

Los Angeles Unified School District  
Office of Curriculum, Instruction and School Support  
Elementary History

**Day 3**

**ESSENTIAL QUESTIONS:** What do human beings need to survive and thrive in a new environment?

**FOCUS QUESTION:** What problems exist in a new environment?

**Objective**

- Students are expected to determine the various factors that are necessary for the colony's survival. They will analyze the problems and needs of the 17<sup>th</sup> century colonists and the future space colonists.

**Quick Look**

- Conceptual Flow: Having chosen a location for their colony, students now will determine what they need to survive and function in that environment.
- Summary: The lesson is designed to familiarize students with problems faced by the 17<sup>th</sup> century colonists and anticipated problems that space colonists will face. In addition to physical challenges there are social and psychological problems that arise from being so far away from home and having to live together under difficult circumstances. Using primary sources and secondary sources from Jamestown and Plymouth, and the results of the Biosphere 2 experiment, students will identify needs other than physical that need to be considered when they design their colony.
- Time: Approximately 3 ½ - 4 hours.
- History Content Standards:
  - 5.4.1 Understanding the influence of location and physical setting on the founding of the original 13 colonies, and identify on a map the locations of the colonies and the American Indian nations already inhabiting these areas.
- Science Content Standards:
  - LS 4.2.a Students know plants are the primary source of matter and energy entering most food chains.
  - LS 4.2.b Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
  - LS 4.2.c Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.

- LS 4.3.a Students know ecosystems can be characterized by their living and nonliving components.
- LS 4.3.b Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
- LS 5.2f Students know plants use carbon dioxide (CO<sub>2</sub>) and energy from sunlight to build molecules of sugar and release oxygen.
- LS 5.2g Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO<sub>2</sub>) and water (respiration).
- \*Common Core State Standards:
  - Writing Grade 5: 1, 2, 7, 8
  - Reading Informational Texts Grade 5: 1, 3, 9,10
  - Speaking & Listening: Grade 5: 1, 2
  - \*see Appendix A
- Student Products
  - Journal Entries
  - Entry on Historical Colony Chart under Survival Needs
  - Historical Colonist Problem Solution Chart
  - Biosphere 2 Problem Solution Chart

## **BACKGROUND**

### **Historical Background**

The colonists faced many new challenges in the new colonies. Some problems they anticipated were interactions with the indigenous peoples, need for food, need for resources for housing, need for water and a safe harbor for protection from other European countries. Some problems they did not anticipate were the rocky soil, different plants and animals, and the weather and disease.

### **Science Background**

In 1991 Biosphere 2, a sealed environment, was built in the Arizona desert. It was intended to serve as a model system for future space colonization. The intent was that a small group of people could live in it for two years and be completely self-sustaining. There were seven different biomes plus a human habitat section. Eight men and women (the Biospherians) stayed in the complex for two years.

Several problems arose, both physical and social. Two of the Biospherians (Taber MacCallum and Jane Poynter) wrote a research paper examining these problems (Teacher Resource 3.1a-3.1e) A more detailed overview and history are provided in the article “Biosphere 2, Overview and Short History.” (Teacher Resource 3.2a, 3.2b),

### **Vocabulary**

Vocabulary words are embedded and defined in the student informational text.

## **Materials**

For the classroom

- 8 copies of John Smith's Instructions By Way of Advice, for the Intended Voyage to Virginia (Student Handout 3.1).
- 8 copies of Mourt's Relations. Or Journal of the Plantation at Plymouth. (Document B) (Student Handout 3.2)
- Problems Colonists Faced (Student Handout 3.3)
- Pictures of Biosphere 2 (for classroom display)
  - Photograph of Biosphere 2, aerial view (Teacher Resource 3.6)
  - Biosphere 2 Cross-section (Teacher Resource 3.7)
  - Biosphere 2 Biome Map A (Teacher Resource 3.8)
  - Biosphere 2 Biome Map B (Teacher Resource 3.9)
  - Biosphere 2 Beach and Ocean Biome (Teacher Resource 3.10)
- Factors Affecting Human Performance in the Isolated Confined Environment of Biosphere 2 (Teacher Resource 3.1a-3.1f)
- Biosphere 2 Overview and Short History (Teacher Resource 3.2)
- Access to video *Pilgrims in America* <http://www.history.com/shows/mankind-the-story-of-all-of-us/videos/pilgrims-in-america>
- Access to video *Discovering Jamestown Legacy* <http://www.historyisfun.org/videos-discovering-jamestown.htm>
- Access to video *Our World* <http://www.youtube.com/watch?v=l4DX994NonE>
  - Access to video *Jane Poynter's TED Talk* [http://video.ted.com/talk/podcast/2009X/None/JanePoynter\\_2009X.mp4](http://video.ted.com/talk/podcast/2009X/None/JanePoynter_2009X.mp4)
- Large Classroom Historical Problem Solution Chart (Teacher Resource 3.4)
- Large Classroom Biosphere 2 Problem Solution Chart (Teacher Resource 3.5)
- Factors Affecting Human Performance in the Isolated Confined Environment of Biosphere 2 (Teacher Resource 3.3)
- Student copies of Factors Affecting Human Performance in the Isolated Confined Environment of Biosphere 2 (Student Handouts 3.4-3.10) Privacy Student Handout 3.7

## **PART I LOOKING BACK**

### **Objectives**

Students will be able to identify the various problems that developed when living in a small isolated colony.

