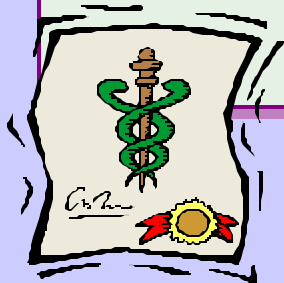


Explorers Through Time

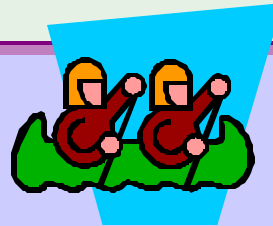
An Eighth-Grade Technology -Based
History Unit Keyed to
Standards and Benchmarks

Second Edition

By Diane E. Paynter



The Discovery of Radium



The Lewis and Clark Expedition



The Race for the Moon

Acknowledgements

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Explorers Through Time

An Eighth-Grade History Unit

Throughout history, men and women have pursued and met goals, many of which have depended on whether they could accomplish their goals before someone else did. In this unit, students will examine three situations in which people set out to achieve a goal that would change the world forever:

- (1) The journey of the Corps of Discovery — the Lewis and Clark Expedition
- (2) The discovery of radium by Pierre and Marie Curie
- (3) The race to put the first man on the Moon

This unit consists of lessons designed to help students acquire and apply important content knowledge. This content knowledge is identified in the form of standards and benchmarks. The lessons are constructed in a way that supports students in acquiring new knowledge and integrating it with what they already know. The lessons also are designed to help students

extend and refine this knowledge and then apply it by engaging in tasks that require them to use complex reasoning processes and/or tasks set in meaningful, real-life contexts.

These tasks can be used for assessment purposes and to report students' progress on standards. Some tasks ask students to construct responses; these tasks require the use of scoring rubrics, which are included at the end of the lesson.

Note that throughout the unit, Internet addresses are provided for accessing resources that students will need to acquire the content information and skills needed to complete this unit.

There is no specified time limit for each lesson. It is assumed that the classroom teacher is the best judge of the time limit for each lesson based on individual time constraints and on an analysis of students' prior knowledge and abilities.

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Special Point of Interest

Specific instructional strategies are included in the lessons in this unit. Other powerful strategies that research on instruction suggests teachers use are found on page 4. You may wish to include these as you teach this unit.

Explanation of Unit Lessons

The lessons in this unit are designed to help students. . .

- (1) acquire the information and skills/processes identified by the standards, benchmarks, and supporting knowledge.

For information, this means helping students

- access prior knowledge
- make connections to new and prior information
- organize information to see patterns or relationships
- clear up confusions or misconceptions
- memorize important information

For skills/processes, this means helping students

- construct rough models of the skill/process
- gain conceptual understandings
- become proficient through feedback and practice

- (2) apply this knowledge by completing tasks that ask them to construct responses, engage in complex reasoning processes, and/or consider real-life applications or contexts.

The lessons in this unit are designed so that **student data collection** is directly tied to the standards and benchmarks. Many of the tasks can be used as **assessments**, as they are designed to allow students to construct responses to demonstrate their knowledge. Rubrics for scoring these assessments are found in the lessons in this unit. Any selected response assessments, with answer keys, will be included as part of each individual lesson when appropriate.

This unit identifies specific instructional strategies that will help students acquire and apply the knowledge identified by the selected standards and benchmarks.

Research shows that in order to create an optimal learning environment, teachers also need to

- ♦ help students set their own learning goals as they relate to the identified standards and benchmarks;
- ♦ reinforce students' efforts and provide recognition for their accomplishments;
- ♦ assign homework and practice as appropriate; and
- ♦ provide students with feedback on the progress they are making.

Content Standards and Benchmarks

The content standards and benchmarks listed below identify the information and skills/processes that students will learn in this unit.

History Standard 2

Students understand the historical perspective.

Benchmarks

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.
- ◆ Understand that historical accounts are subject to change based on newly uncovered records and interpretations.

History Standard 4

Students understand major global trends from 1900 to the end of World War II.

Benchmark

- ◆ Understand how new technologies and scientific breakthroughs benefited humankind.

Language Arts Standard 2

Students use the general skills and strategies of the writing process.

Benchmark

- ◆ Write persuasive compositions.

History Standard 3

Students understand economic, social, and cultural developments in the United States.

Benchmarks

- ◆ Understand how different groups attempted to achieve their goals.
- ◆ Understand how women influenced Europe and the United States in the early 1900s.

History Standard 6

Students understand the U.S. territorial expansion between 1801–1861 and how it affected relations with external powers and Native Americans.

Benchmark

- ◆ Understand the significance of the Lewis and Clark expedition (e.g., its role as a scientific expedition and its contributions to friendly relations with the Native Americans).

Language Arts Standard 4

Students use the general skills and strategies of the reading process.

Benchmark

- ◆ Use new information to adjust and extend their personal knowledge base.

Thinking and Reasoning Standards

The thinking and reasoning standards focused on in this unit are listed below. As students engage in tasks, they may be asked to perform complex reasoning processes that relate to these standards. In some lessons, it is assumed that students will already have been taught the complex reasoning process. In others, you will see that a complex reasoning process is taught as part of the lesson. A definition of each complex reasoning process addressed in this unit is listed below.

Thinking and Reasoning Standard 1

Students understand and apply the basic principles of presenting an argument.

Constructing Support

The process of building systems of support for assertions

Thinking and Reasoning Standard 2

Students use mental processes that are based on identifying similarities and differences.

Abstracting

The process of identifying and articulating the underlying theme or general pattern of information

Thinking and Reasoning Standard 3

Students understand and apply basic principles of hypothesis testing and scientific inquiry.

Historical Investigation

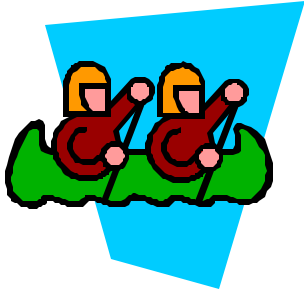
The process of constructing a scenario for an event or situation from the past for which there is no agreed-upon explanation or sequence of events

Thinking and Reasoning Standard 4

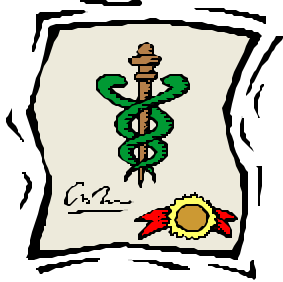
Students apply basic trouble-shooting and problem-solving techniques.

