

"Take into account that great love and great achievements involve great risk."

-Dalai Lama

Keystone Projects -- Explain & Elaborate & Evaluate

Just Add Water

What happens to the abundance and variety of local wildlife when students design, build, test, assess, and improve re-purposed water features?

What happens to the abundance and variety of wildlife when a water source is introduced to the school yard or backyard? Students ask this question, design up-cycled water features, test numerous iterations of their designs, and assess how well they are working. An interactive presentation gets them started on the road and the Engineering Journey student sheets, for data keeping and evaluating, guide them on their journey. Just Add Water can last a few weeks or span an entire year, serving as the base for a complete interdisciplinary curriculum.



Gimmie Shelter

What happens to the abundance and variety of local wildlife when students design, build, test, assess, and improve natural or up-cycled animal shelters?

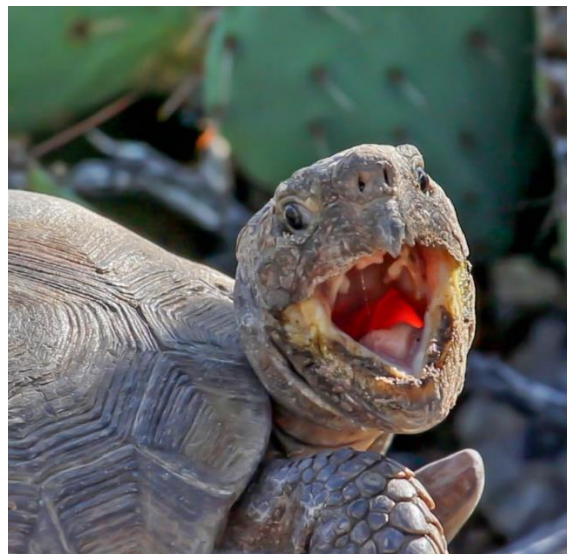
Students ask the question: What happens to the abundance and variety of wildlife when animal shelters are introduced to the school yard or backyard? They design shelters from recycled and natural materials, test numerous iterations of their designs, and assess how well they are working. The interactive presentation gets them started on the road and the *Engineering Journey* student sheets, for data keeping and evaluating, guide them on their journey. Gimme Shelter can last a few weeks or span an entire year, serving as the base for a complete interdisciplinary curriculum.



Who's Got the Munchies?

What happens to the abundance and variety of local wildlife when students research, create native-food sources, test numerous iterations of their designs, and assess how well they are working?

What happens to local biodiversity when native food sources are introduced to the school yard or backyard? Students ask this question, do research, create food sources, test numerous iterations of their designs, and assess how well they are working. The interactive presentation gets them started on the road and the *Engineering Journey* student sheets, for data keeping and evaluating, guide them on their journey. *Who's Got the Munchies* can last a few weeks or span an entire year, serving as the base for a complete interdisciplinary curriculum.



Getting STEAMed Up - Our Class Biodiversity Project

This is the heart of Biodiversity PEEK's project-based learning. Students evaluate their specific site through the observations and data they have collected there. Then they brainstorm ways they can help native plants and animals near school have a more supportive and biodiverse environment and develop a feasible plan and take action to improve or protect their local biodiversity. They do the work, not you!



STEAM Exhibition

Here's your chance to show off to the entire school, parents, and greater community the variety of work your students have been doing as a part of Biodiversity PEEK. We don't have a "cookie cutter" plan for you, but instead enable you to create an event that works for you and your situation. You may even choose to have your Biodiversity PEEK projects displayed as part of a larger event that your school already hosts, thus bringing in more visitors with less work on your part. The main thing is to step back and let the kids use their growing skills in communication, planning, art, math, design, etc. to create the display. All you should do is guide them so that an organized and feasible exhibition happens and that it shows off the work and talents of all students. We give you some ideas for a successful exhibit and remind you to creatively up-cycle whenever you can and make what you've got work like a beautiful beast!



