

Tricks of the Trade: Insights on Evaluation

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Summary

Many educators believe that activities centered on electronic tangibles (ET) and robots are fun and motivating for their students. However, it is often difficult, given the nature of both new hardware and new curricula to tease apart the nature and causes of this excitement. Formally planned educational evaluations can help build a deeper understanding of the effects of the new program on students. However, evaluating the impact of new ETs can be a challenge. Classes and workshops utilizing ETs as teaching devices are by their nature hands-on and may not lend themselves to traditional exam-based assessments. After all of the effort required to design a new ET, plan an educational experience utilizing the technology, and then implement that plan with students, evaluation is sometimes left as an afterthought. Strong evaluation methods can provide important insights into ways to improve a design and help to show the impact of a program, resulting in increased opportunities for funding, dissemination, and replication.

Members of the panel will share insights on their evaluation practices, their experiences, and their mistakes. Panel members come from a variety of backgrounds but have in common experience evaluating the impact of educational ET interventions. The panel will focus on questions such as:

- How do you get from your idea to an evaluation strategy?
- What kind of methods have you used for evaluation and what strategies do you recommend others use?
- How do you take evaluation results and use them to inform design at certain stages of program growth? (Evaluation driven design, participatory design)
- How do you get the most out of a survey? (Pre and post surveys, asking directed questions beyond, "Did you like it?")

- How do you plan ahead to get the most out of the limited resources typically available for evaluation?

Debra Bernstein

Debra Bernstein is a researcher at the University of Pittsburgh Center for Learning in Out-of-School Environments (UPCLOSE) and a doctoral student in Cognitive Psychology. She holds an MA in Educational Psychology from Teachers College, Columbia University. Debra's research examines the development of technological fluency in children, with a focus on the design and evaluation of out-of-school technology learning environments.

Emily Hamner

Emily Hamner is a senior researcher in Carnegie Mellon's Community Robotics, Education, and Technology Empowerment (CREATE) lab. She has experience evaluation educational robotics activities such as the Robotic Autonomy Summer Camp (RASC) for high school students and the Personal Exploration Rover (PER) exhibit in museums. More recently, she has been deeply involved in the Robot Diaries project, where formal evaluation has played a formative role in each stage of the project. Emily has a BS in Computer Science from Carnegie Mellon.

Tom Lauwers

Tom Lauwers is a doctoral student in Carnegie Mellon's CREATE lab. His primary research focuses on using applications of robotic technologies to positively impact motivation and learning in science and technology education. This research relies heavily on educational evaluation of pilots to assess whether new educational tools and the associated curricula are causing students to learn desired learning goals and positively affecting their motivation and interests in STEM. Tom has been involved in educational evaluation in the contexts of participatory design programs, of small pilot workshops, and of medium scale studies with up to 100 participants. He has a BS in Electrical Engineering and an MS in Robotics, both from Carnegie Mellon.

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Kristen Stubbs

Kristen Stubbs is the Science, Technology, Engineering, and Math (STEM) Outreach Program Manager at iRobot. She received her Ph.D. in Robotics from Carnegie Mellon University and now directs SPARK, iRobot's educational outreach initiative. Throughout her graduate and postgraduate work in human-robot interaction and educational robotics, Kristen has utilized a variety of evaluation techniques, including interviews, ethnographic observations, and questionnaires.