

Mining Reclamation and Cookies

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TESI '04

Time: This lesson is design for one 55 minute class period. A teacher can make it a two day lesson by increasing the reclamation discussion time and having the students write the assessment in class.

Overview: This lesson is for an Earth Science based Integrated Science class. The class is populated with Special Education students at the freshman (9th grade) level.

State of Michigan Objective: (EG) V.1.5 “All students will analyze effects of technology on the earth’s surface and resources.”

Completion of State Objective: In this activity the students will be modeling mining and its effect on a local environment. The students will see how mining out chocolate chips without a plan will destroy the cookie. This theme will be carried into a discussion and video about mining reclamation. The students will see how society’s need for mining and minerals effects the environment and what we do to reclaim or rebuild to protect the environment.

Objective: Upon completing this activity, the students will learn about the planning that goes into mining. The students must understand that before any mining can take place, the effect of that mining on the environment must be considered. For a mine to be built, there has to be a plan for the reclamation of that mining property. Also, the students will

be able to define reclamation and see real examples of the reclamation process in Michigan.

Materials:

Chocolate Chip Cookies

Graph Paper

Tooth Picks

Republic Mine Reclamation Video

Activities:

Cookie Mining (20min)

1. Pair students into groups of two and have them determine a name for their mining company.
2. Give each student a tooth pick.
3. Give each group a cookie and graph paper.
4. Have the students trace the cookie onto the graph paper.
5. Instruct the students that you are a chocolate chip collector and you will pay each company \$10,000 for each quality chip. (No small, broken, little chips allowed. Only high quality *chocolate ore*.)
6. The students must mine their cookie of all the chips with only the tooth picks (no hands) inside the cookie line.
7. After mining, the teacher will count the number of quality chips and write on the graph paper the total amount paid for the chips.
8. Another teacher (if a co-teacher is present) or the same teacher will become an EPA representative and fine the mining companies for destroying the environment and being too messy with their "*waste cookie*" outside of the lines.
9. Give the students another cookie and graph paper.

10. Trace
11. Now instruct the students to plan their mining so that the cookie can be put back together almost in its original form. Give the students several minutes to construct a plan and write notes about their plan.
12. Mine the cookie.
13. Count chips and write profit and assess any fines if needed.
14. Give each student a cookie and clean-up.

Reclamation (10-15min)

Define reclamation (“returning the land to productive and beneficial use.”) to the students and discuss the environmental impacts of mining on the environment. Ask the students how they first mined the cookie compared to the second time. Stress that mining is a planned process that takes a lot of time. Give examples of reclamation; lakes, wild life refuge, cottage property, golf courses, refrigeration, mushroom farming, etc. Also, you can discuss how abandoned mines can be used for landfills, etc.

Video (approx. 20min)

Show the Republic Mining Reclamation video.

Assessment

Have the students write a two paragraph essay on the positives of the Republic Mine’s Reclamation process. The essay must include at least five positives that the reclamation process had on the environment and local community.