ENGAGE LESSONS – Priming the pump of curiosity

STEAM: It's Child's Play

This is a special lesson we created just for toddlers and even babies. It proves to parents and principals that when they see small children “just playing” what they are actually observing are natural scientists engaged in an unspoken version of the scientific method. This lesson can be recycled all year by simply changing your toddlers’ immediate environment and the natural materials you expose them to. They will automatically DO science and, often, make art as they form hypotheses, make observations, investigate variables, measure, and form evidence-based conclusions. This new way of teaching sets the stage for all future STEAM learning.



1. EyeSpots: Seeing & Feeling -

Getting out their outdoor sillies!

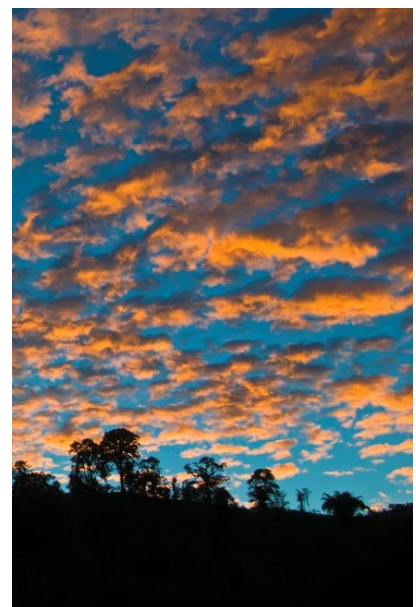
A short welcome from The Biodiversity Group gets your gang excited to help collect science data on wild plants and animals near school. Then they are introduced to their own special, unplugged, natural spot, their *EyeSpot*, to which they will return for observing, wondering, and investigating via journaling and photography. This first *EyeSpot* experience could be so strange to them that they are wiggly, giggly, and a bit silly and that is okay—they will get over it.



2. Daily Data -

Beginning Graphing

This begins the ritual process of observing and graphing each day’s weather as well as plant and animal happenings so that as time goes on patterns in the seasons and related biological events in and around their *EyeSpots* are revealed. The data they gather each day will also provide information and ideas for their upcoming class *Biodiversity Project*. It might even help them realize that weather forecasters don’t actually make the weather happen, as some kiddos think!



3. EyeSpots : Hearing & Touching –

Using Your Common Senses

This lesson demonstrates some other ways to observe a natural space besides just seeing, and helps young children pay closer attention to their surroundings. Your kids return to their *EyeSpot* and, using their guided nature journal, observe and record the different sounds they hear and what different tactile experiences they can find. They draw pictures and use words, from a word garden, to help express their discoveries.



4. EyeSpots: Smelling & Tasting –

Using Your Common Senses

This lesson primes the pump for students to consider the big concept of how animals and plants get food to survive, grow, and raise young. Your kids use their guided nature journal to observe and record the different smells they detect outside and the different tastes found in edible plants. They draw pictures and use words sprouting from a word garden to help.



5. Charcoal Shadow Drawings –

Fire + Light = Art

This artistic lesson helps students discover a scientific property of light. Students use a variety of solid, translucent, and transparent objects outside and use charcoal to draw the shadows cast by these objects. Our teacher guide then helps you guide their discovery that light passes through some materials more completely than others. Best of all, your own inner pyromania gets satisfied as you use fire to safely demonstrate how charcoal is made from woody plants!



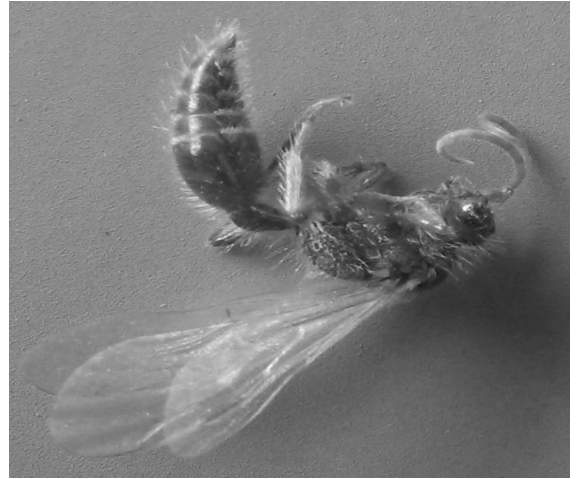
ENGAGE & EXPLORE LESSONS –

Wondering what affects plants' and animals' abilities to survive and thrive in their environments

6. *Finding Dead Stuff* –

An opportunistic lesson

This lesson should be used any time a dead animal is found. Your students will be in awe as they get to observe and consider, up close, an organism that is elusive while alive-and-kicking. The kids also benefit from deciding what to ultimately do with its remains so as to respect its life. Facing this human conundrum opens the door for a related K-2 science concept: recognizing that organisms, in death, become food for other things to live and grow!



