A Practice-Based Approach to Professional Development in Science (PBA) addresses an enduring challenge in U.S. education: providing students from historically non-dominant communities (e.g., students of African descent, students from low-income households, students for whom English is a second language) with high-quality, intellectually-engaging learning experiences in science.

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TERC is expanding the work of the DLESE Data Services project through an annual workshop bringing together scientific and educational communities to develop educational modules using Earth science data and data analysis tools.

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Building off the successful pilot of a year-long adult numeracy professional development model for practitioners (Adult Numeracy Instruction - PD) created by the University of Tennessee, MPR Associates, Rutgers University, and TERC, TERC is partnering...

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This project, a collaboration between the Chèche Konnen Center at TERC and the King Open School, is exploring connections between artistic and scientific literacies and the pedagogical opportunities such connections may create for engaged and equitable learning for all children, in particular children of color, children who speak a first language other than English, and children who live in low-income communities.

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In affiliation with NASA’s Astrobiology Institute, TERC developed the Astrobiology Institute Educator Resource Guide, a series of five hands-on activities to introduce core ideas in Astrobiology.

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Salem State College, in partnership with TERC, Universidad de Puerto Rico en Humacao, and other Massachusetts and Puerto Rico Public Schools is developing the Atlantic Partnership for the Biological Sciences—an NSF-funded initiative to facilitate cross-cultural life science teaching and learning in two colleges and up to seventeen districts in eastern Massachusetts and eastern Puerto Rico.

More »
**Principal Investigator:** Nick Haddad and Tamara Shapiro Ledley  
**Funders:** National Science Foundation  
**Project Website:** [http://serc.carleton.edu/eet/msdatatools/](http://serc.carleton.edu/eet/msdatatools/)

The DataTools project is facilitating middle and high school science teachers’ and students’ use of Earth system science data and the IT tools needed to analyze and draw conclusions from the data.  

- **Earth Exploration Toolbook Workshops**

  **Principal Investigator:** Carla McAuliffe and Tamara Shapiro Ledley  
  **Funders:** National Science Foundation  
  **Website:** [http://serc.carleton.edu/eet/workshops.html](http://serc.carleton.edu/eet/workshops.html)

Earth Exploration Toolbook (EET) Workshops is a professional development program in which teachers carry out data analysis techniques and learn to use the National Science Digital Library (NSDL) and the Digital Library for Earth System Education (DLESE).  

- **Earth Exploration Toolkit Workshops**

  **Principal Investigator:** Carla McAuliffe  
  **Funders:** National Science Foundation  
  **Website:** [http://serc.carleton.edu/eet](http://serc.carleton.edu/eet)  

EET (http://serc.carleton.edu/eet) is an online resource for teachers and students. It is a collection of computer-based learning activities within the National Science Digital Library (NSDL) and the Digital Library for Earth System Education (DLESE).  

- **Earth Science by Design**

  **Principal Investigator:** Harold McWilliams  
  **Funders:** National Science Foundation  
  **Website:** [http://www.esbd.org/](http://www.esbd.org/)

Earth Science by Design has developed and field-tested a year-long program of professional growth for middle and high school Earth science teachers.  

- **Fulcrum Institute for Education in Science**

  **Principal Investigator:** David Carraher and Sue Doubler  
  **Funders:** National Science Foundation  
  **Website:** [http://empower.terc.edu](http://empower.terc.edu)

TERC, in partnership with Tufts University, has offered leadership institutes for K-8 science educators.  

- **Learning Science Online: A Descriptive Study of Online Science Courses for Teachers**

  **Principal Investigator:** Gilly Puttick  
  **Funders:** National Science Foundation  

With the rapid increase in online degree programs for teachers, it is imperative to understand what is happening in this new learning environment - yet to date, meta-studies in online education have focused primarily on institutional support and accessibility for students. Learning Science Online (LSO) is the first multi-institutional study of science courses taught online for teachers.  

- **Lesson Study for Accessible Science**

  **Principal Investigator:** Karen Mutch-Jones and Gilly Puttick  
  **Funders:** National Science Foundation  

TERC and EDC are undertaking a three-year research project to study the extent to which special and general educators engaged in Lesson Study increase their knowledge of science content and learning disabilities, and apply new knowledge to improve teaching practice in inclusive science classrooms.  

