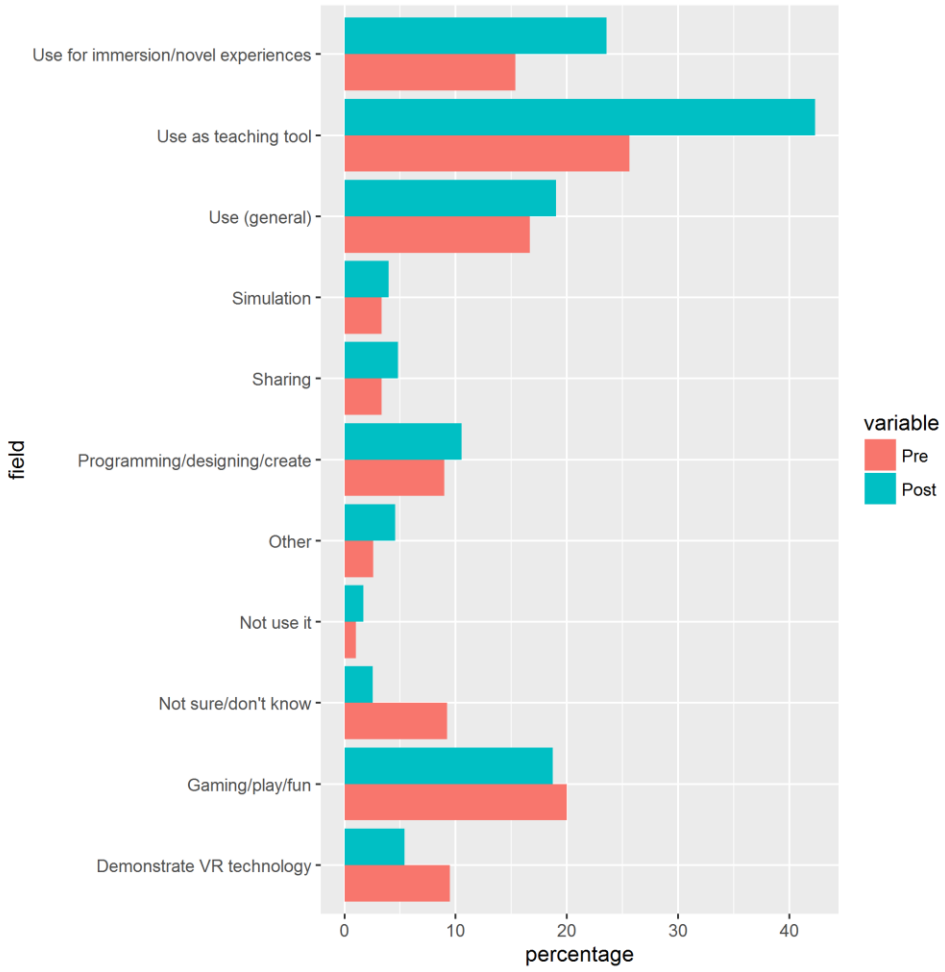


Students elaborated that they had a better understanding of the potential uses of VR, how VR technology works, or simply how to use VR. Smaller numbers of students related that they were more comfortable using VR after having used it in the classroom. Some students even described a better understanding of how VR could offer a change in perspective, or provide new experiences:

- "I have gone from knowing [VR is] a headset thing to working with it and being able to explain it to others."
- "My understanding of VR has changed a lot because I have seen how VR can help in the medical, construction, and other industries that are a necessity to human living."
- "I now fully understand the immersion effect [VR] has on people and the intensity it can have. It changes an individual's perspective so easily."
- "[VR] connects to your emotions and can convert your opinion."

After classroom exposure to VR, students were also more likely to say they saw VR as helpful to learning in the classroom. Students were more likely to want VR to be used as a teaching tool, and more likely to want VR to be used for immersion in novel experiences.

Coded responses to the question "What would you like your teacher to do with virtual reality in the classroom?"



