

Parkers Prairie High School
2011 South Dakota Field Investigations Trip
Journal Assignments

Guidelines for Your Journals

- Put the name of each site ("stop") on the top of your journal page. Start a new page for each site.
- Use a pencil. It writes best on the special waterproof paper in your journal.
- On bus rides in between sites, it would be a good idea to write the assignments for the next site in your journal - or at least write a clear heading so both of us can find it later.
- Be sure to complete assignments at each site. Check the checklist as you complete each item. Remember, we are not going back!
- **Journal assignments printed in bold are questions/responses of major emphasis. All items will be graded, however those in bold will have a value of 4 points (except for the Badlands and Wind Cave investigations); all others will have a value of 1 point. Responses should be complete and related to the question or task. Note that 1 point items soon add up, so don't slight these responses!**
- You will receive an additional 20 points (4 points per day) for Work Habits. These points will be based on "on task" behavior, including working well with your group.

Journal Essential Questions:

This is the "big picture" learning that you need to demonstrate this week. Each day has an Essential Question or Questions to focus your learning. The point totals for these questions will be recorded in the grade book.

Day 1 - Monday, May 16, 2011

Essential Question 1: How does wind become energy and is it a good thing or a bad thing - or both? ___/9

Essential Question 2: How do rocks provide evidence of change over time and how are those environments recorded in the rocks? ___/22

On the bus, as we leave Parkers Prairie, write three LEARNING goals for yourself for this week. What do you hope to learn about GEOLOGY over the next five days?

Stop 1.1: Wind Energy and Electric Power Generation in Southwestern Minnesota
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___ Make at least three observations and write at least one question about what you see, hear or feel.

___ Discuss some advantages and disadvantages of wind energy. Is wind energy the answer to our energy problems? Is it the answer to our climate change problem? Why or why not?

Stop 1.2: Geology and Cultural History of Pipestone National Monument

Before going out on the trail, meet with your group and share your learning goals for the week.

___ You will see signs of "cross-bedding" in the rocks at Pipestone. Think in advance what cross-bedding might look like and write or draw your prediction in your journal.

___ During your walk to the outcrop, make at least three observations and write at least one question about what you see, hear or feel.

___ At the outcrop, look closely at a piece of quartzite through a lens. Draw what you see.

___ How do you think the talus got here? Make a hypothesis and support your explanation with evidence. (A drawing might help.)

___ Draw an example of cross-bedding and explain how you think it was formed.

___ You are a grain of sand. Describe your passage through time as you become quartzite.

Stop 1.3: Devil's Gulch Recreation Area

___ Make at least three observations and write at least one question about what you see, hear or feel.

___ How do you think this gulch formed? What is the evidence that led you to this hypothesis?

___ Pick any rock that you know other than quartzite - would it erode faster or slower than quartzite. Explain!

___ Would the gulch look the same if it was made from your rock? How would it be different?

___ What do Devil's Gulch and Pipestone have in common? How are they different?

___ On the bus, as we drive to the KOA, discuss how the landscape has changed since we left Parkers Prairie. Make a list of these changes. (Include detailed observations of the plants,

animals, soils, etc.) What are some earth science reasons why the landscape is different? (We will process this on the bus.)

___ Look back at the two Essential Questions for today. Write a reflection on how you would answer these questions. (8 points - 4 points each)

Day 2 - Tuesday, May 17, 2011

Essential Question 3: How were the Badlands formed and why are they so different from anything around them? ___/33

___ During our morning drive to the Badlands, use your South Dakota map and itinerary to trace our route for the next three days.

Stop 2.1: Chamberlain Rest Stop

___ Walk the path to the overlook at the north end of the rest stop. Sketch the river valley as you look upriver from the bluff. How do you think this valley was formed? How do you know?

___ How does the rock used to make the building compare to rocks you have seen on this trip?

Stop 2.2: Badlands National Park

___ Make at least 3 observations and write at least one question about what you see.

___ Pick an area and sketch it in your journal. What details did you observe while making your drawing that you didn't notice before?

___ Pick a quiet place to sit and write for 5 minutes. Write about what you see, how it makes you feel, and what thoughts or questions it brings to mind. You **must** do this alone!

Stop 2.3: Door Trail at Badlands National Park

___ Make at least three observations and write at least one question about what you see, hear or feel.

___ Pick up and feel the soil. Look at it through a lens. Describe it.

___ Meet in groups to share your observations about the soil. How is it different from the soil in Parkers Prairie? (Mrs. Schoeneck has a bag of soil from Parkers that you can use for comparison.)

