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Collaboratively Developing Experimental Physics Skills in Hybrid Virtual Reality Labs JARED CANRIGHT, SUZANNE WHITE BRAHMIA, University of Washington — The Novel Observations in Mixed Reality (NOMR) project in the UW Physics Education Research Group applies modern virtual reality technology to teach experimental physics skills by simulating phenomena that do not exist in our universe. By exploring and characterizing unheard-of and Google-proof physical phenomena, students are able to practice experimental physics skills on a level playing field and in absence of a "right answer" to work toward or be judged against. We postulate that NOMR labs can engender expert-like beliefs and habits of mind about experimental physics in students, as measured by instruments such as the Colorado Learning Attitudes About Science Survey for Experimental Physics (E-CLASS) and Investigative Science Learning Environment (ISLE) rubrics. In this work, we discuss the administration of NOMR labs in a sophomore-level experimental physics course of ~120 students at UW in Fall 2020, emergent insights from a hybrid approach to running VR labs, and our measurements of students' shift in experimental physics thinking over the course. Insights from our findings will inform the design and future use of VR labs in remote contexts and other educational application areas.

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