William M. Staerkel PLANETARIUM

Teacher's Guide to

DAWN OF THE SPACE AGE

OBJECTIVES:

- To learn about early trips into space
- To examine milestones in human space flight.
- To gain an appreciation of the massive technological effort it takes to put something in space

This show conforms to the following Illinois state science standards: 12.F.3a, 12.F.2c, 12.F.3b, 13.B.1c. Next Generation Science Standards: 1.ESS1.1

BRIEF SHOW DESCRIPTION:

"Dawn" replaces our old "Space Pioneers" show. Through wonderful computer animation, "Dawn" allows you to relive major milestones in the history of spaceflight. From Sputnik to Space Ship One, we see how Yuri Gagarin survived in space, the voyage of Laika (the dog), the early Gemini missions, Apollo to the Moon, the Space Shuttle, and even the International Space Station.

PRE-VISIT ACTIVITIES/TOPICS FOR DISCUSSION:

- Develop a timeline of space events going back before Sputnik. Who developed rocketry? Who had the early lead in the space race? How many countries have sent astronauts into space?
- How many people have been in space? What does it take to train for space travel?
- Get a children's wading pool, fill about half of it with sand and then a thin layer of flour. By dropping rocks into the sand, you can make craters. Experiment by changing the size and shape of the rock, the height that you drop it, and the angle that it comes into the sand. Can you duplicate some of the craters on the Moon?
- How far have humans ventured into space? Make a scale model solar system by scaling down the Sun to a 38-inch diameter circle. Jupiter would then be a softball, Saturn is a baseball, and Venus and the Earth are marbles. The Earth would be 110 yards away from the Sun! See the Staerkel model below and walk through it on a field trip. The model is across the street from the planetarium.
- Interview someone in their 50s or 60s about the early days of space flight. What do they remember about the Moon missions.

POST-VISIT ACTIVITIES/TOPICS FOR DISCUSSION:

- Research how to become an astronaut. What sorts of things would you need to know to be an astronaut?
- Use the Heavens Above weblink below and find out when you can see the International Space Station above your town. You'll need to know your latitude and longitude.
- What dangers exist in space for our astronauts?
- Is the cost of space travel worth the money? Divide the class and have a debate. What spin-offs do we enjoy today due to the space program? Can studying space and the other planets benefit us here on the Earth?
- Find a Moon map online (see below) and locate the Apollo landing sights. The Sea of Tranquility is easily visible from first quarter to full phase.

- There has been somewhat of a debate about whether we actually landed on the Moon or not? What does the class think? What evidence exists that we indeed did venture to the Moon? See Phil Plait's web site below.

VOCABULARY LIST:

Airlock
Agena
Alexei Leonov
Apollo
atmosphere
atmospheric pressure
command module
Deep Space Network
Elliptical
Freefall
Galileo
Gemini
Gravity
International Space Station
Hydrogen
Kazakhstan
Laika
Maria
Neil Armstrong
Orbit
Radiation
Sergei Korolov
Space Race
Sputnik
Trans-lunar insertion
Venera
Viking 1
Vostok
Voyager (to Jupiter, etc)
Wernher Von Braun
Yuri Gagarin

INTERNET RESOURCES:

- Learn when the space station is visible: http://www.heavens-above.com
- NASA: http://www.nasa.gov.
- Phil Plait's web site: http://www.badastronomy.com/index.html
- The Staerkel Planetarium's scale model solar system: https://www.parkland.edu/Audience/Community-Business/Parkland-Presents/Planetarium/Educational-Resources/Campus-Solar-System
- History of space flight: https://history.nasa.gov/monograph41.pdf and https://www.nasa.gov/centers/kennedy/about/history/spacehistory_toc.html
- Timeline: https://www.space.com/4422-timeline-50-years-spaceflight.html or http://www.windows2universe.org/space_missions/manned_table.html
- International Space Station: http://www.nasa.gov/mission_pages/station/main/index.html
- Living in Space: http://www.nasa.gov/audience/forstudents/k-4/home/F_Living_in_Space.html or http://www.pbs.org/spacestation/station/living.htm
- NASA's Space Place for kids: http://spaceplace.nasa.gov/