Problem Solving

The process of overcoming constraints or limiting conditions that are in the way of pursuing goals



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**



**The Discovery of Radium:
Marie and Pierre Curie**



**Putting the First Man on the Moon:
The United States Space Program**

Explorers Through Time

Lesson 1

Using the Problem-Solving Process



Lesson 1

Using the Problem-Solving Process

Provide students with a personal example of a time when you pursued and met a particular goal. Share with them various details about what you wanted to accomplish, what kept you from reaching that goal, and how you eventually met your goal.

Ask students to share examples of when they were pursuing a particular goal and what occurred as they tried to meet that goal (e.g., winning a particular race, learning how to use a specific computer program, playing a part in a school play). Help them see that in each example, certain problems arose and, in order to accomplish the goal, various solutions had to be considered and selected. Explain that the process of overcoming something in order to meet a goal is a complex reasoning process called “problem solving.”

Introduce students to the definition and steps involved in the problem-solving process (see page 9). Discuss with students the meaning of the words “constraint” and “limiting condition.” Provide them with a copy of the problem-solving graphic organizer (see page 10), and have them fill in the organizer using a personal experience. When they have completed this activity, ask them to share their graphic organizer with two or three other students and discuss the degree to which they followed each of these steps in the pursuit of their goal and which of the steps, if any, was the most difficult for them. Have them share what they learned about the problem-solving process.

Explorers Through Time

Explain to students that in this particular unit, they will be examining three different events in history:

1. The Lewis and Clark Expedition
2. The discovery of radium by Marie and Pierre Curie
3. The race to put the first man on the Moon

For each event, they will determine what the goals were, what the constraints or limiting conditions were, the degree to which the groups of people involved in each event overcame these constraints or limiting conditions, and why it was important to achieve this goal before anyone else did.

Post all of the standards and benchmarks for students, and explain that this is the knowledge they will be learning in this unit. During each lesson, refer students to the standards and benchmarks that are the focus of that lesson.



History Standard 3

Benchmark

- ◆ Understand how different groups attempted to achieve their goals.

Supporting Knowledge

Understand that the Lewis and Clark Expedition, the scientific explorations of Marie and Pierre Curie, and the race to put a man on the Moon were all incidents in which different groups set a goal and encountered various problems and difficulties in trying to accomplish their goals.

Vocabulary: constraint, limiting condition

Thinking and Reasoning Standard 4

Apply basic trouble-shooting and problem-solving techniques.



Problem Solving

Problem solving is the process of overcoming constraints or limiting conditions that are in the way of pursuing goals.

1. Identify the goal you are trying to accomplish.
2. Identify the constraints or limiting conditions.
3. Determine exactly how these constraints or limiting conditions are preventing you from reaching your goal.
4. Identify different ways of overcoming the constraints or meeting the limiting conditions.
5. Select and try out the alternative that appears to be the best.
6. Evaluate the effectiveness of the alternative you have tried. If appropriate, try a different alternative or identify additional ways of overcoming the constraint or limiting condition.

Goal:

CONSTRAINT/LIMITING CONDITION



CONSTRAINT/LIMITING CONDITION



HOW I OVERCAME THIS

Blank box for describing how the constraint was overcome.

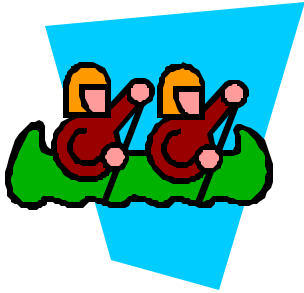
HOW I OVERCAME THIS

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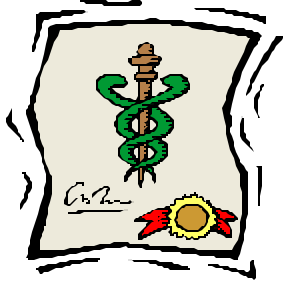


RESULTS

Large blank box for describing the final results of the process.



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**



**The Discovery of Radium:
Marie and Pierre Curie**



**Putting the First Man on the Moon:
The United States Space Program**

Explorers Through Time

Lesson 2

**Linking Prior Knowledge to
Construct Meaning**

Lesson 2

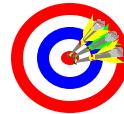


Linking Prior Knowledge to Construct Meaning

Explain to students that in order to compare how these various groups engaged in the problem-solving process to accomplish their goals, they need to gather new information and link it to what they already know. This process is referred to as “constructing meaning.” Explain that prior information they have about a topic/subject helps them bring meaning to new information. One strategy they can use to help them construct meaning is a strategy called “Character Quotes.” This strategy uses various quotations to elicit discussions that are based on students’ prior knowledge.

Have students form cooperative groups of 3–4 people. Provide each group with a set of quotes to consider (see page 13). Explain that these are quotes about people who had a tremendous impact on history. Each group is to generate as many descriptive words as they can that might describe the character of the person/people that the quote is about. Give the group time to generate these descriptors, and then ask a member of each group to share the list of qualities that their group associated with that person or persons. Help students see that their ability to generate descriptors is related to their prior knowledge.

Once students have shared their descriptors, have them generate several summary statements that they think generally describe the people that the quotes are about (e.g., “These were all people who were self-starters”). Make sure that these summary statements are not about any particular person, but rather, reflect all of the people involved in the three events. Ask students to predict what impact they think these people had on history. Post these statements and predictions. As students continue in the unit, periodically come back to them and have students see if they still hold up. Help students understand that predicting helps them set a purpose for their learning and that their ability to predict is directly related to their prior knowledge.



History Standard 2

Benchmark

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

Language Arts Standard 4

Benchmark

- ◆ Use new information to adjust and extend their personal knowledge base.

Supporting Knowledge

Understand that they already has some prior knowledge about these three events and by using this prior knowledge, they can make predictions on the impact and values of these people based on limited information.

Understand that these predictions may or may not be true.

Understand that predicting helps them set a purpose and keeps them interested in the learning experience.

"CHARACTER QUOTES"



Lewis and Clark

From the Lewis and Clark Journals
Lewis: "All appear perfectly to have made up their minds to succeed in the expedition or perish in the attempt."
Lewis (in deciding a crucial decision): "They were ready to follow us anywhere we thought proper to direct."
Lewis (on his 31st birthday, having been the first American to reach the Continental Divide): He vows "in the future, to live for mankind, as I have heretofore lived for myself."
Clark (with the Pacific Ocean in view): "O! The joy."

DESCRIPTORS



Marie Curie

Albert Einstein: "Marie Curie is, of all celebrated beings, the one whom fame has not corrupted."
Eve Curie (daughter): My mother was 37 years old when I was born. When I was big enough to know her, she was already an aging woman who had reached the summit of renown. And yet it is the 'celebrated scientist' who is strangest to me — probably because the idea that she was a celebrated scientist did not occupy the mind of Marie Curie."
Marie Curie: "Life is not easy for any of us. But what of that? We must have perseverance and above all confidence in ourselves. We must believe that we are gifted for something and that this thing must be attained."