___ Together, talk about some observations that you could use to collect data on in this area. Decide what data you are going to collect and how you are going to collect it. Carry out your investigation and record your data. Be prepared to present your findings to the large group, using the white boards to show your data. (12 points)

___ Are these rocks igneous, sedimentary or metamorphic? How do you know?

___ How did this area form? Make a hypothesis and provide at least two pieces of evidence to support it.

<p>Stop 2.4: Collecting Activity and Investigation: Rocks, Agates and Buffalo National Grasslands</p>
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___ Make at least three observations and write at least one question about what you see, hear or feel.

___ Collect 5 stones that you think are cool. Get in a small group with other students. Compare the rocks and try to find two that are the same. What evidence do you have for thinking so?

___ What do you think it would be like to stand here 10,000 years ago when most of these stones were deposited? Include sounds, sites, colors, and smells in your description.

___ Look back at the Essential Question for today. Write a reflection on how you would answer this question.

Day 3 - Wednesday, May 18, 2011

Essential Question 4: How do water processes shape the landscape? ___/19

Essential Question 5: What do fossils tell us about the past? ___/9

<p>Stop 3.1: Wind Cave National Park</p>

Bring a small flashlight today!

___ Make at least three observations and write at least one question about what you see.

___ Observe the rocks in and around Wind Cave. Are these rocks igneous, sedimentary or metamorphic? How do you know?

___ With your group, do a quick overview of the landscape at the surface of Wind Cave. What are the characteristics of this particular ecosystem? Decide what data that we need to collect to find out more. Break into smaller groups to collect data, and then be prepared to come back and report on what you found out. (12 points)

___ What was the most interesting thing you learned at Wind Cave?

Stop 3.2: Entering the Black Hills - Spearfish

(Note: This is a "drive-through" stop!)

___ Observe the rock formations as we drive through the Black Hills. How are these rock formations different from the Badlands?

___ Make at least three observations about the rock outcrops we see on our drive to Devil's Tower. (Sketching one might help.)

Stop 3.3: Black Hill Geology Research Institute.

___ Look around the museum first - Write a question for Neal.

___ Select one similar structure (like the shells, teeth, jaws, toes, hips, etc.) from two dinosaurs or two other related creatures. Sketch both, then compare and contrast the structures of the two animals.

___ Look back at the two Essential Questions for today. Write a reflection on how you would answer these questions at the end of the day. (8 points - 4 each)

Day 4 - Thursday, May 19, 2011

Essential Question 6: How do mountain building and erosion processes interact to make the landscape that we see? ___/27

Stop 4.1: Devil's Tower: Igneous Rock and Area Plate Tectonics

___ At Devil's Tower, make at least three observations and write at least one question about what you see, hear or feel.

___ On the trail, look at a talus sample through a lens. Draw what you see. How is this rock different from all the rocks we have seen so far?

___ At the overlook, compare the rock material at the tower with the rocks you observe in the valley. Describe both in your journal. How are they different?

___ How do you think Devil's Tower was formed? Write a hypothesis in your journal and give EVIDENCE to back it up!

Stop 4.2: Spearfish Canyon

___ Are these rocks igneous, sedimentary or metamorphic? How do you know?

___ How do you think this canyon was formed? How do you know it was not formed by a glacier?

Stop 4.3: Homestake Gold Mine, Lead, SD

___ Make a quick sketch of the open mining pit. (Don't worry about the roads. Draw the rocks.) You are looking at the inside of a mountain! Write at least three observations of what you see.

___ Are these rocks igneous, sedimentary or metamorphic? How do you know?

Stop 4.4: Mount Rushmore

___ Make at least three observations and write at least one question about what you see, hear or feel.

___ Make at least three observations of the boulders along the walkway just on the other side of the black metal fence. Draw the crystal of one mineral of your choice. Are these rocks igneous, sedimentary or metamorphic? How do you know?

___ On the bus, talk to your friends about what you observed in general about the Black Hills and the Badlands. Why do you think these two areas are so different? Write your thoughts and observations in your journal.

___ *Quaquaversal* is a cool geology word. Write the word in your journal and what you think it means. Find out what it really means and what it has to do with the Black Hills. Say it ten times really fast!

___ Look back at the Essential Question for today. Write a reflection on you would answer this question.

Day 5 - Friday, May 20, 2011

Essential Question 7: Why is geology important to learn and understand?

___/16

___ On the bus, write some comments about why this trip was important to you. How do you think you will remember these last five days?

___ Look at the learning goals you wrote on the first day. Did you meet or exceed these goals? EXPLAIN!

___ After five days of field investigations, what new or unanswered questions do you have about geology? (Yes, you must have some!)

___ Look at the Essential Question for today. Write an overall reflection on how you would answer this question, now that the trip is drawing to a close.