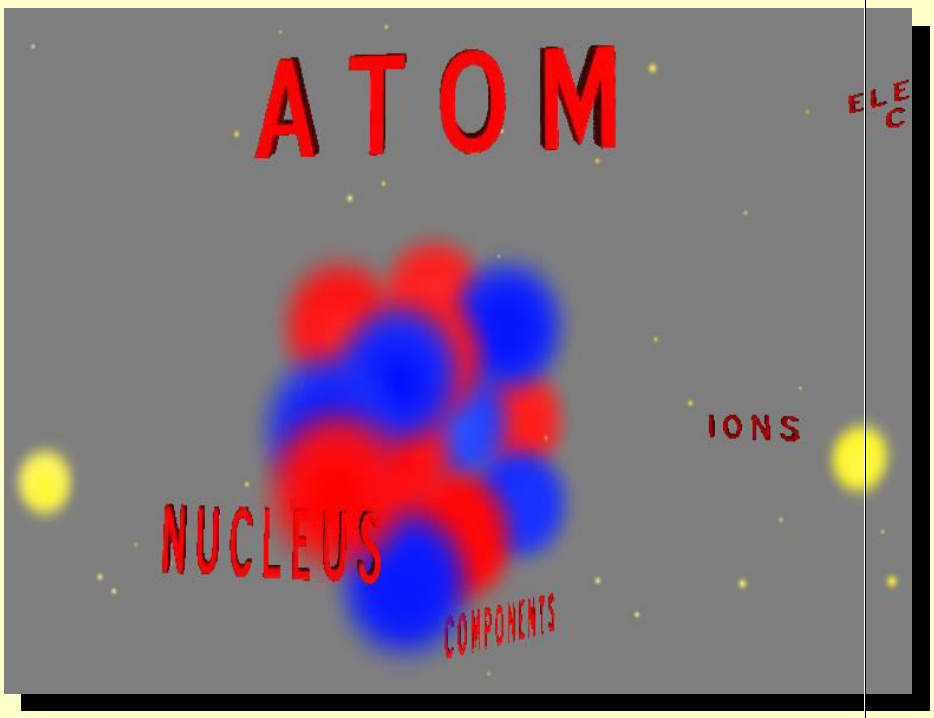
SUNRISE

Into the Atom 3D

Teaching the Atom through 3D simulation



Lesson
Teaching the Atom through 3D simulation

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

2) Students will gain a deeper understanding of the components of the Atom and how they function together.

Activity
Students travel through the Atom in real-time 3D, helping them to visualize and understand its structure and functions.

Materials
Atom3D Homepage
(click or cut and paste URL into browser)
http://www.sunrisevr.com/atom3d

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 Atom as it appears on-screen

4) Begin the lesson by asking students what they already know about the Atom; write responses on the board

5) Review basic facts about the Atom including:

- The atom is the building block of matter
- A typical atom consists of a nucleus containing neutrons and protons, as well as electrons that orbit the nucleus

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:

- The space of an atom contains hardly any mass- it is mostly empty space
- The electron cloud around the nucleus

9) Have a final wrap-up with students with a question and answer period about the Atom. Ask them what are the primary components of the Atom and how the Atom is structured. Ask them what parts of the Atom they found interesting.

Optional Activity: 3D Scavenger Hunt + Discussion

Have students find a particular part of Atom, such as the Proton. If students are on multiple computers, have them "race" to the part of the Atom 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