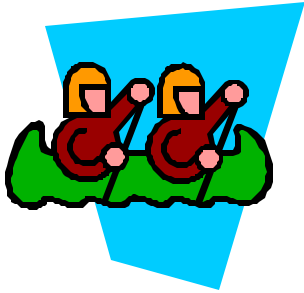
DESCRIPTORS



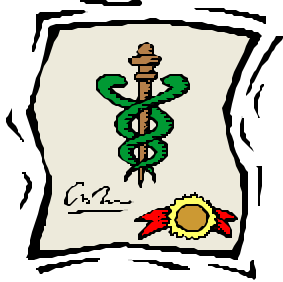
U.S. Space Program

Neil Armstrong: "That's one small step for man, and one giant leap for mankind."
Plaque on Moon: "Here men from the planet Earth first set foot on the Moon, July 1969 A.D. We came in peace for all mankind."
Neil Armstrong (talking to President Nixon): "It is a great honor and privilege for us to be here representing not only the United States but men of peace of all nations and with interest and curiosity and a vision for the future."
Buzz Aldrin: "This has been far more than three men on a mission to the Moon....We feel this stands as a symbol of the insatiable curiosity of all mankind to explore the unknown."

DESCRIPTORS



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**



**The Discovery of Radium:
Marie and Pierre Curie**



**Putting the First Man on the Moon:
The United States Space Program**

Explorers Through Time

Lesson 3

Gathering New Information



Lesson 3

Gathering New Information



Now that students have used their prior knowledge to predict the character and impact of those involved in the events described in this unit, they will need to gather more information to see if their predictions are true and to gain a deeper understanding of each of these events. To do this, have students form a cooperative home team of six people. Have each team determine which pair in the group will gather additional information about each of the events (e.g., decide which two members of the group will gather additional information about the Lewis and Clark expedition). Tell students that each pair will gather the information about one of the events, complete a graphic organizer for that event (see pages 17-19), and then share what they are learning with the rest of their team.

Students will need various resources to complete their graphic organizers. On the following page is a list of web sites with various resources for each event. Some of the resources can be directly downloaded and printed from the web site; others will identify materials and resources that you might order directly from the web site.

You may also wish to check with the school library to find additional resources for students to use. In any case, make sure that if students are expected to read as part of the assignment that the resources selected reflect several different levels of complexity.

Language Arts Standard 4

Benchmark

- ◆ Use new information to adjust and extend their personal knowledge base.

History Standard 2

Benchmark

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

History Standard 3

Benchmark

- ◆ Understand how women influenced Europe and the United States in the early 1900s.

History Standard 4

Benchmark

- ◆ Understand how new technologies and scientific breakthroughs benefited mankind.

History Standard 6

Benchmark

- ◆ Understand the significance of the Lewis and Clark Expedition.

Supporting Knowledge

Understand that they may already have some knowledge about the information they will be viewing, reading, or listening to and that this information can be used to help them make predictions about the event and/or people that they will be learning about.

Understand that multiple resources may provide different kinds of information that will help them determine if their predictions are correct or not.

Understand that the Internet is a valuable source for finding information about events and people.



Lesson 3 (cont'd)

Lewis and Clark Expedition

<http://www.encarta.msn.com/>

<http://www.lewis-clark.org/>

<http://www.pbs.org/lewisandclark/>

Marie & Pierre Curie: Discovery of Radium

<http://hum.amu.edu.pl/~zbow/ph/sci/msc.htm>

<http://www.encarta.msn.com/>

<http://etext.lib.virginia.edu/toc/modeng/public/CurPier.html>

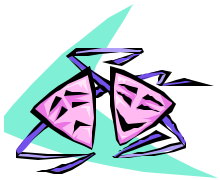
Race to Put the First Man on the Moon

<http://www.hq.nasa.gov/office/pao/History/SP-4214/ch9-5.html>

<http://www.ksc.nasa.gov/history/apollo/apollo-11/apollo-11.html>

<http://www.nasm.si.edu/nasm/dsh/shdiv.htm>

<http://nssdc.gsfc.nasa.gov/nmc/tmp/1969-059A.html>



Once students have been provided with various resource materials, have them work in pairs to complete their graphic organizers. Walk around the room, meet with each of the pairs, and provide them with feedback and clarity as needed. When the pairs have filled in the graphic organizers, have two of the teams partner to form a team of 12. Have each of the four members for each

event work together to create a short dramatization of the event they have been studying. Then ask them to present their dramatization to the rest of the group. Provide the rest of the members of their group with blank graphic organizers for the event, and have students fill them in as they watch the dramatization. When the dramatization

is finished, give students time to ask any questions necessary to help them complete their graphic organizers. Help them understand that creating a dramatic re-enactment of the event helps them remember the details of the event. Remind them of the predictions they made in Lesson 2, and ask them to determine if their predictions still are true or if they have changed now that they have additional information about these events and people.

Ask students to reflect on how the graphic organizer helped them organize the information about the various people, places, and happenings related to the event. Explain that another strategy for helping them remember specific details about the events is to create symbols that represent the information they are learning. Ask them to go back to their graphic organizers and place simple drawings of symbols that will help them remember this information. Give students time to share their symbols with one or two other students in the class.

When all of the groups have finished, ask them to share what they found was most interesting about the three events. Help clear up any confusions through a classroom discussion. Provide students with any additional information or insights necessary to understand the resources they are using.

Name _____

Who Was Involved?	What Was Their Role?

When Did This Happen?

From _____

To _____

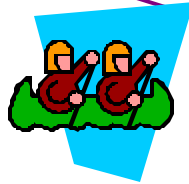
What Was Their Goal?

Where Did This Happen?

It began at _____

And ended at _____

Why Was It Important To Be The First To Do This?



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**

Sequence of Events

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

What Information Did You Find Particularly Interesting? Why?

Name _____

Who Was Involved?	What Was Their Role?

When Did This Happen?

From _____

To _____

What Was Their Goal?

Where Did This Happen?

It began at _____

And ended at _____

Why Was It Important To Be The First To Do This?



**The Discovery
of Radium:
Marie and Pierre Curie**

Sequence of Events

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

What Information Did You Find Particularly Interesting? Why?

Name _____

Who Was Involved?	What Was Their Role?

When Did This Happen?

From _____

To _____

What Was Their Goal?

Where Did This Happen?

It began at _____

And ended at _____

Why Was It Important To Be The First To Do This?