- **New York City Professional Development for Adult Educators**

  **Principal Investigator:** Mary Jane Schmitt  
  **Funders:** New York City  
  **Website:** [http://empower.terc.edu](http://empower.terc.edu)

Building on TERC’s *Empower* curriculum and workshops, TERC will provide ongoing professional development opportunities for math educators in the NYC adult education system.
• NYC District 79 GED —

Principal Investigator: Martha Merson and Mary Jane Schmitt
Funders: NYC Department of Education
Website: http://adultnumeracy.terc.edu/

TERC's Adult Numeracy Center is piloting a customized EMPower curricular guide, accompanying teacher professional development, and online support for a rigorous, scalable, and Common-Core aligned mathematics pathway. More »

• Professional Development for Mathematics Leadership —

Principal Investigator: Fund for Excellence in Education
Funders: TERC is providing a series of professional development workshops and coaching support for Baltimore elementary and middle school principals on issues of mathematics leadership and instructional improvement. More »

• Project AIM Evaluation —

Principal Investigator: Judith (Judy) Storeygard
Funders: The National Science Foundation
Website: http://seec.terc.edu/

TERC is the evaluator for Project AIM (All Included in Mathematics), an NSF-funded project whose goal is to facilitate mathematics communication in the classroom as a viable form to support all students in learning meaningful mathematics content. More »

• Promoting STEM Career Interest In the Classroom: An Exploratory Study —

Principal Investigator: Carla McAuliffe
Funders: National Science Foundation

This Innovative Technology Experiences for Students and Teachers (ITEST) Studies project looks at the ITEST portfolio of past and current projects from the perspective of two important and widespread roles that teachers are placed in during professional development programs. More »

• Reopening the Science Door: TERC/Lesley Online Master's in Science Education —

Principal Investigator: Sue Doubler
Funders: National Science Foundation
Website: http://scienceonline.terc.edu/

TERC and Lesley University are extending the faculty development efforts of an online master's in science education program for K-8 educators. More »

• Scaling Up TRIAD —

Principal Investigator: Judith (Judy) Storeygard
Funders: National Science Foundation, US Department of Education, and the State University of New York, Buffalo

The goal of the TRIAD (Technology-enhanced, Research-based, Instruction, Assessment, and Professional Development) project is to increase math achievement in preschool children, by providing a sustainable model for successful, systemic, scaled up implementation of the Building Blocks math curriculum through professional development for teachers and on-site support by mentors. More »

• Science Online: Master's in Science Education Degree Program —

Principal Investigator: National Science Foundation
Website: http://scienceonline.terc.edu/

TERC and Lesley University have developed an online science education master's degree program for elementary and middle school educators. More »

• Talk Science —

Principal Investigator: Sue Doubler and Harold McWilliams
Funders: National Science Foundation
Website: http://inquiryproject.terc.edu/

Talk Science is developing and studying web-based professional development that encourages productive classroom talk, helping teachers engage with science to linguistically meld subject (discipline) and practice (inquiry) to the benefit of their students. More »
• **Teaching to the Big Ideas of Early Algebra —**

  **Principal Investigator:** Deborah Schifter, Susan Jo Russell, and Virginia Bastable  
  **Funders:** National Science Foundation

  This project is designing, producing, and testing two professional development modules to help teachers learn about mathematics content and development of student thinking in early algebra. More »

• **The Atlantic Partnership for the Biological Sciences —**

  **Principal Investigator:** Brian Drayton and Gilly Puttick  
  **Funders:** National Science Foundation  
  **Website:** http://atlantic.mspnet.org/  

  Salem State College, Universidad de Puerto Rico en Humacao, TERC, and school districts from Massachusetts and Puerto Rico are working together to transform the way life sciences are taught in the two colleges and up to 17 school districts. More »

• **TIAN: Teachers Investigating Adult Numeracy —**

  **Principal Investigator:** Mary Jane Schmitt  
  **Funders:** National Science Foundation  
  **Website:** http://adultnumeracy.terc.edu/  

  TERC, in partnership with the Center for Learning Studies at the University of Tennessee, will develop, pilot and field-test an approach to standards-based mathematics in-service professional development, using recently developed standards and curriculum for the Adult Basic Education system. More »

• **Transforming Instruction by Design in Earth Science (TIDES) —**

  **Principal Investigator:** Harold McWilliams and Carla McAuliffe  
  **Funders:** US Department of Education  

  Funded by the Department of Education Institute of Education Sciences, this project is a partnership of SRI, TERC, the American Geological Institute, and Duval County Public Schools. The project evaluates how Earth system science teaching and learning can be improved by using different mixes of curriculum materials and teacher professional development strategies. More »

• **Try Science Online —**

  **Principal Investigator:** Sue Doubler and Linda Grisham  
  **Funders:** U.S. Department of Education  
  **Website:** http://scienceonline.terc.edu/  

  Introducing inquiry and current technology resources into classroom science in ways that result in sound understanding of scientific concepts is a challenge that requires new and innovative teaching paradigms. More »

• **Women's Science Equity Online —**

  **Principal Investigator:** Jodi Asbell-Clarke and Elizabeth Rowe  
  **Funders:** National Science Foundation  

  This research project will study the characteristics of online science courses for teachers that correlate to positive learning outcomes for women. More »