



PROFESSIONAL LEARNING RESOURCE

STIMULATE THE IMAGINATION

All photos: David M. Barreda /
National Geographic

Introduction

This professional learning resource introduces educators to one of the Wonder Learning Strategies: Stimulate the Imagination. This strategy helps inspire wonder and curiosity in the classroom by incorporating practices typically used in other fields, such as literature and the arts, to explore phenomena. It is part of the [WonderLab Learning Resources](#): a collection of resources inspired by the work of renowned National Geographic Explorer and photographer Anand Varma. It helps educators plan activities or lessons that bring wonder and awe into their teaching. It consists of three parts:

- **Part 1: Engage and Explore**
Learn how students can display the attitudes of the Explorer Mindset by stimulating their imagination with the purpose of telling stories about a phenomenon.
- **Part 2: Learn by Doing**
Select a phenomenon of interest, figure out a way for students to document it and tell stories about it.
- **Part 3: Reflect and Apply**
Reflect on the experience using the Stimulating the Imagination strategy in the classroom.

Guiding Question

How can you stimulate your learners' imaginations to notice and wonder about phenomena in the world in new ways?



Part 1: Engage and Explore

National Geographic Explorers are storytellers. They ask questions and seek answers about phenomena that interest them. They also communicate what they learn to a variety of audiences to excite others about asking new questions and seeking more answers. To be an effective communicator, Explorers have to learn how to shape their stories for the different audiences they are trying to reach - Explorers and researchers, teachers and educators, and learners of all ages, languages, cultures and abilities. Being able to reach different audiences helps inspire others to protect and sustain the wonder of our world.

Watch the video, [I Wonder: Stimulate the Imagination](#), and pay attention to how Anand Varma and his team display attitudes, skills, and knowledge of the Explorer Mindset to stimulate their imaginations for the purpose of developing stories about the phenomenon they are exploring. Use the following prompts to reflect on the video.

- What phenomena are Jacob and Gena **curious** about? What motivates their curiosity?
- How do Jacob and Gena use various tools and resources in the WonderLab to **observe** and **document** their phenomenon of focus (e.g. spiders, plants) in new ways?
- What are different ways you see Anand and the team **collaborating** and **communicating**? How do you think this supports the storytelling process?

Teaching Tips

1. Introduce new vocabulary to your learners. If necessary, find or think about other examples to illustrate the new terms.
2. Use the video and prompts to introduce learners to the Explorer Mindset attributes, such as curiosity, empathy, empowerment, communication and storytelling.
3. Discuss how these attributes are embodied in the way that National Geographic Explorers do their work.

Vocabulary

Wonder (noun): the mental state of openness, questioning, curiosity, and embracing mystery that arises out of experiences of awe

Curiosity (noun): a strong desire to learn or know something

Phenomenon (noun): an event in the natural or designed world

Visual mode (mode of communication): what the audience can see. It could be moving like a video or animation, or still like a photograph or even the way text appears - in color, italicized, font choice and size

Plant Awareness Disparity (PDA) (concept): the tendency to overlook plants in one's environment and to undervalue their importance. This term was formerly known as plant blindness.

Explorer Mindset (concept): a series of attributes, shared values, and commitments that define what it means to be a National Geographic Explorer such as curiosity, empathy, empowerment, collaboration, storytelling, communication and problem-solving.





Part 2: Learn by Doing

In the [Stimulating the Imagination](#) video, we see Jacob exploring the inside of an egg to show the early development of spiders, and Gena trying to find ways for people to see plants in “different ways to engage their imaginations.” We learn that both Jacob and Gena are motivated by questions that inspire them to observe their phenomena of interest in new and interesting ways. Jacob wants people to see beyond the traditional views of “scary, creepy” spiders. Gena wants to confront the pervasive problem of plant awareness disparity¹ (PAD) (formerly known as “plant blindness”) and encourage people to see plants and their vitality. Selecting a phenomenon of interest, figuring out how to observe and document what to show about the phenomenon, and sharing the story with others are three practices that Anand and his team members use to stimulate their own imaginations as well as others who hear their stories.

