

Voyager3D

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

Activity

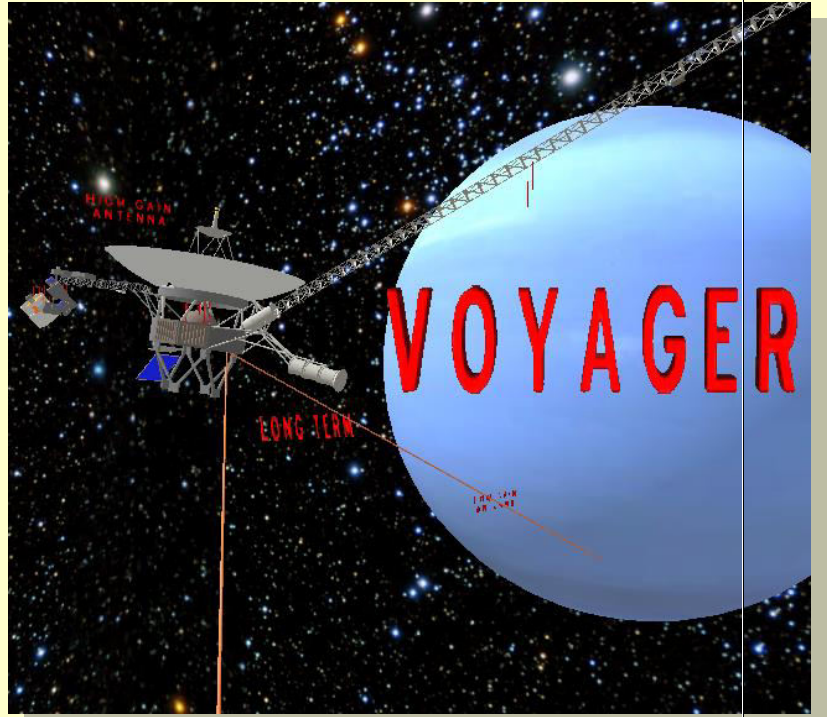
Students travel through the Voyager Spacecraft in real-time 3D, helping them to visualize and understand its structure and function

Materials

Voyager 3D Homepage

(click or cut and paste URL into browser)

<http://www.sunrisevr.com/voyager3d>



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 Voyager Spacecraft as it appears on-screen
- 4) Begin the lesson by asking students what they already know about the Voyager Spacecraft; write responses on the board
- 5) Review basic facts about the Voyager Spacecraft including:
 - The mission on the Voyager spacecraft was to engage in close-up study of Jupiter and Saturn.
 - The probes continued their travel into outer solar system and Voyager 1 is now the farthest human-made object from Earth
- 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:
 - Instruments
 - Heliosheath
- 9) Have a final wrap-up with students with a question and answer period. Ask them what the mission of the Voyager Spacecraft was, and where the spacecraft is now

Optional Activity: 3D Scavenger Hunt + Discussion

Have students find a particular part the Voyager Spacecraft. If students are on multiple computers, have them “race” to the part of the Voyager Spacecraft 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