### **Engage/Introduction**

Students review the location choices made on Day 2.

#### **Teacher will ask:**




- *How did this location meet their physical needs?* (Water source, land for growing food, trees for building shelters)

- *What others needs should be considered besides food, water and shelter? (Answer will vary)*

In this lesson the students will view video documentaries and examine primary documents of early Virginia and Massachusetts and analyze the anticipated problems that guided colonists' decisions. By looking into these documents the students will gain an understanding of the problems that early colonists anticipated when looking for locations to start a colony.

### **Explore/Analysis Activity**

Students should take notes while viewing videos. Students will analyze excerpts from John Smith's Instructions By Way of Advice, For the Intended Voyage to Virginia, and the journal entry by Edward Winslow on his observations on Plymouth Colony. (Student Handout 3.1 and 3.2.)

- Begin with a question to the students about location for colonial developments to bring out what kinds of things might be desirable in a quality location (good soil, abundant food sources, navigable rivers, water sources, friendly neighbors, etc.) Create a list and ask for explanations of why these are desirable when building a colony.
- Next tell students that they will be researching the problems that the colonists either faced or anticipated that they would encounter in the new environment.
- Within each group of four students, give two students John Smith's instructions regarding Virginia and give two students the journal entry by Edward Winslow regarding Plymouth.
  -  Choose one student to read the passage aloud to the group first.
- Students will work in pairs to analyze the two documents focusing on the location of the colonies. The pairs are to first read the document aloud and summarize what they think the document is saying. Students annotate the documents by circling words or phrases that are not understood.
  -  Teacher may model annotating the text if the students are unfamiliar with this notetaking strategy.
- Students should be highlighting sections that could be evidence of anticipated problems.
  -  During this time the teacher should circulate throughout the classroom stopping at each group to check for understanding and to answer questions. Teacher should note what the students are annotating and provide support where needed.
- Then they work together to discuss the questions on the document page, and keep a list of the problems that they think the colonists faced. (Student Handout 3.3. Students should bring out the issues of food, water, transportation, safety, access, and other ideas.)

- Ask each pair to share their information with another pair of students who had a different document than their own.
- Review the documents with the class as a whole group. Add problems to the Large Classroom Historical Problems/Solutions Chart. Cite evidence to support students' conclusions.
- Watch the video *Pilgrims in America* <http://www.history.com/shows/america-the-story-of-us/videos/pilgrims-in-america> Add more problems to the chart.
- Watch the first five minutes of the video *Discovering Jamestown Legacy* <http://www.historyisfun.org/videos-discovering-jamestown.htm> Add more problems to the chart.
- Add information to classroom Historical Colony Chart under Survival Needs.

### **Explain/Conclusion**

- **Journal Writing**
  - Have students complete a journal entry from the historical perspective.  
*What problems exist in a new environment?*

## **PART II LOOKING FORWARD**

### **Objective**

Students will read and interpret informational text and video about Biosphere 2, a prototype space colony. They will analyze the problems and solutions members of this “colony” encountered.

### **Engage/Introduction**

Show students pictures of Biosphere 2 and the video *Our World* <http://www.youtube.com/watch?v=l4DX994NonE> Explain that it was a research project to see if humans could survive a long time in an enclosed environment.

### **Explore/Analysis Activity**


- Students watch the first half of the TED Talk by Jane Poynter (suggested end point 10:07) [http://video.ted.com/talk/podcast/2009X/None/JanePoynter\\_2009X.mp4](http://video.ted.com/talk/podcast/2009X/None/JanePoynter_2009X.mp4)
- Have students look for answers to the following questions.
  - *What did the Biospherians do in order to eat? [grow all their food (pizza example)]*
  - *What physical problems did they have? [lack of oxygen]*
  - *What social problems did they have? [lack of motivation, no physical contact with family members]*
  - *What was the purpose? Did any new learning come from their experience? [oxygen/carbon cycle, prototypes for Moon and Mars agriculture]*

- Enter information into Classroom Biosphere 2 Problems/Solutions Chart (Teacher Resource 3.5). Stop video at pertinent points to record/ discuss answers to questions on Problems/Solution chart.

- Arrange students in their colony groups. Each group will get a different piece of information about Factors Affecting Human Performance in the Isolated Confined Environment of Biosphere2 (Student Handouts 3.4-3.10).

*Note: There are seven different factors. If you have eight groups distribute the members of one group among the others.*

Each student in each group will read and become an expert in that factor. Create expert groups by having each colony group read about one factor. After reading students should discuss any new problems, citing evidence from the readings.

 *This is an opportunity for students to clarify comprehension with other students and prepare to share understanding in the following step.*

- Each student in each group will count off A-B-C-D. All of the students with the same letter will meet in a larger conference group. Each of these conference groups will have one expert in each of the factors. They will present their information to their fellow students.
- Have students return to their colony group, and as a class share out additional problems, citing evidence from the readings.

### **Explain/Conclusion**


- Add additional findings to the Classroom Biosphere Problem Solution Chart (Teacher Resource 3.5).

## **Part III Bringing It All Together**

### **Journal Entry**

- Have students complete a journal entry from a 21<sup>st</sup> century perspective.

*What problems exist in a new environment?*

 *Journal entries provide an opportunity for students to develop organizational skills in writing after having experienced oral practice with other students and the teacher.*