



Student Guide

Students Can Identify Phenomena

What are phenomena?

Phenomena are real and happen all around you, all the time. But what are they? Simply put, phenomena are observable things that happen in our universe that can be explained using scientific concepts.

For example, why is the sky blue? The response you often hear, *"That's just the way it is,"* can become frustrating.

Really though, why is the sky blue? Great question. In order to explain this phenomena, you will need an understanding of some related science concepts.

Check out ["What are Phenomena?"](#) to hear from other students and teachers for their take on the question.

Phenomena are all around

Learning from phenomena changes how you are learning science, and there is something special when the phenomena is in your own community. We call these phenomena *local phenomena*. Many students believe science only takes place in classrooms, laboratories or in other far away places. But the reality is that phenomena happen all around you and you have the capacity to be a scientist right where you live!

You may be wondering, *"If phenomena truly are happening all around me all of the time, why don't I see them very often?"* It is because you don't notice them. The natural follow up question is, *"How can I notice them more?"* The following pages have some useful and easy-to-do activities to help you start noticing the phenomena all around you and using what you know about science.

Students Can Capture Phenomena

Your phone is [an incredible tool!](#) It can connect you to a whole new world of science and communication! You can use it to capture phenomena in these ways:

- Is the phenomenon something you see? Capture an image or a video!
- Is the phenomenon something you hear? Capture a video or a voice memo!
- Is the phenomenon something you smell, taste, or feel? Capture a reaction video of you or a friend reacting to and describing it!
- Is the phenomenon in a text article from a website? A data set or graph? You can add the link to your bookmarks and record your thoughts!

Students Can Connect Phenomena

Despite the amount of time you've spent in science class, it's not likely that you have learned everything there is to know about science. Actually, no one has! However, you have learned more than you think you have.

After you have captured your phenomenon, you need to figure out why it happened. Google is obviously a great resource to help you with this, but so is a science teacher. You may be nervous to share your phenomenon with your teacher, but if you take a phenomenon to them, their reaction may surprise you. Here are just a few possibilities:

- This is awesome!
- Do you know what caused this? I can help figure it out!
- Thank you for sharing this with me!

Your teacher may also help you to connect your phenomenon to a science learning standard so other students throughout the state can gain access to an opportunity to learn using this phenomenon as well!

Students Can Share Phenomena

The concepts featured in the Iowa Science Phenomena database are cool because can all be found in and around Iowa. Whether it's Ashton Kutcher, sliced bread, the trampoline or Captain Kirk, Iowans have a way of being especially proud of things that are local. Being able to share phenomena is a way to show off something cool about where you live with other Iowans, and build a common pride in our state. With non-Iowans, this brings awareness to where you live!

What do I notice? What do I wonder?

As you observe a phenomenon, use this chart to record what you notice and what you wonder.

Things I notice...	Things I wonder...

I Wonder...

The series of "I wonder why" questions below are meant to give you a jump start on noticing phenomena. Maybe you've wondered about these in the past; or maybe these questions are entirely new to you. Regardless, these wondering questions will help model for you what it might look like to notice and wonder about the phenomena all around you.

Check out [the video "Driving Questions Board"](#) to learn more about important questions in science!

I wonder...

- Why the sky is blue?
- Why it smells like it does after it rains?
- Why the lights in my house are different colors?
- Why electronic devices often make a faint humming noise?
- Why some people go bald?
- If trees grow from the top or from the bottom?
- Why dogs bark but cats don't?
- Why leaves change colors in the fall?
- If plants eat. If so, what?
- Why some animals live in trees and other animals live in burrows?
- Why I can sled on the snow but not as easily on the grass?
- Why there are twins?
- Why a zebra has stripes?
- Why there is so much farming in Iowa?
- Why the moon sometimes seems really big?
- Why it stays bright outside longer in the summertime?
- Why I can't feel the Earth spinning?
- Why the inside of the Earth is so hot?
- Why there is so much water on Earth?
- How stars have so much light and heat?
- Why I can't drink ocean water?
- Why the wind blows?
- Why tornadoes form?

Take a Closer Look

You have already learned that phenomena happen all around you all the time. Sometimes we don't notice phenomena, even when we're looking for them, because they are too small to see. For this activity, you will be exploring phenomena on a smaller scale.

You will need either a magnifying lens or a phone camera could work as well. You will use the [notice and wonder activity](#), but this time you will be looking at something very small.

Using either your magnifying lens or camera to view, take a picture of, or even just get on the ground and look closely at a small patch of grass.

- What do you notice that you have never noticed before?
- What do you see?
 - What textures or shapes?
 - What living things?
- What do you smell?
 - Something familiar?
 - Something new?
- What do you feel?
- What science concept do you know that can help explain what you are noticing?
- What new wonderings do you have?

Science is Real!

The concepts you learn in science class help to explain things that actually happen in the world around you. Sometimes, however, it can be easy to miss these connections.

In this activity, identify something you learned recently in science class and make a connection to a phenomenon that you have observed.

In science, a concept I learned is...	A phenomenon I see that this concept helps to explain is...
<i>Example: That different colors of light have different wavelengths.</i>	<i>Example: Why the sky is blue, but gets more red at sunset.</i>