

Solar System Explorer 3D

Teaching the Solar System and Astronomy through 3D simulation

Lesson

Teaching the Solar System through 3D simulation

Objectives

1) Students will gain a basic understanding of the Solar System through 3D simulation and visualization

2) Students will gain a deeper understanding of the many components of the Solar System and how they function

Activity

Students travel through the Solar System in real-time 3D, helping them to visualize and understand its structure and operation.

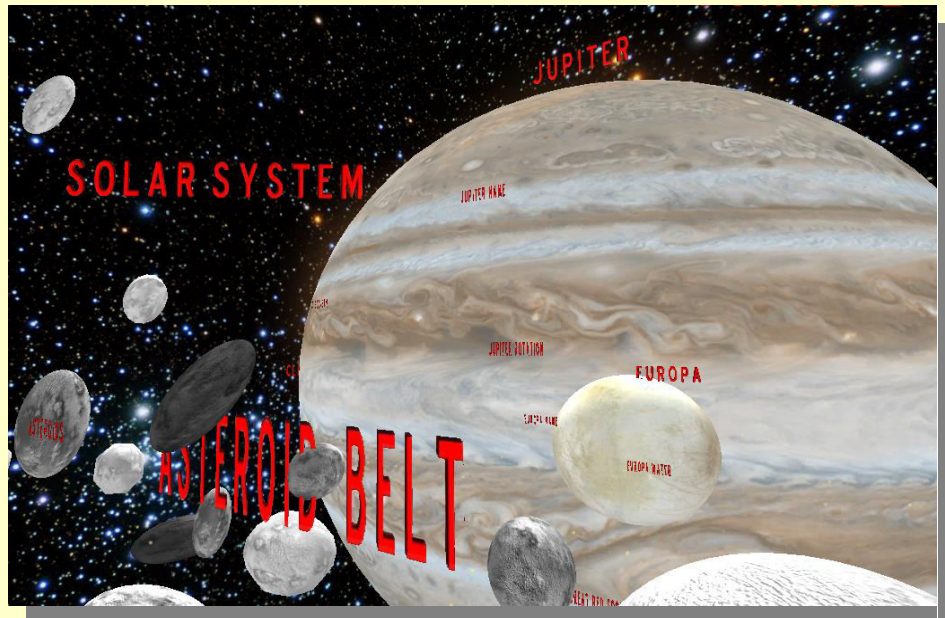
Materials

Solar System3D Homepage

(click or cut and paste URL into browser)

Note: This is a large program which requires additional download time.

<http://www.sunrisevr.com/solarsystem3d>



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

- Unity3D/Flash-Enabled Computer
- Internet Access

Optional Technology

- Projector
- Multiple Computers

Grouping

- Large Group Instruction
- Small Group Instruction
- Individualized Instruction

Staging

Check computer for Internet access, Unity3D/Flash, and projection 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 Solar System as it appears on-screen
- 4) Begin the lesson by asking students what they already know about the Solar System; write responses on the board
- 5) Review basic facts about the Solar System including:
 - The Solar System consists of our Sun and the objects gravitationally bound in orbit around it; eight planets, hundreds of moons, countless comets, meteors, and asteroids
 - The Sun keeps the planets and other objects from drifting off into space through gravity
- 6) Start traveling through the program, facilitate discussion by asking 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:
 - Inner v. Outer Solar System
 - Exploration of the Solar System
 - Unique Moons
- 9) Have a final wrap-up with students with a Q & A period about the Solar System. Ask them

about the primary components. Ask them what parts of the Solar System they found interesting.

Optional Activity: 3D Scavenger Hunt + Discussion

Have students find a particular part of Solar System, such as the Asteroid Belt. If students are on multiple computers, have them “race” to the part of the Solar System 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