



## EVALUATION OF ENGLEARN STEM ACHIEVEMENT PROJECT SUMMARY

### THE PROJECT

This project was funded through a *Department of Education*, Investing in Innovation (i3) Program development grant awarded to **Challenger Center for Space Science Education** (Challenger) from 2013 to 2017.

PRG served as the external evaluator for the grant and designed an implementation and impact evaluation of Challenger's classroom-based ocean science simulation experience, EngiLearn.

### SETTING & PARTICIPANTS

- Implemented in 30 elementary schools across Virginia
- 123 fifth-grade classrooms
- 2,546 fifth-grade students
- 84% of students were White, 27% eligible for free/reduced priced lunch



### THE INTERVENTION

EngiLearn consists of a hands-on, experiential science simulation for fifth-grade students and professional development training for fifth-grade science teachers. The program is an adaptation of Challenger Center's site-based simulation technology for use in classroom settings. The five-day curriculum takes fifth grade students through an Aquatic Investigation, a simulated ocean science mission grounded in fifth grade NGSS science standards.

Over the five days, teachers lead students through two days of pre-mission educational activities to prepare for the ocean simulation activity on day three. The core of the intervention is a 2.5 hour hands-on, computer-based ocean simulation led by teachers in the classroom. The objective of the mission is to investigate the cause of polluted monk seal habitats in the Hawaiian Islands. The simulation includes embedded assessments, which collect data on students' progression through the mission, providing real-time feedback to teachers, who can adjust the pacing to students' needs and offer support as needed. Teachers then guide students through two days of mission reflection and educational activities on days four and five.

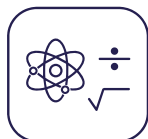
### THE STUDY

PRG conducted a rigorous impact and implementation evaluation of the EngiLearn program's effect on students' ocean science and STEM outcomes. The fidelity study assessed the degree to which the EngiLearn program was implemented as intended in each classroom.

The impact study was a cluster-level randomized controlled trial (RCT) where half of participating classrooms were randomly assigned to implement EngiLearn during the fall semester (treatment) or delay implementation until the spring semester (control).

Program impact was measured on knowledge of ocean science concepts, as well as noncognitive outcomes (self-efficacy, engagement, digital literacy, and future STEM aspirations).

### STUDY FINDINGS



Impact estimates indicated that EngiLearn had no detectable impact on students' ocean science achievement. Students assigned to treatment achieved the same scores on an ocean science achievement test at post-intervention compared with control students.



The EngiLearn program also had no discernible effect on noncognitive outcomes. Results from the impact analyses indicated that students who were offered EngiLearn had the same post-intervention scores on the noncognitive assessments as students who were offered the business-as-usual curriculum.