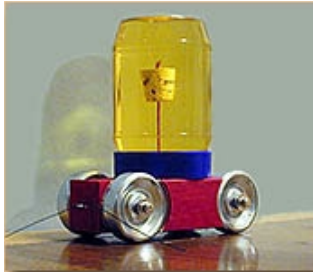


# Science in Education Online Master's Degree

Developed by TERC and Lesley University



**Science in Education** is a fully online master's degree program. It is designed for teachers, curriculum specialists, and instructional resource persons responsible for K-8 science education. The program aligns with National Science Educa-

tion Standards, emphasizes inquiry-based science and introduces innovative, learner-centered teaching strategies.

## Program Design

The 33-credit hour program is comprised of an introductory 3-credit hour course, *Try Science*, and five 6-credit hour modules. Each module focuses on a particular science domain. Course participants build science knowledge and pedagogical skills through a combination of on- and off-line learning and discussion with course colleagues. They engage in doing science to extend their understanding of concepts and skills, rethink teaching and assessment strategies, and implement ideas in their own classrooms.

## Instruction

Each module is co-taught by two instructors. A scientist, well-versed in the science domain, guides participants in their acquisition of key science content, skills and values. A science educator supports participants as they learn and try out pedagogical strategies for bringing science inquiry to their classrooms.

## A Web-based Learning Environment

Participants rely on a web-based environment for online communication, collaboration, reporting scientific research results and accessing electronic science resources. Participants use threaded discussions, an electronic meeting place, images, videos, text, and current online data and information.

## Course Design

There are three main components to each online module.

- 50% of the module is devoted to learning science content by doing science.
- 25% of the module is devoted to considering issues of pedagogy, curriculum, and assessment.
- 25% of the module is devoted to trying ideas in the classroom and reflecting on these experiences with other program participants.

For each course participants begin their experience by doing science and becoming familiar with how inquiry-based science contributes to learning. Their attention then shifts to supporting science learning in the classroom. They commonly analyze classroom events presented through video, case studies, or samples of students' work to become familiar with new teaching and assessment strategies. Finally, they experiment with alternative strategies and curriculum in their professional lives, sharing successes and dilemmas with other program participants.

## PROGRAM COURSES

<b>TRY SCIENCE—</b> Science content: Science as inquiry and a human endeavor Pedagogical focus: Developing conceptual understandings through science inquiry	3 CREDITS
<b>INVESTIGATING PHYSICS —</b> Science content: Exploring the organizing principles of forces and motion Pedagogical focus: Paying attention to learners' ideas about scientific phenomena	6 CREDITS
<b>BIOLOGICAL STUDY OF VARIATION, DIVERSITY AND ADAPTATION—</b> Science content: An introduction to adaptation using an evolutionary perspective Pedagogical focus: The role of the teacher	6 CREDITS
<b>EARTH SCIENCE FROM A NEW PERSPECTIVE—</b> Science content: Structures and changes in the earth's system Pedagogical focus: Curriculum and reform	6 CREDITS
<b>FROM SCIENCE TO DESIGN—</b> Science content: Meeting human need, solving human problems, developing products Pedagogical focus: Assessment for inquiry science	6 CREDITS
<b>RESEARCH THROUGH ECOLOGY—</b> Science content: The interrelationships between organisms and their environment Pedagogical focus: Literacy and mathematics in the science context	6 CREDITS
	33 CREDIT HOURS



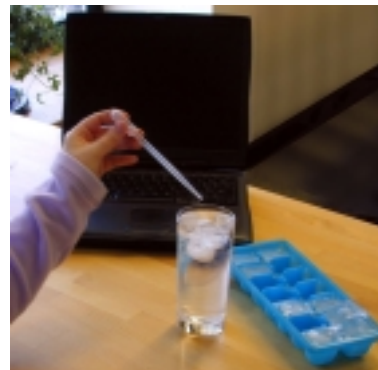
This program is created by TERC and Lesley University, with funding from the National Science Foundation (NSF), and the U.S. Department of Education, Fund for Post Secondary Education (FIPSE).



# Reopening the Science Door Through An Online Science Education Program

Beginning in 1997, TERC and Lesley University entered into a partnership to develop a fully accredited, online science education master's degree program for K-8 educators. This new degree program is designed to help teachers extend their science knowledge and integrate inquiry-based science pedagogy and web-based information technologies into their teaching. The primary aim is to provide a program that is accessible and attractive to K-8 teachers, and that:

- aligns with the National Science Education Standards;
- provides participants with the experience of inquiry learning and rich science content;
- supports participants as they integrate science processes, new curricular strategies and advanced technologies into their science teaching; and
- rewards professional development with appropriate recognition.



Online learning presents creative possibilities for addressing the need for sustained, high-quality professional development. It greatly increases the number of geographically-dispersed learners who can participate. Learning occurs in teachers' homes or schools in asynchronous time. This allows teachers to better balance personal commitments with professional growth.

While online learning provides the reach and economic viability for mainstream professional development, it must also offer the advanced pedagogical practices necessary to develop understanding of core science concepts through inquiry. This is the challenge we address in Reopening the Science Door.

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