

THE ROMAN EMPIRE

IN THE FIRST CENTURY

Rome Lesson Plan 7: Technology and Medicine

Introduction:

Students will learn about Roman architecture, technology, and medicine by becoming teachers for a day. Students will participate in a class discussion about Rome's contributions in these areas and then work in small groups to become experts in one aspect of Roman technology or medicine. They will then share this knowledge with their classmates by teaching what they have learned and having their classmates participate in an activity where they will have to apply what they have learned. Students will then practice their evaluation skills by reviewing one another's performance. A final class discussion about the technological and medical contributions of the ancient Romans will summarize the ideas learned.

Subject Areas:

World History, Social Studies, Science, Math, Engineering Education, and Communication Arts

Grade Level: 6-12

Lesson Objectives:

Students will:

1. View video clips illustrating the importance of education and learning in ancient Rome and sharing these discoveries with others.
2. Participate in a class discussion about the pursuit of knowledge and technology in ancient Rome.
3. Work as a class to create a scoring guide that will be used as an evaluation tool by both the teacher and students' peers.
4. Work in small groups to conduct research and become experts on an assigned topic related to the technology or medicine in ancient Rome.
5. Work in small groups to design a lesson that they will use to teach their classmates about the topic they have researched.
6. Be teachers for a day and teach their classmates about a topic related to ancient Roman technology or medicine.
7. Participate in assorted classroom activities that require them to demonstrate their learning about the topics presented by each group.
8. Evaluate the effectiveness of their classmates using a scoring guide created by the class.
9. Participate in a class discussion about the technological and medical contributions of the ancient Romans and their impact.

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Relevant National Standards:

McRel Compendium of K-12 Standards Addressed:

World History

Standard 9: Understands how major religious and large-scale empires arose in the Mediterranean Basin, China, and Indian from 500 BCE to 300 CE.

Standard 11: Understands major global trends from 1000 BCE to 300 CE.

Historical Understanding

Standard 2: Understands the historical perspective.

Mathematics

Standard 1: Uses a variety of strategies in the problem-solving process.

Standard 2: Understands and applied basic and advanced properties of the concepts of numbers.

Standard 3: Uses basic and advanced procedures while performing the processes of computation.

Science

Standard 13: Understands the scientific enterprise.

Language Arts

Writing

Standard 4: Gathers and uses information for research purposes.

Reading

Standard 5: Uses the general skills and strategies of the reading process.

Standard 7: Uses reading skills and strategies to understand and interpret a variety of informational texts.

Listening and Speaking

Standard 8: Uses listening and speaking strategies for different purposes.

Thinking and Reasoning

Standard 1: Understands the basic principles of presenting an argument.

Standard 3: Effectively uses mental processes that are based on identifying similarities and differences.

Standard 6: Applied decision-making techniques.

Working with Others

Standard 1: Contributes to the overall effort of a group.

Standard 4: Displays effective interpersonal communication skills.

Standard 5: Demonstrates leadership skills.

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Estimated Time:

This should take four 90-minute class periods or seven to eight 50-minute class periods, plus additional time for extension activities.

Note: The amount of time needed will vary depending on the number of groups and the length of their presentations.

Materials Needed:

- Video clips necessary to complete the lesson plan are available on The Roman Empire in the First Century Web site [<http://www.pbs.org/empires/romans/index.html>]. If you wish to purchase a copy of the program, visit the PBS Shop for Teachers [[Purchase DVD or Video](#)].
- Teachers for a Day handout [[Download PDF here \(220k\)](#)], part of this lesson plan.
- Access to Internet and other primary library resources for conducting research.
- Access to word processing and multimedia presentation software (such as Power Point).
- Assorted art and craft supplies.

Procedures:

1. Begin by explaining to students that while the Romans were not great inventors of machines and tools (because they had so much slave labor), they are well known for their use of technology in their architecture as well as their medical system. In addition, they gave the world Roman numerals and the upper classes held education and the pursuit of knowledge in high regard. This can be seen by having students view the clips Episode 4: Pliny the Elder and Pompeii [<http://www.pbs.org/empires/romans/resources/video.html>].
2. Discuss the importance of the pursuit of knowledge and use of various technologies in ancient Rome using questions like:
 - How was Pliny the Elder's pursuit of knowledge supported by the Emperor Vespasian?
 - How did Pliny the Elder's quest for knowledge lead to his death with the eruption of Mt. Vesuvius?
 - What sorts of discoveries were made by Pliny the Elder, and how scientific do you think these discoveries were, based on what you saw in the video clips?
 - From the video clips, how do you know that learning about the world around them was important to the ancient Romans?