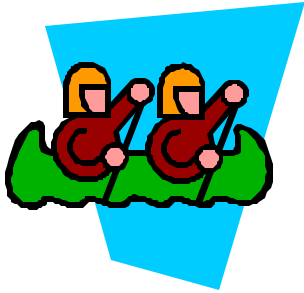


**Putting the First Man
on the Moon:
The United States Space Program**

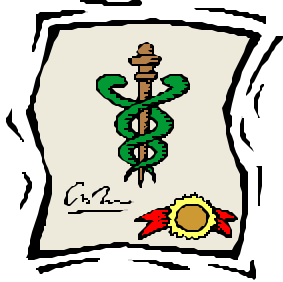
Sequence of Events

1.
2.
3.
4.
5.
6.

What Information Did You Find Particularly Interesting? Why?



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**



**The Discovery of Radium:
Marie and Pierre Curie**



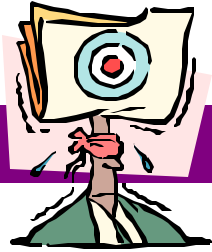
**Putting the First Man on the Moon:
The United States Space Program**

Explorers Through Time

Lesson 4

Overcoming Constraints and Limiting Conditions

Lesson 4



Overcoming Constraints and Limiting Conditions

Explain to students that now that they have some background information about the three events they have been studying, they can begin to examine how the people involved in them engaged in the problem-solving process.

Have students divide themselves into cooperative groups of six people. Have students in each group of six pair off and select one of the three events to study. Give them the appropriate worksheet for their event (see pages 23–25).

Have students read the goal and the constraints listed on each of the worksheets. Provide them with the resources identified below that can be downloaded and printed from the specified Internet addresses. Explain to students that they will use these resources and the resources they received in Lesson 3 to complete their worksheet. Remind them of the steps in the problem-solving process and the relationship that the constraints have to the goal. Help them to see that some of the constraints or limiting conditions surfaced immediately as the group set out to complete their goal, while others surfaced over time.

Lewis and Clark Expedition

<http://www.pbs.org/lewisandclark/inside/equip.html>

<http://www.lewis-clark.org/boat1.html>

<http://www.geocities.com/impurplehawk/sacagawea.html>



Language Arts Standard 4

Benchmark

- ◆ Use new information to adjust and extend their personal knowledge base.

History Standard 2

Benchmark

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

History Standard 3

Benchmark

- ◆ Understand how women influenced both Europe and the United States in the early 1900s.

History Standard 4

Benchmark

- ◆ Understand how new technologies and scientific breakthroughs benefited mankind.

History Standard 6

Benchmark

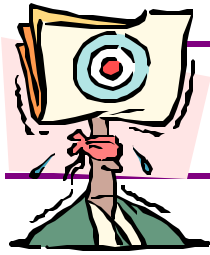
- ◆ Understand the significance of the Lewis and Clark expedition.

Supporting Knowledge

Understand that engaging in the problem-solving process can help them learn more about important content knowledge.

Thinking and Reasoning Standard 4

Apply basic trouble-shooting and problem-solving techniques.



Lesson 4 (cont'd)

Marie & Pierre Curie: Discovery of Radium

<http://www.physics.purdue.edu/wip/herstory/curie.html>

<http://www.nobel.se/physics/articles/curie/index.html>

Race to Put the First Man on the Moon

<http://www.hq.nasa.gov/office/pao/History/>

<http://nssdc.gsfc.nasa.gov/planetary/lunar/apollo11info.html>

When the pairs have completed their worksheet, have them discuss their findings with the other members of the team. Ask them to compare how the constraints or limiting conditions of each event were overcome. What similarities and differences did they notice?

Engage students in a discussion for each of the events centered around how the final outcome might have been different if the people involved had selected a different solution. Do students think that they still would have met their goal? What do they think might have happened?

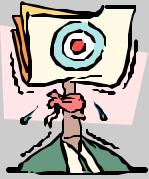
Ask students to give reasons for their answers. Help them see that the constraints or limiting conditions helped shape the thinking of the group for each event and that if the limiting conditions had been different, the group might have picked different solutions and still met the goal.

Finally, have students discuss what they have been learning about the problem-solving process. What implications might this new

understanding have for them as they set goals, identify constraints or limiting conditions, and try to overcome them?

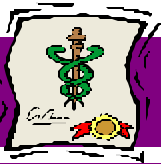


The Journey of the Corps of Discovery: The Lewis and Clark Expedition

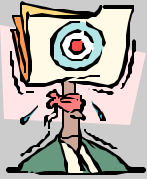


GOAL: Thomas Jefferson wanted Lewis and Clark to find the Northwest passage. He believed that getting there first, before any other country, would give the United States control of the waterways in the West. This, in turn, would give him control over the North American continent, particularly concerning trade.

Constraints	What would Lewis and Clark need to consider?	What were the solutions to overcoming this constraint?	What was the outcome of the solution?	What did you learn about the character of Lewis and Clark?
The expedition would have to travel over a great deal of uncharted territory. They were not familiar with the terrain or conditions of the land.				
The expedition would encounter various native peoples with whom they could not communicate and who might view them as hostile.				
The Spanish officials in Mexico City wanted the expedition to fail because they were deeply suspicious of American ambitions in the West.				



The Discovery of Radium: Marie and Pierre Curie

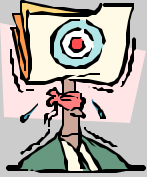


GOAL: Marie and Pierre Curie were seeking the cause of radioactivity. At this point in time, no one in the world had the answer.

Constraint	What would she need to consider?	What were the solutions to overcoming this constraint?	What was the outcome of the solution?	What did you learn about the character of Marie Curie?
Marie Curie was born into a poor family at a time when very few women were able to gain an education.				
Just after discovering radium, Pierre Curie died.				
Marie experienced prejudice because of her nationality and because she was a woman.				

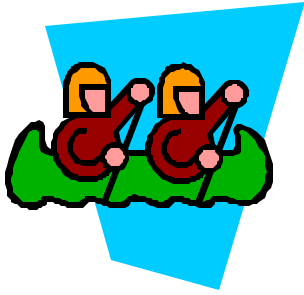


Putting the First Man on the Moon: The United States Space Program

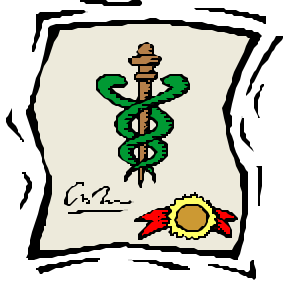


GOAL: Russia was very advanced in its abilities to explore space and seemed to be ahead in the race to put a man on the Moon. The United States wanted to gain control of space exploration by putting a man on the Moon before the Russians did.

Constraint	What would the United States space program need to consider?	What were the solutions to overcoming this constraint?	What was the outcome of the solution?	What did you learn about the character of these people?
No person had ever traveled outside of the Earth's orbit and safely returned.				
Scientists were not sure what the conditions of the Moon's surface might be since no person had previously stepped foot on its surface.				
There was less gravity and oxygen on the Moon than on the Earth.				



