Lesson Plan

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Subject: Earth Science
Grade: 9
Topic of Study: *MoonSurvivor WebQuest* Lesson
Type of Lesson Plan: Indirect/Inquiry Instruction
Class Submitted For: ED 301- Frameworks
Instructor: Monica Ramirez

Standard

Science Standard # 4:

Earth and Space Science: Students know and understand the processes and interactions of Earth's Systems and the structure and dynamics of Earth and other objects in space.

Benchmark/Grade Level Expectancy: #4.4: grade 9

The students will know the structure of the solar system and interactions of objects in the universe and how space is explored

Overview

Objective: *(Remember, this is the **who, what, how, & criteria for evaluating students** written in a ONE SENTENCE statement. In other words your objective includes the learning outcome, the conditions or materials, and the criterion level of how the learning outcome will be measured. Your objective MUST ALIGN with the benchmark and standard above.)*

During a *MoonSurvivor* simulation using *WebQuest,* students, in designated cooperating learning groups, will be able to describe and analyze the physical environment of Earth's Moon, by researching and correctly ranking 15 essential astronaut survival items.

Learning Context: *(Provide a small paragraph description of the background information in terms of how this lesson fits into the scope and sequence of the curriculum. What have the students learned prior to this lesson? Is this lesson one of a sequence in a larger unit? If so what came before it and what will this lesson prepare them to do next?)*

This Earth's Moon lesson is part of the terrestrial planets unit which includes Mercury, Venus, Earth and Mars. Students have already studied the physical properties of Mercury, Venus and Earth and are now beginning to explore Earth's Moon as it relates to the Earth and other moons of the solar system. In this particular lesson, students will be acquiring knowledge about the Moon's physical environment. Future units will include the fourth terrestrial planet, Mars, and the asteroid belt which separates the Jovian or gaseous planets from the terrestrial ones.

Time Allotment: 90 minutes

Instructional Materials: *(List ALL of the materials necessary for you AND the students to engage in this lesson effectively)*

Teacher Materials:

- **Tarbuck and Lutgens CD-Rom slides on Earth's Moon (2003)**
- **Two moon globes (2005)**
- **Mineral and rocks to include: basalt, scoria, anorthosite, plagioclases**
- **Magnetic Compass**
- **Solar System Video**
- **WebQuest**

Student Materials:

- **Two moon globes**
- ***WebQues*t (to include the Electronic Flight Manual)**
- **Mineral and rocks to include: basalt, scoria, anorthosite, plagioclases**
- ***MoonSurvivor* Task Lists (3)**
- **Moon Information Bulletin**

Differentiation of Instruction: *(How will you provide opportunities for all learners to be successful throughout the lesson? Think about how you can design your lesson to meet the needs of all learning modalities—auditory, visual, kinesthetic—as well as what you can do to incorporate the 9 different multiple intelligences. Also, what might you do to meet the needs of ESL children, learning disabled children, etc.—you may want to consult your cooperating teacher for ideas)*

This lesson is a cooperative learning lesson in which students are learning in groups of four. If a student is an ELL learner, the buddy system will be used and the ELL student will be paired up with a designated non-ELL student. Additionally, this

lesson uses kinesthetic and visual aids to assist all types of learners and to accommodate diverse learning styles.

Sequence of Procedures

Opening:

Gaining Attention: **The instructor will run a slide show of the solar system on the white board located in front of the classroom. Each slide image will be accompanied by "space-age" music. The instructor will not talk to the students and allow them to think about today's topic in class (learning about space). Before entering the class, students will pick a number using an available deck of cards (numbers ranging 1-6 for each of the six cooperative learning groups) which will assign them to a table of four. Students at each table will form a lunar-mission crew.**

Assessing Prior Knowledge-Recall: **The instructor will tell students that at each of the tables there are 4 identical *MoonSurvivor* task sheets which students must complete individually. The instructor will scaffold this activity by reading the instructions with the students to include a description of the scenario. (Each student is part of a four-man lunar mission crew. Unfortunately, the lunar module has crashed on Earth's Moon before reaching the designated lunar base station 250 miles away). Thus each crew member must rank 15 survival items in the order of most to least important (rankings 1-15) on his or her travel to the lunar base station on foot. The purpose of this activity is to recall students' understanding of the physical environment of Earth's Moon.**

Purpose Today's Lesson:
The instructor will ask students to keep their ranked *MoonSurvivor* task sheets and ask them what knowledge they would need to acquire to be able to respond properly to the task (divergent thinking). The instructor will then disclose on the overhead or BlackBoard the objective of today's lesson;

D*uring a MoonSurvivor simulation using WebQuest, students, in designated cooperating learning groups, will be able to describe and analyze Earth's Moon's physical environment, by researching and correctly ranking 15 essential astronaut survival items.*

- **Instructor CREATIVELY gains students' attention, informs them of the learning objective and stimulates recall of prior knowledge**
- **Instructor assists in students organizing the new information they are about to construct—(what are the larger concepts this learning fits under)**

Body of Lesson: *(As you move out of the opening and into this main portion of the lesson, you must think critically about how you will help students develop and refine their understandings as they construct knowledge of the concept(s) you are guiding them to learn . Strategies you should utilize include*

Scaffolding 1: The instructor, using *WebQuest*, will display a map of Earth's Moon which highlights the different Apollo Landing Sites. The lunar base station was built on the former Apollo 15 landing site, and the four-man lunar mission crew has crashed with its lunar module approximately 250 miles SW of the lunar base station. It will be the crew's goal to travel to the lunar base station assessing the value of 15 items that were left intact after the lunar crash.

