



Karst Geology

Class Outline

Brief Synopsis: Using chemical and physical tests students will gain an understanding of the geologic makeup of a karst landscape while visiting the karst features of Eagle Bluff. Students will use this understanding to evaluate local, real life environmental issues and how human activities impact our karst landscape.

Outcomes:

1. Students will identify the most common sedimentary rocks in Southeastern Minnesota.
2. Students will explain how the chemical and physical properties of sedimentary rocks shape the local landscape.
3. Students will demonstrate how karst topography is sensitive to both natural and human activities.

Outline:

I. Down the Drain (15 minutes)

To introduce the sensitivity of a karst landscape to human activity, the instructor pours colored water from containers labeled with common household chemicals down the drain. Students are asked if they would like a drink of water, before discussing the effects of such activities.

II. Sedimentary Rock Identification (90 minutes)

Students use the simple tools of a geologist to identify the chemical and physical properties of four different types of sedimentary rocks. Students will use this information during a hike around Eagle Bluff to identify the two most common sedimentary rock. Students will also visit several karst features and learn how these rock layers dictate the shape of the landscape.

III. Rock Chemistry (20 minutes)

The limestone, shale, and sandstone layers underneath Eagle Bluff have different roles in how water moves through the landscape. This activity introduces students to the chemistry of a karst landscape, and through a relay race, illustrate the importance how these rock layers influence the behavior of our groundwater.

IV. Environmental Repercussions (30 minutes)

Human actions affect and are affected by a karst landscape. Students divide into four groups to work with a demonstration model of a karst landscape. Each group will work through a different local, real-life scenario, to determine the impact on; the water quality of a stream, the water quality of an aquifer, the safety of well water, or the stability of a road way. After determining the local impact, students make recommendations to the "City Council" as to the best way to proceed.

Quick Facts

Class Length: 3 hours

Ages: Designed for 5-8th grade

Season offered: Year round

Time outside: 2 hours

Hike length/physical activity:

2 miles, moderate to strenuous physical level.

Pre-requisite/prior knowledge:

No special skills required

Minnesota Academic Standards:

Science: 5.I.B.1, 7.IV.C.1, 8.III.A.6

Math: 4.II.B.1&5, 5.II.B.1

Language Arts: 6.I.B.4, 6.III.A.1,

3&6, 7.I.A.1, 7.I.B.1,

7.I.C.9, 7.III.A.1&6,

8.I.B.1, 5&8, 8.III.A.1,

2&7, 9-12.I.B.4