

Geologic Changes to North Dakota

Historical Skills	Historical Question	Standards
Examining critically Making a claim	How was the landscape of North Dakota formed?	ND 6-12.1.1 Identify the three landscape regions of North Dakota and describe the major features of the regions and the forces that formed them. ND 6-12.1.3 Interpret current thematic maps to identify where people live and work and how land is used.

Objectives

- Understand the key geologic events that shaped North Dakota's landscape.
- Explain how processes like plate tectonics, erosion, and glaciation have influenced the state's geography.
- Use deductive reasoning to connect geologic processes to current landforms in North Dakota.

resulted in rocky soil and glacial ponds. The Turtle Mountains, Devils Lake, and the Sheyenne River delta are major features of this region. The third region is the Missouri Plateau. It was molded by wind and water exposing dramatic geological features called the Badlands. A continental divide also runs through North Dakota, resulting in smaller rivers discharging into either the Missouri River flowing south or the Red River flowing north.

Supplies

- [Three Regions of North Dakota](#)
- [Growth and decay of the Laurentide Ice Sheet](#)
- [Retreat of the Laurentide Ice Sheet](#)
- [Geologic Map of North Dakota, p. 4](#)
- [Topographical maps of North Dakota](#)
- [Elevation Map of North Dakota](#)
- [Videos of North Dakota over millions of years](#)
- A method to share the maps and visuals with students

Setup

- Have the maps and videos accessible to the students electronically or as printouts.

Background

The geography of North Dakota is divided into three distinct regions that have historically shaped the economies of those areas. The first region is the Red River Valley, which boasts very broad, flat fertile land. The soil was formed from the ancient lakebed of Lake Agassiz. The second region is the Drift Prairie, which is located south of the Souris River and west of the James River. This region was formed by ice sheets that

Activity

1. Ask students, "What comes to mind when you think of the landforms of North Dakota?"
2. Discuss some of their ideas.
3. Provide the students with both the map of North Dakota's three regions and the topographical map. Highlight the boundaries of the three regions and engage in a discussion about the features that differentiate one area of North Dakota from another.
4. Then ask, "What do you think helped shape these regions and landforms?"
5. Again, discuss some of the students' thoughts.
6. Tell the students that they will analyze maps and videos to help them determine why North Dakota's landforms are the way they are today.
7. Students can work independently or in groups on this activity.
8. Give students the maps and videos provided. Tell them to use the questions below to help guide them as they come up with an explanation for how the three regions and other landforms of North Dakota were created. Encourage them to justify their answers using evidence from the maps and videos.

- What natural forces could have shaped North Dakota?
 - What clues have been left behind that show scientists where glaciers, lakes, rivers, mountains, or other features once existed?
 - Why might the west be hilly and the east be so flat?
 - Why are there prairie potholes in the Drift Prairie?
 - How can scientists tell the extent of a glacier? How about an ancient body of water?
 - What happens to land that has been flooded for a long time or repeatedly flooded over time? Which regions in North Dakota have experienced this?
 - What does the elevation map tell you about the regions of North Dakota? How might that relate to other maps you have studied in this assignment?
 - How does a moving glacier affect the land beneath it? How about the land in front of it?
9. To conclude the lesson, have students complete an exit ticket where they write a paragraph summarizing their findings and explaining how they believe the landforms of North Dakota were created based on their analysis of the maps and videos.

Reflection questions

1. How do you think North Dakota will change in the next one million years? Why do you believe these changes will occur?
2. Have students create a timeline of key geological events in North Dakota's history and explain how each event influenced the state's landscape or settlement.