

Lunar and Meteorite Sample Disk Program (K-12)

Image: Lunar surface with earth rising

MALE VOICE: Ignition sequence start: six, five, four, three, two one.

JOHN F. KENNEDY: And we stand, today, on the edge of a new frontier.

Image: Rocket launcher

MALE VOICE: Burn away, Houston.

Image: Rocket lifting off

MALE VOICE: Past the hour. Lift-off on Apollo 11.

Image: Houston Controllers

ASTRONAUT: Wow, what a flight. What a view, isn't it, John?

ASTRONAUT: It's absolutely unreal.

ASTRONAUT: Bunch of guys about to turn blue. We're breathing again. Thanks a lot.

Image: Moon vehicle moving over lunar surface

Lunar and Meteorite Sample Disk Program (K-12)

ASTRONAUT: Hey! There is orange soil!

ASTRONAUT: This is going to be some kind of different ride.

Image: Lunar vehicle with astronaut taking a movie

Image: Astronauts planting U.S. flag on Moon surface

NARRATOR: It was one of humankind's greatest achievements: Apollo. From 1968 to 1972, 12 astronauts traveled 200,000 miles from the Earth to the Moon.

Image: Apollo

Image: Lunar vehicle exploring lunar surface

Image: Astronauts exploring lunar surface

NARRATOR: They explored the lunar surface, collecting samples and gaining new knowledge about our Solar System. Those discoveries raised exciting new questions for scientists, researchers and educators here on Earth.

Image: Apollo blasting off from lunar surface

NARRATOR: Though the Apollo missions ended in the 1970s, the exploration continues with the scientific study of the roughly 400 kilograms of lunar material returned by the astronauts.

Lunar and Meteorite Sample Disk Program (K-12)

Image: Lunar material being studied by scientists

NARRATOR: NASA has made some of these lunar samples available for K through 12 education.

Image: Sample Education Disks

Housed in protective sample education disks, this lunar material, along with meteorite samples found on Earth, allows educators, students, and others to inspect the rocks, compare them to Earth rocks, and be a part of NASA's continuing exploration.

Image: Students studying disks

Graphic: Lunar Meteorite: Sample Education Disk Program

NARRATOR: During the Apollo program, six missions and 12 astronauts touched down on the Moon and conducted a variety of scientific excursions.

Image: Apollo on moon with astronaut exiting craft

Image: Astronauts collecting samples

NARRATOR: The astronauts, trained in geology, searched the lunar surface for rock samples that might give clues about the origin of the Moon and our Solar System.

Lunar and Meteorite Sample Disk Program (K-12)

Gary Lofgren, Lunar Curator: The Moon is a history book, and we're looking at the early pages of that history book. And they're all there for us to see and understand.

NARRATOR: A special laboratory was set up by NASA to conduct early analysis of the lunar samples and to preserve, protect, and distribute them to the scientific community.

Jack Warren, System Specialist: There was a lot of excitement going on. Every scientist wanted their sample, and they wanted it ASAP.

Image: Scientists studying lunar rock

NARRATOR: Early on, scientists learned the Moon is made of rocky material that has been melted, erupted as lava flows, and crushed by meteorite impacts.

Image: Scientists studying lunar rock material

NARRATOR: Decades later, the study of the samples continues, as methods of analyzing the rocks improve with technology.

Image: Apollo lunar sample disk

Lunar and Meteorite Sample Disk Program (K-12)

NARRATOR: Six Apollo lunar samples are included in the sample education disks. Since questions about the Moon still continue, the material is a priceless treasure, the value of which has only begun to be mined by the scientific community.

Image: Lunar Surface

NARRATOR: While the Apollo samples tell us stories of the Moon, NASA also makes available other valuable material from our Solar System: meteorites.

Image: Meteorite

Graphic: Meteorites, Lunar & Meteorite Sample Education Disk Program

Image: Solar system

NARRATOR: Meteorites are rocks from space that fall to the Earth. Unchanged over time, meteorites give scientists a unique look at what was happening during the formation of our Solar System billions of years ago.

Image: Scientist studying meteorite

NARRATOR: Although meteorites may land anywhere, meteorite researchers have found that one location on Earth has

Lunar and Meteorite Sample Disk Program (K-12)

proven to be ideal for finding these fallen treasures: the Antarctic.

Graphic: Outline of Antarctica

Image: Antarctica

NARRATOR: Thousands of meteorites have been found here since the beginning of the Antarctic Search for Meteorites Program in 1978.

