

Field Trip to the Moon

American Museum of Natural History (AMNH)

New York, NY 10024

National Center for Science Literacy, Education and Technology

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PROGRAM DESCRIPTION

Field Trip to the Moon (FTM) is a NASA-inspired exploratory activity that challenges students, grades 5-8, to consider the possibilities of lunar habitation. Students learn about the geography of the moon, choose a lunar landing location, and determine the challenges and opportunities that exist in lunar habitation.

PROGRAM RELEVANCE TO NASA

FTM relates specifically to Exploration Systems Mission Directorate (ESMD) education priorities which include leveraging existing internal and external networks, emphasizing broader nationally scoped efforts, engaging participants in NASA programs in an active and networked community, and improving and expanding distribution networks for existing products.

PROGRAM BENEFITS TO SOCIETY

This project was proven successful at engaging students in space concepts using mathematics, science, and technology; and in providing teachers with a model for infusing STEM – science, technology, engineering, and mathematics – careers in their instruction. Offering FTM at the Museum allowed this project to reach a highly diverse audience. AMNH has ~4 million visitors including nearly 500,000 school children who attend in organized groups. In fact, the Museum is the most-visited field trip destination in New York City, and the diversity of participants directly correlates to that of the New York City public school system—one of the nation’s most diverse—with a student population that is 39% Hispanic, 37% African-American, 11% white, 12% Asian, and 1% American Indian/Alaskan native.

PROGRAM GOALS

Under Outcome 3, Field Trip to the Moon 2007 (FTM 2007) set the following goals:

Objective 3.1 Resources (**Engage**) Provide informal education support resources that use NASA, themes and content, and Objective 3.2 Professional **Development for Informal Ed Providers (Engage)** Provide opportunities to improve the competency and qualifications of science technology, engineering, and mathematics (STEM) informal educators.

In setting program goals, FTM 2007 aimed to meet its objectives and widen its area of impact with a 4-prong strategy: (1) to expanding the delivery of FTM at AMNH/New York, (2) distributing FTM to other planetariums/museums, (3) circulating FTM to non-dome environments, and (4) conducting professional development workshops to involve educators in the FTM experience. In order to achieve the distribution of NASA content, a distribution plan, that closely followed the work begun in FTM 2006, was developed in FTM 2007.

PROGRAM ACCOMPLISHMENTS

FTM 2007 produced the following NASA approved products: All listed on the NASA portal at www.nasa.gov/education/ftm

- ***Field Trip to the Moon (Formal) Educators Guide*** (74 page downloadable PDF)
This unit uses an inquiry-based learning approach that fosters team building and introduces students to careers in science and engineering.
- ***The Field Trip to the Moon Informal Educator's Guide*** (74-page downloadable PDF) takes up where the show leaves off, motivate participants to apply their cooperative learning skills.
- ***Field Trip to the Moon Companion Guide*** (7-page downloadable PDF)
This brief guide provides background information and related activities.
- ***Field Trip to the Moon DVD (available for purchase at NASA's Central Operation of Resources for Educators (CORE)).***
Features include:
 - Introduction (3 minutes)
 - A short introduction to human exploration of the Moon
 - Feature (21 minutes)
 - The complete narrated journey – from launch, through Earth orbit, to Moon orbit and landing.
 - Extra activities (7 minutes)
 - Information on the formation of the Moon and Moon trivia questions.
- ***Field Trip to the Moon Dome version presentation*** (21 minutes) includes dome version of the DVD with sound track and optional narration track.
- ***Field Trip to the Moon Toolbox Kits*** (available at CORE) optional kits of recommended supplies are available at CORE for purchase in order to support each of the six FTM teams: Ecosystem, Engineering, Geology, Habitat, Medical, and Navigation. <http://catalog.core.nasa.gov/core.nsf/item/010.5-03D>

Annual Performance Goals were met as follows:

Measures 3.1.1 / 3.1.2

Four (4) FTM products received 100% approval from NASA's Communications Material Review (CMR) and educational content review by Classroom of the Future (COTF).

- DVD
- Informal Educator, Standards-based, Activity Guide
- Formal Educator, Standards-based, Activity Guide
- DVD Companion Guide

These products were developed for educators and students grades 5-8. The Educator Activity Guides were approved as 508-compliant.

Measure 3.1.3

The products listed above were also developed through a partnership between Marshall Space Flight Center (MSFC) and AMNH. One additional product, a dome version of FTM, was created from the approved DVD by AMNH.

Measure 3.1.6

The following 3 complementary resources were developed and received 100% approval through CMR.

- DVD Sleeve
- Promotional flyer
- DVD label

Measure 3.2.2

AMNH presented FTM dome presentations and workshops, to students in grades 6-8, on an ongoing weekly basis, since January 2006. Data evaluations were entered into NASA Education Evaluation Information System (NEEIS) and were summarized in the FTM final report that has been submitted to MSFC.

Measure 3.2.5

FTM 2007 utilized the NASA Museum Alliance to:

- Advertise NASA's Digital Learning Network (DLN) vent
- Disseminate FTM DVDs
- Promote FTM "Train the Trainer" instructional and close-captioned video, now available "On Demand" through NASA's Desktop Archives

Link: <http://desktoptv.msfc.nasa.gov>

Measure 3.2.7

FTM 2007 successfully presented workshops, showcased dome presentations, exhibited posters, and published abstracts at the *Association of Science-Technology Centers (ASTC)*, *National Science Teachers Association (NSTA)*, *Astronomical Society of the Pacific (ASP)*, *American Astronomical Society (AAS)*, *the MSFC ERC*, and the *post-ASTC "Return to the Moon" events*.

In specific, MSFC and AMNH achieved each of the above program goals through the following four strategies:

(1) Expand Delivery of FTM at AMNH/New York.

The FTM Dome presentation was offered on a weekly basis beginning in April 2007 through the close of the grant December 31, 2007. The numbers reached were comprised primarily of school groups with some families. The numbers of participants reached by FTM are as follows:

- Pilot offerings: 629
- Weekly offerings: 3,426
- The total audience reached by FTM program at the Museum during the project period of performance: 4055.
- NOTE: AMNH continues to offer the program on a weekly basis, and from Jan. 1 – March 6, 2008, an additional 1555 participants have been reached

(2) Distribute FTM to other planetariums/museums. FTM was output to dome master for non-real time systems in a format appropriate for small digital domes. AMNH has developed a licensing agreement, currently undergoing final review by NASA legal, to be used to disseminate the Dome program to planetaria via vendor partnerships.

(3) Disseminate FTM to non-dome environments. During 2007, a DVD version of the FTM program was produced and disseminated.

Dissemination

Total disseminated to date: 5,010

- 712 mailed to individual educator requests
- 1,100 shipped to Marshall Space Flight Center
- 50 sent to Challenge Center in Tallahassee, FL
- 70 mailed to NASA Ames for Return to the Moon workshop
- 85 were disseminated at the Science Teacher's Association of New York State
- 348 disseminated at AMNH onsite professional development events
- 1,400 to the NASA Museum Alliance partners
- 100 mailed to Gheens Science Hall /Rauch Planetarium
- 500 DVD discs sent to CORE
- 100 given to ESMD
- 85 given to network of Educator Resource Centers (ERCN)
- 58 given to Aerospace Education Services Project (AESP)
- 52 distributed to NASA Explorer Schools (NES) sites and coordinators
- 350 sent to national conferences NSTA and ASTC
- 1000 Promotional, CMR approved, color flyers have been disseminated