The Journey of the Corps of Discovery:
The Lewis and Clark Expedition



The Discovery of Radium:
Marie and Pierre Curie



Putting the First Man on the Moon:
United States Space Program

Explorers Through Time

Lesson 5

Identifying General Patterns in Information



Lesson 5

Identifying General Patterns in Information

Explain to students that in life we often must determine how a situation is similar to or like another situation (e.g., how our vacation this year was similar to last year's vacation, how one piece of literature is similar to another). When we do this, we engage in a complex reasoning process called abstracting. This is the process of finding and explaining general patterns in specific information or situations.

Provide students with the steps to the abstracting process (see page 29). Model the process for them using the story of the Emperor's New Clothes (see page 30). Give them a copy of the story, and ask them to read it. Show them that the story can be written very simply into five statements. Then demonstrate how each of these statements can be written into more general statements by replacing words referring to specific things with words referring to more general things, and summarizing information whenever possible. Ask students to discuss how the five statements describing the story were translated into five statements that represent a general pattern.

When students are clear about how the general pattern was abstracted from the five statements, ask them to look at the general pattern to see if they can think of a movie, an incident in history or in a book, or a personal experience that follows this same pattern. Help students understand the importance of each of the steps in the abstracting process. Clear up any confusions or misconceptions they might have about this process.



Language Arts Standard 4

Benchmark

- ◆ Uses new information to adjust and extend personal knowledge base.

History Standard 2

Benchmark

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

History Standard 3

Benchmark

- ◆ Understand how women influenced both Europe and the United States in the early 1900s.

History Standard 4

Benchmark

- ◆ Understand how new technologies and scientific breakthroughs benefited humankind.

History Standard 6

Benchmark

- ◆ Understand the significance of the Lewis and Clark expedition.

Supporting Knowledge

Understand that engaging in the abstracting process can help one learn more about important content knowledge.

Thinking and Reasoning Standard 2

Use mental processes that are based on identifying similarities and differences.

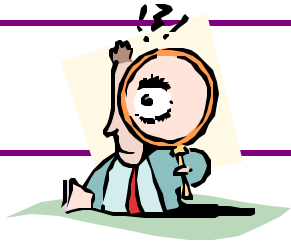


Lesson 5 (cont'd)

Once students are familiar with the process, give them a copy of the worksheet on page 31. Point out that you have already identified what is important or basic to the Lewis and Clark expedition and have written that information in a more general form.

Explain that their assignment is to work in groups of 2–3 people to determine the degree to which the story of Marie and Pierre Curie and the race to put a man on the Moon follow this same pattern. Help them see that an event might follow the general pattern to a point and then veer off. In any case, they should be able to identify at what point the event no longer follows the general pattern. Once they have had a chance to discuss this in their small groups, ask them to share their thinking with the entire group. See if students can identify other events from history that follow this same general pattern. Ask them to justify their answers.

Ask students to identify how completing this abstracting task helped them learn more about the three events. Help them understand that abstracting is a process that they can use independently if they find themselves in a situation in which they want to learn more about specific content knowledge.



Abstracting

Abstracting is the process of identifying and articulating the underlying theme or general pattern of information.

1. Identify what is considered important or basic to the information or situation with which you are working.
2. Write that basic information in a more general form by
 - replacing words referring to specific things with words referring to more general things, and
 - summarizing information whenever possible.
3. Find new information or a situation to which the general pattern applies.



The Emperor's New Clothes

There once was an emperor who loved new clothes. One day two swindlers convinced him that they could make him very special clothes that would be invisible to anyone foolish or unfit for office. The emperor placed an order immediately, thinking that he would now be able to distinguish wise men from foolish men. As the swindlers set up their looms and began to work, many people stopped to see the fabric they were weaving. Each person, afraid to admit that he or she could see no fabric, raved about the beautiful color and texture.

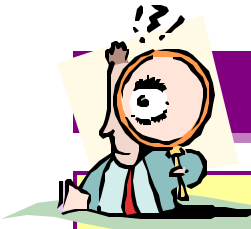
Finally, one morning the clothes were ready. The swindlers presented them to the emperor and pretended to dress him and put imaginary final touches on each piece. The emperor, staring at himself naked in the mirror, agreed that they were the finest clothes he'd ever seen. The emperor's subjects had gathered from far and wide to view the new clothes they had all heard so much about. As the emperor marched through the streets, people talked of how beautiful the clothes were. Then, a little boy, not knowing that he would seem foolish if he could not see the clothes, shouted out, "The emperor has nothing on!" Soon, everyone joined in, "The emperor is naked!" The emperor now felt foolish, but he held his head high and tried to maintain his dignity. The crowd laughed and laughed.

THE EMPEROR'S NEW CLOTHES

1. A vain emperor was convinced by swindlers that they could make him special clothes that would be invisible to anyone foolish or unfit for office.
2. People who watched the swindlers work were afraid to admit that they could see nothing.
3. When the clothes were ready, the naked emperor paraded through the streets to show off his new clothes.
4. A little boy shouted, "The emperor has nothing on!"
5. Even though everyone laughed at the emperor, he continued to pretend that he had clothes on.

GENERAL PATTERN

1. A person is taken advantage of by someone who promises something unrealistic.
2. Other people see what is happening but are afraid or reluctant to speak out.
3. The person refuses to acknowledge the reality of the situation.
4. An innocent person exposes the truth.
5. Even though everyone speaks out, the person refuses to acknowledge the truth.



SO - HOW IS THIS LIKE THAT?

Your task is to study the general pattern below, which has been abstracted from the story of the Lewis and Clark Expedition, and then determine the degree to which (1) the discovery of radium by Marie and Pierre Curie and (2) the race to put man on the Moon either follow or do not follow this general pattern. You also should be prepared to share another example from history that you think follows this same general pattern. Be prepared to justify your answers.

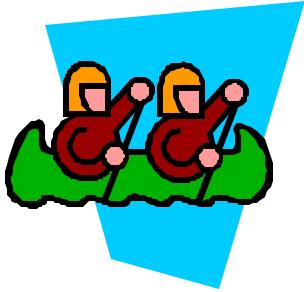
STORY OF LEWIS AND CLARK



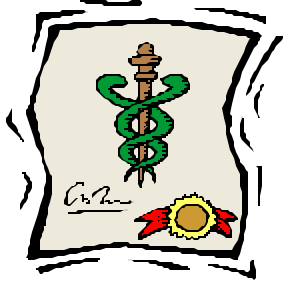
- Thomas Jefferson wants to find the Northwest Passage.
- He commissions an expedition to be led by Lewis and Clark.
- The expedition travels over perilous terrain and enlists the aid of the Native Americans.
- Sacajawea and her husband provide leadership as the expedition continues.
- The expedition does not find the passage but is able to map out a route across the west to the Pacific Ocean.