7. *Forest Surprise* –

A true tale from Ecuador

This short story gives your kids a real world Biodiversity PEEK example of how important their own citizen-science work can be for science and their local community. As the young Ariana discovers her favorite forest critter eating another, unexpected animal, your students discover the different ways animals get food. The story's discussion questions help your students use the process of evidence-based, science inquiry.



8. *Bean Babies* –

Doing Science Naturally

This is our STEAMy take on a classic lesson about seeds, plants, and what they need to grow. This quickly rewarding lesson can continue indefinitely. Your kids will automatically DO science as they sprout and grow bean plants from seeds. They observe, measure, and record plant changes every few days in their journal. They consider what plants need to survive, experiment with variables, and make an evidence-based decision regarding where to ultimately grow their plants if they are to make more bean babies.



9. ***Nut-Nut-Squirrel*** – An Anytime Game

This game is a super-fun, active way to review the concept of the myriad ways living things get food, and to informally introduce the concept of food webs and ecosystems. Do you recall playing *Duck–Duck–Goose* as a kid? This simple game is played exactly the same way, but uses real predator-prey (including plants as prey, if you will) relationships. We would like to name it *Sun–Sun–Leaf*, *Bug, Bug, Spider*, or *Mosquito, Mosquito, Bat*, but *Nut-Nut-Squirrel* is irresistible!



EXPLORE LESSONS – Exploring how different plant and animal body parts and behaviors help them survive and thrive in their local environment.

10. ***Design a Bean House*** – BioMimicry

This super-artistic biomimicry lesson has your students considering how the design of their bean plant's parts helps the plant be sturdy, deliver water throughout the plant, and collect sunlight. Then a field trip around school reveals how the building gets its strength, water, and sunlight. Finally, students extend what they've learned about plant and building parts and their functions by designing a house. But, not just any house! One that gets its sun, water, and strength in ways that are inspired by their very own bean plants!



11. ***What's THAT For?*** – Taking a closer look at the overlooked

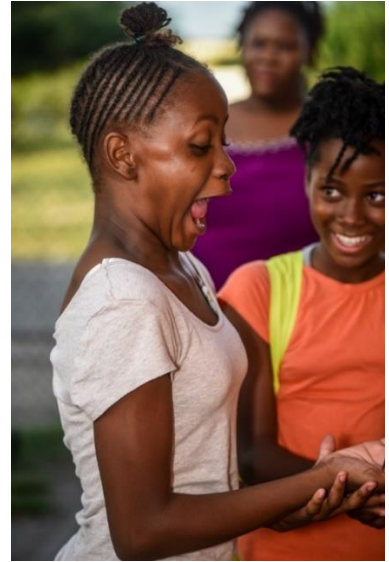
In this wonder-filled lesson students sit in their *EyeSpot* and observe more closely one plant or animal they find there. They use a teacher-guided, writing and drawing journal activity to help them develop several questions about some of the physical traits that help those plants and animals survive and thrive there. After the gorgeous photos in our lesson presentation, they'll be inspired to get out and take a closer look at their own overlooked, backyard wildlife.



12. ***Ghaa! Ground Ghouls!*** –

From creepy to cool

Your students meet Camella, a real Biodiversity PEEK student on the Caribbean island of Barbuda, and her teacher who helps her overcome a big fear by looking closer at a mysterious and misunderstood creature. Her research reveals facts that show the ground dweller's true nature and place in the ecosystem. With interactive discussion questions your kids are introduced to the concept that plants and animals DO things that change their environment and help them live there.



