

GED 2002 Teachers' Handbook of Lesson Plans

Content Area Science	Lesson Title <i>The Solar System</i>	Correlation to Framework 03.03/03.04	Lesson Number 33
Objectives/Learner Outcomes At the end of this lesson, the learner will be able to: <ul style="list-style-type: none"> • Understand information about the solar system obtained from research • Differentiate fact from opinion 		Materials/Resources/Internet Sites/Handouts/Worksheets <ul style="list-style-type: none"> • Internet Resources <ul style="list-style-type: none"> ◦ George Mason University – Physics and Astronomy http://www.physics.gmu.edu • Computer lab • Universe Atlas • Paper mache (newspaper, white glue, flour) • Color pigment • White paper (16 x 20) • String • Balloons • Handout – <i>The Solar System</i> • Handout – <i>How to Make a Paper Mache Solar System</i> 	
Pre-Requisite Knowledge The learner should be able to: <ul style="list-style-type: none"> • Determine the main idea • Comprehend reading passages and research written at the high school level • Work in a group setting 		Key Words <ul style="list-style-type: none"> • Solar system • Gravitation • Rotation • Revolution • Mass • Density • Gravity • Origin 	
Anticipatory Set/Introduction To introduce the lesson, write on the board the words – The Solar System. Have the students brainstorm the following questions: <ul style="list-style-type: none"> • What is the solar system? • What are the origins of the solar system? • Does our solar system produce a sound? If so, what does it sound like? 			

Preview Questions for Lesson

- What is the solar system?
- How many planets are in the solar system?
- How many planets has man visited?

Instructional Outline

Say: Although there have been many theories about the origins of our solar system, the birth of the system still remains a puzzle. Explain to students the difference between a theory and an opinion.

Scientists think that many, many years ago, a vast cloud of gas and dust collapsed. Gravitation pulled so much of the material to the center of the universe that it lit a nuclear fire, the sun. Other materials cooled into planets.

With the help of the Internet, research the origin of our solar system. Complete the **Solar System** worksheet. Make sure that students include all of the information from the sources that they used. Once each group has completed the research stage, have them share some of the different theories that they have found. Promote a class discussion.

As a hands-on activity, have the students make a paper mache solar system.

Process/Activities

Divide the class into groups of 6 to 7 students. Provide each group with project instructions. Allow the students to decide whether they will work as a large group to complete the project or in smaller groups on the different parts of the project.

Say: Today, you will begin working on a project about our solar system. Your project will culminate with a performance for a live audience.

Theme: Origins of Our Solar System

1. (Name your project)
2. (Arts and crafts) Create a solar system using paper mache. Dimensions? Left to individual creativity
3. (Painting) Paint on paper our solar system.
4. (Music) Create or find music for your performance. Be creative! Producing sound with recycled items is always lots of fun.
5. (Performance) Students will role play the origin of the solar system (various theories); students can choose which one to interpret.
6. (Oral) Narrator

Product/Evaluation/Summary			
<ul style="list-style-type: none"> • Presentation of students' work to rest of the class • Production book 			
Teaching to Different Types of Learners			
	Visual	Auditory	Kinesthetic/Tactile
Learning Activity	Provide written directions to students for all of the activities. For the performance, have visual learners write about what they have learned and perhaps show their knowledge through drawings or an art exhibit.	For the performance, provide activities that require students to work together and discuss what they have done (production meetings). Auditory learners may wish to create the music of the solar system using recycled products (plastic bottles, cans, and any material found creatively) and filling them with rice, rock, sand, or water to make sounds.	Have students make a paper mache solar system and use it for a prop when performing their presentation. Students may also wish to assist auditory learners in creating musical instruments that creatively show what sounds the solar system may make.
Special Differentiation Strategies	Use <i>Universe Atlas</i> transparencies or space documentaries or videos with students.	Have each student report work progress orally with the teacher.	Allow students to use props when discussing the topic.
Evaluation	Have students create a performance outline and a written production book.	Have students orally report their experiences with the project and both the advantages and disadvantages of working in a group	Have students use pictures or models of what they have learned.
The Family and Adult Literacy Connection		ESE/ESOL Accommodations	
Share the process with the family. Have parents make a paper mache solar system with their children. Invite the whole family to the performance.		Assist ESOL students by supplying bi-lingual dictionaries. Make sure that all students understand what needs to be accomplished through having them repeat directions in their own words.	

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The Solar System

Using the Internet, research a theory of the origin of our solar system and write your information in the chart.

Source	Theory	Notes

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How to Make a Paper Mache Solar System

1. In a bowl, mix water and flour until you get a thin paste similar to a pancake mix.
2. Cut numerous long strips from the newspaper (6" X 2" – ½" width).
3. Use an inflated balloon (round).
4. Dip newspaper strips into mix. Allow excess to drip off.
5. Place strips on balloon. Smooth the strips as you go. Use four layers on the balloon. This ensures the structural strength of the planet.
6. Once dry (at least 24 hours), paint.
7. Students can put a string on the mache and hang the planets in the room.