Journey Through The Universe "2.0 - S.T.E.M. EDUCATION CONFERENCE

Bringing the Universe to the Classroom
Engaging Students in Science, Technology, Engineering and Math Learning Experiences within and Beyond the Classroom

Saturday, March 3, 2012 Hilo High School

Featuring

DR. JEFF GOLDSHEIN
CENTER DIRECTOR: NCESSE
NATIONAL CENTER FOR EARTH AND SPACE SCIENCE EDUCATION

Jeff Goldstein is a nationally recognized science educator and planetary scientist who has dedicated his career to the public understanding of science and the joys of learning. As Center Director for the National Center for Earth and Space Science Education (NCESSE), Dr. Goldstein oversees the creation and delivery of programs that engage entire communities, train 3,000 teachers annually, and emphasize family learning. He led the inter-organization team that permanently installed the Voyager model Solar System on the National Mall in Washington, DC, in front of the Smithsonian. The Voyager National Program is permanently installing low cost replicas in 100 communities worldwide. Dr. Goldstein also oversees the Student Spaceflight Experiments Program (SSEP) providing real research opportunities for pre-college students on the Space Shuttle and International Space Station. Dr. Goldstein was the Keynote Speakers for the NSTA National Conference in San Francisco, CA, March 2011.

Dr. Goldstein was at the National Air and Space Museum for 8 years, departing in 1996 as acting Chair of the Lab for Astrophysics. He was on the senior staff at Challenger Center 1996-2005. In 2005 he created the National Center for Earth and Space Science Education. Visit Jeff at blogontheuniverse.org

http://www.gemini.edu/journey
Invitational Event for Hawaii Department of Education
Hilo/Laupahoehoe/Waiakea Complex Area Schools and Partners

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Program

8:30 - 8:45 Welcome: State and Complex Area Leadership

8:45 - 10:00 Keynote Address: Science – It’s Not a Book of Knowledge …..It’s a Journey
Dr. Jeff Goldstein, National Center for Space Science Education

10:00 -10:15 Break

10:15 –12:20 Breakout Sessions

School & Community Leaders with Dr. Jeff Goldstein:
Journey through the Universe 2.0: Creating 21st Century Learning Opportunities

Teachers: Select and attend sessions from scheduled sessions (see attached for more information)

- Build Your Own Galileoscope (30 max)
- Integrating the Engineering Design Process (EDP) in the Classroom
- Teaching Science Through Inquiry- Secondary
- Teaching Science Through Inquiry- Elementary
- Exploring the Moon with NASA

12:20 – 12:45 Closing of Morning Session – All Participants

------------------------------------------Special Session Participants Only------------------------------------------

12:45 – 1:30 Lunch will be provided for participants who have pre-registered for the afternoon Special Session.

1:30 – 3:30 Special Session (Optional): Student Spaceflight Experiments Program
For teachers, administrators and potential sponsors, Dr. Goldstein will explain how students can participate in designing real experiments to be conducted in a spaceflight microgravity environment.
Keynote Address and Session Descriptions

Keynote Address: Science –It’s Not a Book of Knowledge .....It’s a Journey.  
Dr. Jeff Goldstein

Every parent remembers that magical time when our children first began to speak, that moment marking the beginning of unending questions. In our children we can see our humanity – our innate curiosity - and recognize the obvious...that we are born to explore!

Science, in all its seeming complexity, is nothing but a means to organize curiosity. A way to empower one’s self to ask the gift of a question, and to hone the art that allows navigation through the noise of the universe around us in quest of an answer. It is an emotional, joyful, and wondrous journey that hopefully allows the traveler to pull back the veil of nature just a little, see how she operates, and celebrate the accomplishment.

Science education is no different. It is the means by which we immerse our children in the act of journey by letting them DO science, and acknowledging it is THEIR journey. As teachers, our sweet reward is seeing the joys of learning wash over them. And as teachers, we are charged with nothing less than patiently and gently launching the explorations of an entire generation.

10:15 – 12:20 Leadership Session: Journey through the Universe 2.0 - Creating 21st Century Learning Opportunities. Dr. Jeff Goldstein

It is recognized that Science, Technology, Engineering, and Mathematics (STEM) education is vital to ensure that America can compete in the high technology marketplace of the 21st century and that our children are prepared for the 21st century job market. In this context, it is important to note that for 8 years Journey through the Universe on the Big Island has made a broad and sustained commitment to STEM education through professional development for teachers, family and public programs committed to cross-generational learning, and classroom visits by researchers capable of providing a firsthand view of what it’s like to work on the frontiers of human exploration. For 8 years, Journey has flourished through its commitment to community-wide engagement, and partnerships between the local education, research, and business communities. In this time of strategic national need in STEM education, we might therefore embrace “Journey 1.0” for what it has accomplished, recognize that it is a proven model for STEM education, and explore its expansion into an initiative that can be strategically coupled to Hawai’i State needs in STEM education.

