



Galileo's Classroom

Astronomy is an ideal vehicle to interest kids in science and to teach the basics of chemistry, physics, math, and even biology to elementary and middle-school kids. For high school it's the perfect science since it uses biology, chemistry, physics, geology, and environmental science to study the universe and our place in it.

Astronomy is also ideally suited to teaching the scientific process — how observations and evidence lead to sensible explanations about how the world works.

How the Galileoscope Fits In

Viewing Saturn, Jupiter, and the Moon through a telescope is a transformative experience, one that's available even in the largest and most brightly lit cities. The Galileoscope can provide this experience in a wide variety of educational settings, from home schools to science centers and even universities.

The Galileoscope kit is designed to be a full-up light and color experimentation station. As the telescope is being built, students conduct experiments, make predictions, and watch and learn how images are formed by lenses. For example, they study what would happen to the image if you cover up half the lens. Most are surprised that the picture doesn't get cut in half or go away but just gets a little dimmer. They learn that each little part of the lens helps form the entire image.

Sir Francis Bacon said, "All knowledge and wonder (which is the seed of knowledge) is an impression of pleasure in itself." The curriculum accompanying the Galileoscope is based on giving kids a pleasurable experience at the eyepiece and thereby increasing both knowledge and a sense of wonder at light, optics, and astronomy.

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Science educators Stephanie Slater, Janelle Bailey, and Michael Gibbs are compiling and editing a coherent set of educational materials that will provide both content knowledge for classroom teachers and classroom-ready materials suitable for use with the Galileoscope in a variety of formal and informal settings. It's called *Galileo's Classroom: The Galileo Teacher Workshop in Celebration of the 2009 United Nations International Year of Astronomy*. It will also include units relevant to other IYA2009 programs, for example, Dark Skies Awareness.

Galileo's Classroom will include one collection of activities that introduces students to telescope optics and five more that let them use the Galileoscope to reproduce some of Galileo's iconic observations.

These sections open with content introductions written by individuals recognized for their expertise in astronomy and their ability to communicate that knowledge to the general public.



Artwork from *Galileo's Classroom*;
courtesy Stephanie J. Slater.

The activities themselves have been selected from among thousands of available astronomy-related classroom activities, based upon their utility in modeling Galileo's findings and on our current understanding of exemplary classroom practices. Each activity has been rewritten into the natural language of classroom teachers and has been field tested in schools.

Additional materials include an overview of multiwavelength astronomy and the extraordinary findings that have become possible thanks to the invention of new types of telescopes and our ability to launch telescopes into space. And teachers can use a sampling of humanities-related activities to extend their astronomy instruction into other areas.

An appendix correlates the *Galileo's Classroom* materials with the standards and benchmarks of the U.S. National Science Education Standards and the American Association for the Advancement of Science. This will help teachers understand the objective of each activity in the curriculum. A second appendix lists relevant Internet sites so that educators can delve deeper into the content and find additional resources for classroom instruction.

Availability of *Galileo's Classroom*

Galileo's Classroom is a collaborative effort of individuals at more than a dozen institutions, representing several nations from three continents. It will be available in English in two forms: as a book published by the Astronomical Society of the Pacific (ASP) and as digital files available online from the University of Wyoming. In addition, if there are IYA2009 organizers who would like to translate *Galileo's Classroom* into other languages, we will be happy to assist in any way we can, with the understanding that all credit and rights are reserved to *Galileo's Classroom* and the contributing authors. Please direct your inquiries to Stephanie Slater at sslater3@uwyo.edu.



Our hope is that organizers of IYA2009-related teacher workshops, especially those incorporating the Galileoscope, will consider buying the book as a means of providing high-quality materials to teachers, and that individual teachers who don't have an opportunity to attend a workshop will be able to access the materials online, at no cost, for use in their own classrooms. Our goal is that all teachers, especially those working with 5th to 8th graders, have access to materials that will assist them in delivering astronomy instruction that is exciting, scientifically accurate, and based on contemporary educational research.

This page will be updated with more information when *Galileo's Classroom* becomes available; publication is expected in the second quarter of 2009.