Selecting a Phenomenon of Interest

National Geographic Explorers use their Explorer Mindset to see the world, and phenomena in the world, in new ways that stimulate their imaginations to help them ask new questions, explore different perspectives, and creatively develop solutions to problems. The motivation to identify the phenomenon explorers find worthy of exploring can come from many different sources. In the video, Jacob states “I think spiders have a bad rep. I’m personally pretty scared of most spiders, so I want to lean into what’s cute about them, what’s cool about them, what’s creepy about them, what’s weird about them.” Jacob is interested in challenging the negative stigma around spiders and wants to make them more relatable. When talking about why she wants to focus on plants, Gena states, “Plants don’t have a face. They don’t look at you and they don’t really do anything. There’s this phenomenon called plant blindness (plant awareness disparity) where people tend to overlook or ignore plants in their environment. My goal with this project is to

make people look at plants in different ways and to engage their imaginations.”

Jacob and Gena offer one perspective around their selected phenomena. They make some assumptions about common narratives around spiders and plants that they want to disrupt by exploring ways to help people understand the phenomena differently. They have both identified phenomena in the world that people tend to see (or not see, in the case of plants) in one way and they want to explore ways to help people see these phenomena differently.

Learners have to consider the audiences for their story. In the case of Jacob’s story for example, it is important to recognize that not all audiences subscribe to the negative stigma or perception about spiders. Learners should consider what their audiences already know about the phenomena before crafting their story.



¹ Parsley KM. Plant awareness disparity: A case for renaming plant blindness. *Plants, People, Planet*. 2020; 2: 598–601. <https://doi.org/10.1002/ppp3.10153>



Your Turn: Select a Phenomenon of Interest to Your Students

The first step in storytelling is to figure out what issue, event or phenomenon needs its story told, or needs its story told in a different way to help others value new perspectives. As an educator, it is important to provide opportunities for your learners to interact with various phenomena. If you can take learners outside, a [Wonder Walk](#) in small groups could be a great place to start. Encourage groups to pause and look at the same phenomenon, sharing what they notice and what they wonder about.

To stimulate the imagination while exploring a familiar or new phenomenon, it is helpful to provide learners with some questions to help them think in new ways:

- **What if...?** What if this phenomenon did not exist? What if this phenomenon behaved differently?
- **How does this phenomenon impact people or other living things?** Would the phenomenon occur similarly in all cultures? Have people needed to adapt to the phenomenon, for better or worse? Who stands to benefit the most from this phenomenon? Who is at risk?
- **How do human activities affect the phenomenon?** Do activities such as development, construction or other factors affect the phenomenon? What is the overall effect of environmental issues such as pollution and climate change?
- **What am I curious about?** What parts of the phenomenon are still unexplained or mysterious? What scientific, historical or cultural gaps exist around it? Could there be different ways of interpreting this phenomenon that shape how I understand it?
- **Where does the phenomenon come from?** Is it a natural, human-made, or unexplained phenomenon? Could the phenomenon have a hidden cause that is not immediately apparent?
- **What is the sensory experience like?** What does the phenomenon look, feel, sound or smell like? How does it engage the senses? What sensory details or unusual perceptions could influence how one interprets the phenomenon?
- **What other phenomena interact with it?** Is this phenomenon part of a larger system or network of events? What other factors influence or interact with this phenomenon?

By answering some of these questions, learners will likely stimulate their imaginations about a phenomenon and uncover unique and engaging angles to tell a compelling story.





Observing and Documenting the Phenomenon

Once a phenomenon is selected, it is important for the explorer-storyteller to think about what information they need to collect about the phenomenon to help tell the story they want to tell. Gena describes the WonderLab as a “playground for really curious, imaginative people with a hyperactive visual curiosity.” Anand, Jacob and Gena have all selected the visual mode of photography for observing and documenting their stories about cuttlefish, spiders and plants.

Your Turn: Observe and Document the Phenomenon

Most phenomena that your learners will be able to explore will be tangible and observable. For this reason, thinking about both what to document and how to document details about the phenomenon are important pieces to gather before building the story. Below are a couple of ways that your learners can document their phenomenon. Select one or more that you think would be most appropriate.