GENERAL PATTERN

- Someone with influence searches to do something profound.
- A significant partnership is formed.
- The partnership experiences difficulties but is provided with support from others.
- The partnership continues with the help and the support of others.
- The partnership does not meet its goal but is successful anyway.



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**



**The Discovery of Radium:
Marie and Pierre Curie**



**Putting the First Man on the Moon:
The United States Space Program**

Explorers Through Time

Lesson 6

Constructing Support



Lesson 6

Constructing Support



By this point in the unit, students should have considerable understanding of the three events they have been studying. Explain that in this lesson they will be asked to write a short article for the local paper. The editor of the paper wants to provide examples of people who have exhibited courage under very difficult situations.

Explain to students that they will need to write a persuasive article describing their opinion about which of the three events required the greatest amount of courage. Explain that their goal is to persuade their audience to agree with their opinion. Give students a copy of the process for constructing support (see page 35), and remind them of the steps in the process.

Let them know that the editor has specified that their writing must reflect an appeal-to-reason argument. To help students understand what this means, show them the criteria and an example of an appeal-to-reason argument (see page 36). Help them understand the various components, providing them with multiple examples of each criterion. When they have sufficient understanding, ask them to construct their own appeal-to-reason argument in the boxes provided. Let them discuss their argument with several other students to determine the extent to which other students think that their argument is convincing. Help students understand that the examples they use to elaborate on their claim can be less or more persuasive. They also should come to understand the purpose of the qualifier and the degree to which it makes the argument more or less believable.

Language Arts Standard 2

Benchmark

- ◆ Writes persuasive compositions.

History Standard 2

Benchmark

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

History Standard 3

Benchmark

- ◆ Understand how women influenced both Europe and the United States in the early 1900s.

History Standard 4

Benchmark

- ◆ Understand how new technologies and scientific breakthroughs benefited mankind.

History Standard 6

Benchmark

- ◆ Understand the significance of the Lewis and Clark expedition.

Supporting Knowledge

Understand that engaging in the constructing support process can help them learn more about important content knowledge.

Thinking and Reasoning Standard 1

Understand and apply the basic principle of presenting an argument.



Lesson 6 (cont'd)

Once students feel they have a strong framework, they can construct the first draft of their article. Be sure to have students engage in all aspects of the writing process (e.g., drafting, revising, editing).

When each student has finished writing his or her article, have the student use the rubric found on page 37 to score this piece of writing. Once the student has self-scored the article, it should be shared with two other students who, independent of each other, will use the rubric to score the article. Both students should give the score and overall feedback on the article to the author of the piece of writing. The author should use this feedback to revise his or her writing.

When students have completed their revisions, ask them to share how constructing support for their opinion helped them learn more about the events they have been studying. Ask them to share any new connections or understanding that they gained as a result of engaging in this process.



Constructing Support

Constructing support is the process of building systems of support for assertions.

1. Identify whether you are stating facts or opinions.
2. If you are stating an opinion, determine whether the situation warrants support.
3. When the situation warrants it, construct a supportive argument through the use of a variety of devices, such as facts, evidence, examples, or appeals.



Components of a Well-Structured Appeal to Reason Argument

Name _____

Planning My Appeal-to-Reason Argument

EVIDENCE: Information that leads to a claim.

Last night, five crimes were committed within two blocks of one another.

CLAIM: The assertion that something is true.

The crime rate in our city is escalating dramatically.

ELABORATION: Examples of or explanations for the claim.

The dramatic increase can be seen by examining the crime rates in the downtown area over the past 20 years.

QUALIFIER: A restriction on the claim or evidence counter to the claim.

The crime rate has stabilized in some areas, however.

EVIDENCE

CLAIM

ELABORATION

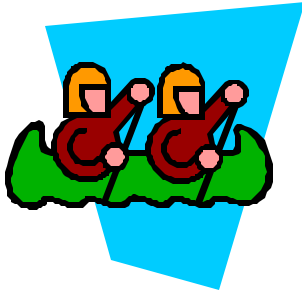
QUALIFIER



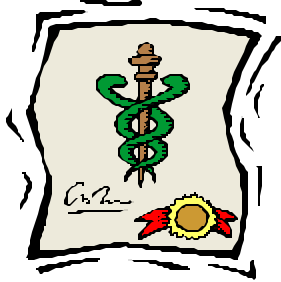
Scoring Rubric

Constructing Support Task

- 4 The student provides a well-articulated and detailed argument containing no errors in logic.
- 3 The student provides a well-articulated but not detailed argument containing no errors in logic.
- 2 The student presents an argument that makes a point but is not well articulated or contains some significant errors in logic.
- 1 The student's argument makes no clear point or has so many errors in logic that it is invalid.
- 0 No judgment can be made.



The Journey of the Corps of Discovery:
The Lewis and Clark Expedition



The Discovery of Radium:
Marie and Pierre Curie



Putting the First Man on the Moon:
The United States Space Program

Explorers Through Time

Lesson 7

Historical Investigation



Lesson 7

Historical Investigation

Show students a video clip of when Neil Armstrong first landed on the Moon. Tell them that although this is the original footage of man first landing on the Moon, there are people today who challenge the fact that Neil Armstrong really did land on the moon. Some people say that the whole event was a hoax and that the U.S. government propagated a lie to gain power over the Russians.

Provide students with copies of articles about people who think this event was a hoax. These can be found at these links:

Apollo 11

http://science.nasa.gov/headlines/y2001/ast23feb_2.htm

<http://www.redzero.demon.co.uk/moonhoax/>

Tell students that over the years, there have been other instances of new information being uncovered or old information being challenged due to new understandings about that information. This has changed the way that the events have been interpreted (e.g., discovery of the Dead Sea Scrolls).

When this happens, people are often confused about what to believe because the information seems to conflict and there does not seem to be a plausible resolution.



History Standard 2

Benchmarks

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

Benchmark

- ◆ Understand that historical accounts are subject to change based on newly uncovered records and interpretations.

History Standard 4

Benchmark

- ◆ Understand how new technologies and scientific breakthroughs benefited humankind.

Supporting Knowledge

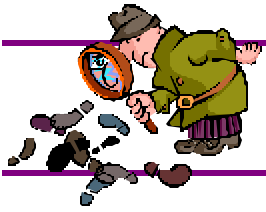
Understand that currently there is a debate about whether the first landing of man on the Moon was a hoax or not.

Understand that current scientific advancements facilitated the conversation about the truth of this event.

Understand that there are various perspectives about this event and that, as of yet, it is unclear whether this was a hoax or not.

Thinking and Reasoning Standard 3

Understand and apply basic principles of hypothesis testing and scientific inquiry.