This breakout session is dedicated to an exciting ‘blue sky’ discussion for the leadership of both the local education and research communities where we can network on STEM education needs and organizational capabilities, and explore how the existing program can be taken to the next level - “Journey 2.0” – with, e.g., authentic STEM immersion experiences for students, and expanded programming and collaborations that can leverage both Hawai’i’s strategic objectives in STEM education and the rich assets of the myriad national and international research organizations on the Big Island.
Teacher Breakout Sessions: STEM Teaching and Learning

**Two Hour Sessions, 10:15 - 12:20 (choose 1)**

- **A1: Build Your Own Galileoscope (max 30)**  
  **Presenter:** Doug Arion
  
  The Galileoscope was developed during the International Year of Astronomy to be the perfect introductory telescope, and, combined with educational materials, a basis for teaching optics, telescopes, and astronomy. This workshop will instruct teachers on how to (a) assemble a Galileoscope kit and (b) how to utilize it in the classroom and for astronomical observing.

- **A2: Integrating the Engineering Design Process (EDP) in the Classroom: K-12**  
  **Presenters:** State STEM Resource Teachers
  
  The Engineering Design Process (EDP) is central to STEM teaching and learning in the classroom. Teachers will learn and practice the steps in EDP, and will learn how to incorporate simple problem-solving activities into lessons they already teach to foster a STEM-based learning community. This session is applicable for teachers at all grade levels and subject areas.

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**-OR-**

**One Hour Sessions, 10:15 – 11-15 (choose 1)**

  **Presenters:** Dr. Tim Slater (Univ. of Wyoming) and the CAPER Team
  
  Sustainability is equally important for explorers on Mars as it is to residents in Hawai‘i. Designed for elementary teachers, this hands-on workshop introduces elementary engineering design principles for capturing wind energy focusing on physical science and STEM learning outcomes as part of the Hawaii Content and Performance Standards.

- **B2: Exploring the Moon with NASA**  
  **Presenter:** Brian Day (NASA)
  
  Educators will be given an update on the recent dramatic changes in our understanding of the Moon. They will be introduced to a wide range of NASA lunar educational resources and activities that they can use in their classrooms. Finally, they will learn how they and their students can directly participate in NASA lunar science, making observations that directly support our missions to the Moon. Applications for both primary and secondary educators.
Invitational Event for Hawaii Department of Education
Hilo/Laupahoehoe/Waiakea Complex Area Schools and Partners

One Hour Sessions 11:20 – 12:20 (choose 1)

☐ C1: Teaching Electric Science as Inquiry- Gr. 6 – 12 (Secondary)
   Presenters: Dr. Tim Slater (Univ. of Wyoming) and the CAPER Team
   Designed for middle and high school teachers, help us design the next generation electrical systems for a new biofilm-organic spacecraft focusing on physical science concepts and STEM learning outcomes as part of the Hawaii Content and Performance Standards.

☐ C2: Exploring the Moon with NASA
   Presenter: Brian Day (NASA)
   Educators will be given an update on the recent dramatic changes in our understanding of the Moon. They will be introduced to a wide range of NASA lunar educational resources and activities that they can use in their classrooms. Finally, they will learn how they and their students can directly participate in NASA lunar science, making observations that directly support our missions to the Moon. Applications for both primary and secondary educators.

1:30 – 2:45 After-Conference Special Session (Optional)

Student Spaceflight Experiments Program (SSEP)
Dr. Jeff Goldstein

The Student Spaceflight Experiments Program, or SSEP, currently provides 41,200 students from 12 communities around the nation the opportunity to propose a microgravity experiment with the chance of having it performed in space. The program is open to students from 5th to 12th grade, colleges, and informal science education organizations, as well as internationally through the Arthur C. Clarke Institute for Space Education.

The SSEP is about a commitment to student ownership in exploration, to science as journey, and to the joys of learning. For school districts—even individual schools—it provides an opportunity to implement a systemic, high caliber, and historic STEM education program tailored to community need.

Dr. Jeff Goldstein was instrumental in developing the SSEP and remains deeply involved. He will explain the program to educators and community partners who are interested in making it available to students in our community. During this special session, we will explore the potential for integrating SSEP into Journey through the Universe on the Big Island. More information about the program can be found at http://ssep.ncesse.org.
Invitational Event for Hawaii Department of Education
Hilo/Laupahoehoe/Waiakea Complex Area Schools and Partners

Please complete and return this form by February 22, 2012
to DOE Resource Teacher Christine Copes:
FAX: 933-0368, PHONE: 808-933-0934
Email: Christine_Copes@notes.k12.hi.us
450 Waianuenue Ave. Rm. C7, Hilo, HI 96720.

STEM CONFERENCE REGISTRATION
*No Registration Fee Required*

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Please Place a Checkmark Next to Each Session that You Plan to Attend

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<thead>
<tr>
<th>Time</th>
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<tr>
<td>10:15 – 12:20</td>
<td>Leadership Session: Journey through the Universe 2.0</td>
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<tr>
<td>10:15 – 12:20 A1</td>
<td>Build Your Own Galileoscope</td>
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<td>10:15 – 12:20 A2</td>
<td>Integrating the Engineering Design Process (EDP) in the Classroom</td>
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<td>10:15 – 11:15 B1</td>
<td>Teaching Energy Science as Inquiry (Gr. K – 5)- Elementary</td>
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<td>1:30 – 3:30</td>
<td>Student Spaceflights Experiment Program (includes lunch)</td>
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Special Session: Teachers and Sponsors