

Teacher's Plan

DAY ONE

First divide the class into groups of 4 students each and pass out student worksheets. The end goal for the students is to write a paragraph that tells a plausible story of the events that happened to form all the features visible in the photographs.

Round One Directions – for the students to do

1. Discuss, in your small group, what you see in the photo. Ask questions of each other about the things in the photo that puzzle you.
2. Decide on two questions that the group would like to ask about the landscape and the features you see. Write them down on your worksheet.
3. Each group will ask one of the questions in turn.
4. As each group asks their question, listen to each question and to the response. Jot down the information you learn about what has happened to shape the landscape in the photo.
5. Round One is complete when each group has had the chance to ask one question.

Round Two Directions – for the students to do

6. Discuss all the new information you have. Consider things like what are the features, how did they form, in what order did they form and how can you know what happened in the past if you didn't actually see what happened.
7. Generate two more questions that you might ask during Round Two. These questions may include your unasked question from Round One. Be sure to refer to the photos often as you try to understand what your observations tell you about what happened.
8. Each group will ask one of the questions in turn.
9. As each group asks their question, listen to each question and to the response. Jot down the information you learn about what has happened to shape the landscape in the photo. Remember, your goal is to write a story about what happened.
10. Round Two is complete when each group has had the chance to ask one question.

End Game – for the students to do

11. Write a paragraph that tells a plausible story for how this landscape developed.
12. Your story should describe, from first to last, the events and the results that occurred. Your story should be include the observations of the features in the photograph and your explanations for how these feature formed.
13. I will collect your paragraphs and judge the tonight
14. The winning story is the one that is most correct (not the most outlandish or imaginative). The winning team gets jolly ranchers tomorrow.

DAY TWO

A self/formative assessment for students

1. Give each group of 4 students the event cards (the need to be pre-mixed up) and photos of the landscape again.
2. Tell the students to put the event cards in order, beginning with what had to happen first (the oldest event) and ending with the last event to happen (the youngest event). Students should not just declare an opinion, but explain their reasoning and cite evidence for why they think what they think.
3. Lead a class discussion on the order of the events; have the groups keep their ordered event cards out in front of the group. Allow students to describe the evidence for each of the events and their reasoning for the order of the events. Facilitate the scientific argumentation that will pop up as students discuss with one another.
4. Announce the winning group, give reward and read the winning essay out loud. All groups can refer to their event cards.
5. Use the theme of *geology is learning about what was by examining what is* during your lessons on rocks, fossils, geologic time, relative dating, stratigraphy and cross-cutting relationships.

Earth Stories: Learning about what was, by examining what is.

Information about the photograph and the feature

1. I took the pictures about ½ km from my house; my house is surrounded by farmland.
2. The land there is not flat, but gently rolling. To take the picture I stood on the gravel road, about 20 m from the pond.
3. The blue is water; the brown is sand and gravel (sediment).
4. The relief in the photograph is on the order of 5 m.
5. The width of the fan-shaped feature is about 3 m.
6. Two weeks before I snapped this picture, we had had some rain.

Your Questions

Round One

1. _____

2. _____

Round Two

1. _____

2. _____

List of Observations

Be sure to listen to and write down other groups' answers.

Names _____ Date _____ Period _____

Earth Stories: Learning about what was, by examining what is.

Directions for your geologic story

In the space below, write a paragraph that tells a plausible story for how this landscape developed. Your story should describe, from first to last, the events and the results that occurred from those events. Your story should be based on the observations of the features in the photograph and your explanations for how those features formed. I will collect your paragraphs and judge them tonight. The winning story is the one that is most correct (not the most outlandish or imaginative). The winning team gets jolly ranchers tomorrow.

Pictures of the delta and a related gully uphill from the delta



Event Cards

The farmer cultivated the field and planted soybeans.

Some of the rainwater soaked into the ground.

The soybean seeds germinated and the bean plants grew.

Some rainwater ran off the water-soaked ground and flowed down slope toward the low spot.

A large amount of rain fell in a short period of time.

In one portion of the field, runoff eroded the soil and underlying sediment to form a gully.

A tiny delta formed at the mouth of the gully where water and sediment flowed into the new pond.

The water rose in the pond to be level with the still-living soybeans. The soybeans, that spent time underwater, drowned.

Water evaporated from the pond causing the water level to go down.

A windy day made waves on the pond that carved the highest “step-like” feature.

Water continued to evaporate and periodically waves carved lower steps.

The water in the pond reached its current level.