

Goal: to develop and present workshops using Galileo's telescopic investigations to teach the process of science, problem-solving, and collaboration in an inquiry-based education framework, resulting in an ongoing and evolving teacher professional development opportunity for modeling science process in the classroom.

The Need

Numerous reports have indicated the importance of improving STEM educational opportunities for our nation's students:

- Decline in graduate student enrollment in aerospace engineering (2003 NSF report).
- 40% of Americans believe STEM disciplines are crucial in maintaining leadership in the global economy; 90% feel the way to improve science skills is to provide more training for teachers (2006 Educational Testing Service poll).
- Little evidence to show that federal funding to improve science and math education is effective (2007 Academic Competitiveness Council).
- Call for increase in STEM education at the primary and secondary levels (2006 U.S. Dept. of Education National Assessment of Educational Progress).
- Call for improving K-12 science education by improving teacher skills (2005 *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, the National Academies).



The Opportunity

The International Year of Astronomy in 2009 provides an opportunity to use increased public awareness of astronomy to develop initiatives to improve teacher training in astronomy, science and the process of science.

The Program

The Astronomical Society of the Pacific (ASP) is embarking on a national program to develop an innovative approach to improving science teaching in the classroom by using Galileo's iconic observations of the moons of Jupiter and the phases of Venus to train teachers in the methods of hands-on, inquiry-based scientific investigation and the process of science:

- The ASP is working with the New Jersey Astronomy Center for Education (NJACE) to develop pilot workshops.
- Two- or three-day workshops will be conducted on the East and West coasts and at sites around the country.
- Workshops will provide K-12 teachers with training/materials in teaching scientific process and problem solving.
- Additional training includes adapting online astronomy tools for the classroom and in using astronomy to teach fundamental science concepts to meet curriculum goals.
- Evaluation of pilot workshops will result in a refined model to serve as a national program of teacher professional development in astronomy/science in 2010 and beyond.
- Graduates will be called Galileo Teacher Ambassadors.
- An online version of the workshop will be developed, with materials and resources archived for use on a web site to reach large numbers of teachers.
- The program is scalable depending on funding.

The Particulars

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The **Astronomical Society of the Pacific (ASP)** is a national non-profit scientific and educational organization founded in 1889, whose mission is to advance science literacy through engagement in astronomy. The ASP publishes a peer-reviewed scientific journal, a professional Conference Series and a popular-level online magazine; manages grant-funded education programs training amateur astronomers and informal educators; and was a pioneer in teaming teachers and astronomers in the classroom through its Project ASTRO program. **The New Jersey Astronomy Center for Education (NJACE)** develops and conducts standards-based teacher training programs.