

Strand: <b>8.4</b>	Standard: <b>8.4.1</b>	Episode 4	<b>Big Idea:</b> The uneven distribution of natural resources is affected by geological processes.
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<b>Title:</b> Utah's Geological Resources	<b>Time:</b> 45 minutes + time for student presentations	CCCs: <u>Patterns</u> <u>Cause and Effect</u>	Practices: <b>Constructing explanations and defining solutions</b>
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### Episode Snapshot

In this episode students will compare maps of resources in Utah with a simple geological map of Utah and look for patterns in the distribution of resources. They will be able to **explain** how the distribution of resources in Utah is caused by the underlying geology.

### Gather

Give students a few minutes to look up some resources that are found in Utah and what these resources are used for (why do we want them?). As a class, make a master list of resources found in Utah. Provide each student with a copy of the [Geological Resources of Utah](#) activity sheet. Each student will select one resource that is found in Utah from the list you generated as a class.

Options may include gold, silver, copper, salt, gypsum, natural gas, coal, oil, silver, uranium. Avoid assigning groundwater to a student. It will be covered in episode 5. See [this document](#) for additional ideas. For the following activity, [maps of the distribution of each resource](#) in Utah are available for gold, silver, iron, coal, gems, lead, building stone, copper, phosphate, oil and gas, zinc, and evaporites (salt, potash, and magnesium). If students would like to research a resource other than these they will need to come up with their own map of its distribution in Utah. If these maps are printed on transparencies, they are sized to be overlaid on [this version of the simplified geologic map of Utah](#) that was originally found [here](#).

Students will record their resource on their activity sheet. Give students time to research how this resource is used and why it is important.

Provide each student with the map of where their resource is found in Utah printed on a transparency. Students will then make a prediction of why they think their resource is found where it is in Utah. Why are there areas where that resource is not found?

Next, provide each student with a copy of the [simplified geologic map of Utah](#). Give them time to become familiar with the geologic map and how to read it.

*(Teacher Note: See [this document](#) for instructions on how to read a geological map.)*

The students will now overlay their resource map on the geologic map and record the rock types and other geological features that are present where their resource is found.

Provide each group with a complete set of the Utah resource maps printed on transparencies.

Ask them to compare the map of their resource with the other maps and identify any patterns they can find. Are some resources found in the same areas as other resources? Which areas of the state have the most mineral resources? Are there areas with few natural resources? Record their ideas on the sheet.

### **Reason**

Hold a class discussion about the patterns that were observed in the distribution of the resources in Utah. Emphasize that the resources are not distributed evenly. Some areas have abundant resources while others have few and this is due to the geology that is present in an area.

Students will now complete the [Utah Geological Resources](#) sheet by making a claim about what determines where their resource is found and how it relates to geology. They will conduct research to back up their claims and make a final statement about the geology that is necessary for their resource to form.

### **Communicate**

Students will create a presentation that will share their findings with the class. This may be a video, a poster, an instructional pamphlet, or another method. As the presentations are given, students will record basic information about the geology of each resource on the activity sheet.

If students need more practice identifying geological situations where certain resources may be found, consider giving them the [Geology and Resources Practice](#) activity.

<b>Assessment:</b> The assessment for this episode is the presentation the student prepares to demonstrate their understanding of the connection between the locations where a resource is found and the underlying geology of the area.	<b>Materials, resources, handouts, etc:</b> <a href="#">Utah's Geological Resources</a> activity sheet  <a href="#">Simple Geological Map of Utah</a>  <a href="#">Utah resource maps</a>  <a href="#">Geology and Resources Practice</a>  <a href="#">Geology and Resources Practice Key</a>  <a href="#">Notes about resources found in Utah</a>
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