

Workshop Outcomes: Exceptional Space Science Materials for Exceptional Students III

Goddard Space Flight Center | July 26-31, 2003

I. Formation of the Exceptional Needs Working Group (ENWG):

1. A group of educators and product developers interested in producing better NASA education materials for use in ALL learning environments, including special needs settings.
2. Listserv set up (ENWG@listserv.cofc.edu) to share ideas, thoughts and announcements among the group.
3. ENWG will include the Special Needs Resources Group (SNRG), formed during the ENWS II, in Huntsville, AL.

II Focus Groups formed:

These educator-lead groups will work with the NASA Office of Space Science Education Support Network to help us better understand the needs of the students with disabilities, their families and the various learning environments in which our education materials will be used. Ultimate goal – OSS products will fit the user.

1. Learning Difficulties (SLD [specific learning disabilities], At-risk, other health impairments, emotional difficulties, autistic spectrum)
2. Visual Impairments
3. Auditory Impairments
4. Orthopedic/Multi-handicapped
5. Informal Applications

III. Exceptional Needs Working Group Mission Statement (DRAFT):

The ENWG is committed to helping NASA's Office of Space Science and the new Education Enterprise to better understand and to prepare more effective and inspiring lesson plans that:

1. Track with the national science, mathematics, and technology standards and AAAS Benchmarks;
2. Implement the Universal Design best practices for learning that includes implementing research driven hands-on/minds-on learning, inquiry-based learning, addresses the needs of diverse learners and is applicable to multiple learning modalities;
3. Make science and math education easier to deliver in ways that are more effective and engaging to ALL students and simultaneously accommodate emergent inclusion needs derived from the No Child Left Behind laws.

IV. Guest speakers and visitors from NASA Headquarters and Goddard Space Flight Center included: Dr. Adena Loston (Associate Administrator for Education, NASA Headquarters), Mr.

Al Diaz (Goddard Space Flight Center Director), Dr. Jeff Rosendhal (OSS Director for Education and Public Outreach), Dr. Phil Sakimoto (OSS Program Planning Specialist, Education and Outreach Program), Dr. Bob Gabrys (Goddard Space Flight Center Education Officer), Dr. David Bohlin (Deputy Associate Administrator for Science, OSS, NASA Headquarters), Mr. Mike Hartman (Goddard Space Flight Center Equal Opportunity Coordinator).

- V. Three exceptional teachers, from the SERCH region, gave a special talk on what it is like for them to teach in a classroom with students with special needs. This talk was provided for attendees who do not work directly with the special needs community.

Teachers' Perspective: "In the Classroom with Students with Special Needs"

Ms. Dorian Janney (Science Teacher, MD), Ms. Gail Henrich (Coordinator, Virginia School for the Deaf, Blind & Multi-disabled), & Ms. Carol Olney (Special Education Teacher, Whitesides Elementary, SC)

- VI. Many space science activities and education materials were shared by space scientists, engineers, as well as, museum staff members. Following a presentation on background content, the participants had a chance to work through a part of the activities/lesson plan with a "disability on". Included in the presentations were:

Sun-Earth Connection (SEC): From the Sun to the Earth

Mr. Troy Cline (SEC Education Forum Educational Technology Coordinator) & Ms. Ruth Paglierani (SEC Education Forum Coordinator of Public Programs)

Activities presented (primarily from "Eye on the Sky" at www.eyeonthesky.org):

1. Sun/Earth Moon Model: www.eyeonthesky.org/lessonplans/03sun_howbig.html
2. Eclipse Books: www.eyeonthesky.org/lessonplans/13sun_eclipsebook.html
3. Make a Table-top Eclipse: www.eyeonthesky.org/lessonplans/12sun_littlemoon.html
4. "Auroras! Mysterious Lights in the Sky" on line book: www.sunstories.com
5. On-line Weather Journal: cse.ssl.berkeley.edu/first/EyeontheSkyWeatherJournal/

Solar System Exploration (SSE): 7 Years, 17 Countries, One Planet The Cassini-Huygens Mission to Saturn

Ms. Alice Wessen (Cassini Education Outreach Lead) & Ms. Shannon McConnel (Cassini Education Outreach Coordinator)

Websites provided:

Cassini-Huygens Mission to Saturn and Titan: <http://saturn.jpl.nasa.gov/index.cfm>

Solar System Exploration: <http://solarsystem.nasa.gov/index.cfm>

Saturn Observation Campaign: <http://soc.jpl.nasa.gov/index.cfm>

Astronomical Search for Origins and Planetary Systems (ASO): "Bringing Origins Science to the Classroom with Light & Color"

Dr. Denise Smith (Origins Education Forum Lead) & Ms. Linda Knisely (Hubble Space Telescope Formal Education Teacher Intern)

Activities presented:

1. Hubble Deep Field:
<http://amazing-space.stsci.edu/resources/explorations/hdf/hdf-details.htm>
2. The Visible Spectrum (Sensing the Invisible):
<http://sofia.arc.nasa.gov/Edu/materials/activeAstronomy/activeAstronomy.html>
3. Invisible Light Sources and Detectors (Listening to Light):
<http://sofia.arc.nasa.gov/Edu/materials/activeAstronomy/activeAstronomy.html>
4. Herschel Infrared Experiment: <http://sirtf.caltech.edu/Education/Herschel/herschel.html>

Structure and Evolution of the Universe (SEU): "What is your Cosmic Connection to the Elements?"

Dr. James Lochner (Education Lead for the Lab for High Energy Astrophysics), Ms. Amanda Cook (Education Summer Intern), & Ms. Sara Mitchell (Junior Programmer)

Activities presented from Imagine the Universe: Cosmic Elements – What is your Cosmic Connection to the Elements? <http://imagine.gsfc.nasa.gov/docs/teachers/elements/>

1. What's Out There?:
<http://imagine.gsfc.nasa.gov/docs/teachers/elements/imagine/activities.html>
2. Spectral Analysis Activity: Auditory – "Nickel-oden":
<http://imagine.gsfc.nasa.gov/docs/teachers/elements/imagine/spectral.html>
3. Element Connections Board Game:
<http://imagine.gsfc.nasa.gov/docs/teachers/elements/imagine/activities.html>
4. Kinesthetic Big Bang:
<http://imagine.gsfc.nasa.gov/docs/teachers/elements/imagine/activities.html>

Round Robin Session – 10 minute presentation followed by 10 minute visit

Group 1 **3-D Models of Geologic Features**

- Ms. Stephanie Stockman (GSFC) & Mr. Frank Niepold (GSFC)
- Group 2 **NASA Center for Distance Learning Programs for K-Adult**
Dr. Randall Caton (NASA Langley Research Center)
- Group 3 **Student Observation Network: Radio JOVE**
Mr. Troy Cline (SECEF) and Chuck Higgins (Middle Tennessee State University)
- Group 4 **Using Asteroid Scale Models in Space Science Education for Blind & Visually Impaired Students**
Dr. Bernhard Beck-Winchatz (DePaul University)

VII. We also visited and enjoyed presentations at the **Maryland Science Center** and the **National Air and Space Museum**. Staff at both informal science centers treated our workshop participants to a tour of floor exhibits and a planetarium show.