Image: Scientists on snowmobiles in Antarctica

NARRATOR: Scientists conduct expeditions in this remote area, where the dark meteorite material stands out against the frozen terrain, and ice movement concentrates large numbers of meteorites into small areas.

Image: Scientists finding meteorite in snow

NARRATOR: The extreme cold and dry climate also helps preserve the meteorites. Treated just like a lunar sample, Antarctic meteorites are bagged and returned to the lab at the Johnson Space Center for preservation, distribution, and study.

Image: Container with meteorite being loaded onto truck

Lunar and Meteorite Sample Disk Program (K-12)

NARRATOR: The meteorite samples and lunar samples are available in separate sample disks. Requesters can ask to borrow one or the other, or both, providing a diverse collection of space rock samples for educators, students, and the public to view firsthand.

Image: Scientist closely examining meteorite

Image: Students in classroom

NARRATOR: In the classroom, students learn lessons about the dynamic processes affecting Earth and Solar System objects. The samples become a part of these lessons. Students make observations of Moon rocks, Earth rocks, and meteorites. By comparing and contrasting the samples and Earth rocks, they learn about impacts, volcanism, our early Solar System, and how our own planet was formed.

Image: Lunar surface

Christina Casaburri, Science Teacher, Clear Creek ISD:

Nowadays, you hear about what other ways can we engage our students in the new sciences, or the sciences that are going on, and we want make sure that they have more hands-on experience. They're actually able to see what we talk about; instead of just showing them a picture of the disk, they're actually holding the disk in their hand.

Lunar and Meteorite Sample Disk Program (K-12)

NARRATOR: Schools aren't the only place to benefit from the sample education disks; educators with the proper NASA certification may submit a request to display the samples at public venues, such as museums, libraries, school lobbies, churches, and even shopping malls.

Image: Young student looking at sample disks

NARRATOR: Display restrictions include making the disks available in a shared area, where there is no charge for viewing and constant supervision by the certified borrower.

Image: Security guard

NARRATOR: A security guard may be required for events when public notice of the display is announced. So, how do you check out a sample education disk?

Graphic: Checking Out Lunar Meteorite Sample Education Disk Program

Image: Lunar and Meteorite Certification Workshop

NARRATOR: The first step is to get certified by attending a Lunar and Meteorite Certification Workshop, where the borrower can learn not only the most effective methods for using the disks, but also proper security and storage. Only certified individuals may borrow a disk. Requests for the

Lunar and Meteorite Sample Disk Program (K-12)

education disks are sent via e-mail to the Johnson Space Center. Requests should be made at least six weeks in advance, and include the purpose for borrowing the disk and the dates requested, along with alternate dates.

Image: Educators at computer completing request form

NARRATOR: NASA determines the date the disks will be available, and e-mails the borrower a loan agreement and security form to complete and return.

Image: Loan agreement

NARRATOR: The locations the sample will be displayed, as well as the location for storage, must be included. After the signed loan agreement and security forms are received by NASA, the disks are sent via registered, restricted mail. When the borrower receives the disks, they must sign and return the sample assignment form sent with the disk, notifying NASA the disk has arrived.

Image: Educator signing form for receipt of disk kit

NARRATOR: From this point on, the borrower is responsible for the safety of the disk and the kit contents. The guidelines are straightforward: protect these national treasures. When not on display or in use, the borrower must

Lunar and Meteorite Sample Disk Program (K-12)

either have physical possession of the disk, or the disk must be locked away in a safe or vault that meets NASA guidelines.

Image: Disk being locked in safe

Image: Educators attending certification workshop

NARRATOR: There are other guidelines and procedures, and these are covered in detail at the certification workshop, and will also be reviewed when the disks are requested. The education sample disks may be borrowed for up to two weeks; after that period, the borrower must return the disks and all the contents, along with their cases, via pre-paid, registered mail, using the original shipping carton.

Image: Disks being boxed and readied for shipment

Image: Teacher and students studying disks

NARRATOR: These sample disks are in heavy demand because the collection contained inside is both rare and unique: samples taken from the Moon by human hands; samples from space, billions of years old; and samples collected on Earth. Together, these materials tell stories: stories of how our Solar System was formed; the origin of our Moon and our own planet.

Image: Moon

Lunar and Meteorite Sample Disk Program (K-12)

NARRATOR: Through the Lunar and Meteorite Sample Education Disk Program, NASA is inviting students, educators, and the public to share in those stories of rocks from space.

Graphic: Lunar Meteorite Sample Education Disk Program

END OF FILE