

**SCIENCE LEARNING: INTEGRATING DESIGN, ENGINEERING AND ROBOTICS
(SLIDER)**

**GEORGIA INSTITUTE OF TECHNOLOGY (GEORGIA TECH)
SEEKING A POSTDOCTORAL FELLOW TO BEGIN FALL 2010**

Science Learning: Integrating Design, Engineering and Robotics (SLIDER), an NSF funded project at Georgia Tech, is seeking a postdoctoral fellow. (See SLIDER project abstract below.) The postdoctoral fellow will join our multidisciplinary collaborative team of cognitive scientists, teachers, scientists, and engineers. Our aim is to explore robotics-enhanced science, math and engineering middle school education within a problem-based, inquiry curriculum.

We are examining how curriculum and assessment using Lego-based robotics can be used to enhance science content learning as well as engagement. A problem-based inquiry curriculum will be developed, implemented, and assessed with the goal of understanding how well our middle school subjects learn, understand, and retain the science content as presented by trained teachers.

The fellow will be involved in all aspects of the project such as assisting with collecting qualitative and quantitative data, conducting interviews, developing coding schemes, and interpreting results. The fellow will conduct a research program, collaborate on the design of new technologies, author instructional materials, collaborate with local schools, and design assessments with input from a team of experts. The fellow will have the opportunity to learn about advances in technology and education and to contribute to all aspects of the work.

QUALIFICATIONS

Candidates should have a good background in science, engineering, mathematics, cognitive science, or computer science and a Ph. D. in education, psychology, mathematics, science, engineering, computer science, or a related discipline. The ideal applicant will have experience in developing coding schemes for coding and analyzing interview and observational data; be familiar and comfortable with collecting interview and observational data; have experience in school settings; and be comfortable with a joint qualitative and quantitative approach to research. Experience with or understanding of learner-centered classrooms is a must, as is willingness to work in a highly-collaborative team. Experience in the design, implementation, and analysis of science curricula and assessment is an asset. Applicants should demonstrate ability to work on a team, skill in collaborating with practitioners, interest in working in partnerships to develop innovations, and ability to succeed in a school setting.

We seek a candidate who can start in Fall 2010 with a negotiable start date. Salary will be dependent on level of expertise and experience. Applicants should be prepared to make at least a two-year commitment; renewal for the second year will be contingent on performance in Year 1.

TO APPLY

Taking applications now. Position will remain open until filled. Send CV, statement of purpose, one or more papers, and names of three people we can contact for references to: Donna C. Llewellyn at donna.llewellyn@cetl.gatech.edu. Subject: "SLIDER Postdoc".

The Georgia Institute of Technology is an equal opportunity employer.

ABSTRACT

SLIDER: THE SCIENCE LEARNING: INTEGRATING DESIGN, ENGINEERING AND ROBOTICS

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With Richard Cantrambone, Barbara Burks Fasse, Jeffrey Rosen, and Michael T. Ryan

The Science Learning: Integrating Design, Engineering and Robotics (SLIDER) project is a collaborative effort involving Georgia Tech's Center for Education Integrating Science, Mathematics and Computing (CEISMC), Center for the Enhancement of Teaching and Learning (CETL), School of Psychology, School of Biomedical Engineering, and College of Computing as well as the State of Georgia Department of Education and three Georgia school systems: one urban, one rural, and one suburban. The project is developing and implementing a rigorous eighth grade physical science program that utilizes engineering design, LEGO™ robotics and mechanics, and a problem-based learning approach to teach mechanics, waves, and energy. The project seeks answers to these research questions: Can research-based physical science instructional materials that use problem-based inquiry learning in the context of engineering design scenarios empower a broad range of middle school learners to learn physical science content and reasoning skills? Can these educational materials lead to increased engagement, motivation, aptitudes, creativity, and interest in STEM fields; if so, does this effect persist as students move into high school? Do students engage with the materials differently depending upon their gender, race, socioeconomic status, prior academic achievement level, or location (urban, suburban, or rural)?

In the process of answering these primary questions, additional questions being addressed include: How should the learning be assessed in the classroom and how does this assessment impact student performance? What instructional materials and professional development are necessary to prepare teachers to deliver this type of instruction effectively in their classrooms? Three geographically disparate schools with strong school leadership and an existing track record of robotics use are participating in the project. In each school, two teachers will utilize LEGO™ kits and storage units to fully support instruction in their physical science classes. The SLIDER instructional materials will consist of contextualized, problem-based challenges that require students to design, program, investigate, reflect, and revise their products or solutions.

Intellectual Merit: SLIDER contributes to the knowledge base on the effectiveness of using engineering design and robotics in K-12 education.

Broader Impacts: SLIDER impacts K-12 physical science education by providing a research-based and thoroughly tested set of instructional materials for use by teachers. These materials will be designed to help attract more students, particularly those previously underrepresented in STEM, into technical fields and careers. The project also impacts the educational research workforce by training graduate students, undergraduate students, and postdoctoral researchers in the theory and methods of educational research and evaluation.