Cooperative Learning Groups Assignment: The instructor will, using a second *Moon Survivor WebQuest page*, display pertinent information as to what role each crew member will play. As students are already in groups of four, it is now their responsibility to assign the individual roles to each group member and to name their lunar mission.

***WebQuest* Display:**

Before you begin your task, assign one of the following roles to each crew member. If you have five crew members, two people can share the role of Payload Specialist:

Commander—Leader responsible for the safety of the crew and mission success. The commander should make sure all other crew members successfully fulfill their roles

Payload Specialist—Uses wireless laptop and other resources to guide the research

Concept Engineer Mission Specialist (CEMS)—Demonstrates how the knowledge from the research is used the prioritize each item by creating a concept map

Systems Analyst Mission Specialist (SAMS)—Synthesizes the discussion and records rankings and justifications

Task 1: The instructor now gives each of the commanders a *MoonSurvivor* task sheet identical to the previous individual task sheets. Now, as a group, students will discuss the items and re-rank them based on social interactions.

- **Students engage in self-evaluation and self-reflection of their own responses by having them provide reasons for their answers**
- **Students are encouraged to use their own ideas and prior knowledge/experience to draw parallels and associations to the new knowledge they are constructing**

- **Students have adequate time provided for social interaction and group dialogue and discussion so students can make generalizations about the concepts**

Scaffolding 2: **The instructor will collect the group's *MoonSurvivor* task sheet and show students seven slides of Earth's Moon, comment on them, *model* a difficult concept such as synchronous rotation using three crew members from the audience, and use an authentic Moon globe to visualize Earth' Moon as a spatial body in the solar system. Additionally, the instructor will *showcase* three of Earth's rocks and minerals which are similar to the Moon's as discussed in one of the slides.**

- **The instructor will provide models, visual illustration, and hands-on opportunities, Moon Information Bulletin to assist students in making difficult connections**
- **The instructor will use inductive reasoning including examples and non-examples to help students abstract patterns in the concept she is teaching**
- **The instructor throughout the lesson will guide the learning process by asking *DIVERGENT* questions while probing for deeper understanding. (This is how the instructor checks for understanding and students check each other for understanding by posing questions to one another).**

Task 2: **After instructor scaffolding 2, each crew member will use the *WebQuest* program on wireless computers (one computer per crew of 4) to access relevant information to support the understanding of Earth's Moon and to re-rank the 15-item *MoonSurvivor* task list a third time. Although the two previous *MoonSurvivor* task sheets contained a column for students to support their ranking of the individual items, it is required of the commander in round three, to justify the rankings in detail.**

- **Students will transfer information into a response that is different from the stimulus that was used to present the material. Students will come up with a "generalization" and "discrimination."**

Assessment *(This should be the end result of the lesson—a product or performance that you will use to evaluate their understanding of the concept(s) they learned. This MUST relate to what you stated as your criterion to evaluate students in your objective—how you planned to measure student learning)*

Scaffolding 3:

These are two suggestions to assess the students.

Suggestion#1: **The instructor collects *MoonSurvivor* task sheets two and three and compares the differences in rankings to the correct ranking. Using a rubric, the instructor scores each crew as excellent, very good, fair and poor survivor astronauts.**

Suggestion#2: **The instructor lists the correct and the individual group rankings on the board. In this particular lesson suggestion#2 was implemented. Each crew name was written on the white board and each crew gave their ranking of each item. The correct item ranking was posted next to the crew's ranking and the difference in correct responses was tallied. . . the lower the score, the better the survival rate.**

Closure: *(How will you wrap-up the lesson and give students an opportunity for reflecting*

about their learning?)

Debriefing: Using the locomotor activity, each crew member states one thing they learned about the Moon's physical environment.

Reteaching Activities: Those students absent for this activity, can access *WebQuest* and read up on the Moon and then complete a *MoonSurvivor* task sheet.

Extension Activities:

- **The instructor will make copies of each crew's MoonSurvivor task sheets#2 and #3 and have them compare and contrast in writing all three task sheets as well as the correct rankings.**
- **Students will write a two-page biography on one of the Apollo astronauts using *WebQuest* and any other relevant sources.**

Attachments: See MoonSurvivor task sheets available on *WebQuest*

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