

Best Practices of Technology Integration

Title: *We are not alone!!!*

Subject Area: Science

Intended Grade Level(s): 8

Description:

This unit on Astronomy has three main components. First, the student will become familiar with our neighboring planets. They will choose a planet and learn about the characteristics of that planet (size, shape of orbit, distance from the sun, length of day, length of year, and physical make-up). Second, in order to understand the size of our solar system and planets, the student will develop a realistic scale for the solar system and construct a 2-dimensional scale model of their chosen planet. Next, the students will combine their individual planets to construct a scale model of the solar system complete with a narrative about the characteristics of each planet. The model will be displayed in an area of the school for others to learn and enjoy. Third, the students will develop a PowerPoint® or Kid Pix™ presentation about their planet to present to the class, complete with information about their planet, satellite pictures of their planet, and digital camera pictures of them working on their scale model.

Narrative:

I have taught this lesson before, but without the PowerPoint® or Kid Pix™ presentation. The students seem to really enjoy it. They especially liked constructing their planet. In order to construct a likeness of their planet, the students have to go on-line to find satellite photos of the planets. The students work in groups of 2 and, therefore, have plenty of hands-on computer and Internet experience. Upon completion of this lesson, the students seemed eager to look up and/or through a telescope and see if they could see any planets. They also seemed eager to follow our space program to see if there are any intentions of going to our neighboring planets. Integrating technology into my curriculum is quite easy do to the large number of computers (125) in our building, digital cameras (3), and a 32" T.V and VCR hooked up to a computer in each room for Power Point presentations. This lesson takes full use of all the technology offered by Ithaca Public Schools.

Curriculum Benchmarks:**MI.SCI.V.4.MS.1**

Compare the earth to other planets in terms of supporting life. (Key concepts: Comparisons-relative distances, relative sizes, atmospheres, heat, temperature of planets. Compositions-rocky, solid, gases, frozen gases. Sun produces the light and heat that falls on each planet. Molecules necessary to support life-see Cells and Living Things benchmarks. Real-world contexts: Examples of local and extreme outdoor conditions on Earth vs. conditions on other planets; situations where a heat source warms an object at varying distances from it.)

MI.SCI.V.4.MS.2

Describe, compare, and explain the motions of planets, moons, and comets in the solar system. (Key concepts: Orbit, year, spin, axis, gravity, moons, rings, comets. Also see Motion of Objects benchmarks. Real-world contexts: Maps showing the motions of the planets, comets, moon and its phases.)

Detailed Timeline:

9-10 lessons each 52 minutes

Materials/Hardware/Software:

- Computer with Internet accesses and word processing (2 students/machine) and printer.
- One calculator/group of 2 students.
- Large bulletin board paper (Various Colors).
- Markers, colored pencils, or crayons.
- Masking tape.
- Yard sticks (1/group of 2 students).
- PowerPoint® or Kid Pix™
- Digital Camera
- Data projector or TV hooked up to a computer.

Teacher Preparation:

Pick groups of 2 students/group and allow group to chose a planet by drawing group at random and giving them choice. Review basic PowerPoint® or Kid Pix™ and digital camera

Pass out and go over Hotlinks sheet where the students can find the appropriate information on their planet. Obtain all materials and computer lab time for students to begin once groups and planets are chosen.

Prerequisite Student Skills:

- Knowledge of logging on to computer and entering the Internet.
- Knowing how to type in a URL to navigate to a site listed on the Hotlinks handout.
- Knowing how to scroll/navigate through a site.
- Knowing how to print pertinent information.
- Knowing how to use a digital camera
- Knowing how to write a PowerPoint™ presentation including downloading pictures from Internet sites and digital camera pictures.

Student Activities/Procedures:

Day 1: 1) Separate into groups of 2 and choose a planet.

2) Pass out and explain the project and Hotlinks handouts.

3) Use textbook to find any pertinent information on planet.

Day 2: 1) Allow student the entire time to work on Internet, going to ONLY the sites on the Hotlinks handout. Focusing on getting information about and pictures of their planet for use in their PowerPoint® or Kid Pix™ presentation.

Day 3: 1) Allow students entire time to work on PowerPoint® or Kid Pix™ presentation.

Day 4: 1) Guide students in calculating a realistic scale for their planet and the solar system.

2) Allow students rest of time to work on 2-dimensional scale models.

Day 5: 1) Allow entire time for working on scale model or PowerPoint®/Kid Pix™ presentation.

Day 6: 1) Allow entire time for working on scale model

Day 7: 1) Student PowerPoint® presentations.

Day 8: 1) Powerpoint™ presentations (if needed)

2) Review

Day 9: 1) Review (if needed)

2) Test

Assessment/Evaluation:

The students will be assessed on their 2-dimensional planet:

<i>Pertinent Information:</i>			
size	2	shape of orbit	2
distance from the sun	2	length of day	2
length of year	2	physical make-up	2
<i>Scale:</i>	2		
<i>Detail:</i>	2		
<i>Visual appearance:</i>	14		
<i>Total</i>		30	

The student will be assessed on their PowerPoint® or Kid Pix™ presentations:

<i>Pictures (planet & Digital Camera)</i>	10
<i>Knowledge/Pertinent Information:</i>	10
<i>Total</i>	20

The student will be given a test over the pertinent information about each planet:

<i>Test</i>	50
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Total points for lesson: 100

Follow up Activities:

The PowerPoint® Presentation will be put together in order from the sun to Pluto and sent to the local public broadcasting channel for broadcasting on local TV.

From the planets we will move onto the stars and galaxies. While studying these, we will return to our knowledge of our solar system to discuss the probability of life on other planets, what that life may look like, and why. The scale model of our solar system will be left up for several weeks to be enjoyed by all. When it is taken down, the students may keep their planet as a reminder.

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Hotlinks Handout
For
We Are Not Alone!!!

Directions: You are to go to the following sites and **ONLY** the following sites to obtain the pertinent information you need for your planet. DO NOT waste time. I will give you only one class period to surf these sites.

<http://seds.lpl.arizona.edu/nineplanets/nineplanets/nineplanets.html>

http://www.exploratorium.edu/ronh/solar_system/

<http://www.hawastsoc.org/solar/eng/homepage.htm>

<http://www.teacherlink.usu.edu/nasa/lithos/indexSS01.html>

<http://space.jpl.nasa.gov/>

Pertinent Information/Characteristics:

PLANET _____

Size: _____

Shape of orbit: _____

Distance from the sun: _____

Length of day: _____

Length of year: _____

Physical make-up: _____