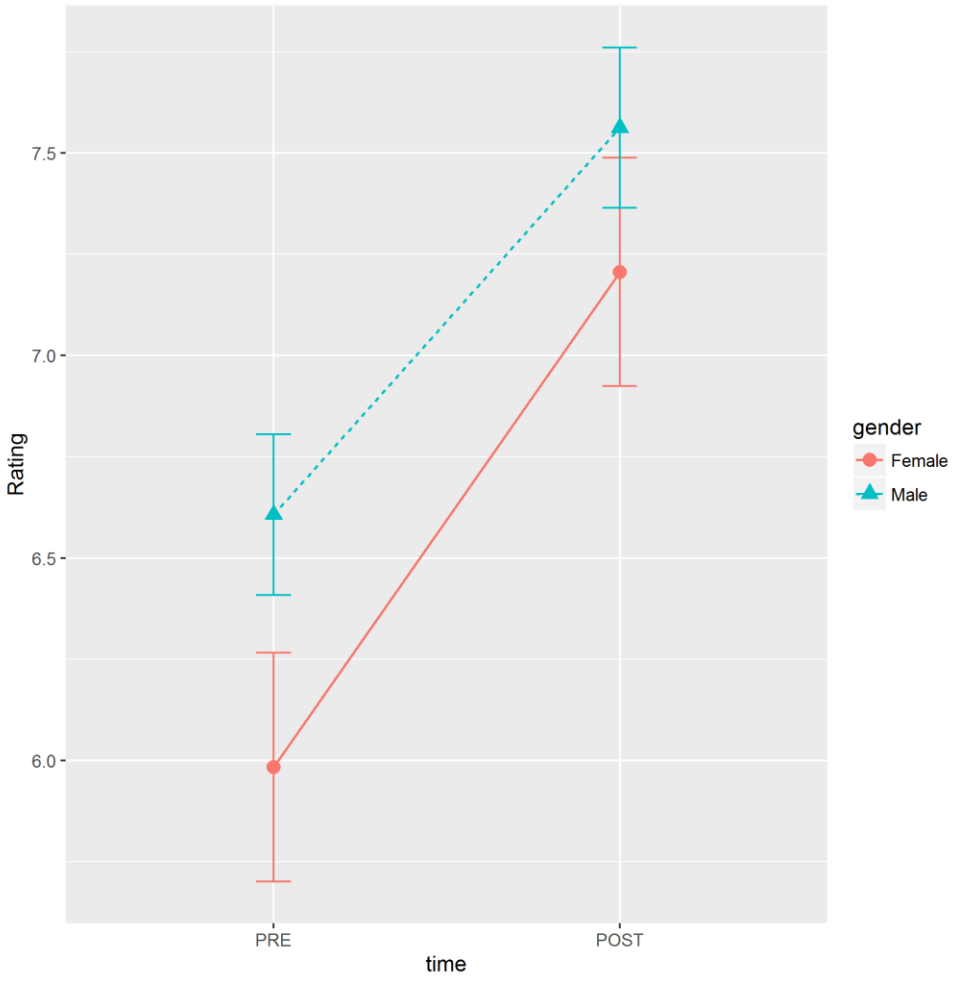
Advice from students

After their experience, we asked students to give advice to others starting out with VR. The most common practical advice students gave was simply to try using VR, suggesting that VR is something that needs to be experienced to be understood fully. Students also had practical advice on how to engage with VR. They emphasized having physical awareness while wearing the headset, and gave advice about VR equipment. Students were quite vocal that VR could be a powerful, and sometimes overwhelming, experience, and encouraged others to take things easy at first. One student noted, "Take it slow at first! It can be quite shocking to go from a classroom to the top of a mountain." About 1 in 6 responded that they have experienced VR content that felt too overwhelming for them to handle. Carefully curating educational content and priming students for potentially overwhelming content is crucial for a comfortable immersive experience.

VR and gender

Bringing VR to both male and female students afforded us an opportunity to look at gender differences in perception of and engagement with VR. At first glance, it seemed that male students had a higher understanding of VR than female students at the start of the program. However, this is because males had greater experience with VR, a higher preference for technology (i.e., a preference for simulations over reading), and greater interest in a STEM career. The program appeared to impact male and female students similarly. Fifty-three percent of male students and 57% of female students expressed that they had a better understanding of VR after classroom exposure. After participation in the program, there wasn't a demonstrable difference between male and female students in their understanding of VR. This suggests that the use of VR in class may help to bridge a well-documented gender gap in technology.

Interaction plot, showing change in male and female ratings for "I have a good understanding of what VR is"



Moving forward

With our VR program for the current school year, we hope to expand on the results here. We're expanding to more schools, looking at a broader age range of students, and looking at content creation alongside content consumption. We're particularly interested in questions of perspective related to the VR experience: How do we know whether students are more "empathetic" as a result of VR? How cognizant are students about perspective-taking in VR? What breaks immersion for students? How much do they trust that what they are seeing is real? Through asking these questions, we hope to develop a better understanding of the types of VR content valuable to students, and to find insights into how this unique technology can be successfully applied in the school environment.