Lesson 7 (cont'd)

This process is a thinking and reasoning process called “historical investigation.” It involves trying to resolve issues about which there have been confusions or contradictions. Provide students with a copy of the steps involved in historical investigation (see page 41).

As students study the steps, explain each step to them. Once students are clear about the steps, ask them to use an article from the Internet to complete the worksheet on page 42. Have students share the information they wrote in each of the boxes. Once students have completed this task, have them work with a partner using the rubric on page 43 to score their responses.

As students engage in this activity, help them understand that when they want to develop a deeper understanding about a topic, it is helpful to engage in a complex reasoning process that helps them meaningfully apply the information that they have been learning. Ask them to share any new insights they gained about the Apollo 11 mission as they engaged in the process of historical investigation. Invite them to share ways that they might be able to use this process in the future.



Historical Investigation

Historical investigation is the process of identifying and resolving issues for an event or situation from the past for which there is no agreed-upon explanation or sequence of events.

1. Clearly identify the past event to be explained.
2. Identify what is already known or agreed upon.
3. Identify and explain the confusion or contradiction.
4. Develop and defend a plausible resolution to the confusion or contradiction.

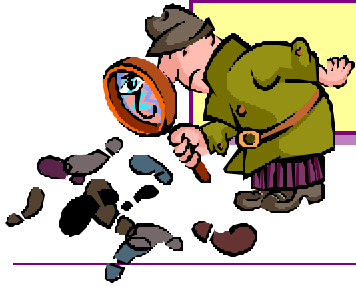


Past Event to be Explained: Apollo 11 Landing on the Moon

What is already known or agreed upon?

What confusions/contradictions exist?

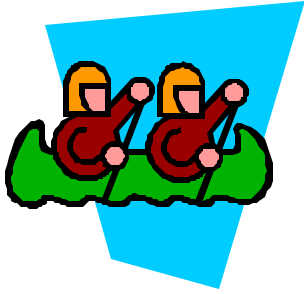
What is a plausible resolution to the confusions/contradictions that exist?



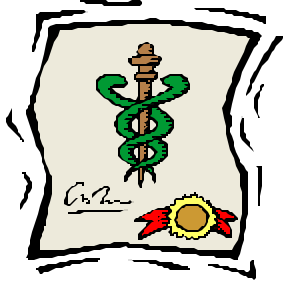
Scoring Rubric

Historical Investigation Task

- 4 The student thoroughly and accurately identifies what is known about the subject of the investigation and presents a well-articulated solution to the confusions or contradictions associated with the situation.
- 3 The student thoroughly and accurately identifies what is known about the subject of the investigation but does not fully address the confusions or contradictions associated with the situation.
- 2 The student presents a partial description of what is known about the subject of the investigation.
- 1 The student's description of what is known about the subject of the investigation is severely flawed.
- 0 No judgment can be made.



**The Journey of the Corps of Discovery:
The Lewis and Clark Expedition**



**The Discovery of Radium:
Marie and Pierre Curie**



**Putting the First Man on the Moon:
The United States Space Program**

Explorers Through Time

Lesson 8

What If They Hadn't Gotten There First?



Lesson 8

What If They Hadn't Gotten There First?

Throughout this unit, students have been learning about how specific groups of individuals engaged in the problem-solving process as they pursued a particular goal. In each case, they wanted to meet this goal before anyone else did. But what if someone else had met this goal before they did? What impact would this have had? Would it have changed history, or would it just have had an impact on the lives of those in that particular group?

To help students reflect on the importance of timing in meeting particular goals, ask them to form cooperative groups of three or four. Put the following sets of questions on the board, and have each group choose one set of questions to consider:

Set 1. What if the Spanish had reached the Pacific Ocean before Lewis and Clark did? What might have been the outcome for the United States? For the Spanish? What effect might this have had on the control of the trade route of North America? How might life in the United States be different today?

Set 2. What if Pierre Curie had died shortly after he and Marie were married and she had not been allowed to continue her research work? What impact do you think this might have had on women and their right to pursue an education? What effect do you think this would have had on the discovery of radium? Who do you think might have discovered radium if Marie and Pierre had not?

Set 3. What if the Russians had been the first country to place a man on the moon? To what extent might this have influenced the power struggle between the United States and Russia? How might this have made a difference in the United States space program?

Explain to students that in order to answer the questions they have selected, they will engage in a complex reasoning process called “projective investigation.” Give students a copy of the definition and steps for this process (see page 47). Explain the process, helping students to understand each step.



History Standard 2

Benchmark

- ◆ Understand that specific individuals/groups and the values those individuals/groups held had an impact on history.

Supporting Knowledge

Understand that if specific individuals/groups had not accomplished their goal first, there would have been significant changes in history.

Thinking and Reasoning Standard 3

Understand and apply basic principles of hypothesis testing and scientific inquiry.



Lesson 8 (cont'd)

What If They Hadn't Gotten There First?

Provide students with the worksheet found on page 48. They should complete the left-hand section of the worksheet first and, then, using the predictions they have made, create a symbolic representation of what the outcome would have been if the group they selected had not met their goal first.

Point out that by choosing the set of questions, they have completed step 1 of the projective investigation process. In other words, they have selected the event that they will focus on. Also point out that the set of questions provides them with the information they need to complete step 2 of that process. (Note that both of these steps have been fairly teacher directed.)

Explain to students that they will now need to engage in steps 3 and 4 as a team and will be asked to share and justify their predictions with the other students. Remind them that the task is not to randomly make a prediction, but, rather, to make a thoughtful, supported prediction based on what is already known or agreed upon about that event.

Ask students to share their representations with other students, explaining what information they used that allowed them to make this prediction. As students finish sharing their symbolic representations, ask them to consider how engaging in projective investigation helped increase their understanding of each of the events.



Projective Investigation

Projective Investigation is the process of using what is already known or agreed upon to explain what the outcome of a particular event in the past or future would be if one or more aspects of that event were changed.

1. Clearly identify the event that will be focused on.
2. Identify what aspect(s) of that event will be changed.
3. Identify what is already known or agreed upon regarding the aspect(s) of that event.
4. Identify and defend what would happen as a result of the change.



What If They Hadn't Gotten There First?

Name _____

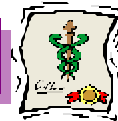
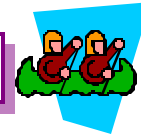
SYMBOLIC REPRESENTATION

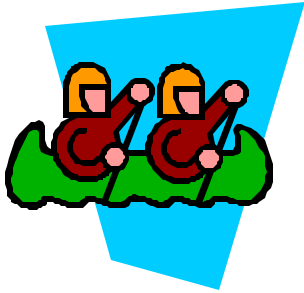
1. What event will you focus on? (Put a checkmark in box.)

