Girls Immersed in Robotics Learning

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Girls Immersed in Robotics Learning engages middle school Latina girls in computer science and co-robotics with an immersive narrative of helping a Puerto Rico community recover from a hurricane. We are developing GaleForce, a Unity virtual robotics game where students can learn to code virtual robots and drones using a block-based programming language, and have collected data from a week-long workshop with a group of 9, mostly Latinx, 4th and 5th graders. Students showed gains from 13% - 50% in interest in pre/post surveys, and gains in scores ranging from 11% to 39% on content in pre/post assessments. Preliminary backend learning analytics results indicate that the students consistently used the 3D virtual world of San Juan as their point of reference for programming and wrote programs that focused on direction and distance, but did not use more advanced loops, conditionals and black boxed blocks. These results support a developmental approach to teaching programming, focusing first on concrete referents for program construction.

Keywords: robotics; block-based coding; narrative

DOI: https://doi.org/10.1145/3478432.3499238