The Galileo Teacher Training Program: Connecting Space Grant to Teacher and Student Preparation for the STEM Pipeline

James Manning
Astronomical Society of the Pacific
“It is a very beautiful thing, and most gratifying to the sight, to behold the body of the moon so that its diameter appears almost thirty times larger . . “
“On the 7th day of January in the present year, 1610, in the first hour of the following night . . . the planet Jupiter presented itself to my view . . .”
Galileo Teacher Training Program

Goal: to develop and present workshops using Galileo’s iconic observations to teach the process of science, problem-solving, and collaboration in an inquiry-based framework, resulting in a teacher professional development opportunity for modeling science in the classroom.
Galileo Teacher Training Program

• Incorporates a flexible approach to serve multiple needs.
• Flexible workshop design includes four elements:
  1. Galileo-related content.
  2. Fundamental astronomy concepts.
  3. Adaptable resources for the classroom.
  4. IYA-related resources.
Galileo Teacher Training Program

• Currently incorporates IYA and NASA-related content and activities:
  1) Galileoscope.
  2) Dark Skies Awareness.
  3) NASA content/materials.
  4) NLSI content/activities.
Galileo Teacher Training Program

• Pilot Workshop at ASP Meeting, Millbrae, CA, Sep., 2009:

1) Galileo background/Jupiter moons activity.
2) Lunar phases/constellations/size & scale activities.
3) Astronomy/hands-on resources/pedagogy.
4) Galileoscope/Dark Skies activities.
Galileo Teacher Training Program

• Workshop at Northrop Grumman Aerospace Systems, Redondo Beach, CA, Mar. 12-13, 2010:

1) Galileo/Jupiter moons/Venus phases activities.
2) Lunar phases/size & scale activities.
3) JWST tour/Astronomy resources.
4) Galileoscope activities.
• Web site established and will expand in 2010.
• Will become repository of GTTP resources and activities.
• Will include calendar of upcoming GTTP workshops.
• Will develop community of practice among graduates.
Galileo Teacher Training Program

• Developing a web-based directory linking users to educational resources.

• To include links to ASP-developed resources for amateurs, teachers, etc.

• Links to other directories of formal and informal resources including NASA and IYA—and Space Grant?

A Sampling of Hands-On Astronomy Activities

From Project ASTRO™ and the resource notebook series The Universe at Your Fingertips:

- Picture an Astronomer
- Cosmic Calendar
- Testing Astrology
- Galaxy Sorting

COSMIC CLEARINGHOUSE
How Does Space Grant Connect?

From the 2010 - 14 Solicitation . . .

"The goal of the Space Grant Program is to contribute to the nation's science enterprise by funding education, research, and informal education projects through a national network of university-based Space Grant consortia."

Objectives include to . . .

“Promote a strong science, technology, engineering, and mathematics education base from elementary through secondary levels while preparing teachers in these grade levels to become more effective at improving student academic outcomes.”
How Does Space Grant Connect?

From the 2010 - 14 Solicitation . . .

Current areas of emphasis include . . .

“Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise. (Provide) capabilities for teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines.”
How Does Space Grant Connect?

From the 2010 - 14 Solicitation . . .

NASA Education Outcome 2 (Secondary): **Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty (Educate and Engage)**

Precollege Education . . .

“The emphasis in precollege programs should be placed on teacher preparation and/or development . . . Consortia are encouraged to implement precollege programs in collaboration with other NASA pre-college projects or STEM pipeline projects.”
Based on web site information... 

At least half of the 52 consortia currently support teacher professional development in some fashion.

At least as many currently support K-12 student initiatives.
1) GTTP is an opportunity to partner with ASP to support your K-12 teacher professional development and student initiatives.

**OHIO** – Supports a Project ASTRO™ site, pairing classroom teachers and astronomers to improve science teaching.

[www.astrosociety.org/education](http://www.astrosociety.org/education)

**MINNESOTA** – Project STEP, modeled on Project ASTRO for science.
2) GTTP can provide an opportunity to advance your Space Grant Consortium as a resource for your state’s teachers and students, and to encourage future SG fellows.

MONTANA – University students provide presentations on astronomy and NASA missions to K-12 schools around the state.

MSGC becomes an adaptable resource for the classroom and provides role models for future space grant fellows entering the STEM pipeline.
Let’s Connect!
Let’s Connect!

1) I’ll be around to chat.

2) Pick up one of the handouts containing contact information.

3) Let’s talk about how we might partner to meet our common goals.
Contacts

• Dr. Greg Schultz, ASP Director of Education
gschultz@astrosociety.org

• Brian Kruse, ASP Lead Formal Educator
bkruse@astrosociety.org

• Jim Manning, ASP Executive Director
jmanning@astrosociety.org
Goal: To generate awareness and interest that will lead to the development of sustainable programs and models to serve astronomy and science education for the future.
The Stakes...
ASP: Advancing science literacy through astronomy.

www.astrosoociety.org