

Galileo3D

Teaching astronomy, spacecraft, space exploration, and science through 3D simulation

Lesson

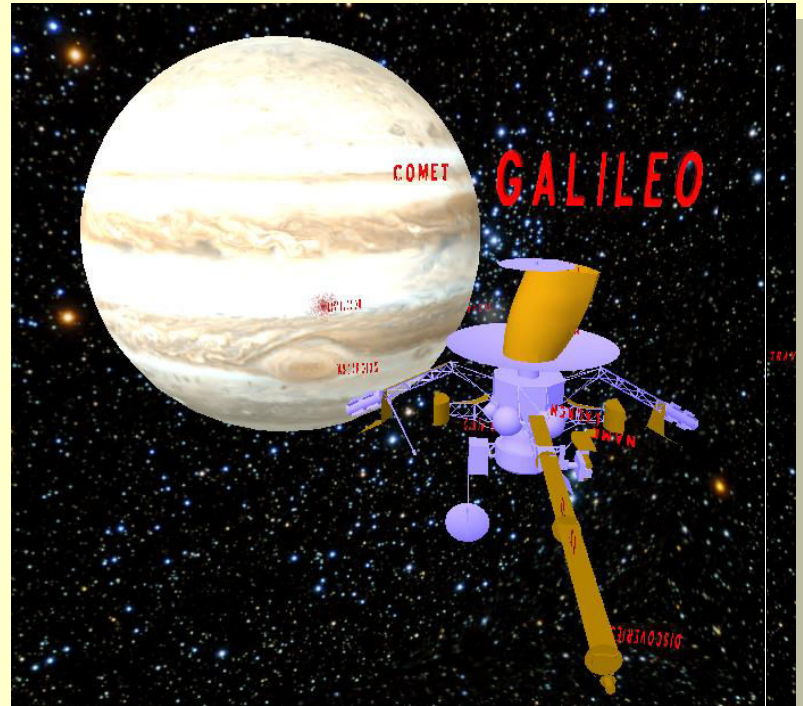
Teaching astronomy, spacecraft, space exploration, and science through 3D simulation

Objectives

- 1) Students will gain a basic understanding of the Galileo Spacecraft through 3D simulation and visualization
- 2) Students will gain a deeper understanding of the Galileo Spacecraft, its mission, and exploration of the Solar System

Activity

Students travel through the Galileo Spacecraft in real-time 3D, helping them to visualize and understand its structure and function



Materials

Galileo 3D Homepage

(click or cut and paste URL into browser)

<http://www.sunrisevr.com/galileo3d>

3D Simulation and Investigation

3D simulations are designed to make subject matter more engaging to today's technology-savvy kids, and help them bridge the gap between the "concrete" world and the abstract world of concepts. When students experience complex subject matter in real-time 3D it becomes clearer. Students learn best when they are actively immersed in subject matter from a variety of different viewpoints; 3D simulation is designed to help students visualize difficult ideas and objects through investigation at any scale (atomic, cellular, planetary, conceptual, etc), and doing things that would normally be impossible.

Required Technology

- PC/Tablet

Optional Technology

- Projector
- Multiple Computers
- Internet Connection

Grouping

- Large Group Instruction
- Small Group Instruction

Staging

Check computer/Tablet for Internet access if needed

Procedure

- 1) Access program
 - 2) Pick a lead student navigator to control movement through the 3D environment
 - 3) Pick a lead student reader to read information about the Galileo Spacecraft as it appears on-screen
 - 4) Begin the lesson by asking students what they already know about the Galileo Spacecraft; write responses on the board
 - 5) Review basic facts about the Galileo Spacecraft including:
 - Galileo was an unmanned spacecraft that explored the planet Jupiter and its moons
 - Galileo was launched on October 18, 1989, from the Space Shuttle Atlantis.
 - 6) Start traveling through the program, facilitate discussion by asking students where the class should go
 - 7) Use the 3D simulation as a visual aid; explain information as needed
 - 8) Have students pay special attention to:
 - Use of gravity to propel the spacecraft
 - Discoveries
 - 9) Have a final wrap-up with students with a question and answer period. Ask them about the mission of the Galileo Spacecraft
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Optional Activity: 3D Scavenger Hunt + Discussion

Have students find a particular part of the Galileo Spacecraft. If students are on multiple computers, have them “race” to the part of the International Space Station the teacher wishes to highlight. Once students find/arrive at the location, the teacher may commence discussion. Repeat in other areas of the simulation as desired to build understanding.

Homework/Review

Students may also access the program outside the classroom to supplement textbook questions

Functional Notes

- The program is available on multiple platforms
- If using the program online, please ensure the Unity3D Player is installed on the computer; through the Internet Explorer Browser; download the latest at <https://unity3d.com/webplayer>.
- If you see something in **red** you can probably click on it
- For ease of use you can go through most 3D objects, and even the ground
- The school library can request and access programs (free) at www.sunrisevr.com for off-line use via PC and Mac if there is no internet connection