

Layered Lockers Application

Challenge: What evidence can you uncover in the “layers” of your locker that serve as indicators of your school year activities and how can this be related to geologic history?

Materials: rulers student locker
graph paper

Let's Dig In:

As a class, brainstorm some objects that might be found in student lockers that might represent an “index fossil”. Once the list is generated, find a partner. Choose a locker from which you can make a profile. Take measurements and sketch what items are found, paying particular attention to those that might serve as index fossils. Indicate in which location these items are found. Remember to keep detailed and accurate notes as the locker may need to be “reconstructed” based on your sketch.

Go Figure:

1. What “index fossils” did you decide to look for and why did you choose the item?
2. What time span does your locker cover?
3. What absolute and relative dating can be done from your profile?
4. If you would leave your locker like a time capsule and your children of the 30th century returned and opened your “sealed” locker, what interpretations would they make of the time span and “index fossils” that you described in questions 1 and 2?
5. Compare your locker profile with two other profiles, recording all similarities and differences.

Teacher Notes
Layered Lockers
 Application

GEOMES Topic: Changes & Forces on the Earth’s Surface –Geologic History

Lab setup:	none	<u>easy</u>	moderate	difficult
Reasoning level:	<u>easy</u>	moderate	difficult	
Time required:	20-40 minutes	40-60 minutes	<u>60-90 minutes</u>	
Process skills:	<u>comparing</u>	<u>observing</u>	<u>collecting data</u>	<u>measuring</u>

Objectives: In this activity students will apply their understanding of fossils as indicators (index fossils) to a personally relevant phenomenon.

National Science Education Standards:

Content Standard: Earth & Space Science - Earth’s history
 Origin and structure of the earth system
 Unifying Concepts and Processes: Change, constancy, & measurement

Materials: rulers student lockers graph paper

Teaching Strategies:

Begin with a brainstorming session with your students about what they feel might serve as appropriate index fossils in their locker. Some suggestions might be: class schedule, course syllabi, student handbook, planner, pictures of friends, clothing, snack wrappers, activity schedule, office memos, library fine notices, or food remnants.

Direct the students to work with a partner to profile the contents of a locker. Providing rulers and graph paper will encourage students to do measurements so that the “site” could be recreated from the student sketch.

Sample Data and Observations:

Data Collected March 2003

Top of locker	
	Daily planner
	Mittens
	Completed French assignment (due 3-15-03)
	Math book
	Social Studies book
	Note to office from Mom (dentist apt. 2-12-03)
Middle of locker	
	School pictures of friends
	Magazine sales books
	Old Christmas cards from friends
	Overdue library book (due 10-2-02)
	Graded math assignment dated 9-15-02
	Class schedule
Bottom of locker	
	Good luck locker sign for football season
	Letter from advisor about fundraising (dated 9-2-02)
	Registration handbook

Similarities to our Profile	Differences from our Profile
<ul style="list-style-type: none"> • The oldest dated items were on the bottom of the shelf. • Both lockers contained a lot of items. • Both lockers contained clothing items. • Both lockers contained textbooks. • Both lockers had things taped to the inside of the doors. • Both lockers contained backpacks. • Both lockers contained spiral notebooks & colored pencils. 	<ul style="list-style-type: none"> • Our locker was a lot more organized. • Papers were crumpled in the other locker, but not in ours. • Our locker had no loose pens & pencils, the other one did. • Our locker had no food containers, the other one did. • Our locker looked a lot better. • The other locker had old shoes in the bottom, ours didn't.

Sample Responses to Go Figure:

1. Students are likely to list items as index fossils such as class schedule, student handbook, food items and pictures.
2. Answers will vary depending on the time of year the activity is done as well as how often lockers have been cleaned.
3. Answers will vary, but are likely to resemble the following sample. We found an essay written on September 16 that we can date absolutely due to the date written on the paper. The relative dating that we were able to note is that our class schedule was found on the bottom and so it is relatively older than the school pictures of friends that were found at the top of my pile.
4. Answers will vary but should include reference to the specific time frame and index fossils that the student indicated in questions 1 and 2. Students may even wonder what schools would be like or even if schools will still exist in the 30th century
5. Students might list such things as student handbooks were at the bottom of the shelf in each locker; only one profile contains a class schedule; all profiles had gum wrappers but they were found in different locations; pictures of friends were in two of the profiles.

Internet Connection:

- Suggested keywords to find sites with related information: index fossil, paleospecies, and punctuated equilibria.