2. What aspects of the event would have changed?
Someone else would have met his or her goal
before they did.

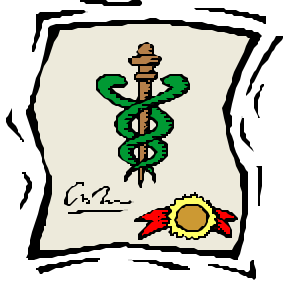
3. What is already known or agreed upon about these aspects
of the event?

4. What would have happened? Defend your answers.





The Journey of the Corps of Discovery:
The Lewis and Clark Expedition



The Discovery of Radium:
Marie and Pierre Curie

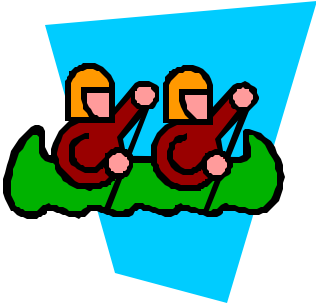


Putting the First Man on the Moon:
The United States Space Program

Explorers Through Time

Additional Resources & Bibliography

Additional Resources, Apollo 11:



<http://www.hq.nasa.gov/office/pao/History/SP-4204/ch22-6.html>

<http://www.hq.nasa.gov/office/pao/History/SP-350/ch-13-1.html>

Ask an Astronaut

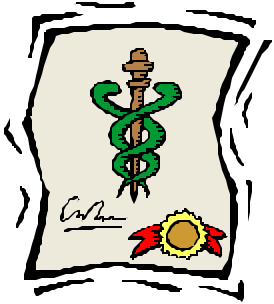
Send questions to some of the men and women who have flown in space.

<http://www.ari.net/nss/askastro/>

Apollo Lunar Surface Journal

A definitive guide to the Apollo Missions 11 through 17. This resource provides mission overviews, crew bios, and transcripts from the Moon's surface.

<http://www.hq.nasa.gov/alsj/frame.html>



Apollo 13 Accident

“Houston, we have a problem.” Find pictures, a story, and a detailed, technical explanation of what went wrong with Apollo 13.

<http://nssdc.gsfc.nasa.gov/planetary/lunar/ap13acc.html>

Kennedy Space Center Page — Apollo 11

Highlights include detailed transcripts of crew member comments and a sizeable collection of Apollo 11 links.

<http://www.ksc.nasa.gov/history/apollo/apollo-11/apollo-11.html>

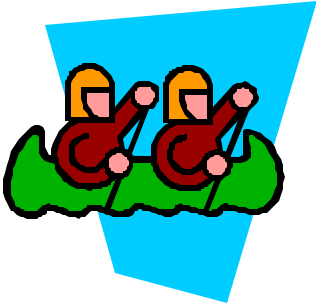


Apollo 13 — IMDb

This popular archive of movie information about this suspenseful drama includes a cast and crew list, reviews, trivia, and photos.

<http://us.imdb.com/Title?0112384>

Additional Resources, Apollo 11 (Continued)



Kennedy Space Center — Apollo 13 Page

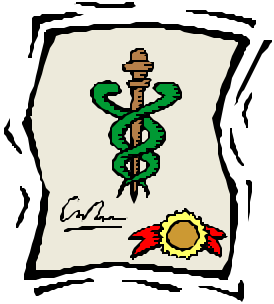
Features technical launch details, milestones, and mission highlights. Includes many related links.

<http://www.ksc.nasa.gov/history/apollo/apollo-13/apollo-13.html>

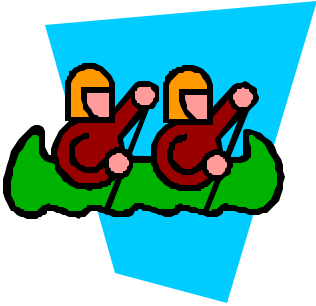
NASA — Apollo 11, 25 years later

Commemoration of the first lunar landing with images taken by the crew of Apollo 11 on their trip to the Moon in July 1969.

<http://nssdc.gsfc.nasa.gov/planetary/lunar/apollo11.html>



Additional Resources, Lewis & Clark:

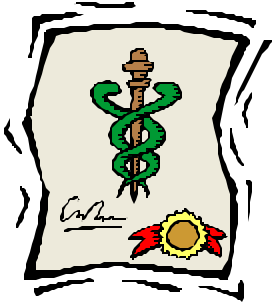


<http://www.lewisandclarktrail.com/>

<http://www.nationalgeographic.com/west/>

<http://lcweb.loc.gov/exhibits/treasures/trr001.html>

Additional Resources, Marie & Pierre Curie:



<http://encarta.msn.com/>

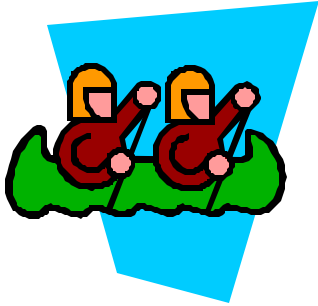
<http://www.teachwithmovies.org/guides/madame-curie.html>

<http://hum.amu.edu.pl/~zbzw/ph/sci/msc.htm>

<http://www.aip.org/history/curie/>



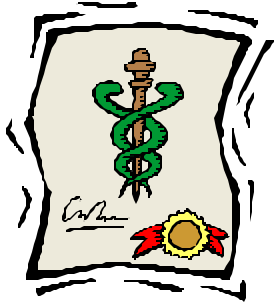
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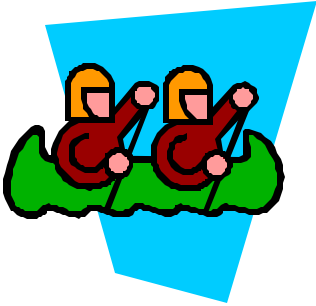
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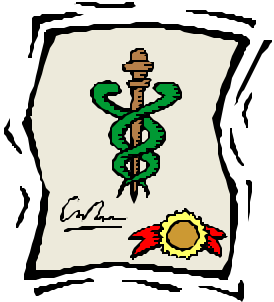
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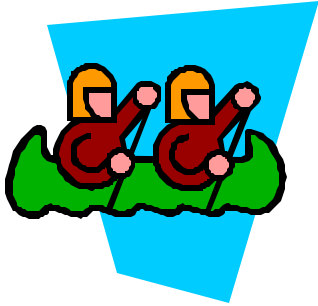
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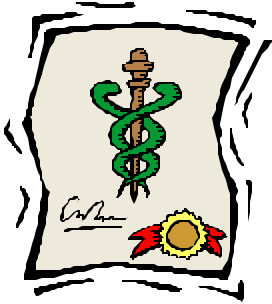
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