- **Field Notes:** As learners observe the phenomenon in real life or through video, they can document their immediate impressions, including what they notice, what surprises them and/or what questions they might have. These notes could be written down or recorded verbally.
- **Visual Documentation:** For events that unfold over time, photographs and videos can be a great way to capture details. Events that happen quickly (e.g. a raindrop falling in a storm) can be video recorded and slowed down for more careful observation. Events that happen very slowly could also be photographed and

pieced together in a time-lapse video (e.g. acorn growing into an oak tree). Additionally, phenomena that are extremely large or small can be photographed or sketched at different angles, or to show contrasts that feel significant.

- **Data and Research:** For natural/physical phenomena, gathering data that explains the phenomenon helps to provide evidence to support claims that might be in the story (e.g. looking at growth over time)
- **Creative Exploration:** This documentation extends observation into more speculative thinking, which can stimulate the imagination in different ways. Questions like, “What if the phenomenon were viewed from a different angle?” or “What if this phenomenon were to change?” could supplement any of the above documentation methods to think more creatively about the phenomenon.
- **Five Senses Documentation:** This process asks learners to document what they smell, hear, taste and feel, in addition to what they think and wonder.

While these are some suggestions, also consider whether there are other things that can be collected, such as artifacts, that might relate to the phenomena. Consider other ways of organizing the documentation, such as constructing a timeline or map that visually represents changes over time or locations of measurements. These methods can also be combined to provide learners with robust materials to start their story. If you were to encourage your learners to use any of these methods, what kinds of support would you need to provide to help them consistently observe and document their phenomena over time?





Building and Sharing the Story

Something we hear frequently in the WonderLab video is how Jacob and Gena use analogies to connect something new that they are observing to something more familiar. For example, when Gena looks at the image of the spider egg, she compares it to “an upside down view of what you would see flying in an airplane, like flying over the clouds... or a misty forest.” When Jacob looks at the egg sac later he says, “It looks like a little pile of caviar.” These descriptions are ways that explorers can connect their observations to visuals or experiences that may be familiar to their audiences. Explorers recognize the importance of testing their ideas with diverse people with varying perspectives and experiences. In the lab, Gena and Jacob try out some of these connections with each other to see if they help support the ideas they are communicating. Sometimes they work and sometimes they don’t, but the important part about telling a story is that you want the story to connect to your audience. Sharing rough draft ideas to gather feedback is part of that storytelling process. There are often many drafts that come before the final story.

Your Turn: Build and Share the Story

To help learners shape their observations into a story, it is helpful to provide many opportunities for them to share their creative ideas, gather feedback and make revisions. Some questions to help guide learners through this stage of the process are:

- Who should know about the story? Who is the audience for this story?
- Who already knows about this phenomenon? How will this story enhance their understanding?
- How will you develop, produce and refine the story?
- How would you like to share the story?
- Who will provide feedback along the way?

Some learners may want to go beyond a visual or written story and consider engaging in multimodal storytelling. This allows authors to be more expansive and creative in the ways they communicate their stories to different audiences. The [Multimodal Storytelling](#) tool provides more questions to consider as learners construct stories in multiple modalities.



Teaching Tips

1. Select a phenomenon of interest to your learners or one that aligns to the standards you are teaching. Make sure to connect to these standards. You may also ask your learners to select a phenomenon that interests them.
2. Design an activity to explore and document the phenomenon.
3. Select questions to explore the phenomenon. Provide them to your learners. Learners may also create their own questions.
4. Have your learners document the phenomenon. Choose how they will document it.
5. Select or have learners select how they want to share their story. Have them share it with others.
6. Discuss and reflect on the experience with your learners.



Part 3. Reflect and Apply

Stimulating the Imagination is one learning strategy that can be used to cultivate wonder in young learners. To support this strategy, educators can create physical learning spaces that encourage learners to examine familiar things in new ways. Educators can also create intellectual spaces that prioritize making space for asking questions, considering different perspectives and communicating new ideas in different ways.

Finding ways to spark learners' sense of wonder will inspire them to engage in scientific practices to ask questions and pursue answers. But true wonder leads to more wondering, which is when you know you have been successful at cultivating wonder with your learners.

Think About

Take some time to reflect on the questions below and consider what you are already doing with respect to supporting learners around stimulating their imaginations. Identify an area of improvement based on your experience.

- When do I create opportunities for my learners to stimulate their imaginations by exploring phenomena?
- How do I support learners in documenting observations of phenomena for the purpose of telling a story?
- How do I encourage my learners to share their stories with various audiences?



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