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3. Using content from The Roman Empire in the First Century [<http://www.pbs.org/empires/romans/index.html>], including Baths [<http://www.pbs.org/empires/romans/empire/baths.html>], as well as the Related Resources section [<http://www.pbs.org/empires/romans/educators/lesson7.html#resources>] in this lesson plan, explain to students that they will become teachers for a day. They will work as a small group to instruct other students about a specific aspect of Roman technology or medicine. Distribute the Teachers for a Day handout [[Download PDF here \(220k\)](#)] and review the requirements for completion of the project.
4. Assign students to groups and have each group draw a number between one and seven. Groups will be assigned their teaching topic for the day by matching their number with the corresponding topic on the Teacher for a Day topics list.
5. Provide students with class time to complete their research and develop their lessons. Assign each group a specific day to “teach” their classmates about what they have learned. Stress the importance of having a hands-on activity for students to practice and demonstrate their learning.
6. Before presentations begin, work as a class to devise a scoring guide that will be completed by the teacher and all students after each group teaches its class. Categories for students to be evaluated on could include:
 - Accuracy of the information presented
 - Inclusion of all lesson planning elements listed above
 - Participation of all group members
 - Organization and preparedness
 - Quality of presentation and materials
 - Overall effectiveness – Did students really learn from your class?
7. Have students teach the class and grade their classmates’ performance on the practice activities. Students should complete a scoring guide to evaluate the group’s effectiveness in presenting what they have learned.
8. As a closing activity, facilitate a class discussion about the impact of the technology and medicine developed by the ancient Romans using questions such as:
 - When you look at the characteristics of Roman architecture, how are these still used in modern construction and why are they important elements?
 - How could adopting an ancient Roman point of view about diet, exercise, and caring for the body benefit the American public if we made it common practice today?

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- When looking at the design of traditional Roman cities and how they compare to cities in America today, what are the similarities that can be drawn between the two?
- Clean water was critically important to the Roman Empire, as it is today. Discuss how the developing countries of the world could use the basic ideas learned and practiced by the ancient Romans to provide clean water sources for their people.
- Of the topics you studied, which do you think had the greatest impact on the Roman people? The world? Which still continues to impact us today?

Assessment Suggestions:

1. Students could receive participation grades for class discussion activities and being attentive during group presentations.
2. Completion grades could be assigned for each scoring guide that is completely finished.
3. Time on task or group work grades could be given in the form of points or participation grades for the completion of all aspects of the group teaching project.
4. All groups will receive a completed scoring guide from the teacher and their classmates evaluating their performance. These grades could be averaged and recorded in terms of points or percentages.
5. Students could receive a completion grade for doing all activities assigned by “student” teachers.

Extension Activities:

1. Think about the technological advances that have taken place in the world over the past ten years. Make a list of items that are common today but were not typically part of the American lifestyle ten years ago. Discuss how these advances have changed our lives in both positive and negative ways. Look at the list and decide which of these inventions will be considered the most significant when students 200 years from now are studying history.
2. Working as a class, construct a scale model of a Roman city. It could be a fictional city or one from history. In it, include all of the architectural elements you learned about in class. Be sure to use Roman numerals when labeling anything requiring numbers. Be sure the layout of the city is consistent with that of a Roman city.

Related Resources:

NOVA Online: Baths of Caracalla

[\[http://www.pbs.org/wgbh/nova/lostempires/roman/day.html\]](http://www.pbs.org/wgbh/nova/lostempires/roman/day.html)

provides a detailed tour and a description of all areas of the bath house.

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NOVA: Roman Bath [<http://www.pbs.org/wgbh/nova/lostempires/roman/>]
describes the construction of a Roman bath. There is also information on aqueducts, including a game where students can construct an aqueduct.

Ancient Roman Architecture

[<http://www.geocities.com/SoHo/Workshop/5220/ancient/roman.html>]
provides information about typical Roman design features as well as pictures of some of Rome's most famous structures.

Nova Roma: On Roman Numerals

[http://www.novaroma.org/via_romana/numbers.html]
describes the number system developed by the ancient Romans. It also provides a conversion feature that allows you to type in a number and see it represented as a Roman numeral.

Ask Dr. Math: Roman Numerals [<http://mathforum.org/dr.math/faq/faq.roman.html>]
explains how Roman numerals are read and used to work out a variety of math problems. It also explains the use of an abacus to calculate complex math problems.

Teacher Net [<http://members.aol.com/TeacherNet/AncientRome.html>]

has a complete listing of resources related to Rome and various aspects of Roman technology and life.

The Medicine in Ancient Rome Web pages

[http://www.historylearningsite.co.uk/medicine_in_ancient_rome1.htm on the History Learning Site [<http://www.historylearningsite.co.uk>] explore various medical practices. They also show what the Romans did to prevent disease when designing cities and caring for themselves.