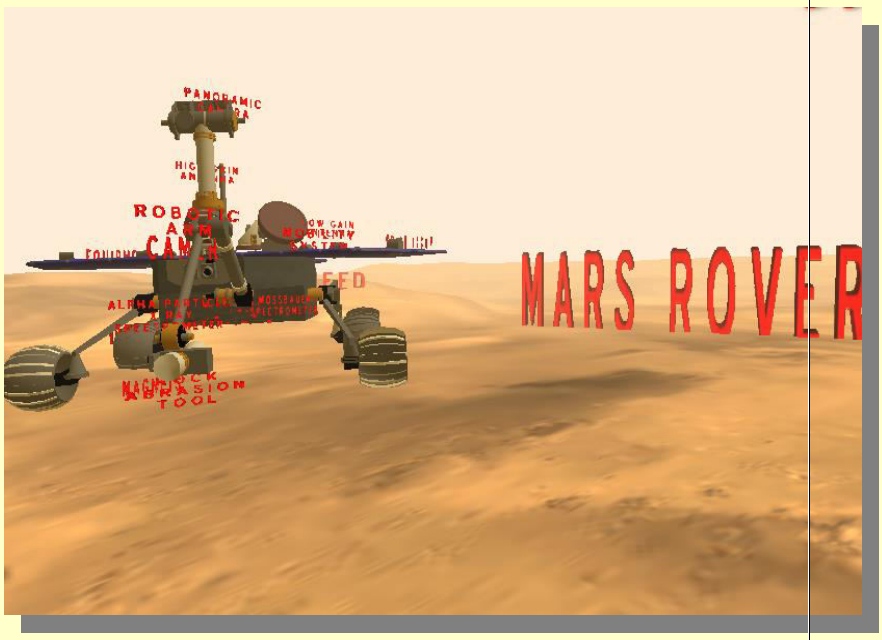
SUNRISE

Mars Rover 3D

Teaching the Mars Rover, Mars, and Astronomy through 3D simulation

Lesson
Teaching the Mars Rover, Astronomy, and Science through 3D simulation



Objectives
1) Students will gain a basic understanding of the Mars Rover through 3D simulation and visualization,

2) Students will gain a deeper understanding of the operation of the Mars Rover.

Activity
Students view the Mars Rover on the surface of Mars in real-time 3D to understand its role and function.

Materials
Mars Rover3D Homepage
(click or cut and paste URL into browser)
http://www.sunrisevr.com/marsrover3d

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 Mars Rover as it appears on-screen

4. Begin the lesson by asking students what they already know about the Mars Rover; write responses on the board

5. Review basic facts about the Mars Rover including:

- A Mars rover is a robotic vehicle that drives itself across the surface of the planet Mars
- Mars rovers are equipped with a robotic arm

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:

- Travel and movement on the surface of Mars
- Missions
- Types of equipment

9. Have a final wrap-up with students with a question and answer period about the Mars Rover. Ask them how it works, and to name some of the primary components on the Rover.

Optional Activity: 3D Scavenger Hunt + Discussion

Have students find a particular part of Mars Rover, such as the Panoramic Camera. If students are on multiple computers, have them "race" to the Rover part 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

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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