



Africa: Economics and Change

The focus of this lesson plan is gold, from the gold-mining industry to its different uses.

Subject

Geography

Grade level

6-8

Duration

Three class periods

Objectives

Students will

- discuss challenges and dangers associated with gold mining;
- learn about gold's history and industrial applications; and
- present a list of "Top Ten" amazing facts about their topic.

Materials

- Computer with Internet access
- Print and online resources about gold
- Poster board and markers
- *Africa: Economics and Change* video and VCR (or DVD and DVD player)

Procedures

1. After watching *Africa: Economics and Change*, ask students to share what they learned about the gold-mining industry. Where are the world's deepest mines, such as Mponeng (the featured mine featured)? (*South Africa*) Ask students to name challenges and dangers of working in a gold mine. Their answers might include the following:
 - cooling the air in the extreme underground heat
 - penetrating tough rocks with drills and powerful explosives
 - transporting and building supports to protect workers from weight of the rock
 - transporting men and materials down extremely deep mine shafts
 - monitoring earthquakes
 - explosions from methane gas trapped in small pockets of rock
 - digging deeper and deeper mines to reach ore
 - communicating with workers who speak many languages

- extracting gold from the ore
 - working with toxic chemicals such as cyanide
 - completing the many steps of making gold bars out of gold ore
 - transporting and protecting millions of dollars of worth of gold
2. Ask students why they think gold is so expensive. (*It is difficult and costly to mine and produce; it's rare and supplies of gold ore are becoming more rare.*) Now brainstorm ways that gold has been used throughout history. (*For example: jewelry, religious statues, building ornamentation*)
 3. Tell students that for thousands of years, gold has been one of society's most precious resources. For this lesson, they will work in groups to explore several facets of the mineral, from its history to its industrial uses. They'll research a topic and create a "Top Ten" list of amazing facts to present to the class.
 4. Divide the class into six groups and assign one topic to each group.
 - Gold production
 - Price of gold
 - History of gold
 - Industrial uses for gold
 - Gold jewelry
 - Properties of gold
 5. Have students use print and online resources to research 15 to 20 facts about their topics. (Encourage students to focus on the most important, interesting, or surprising facts.) The following Web sites from the World Gold Council are a great place to start. Here are a few sites selected for each group:

Gold Production

http://www.gold.org/value/markets/supply_demand/mine_production.html
http://www.gold.org/value/markets/supply_demand/recycled.html

Price of Gold

<http://www.gold.org/value/stats/statistics/avprices1900.html>
<http://www.gold.org/value/stats/statistics/monthlysince1971.html>

History of Gold

http://www.gold.org/discover/knowledge/aboutgold/gold_prod/index.html
http://www.gold.org/discover/knowledge/aboutgold/ancient_world/index.html

Industrial Applications of Gold

http://www.gold.org/discover/sci_indu/indust_app/index.html
http://www.gold.org/discover/knowledge/aboutgold/industrial_uses/index.html

Gold Jewelry

http://www.gold.org/discover/knowledge/aboutgold/gold_jewellery/index.html
<http://www.gold.org/jewellery/goldandyou/karatage/index.html>
<http://www.gold.org/jewellery/technology/colours/index.html>
<http://www.gold.org/jewellery/technology/alloys/index.html>

Properties of Gold

http://www.gold.org/discover/sci_indu/properties/index.html

6. Once students have collected facts, have them select the ten most interesting, important, or surprising facts. Have them create a "Top Ten" poster, including at least one image, chart, or graph.
7. Have teams present their charts to the class. You can also challenge the class to create a general "Top Ten" list about gold or develop a game to recall some of the most amazing facts they learned.

Extensions

For the "**Africa's Grain Basket**," "**Fruits of the Desert**," and "**A Beneficial Bean**" segments: As a class, review the geography of the three countries featured in these segments—Mali, Kenya, and Algeria. What are the primary crops in each country? How are they influenced by geography and climate? Divide the class into four groups and give each group an outline map of the African continent on a transparency. Have each group create a different map of Africa that shows these features:

- Africa's biomes, including deserts, grasslands, mountains, and rain forests
- Africa's countries, including political boundaries, country names, capital cities
- Africa's lakes, rivers, and other bodies of water that border the continent
- Africa's major crops, indicated with symbols

Ask each group to present their map using the overhead projector. Then challenge the class to overlay different maps to answer questions, such as these:

- In which countries will you find grasslands?
- In what type of biome do you find most rice crops?
- Through what countries does the Niger River run?

For "**A Living on Lake Victoria**" segment: Hold a class debate about the benefits and problems of introducing the Nile Perch into Lake Victoria. Divide the class into two groups: the local fisherman and merchants and a group of Tanzanian biologists and environmentalists. Have students consider the short-term and long term effects in their debate.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

3 points: Students were active in class discussion; named several challenges and dangers of the mining industry; showed thorough research on their topic; and created a clear, comprehensive "Top Ten" list that included ten appropriate facts and more than one image, chart, or graph.

2 points: Students participated in class discussions; named some challenges and dangers of the mining industry; showed satisfactory research on their topic; and created an adequate "Top Ten" list that included ten appropriate facts and one image, chart, or graph.

1 point: Students participated minimally in class discussions; did not name any challenges and dangers of the mining industry; showed unsatisfactory research on their topic; and created an incomplete "Top Ten" list that included fewer than ten appropriate facts and no images, charts, or graphs.

Vocabulary

Fangalo

Definition: A unique language spoken only in South Africa's gold mines

Context: Miners in South Africa speak many different languages, but Fangalo allows them to communicate in the mines.

ore

Definition: A mineral from which a particular metal, such as gold, can be extracted

Context: Deeper mines are dug to reach new sources of gold ore.

reef

Definition: A vein or narrow band of gold ore; a strip or ridge of rocks, sand, or coral that rises to or near the surface of a body of water

Context: Over millions of years the seabed's rocks formed a reef.

shaft

Definition: A vertical passage in which an elevator travels

Context: The central shaft at Mponeng plunges more than two miles deep.

Academic Standards

The National Council for Geographic Education (NCGE) provides 18 national geography standards that the geographically informed person knows and understands. To view the standards online, go to <http://www.ncge.org/>.

This lesson plan addresses the following NCGE standards:

- Environment and Society: The changes that occur in the meaning, use, distribution, and importance of resources.

The National Council for the Social Studies (NCSS) has developed national standards to provide guidelines for teaching social studies. To become a member of the NCSS, or to view the standards online, go to <http://www.socialstudies.org>.

This lesson plan addresses the following thematic standards:

- People, Places, and Environments
- Production, Distribution, and Consumption

Credit

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