13. ***Why Does It DO THAT?*** –

And, yes, plants DO THINGS too!

Our interactive video lets you sit back as we introduce the idea of amazing survival behaviors of plants and animals. Then, in this curiosity-raising lesson, students visit their *EyeSpots* to again observe the plants and animals they find there. They use a writing and drawing journal activity to help them develop several questions about some of the things organisms DO to and with their environment that help them live there.



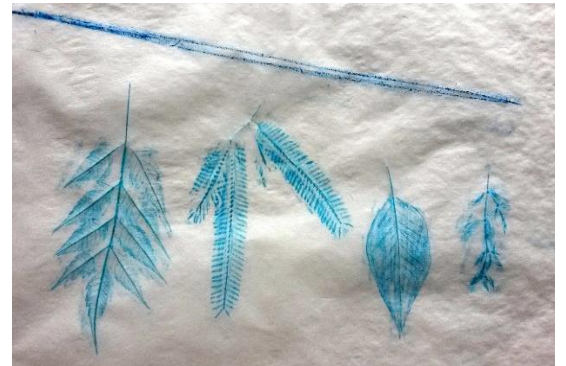
EXPLORE & ELABORATE LESSONS -

Using research, reasoning and analysis to understand environmental challenges
of local plants and animals

14. ***Frottage*** -

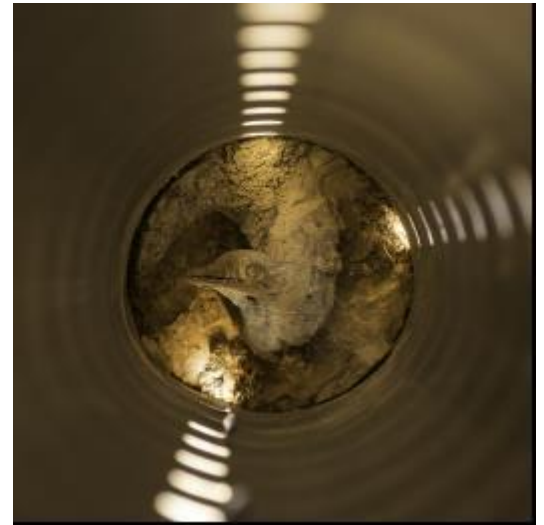
Ancient Data Collection & Art

This funny-sounding, fun and surprisingly simple, mess-free, printmaking lesson can be used in all sorts of STEAMy ways. Your students learn the ancient craft of relief printing from textured surfaces. In the process, they count, measure and explore the different types of leaves, tree bark, rocks, and more that they find outside.



15. ***Mystery of the Dead Birds*** –
Citizen-Science sleuthing with *Biodiversity PEEK*

A second-grade class stumbles on a puzzling mystery while out *PEEKing*, and your kids use research and evidence to help solve it! Along the way your students learn the value of having a variety of wild plants and animals around, and discover the potential value of their own actions as citizen-scientists. This engaging, photo-filled story is based on something that actually happened in a Biodiversity PEEK class on the edge of Tucson, Arizona and it primes the pump of inspiration for your students' own, upcoming *Biodiversity Class Challenge* project. Plus, it helps everyone learn to love vultures!



16. ***Weather Patterns*** –
Finding a Story in Daily Data

You and your students step back and look for patterns revealed on their collected *Daily Data* sheets. First, they use themselves as moveable counting blocks to help examine how the weather affects their own behaviors. Then they analyze and interpret their *Daily Data* to reach logical conclusions about how changes in weather affect the local plants and animals in their *EyeSpots*.



ELABORATE & EVALUATE LESSONS–

**Taking student-driven, citizen-science action based on experience & observation
to improve and/or protect local biodiversity**

17. ***Let's Get SmART*** –
Creative Dumpster Diving!

Instead of being **degrading** this lesson helps you and your kids re-purpose non-biodegradable materials such as plastic and Styrofoam® for all sorts of projects, but especially for making lively mosaics in the next lesson. After gobbling up our eye-candy slide show presentation, you and your class will be eager to earn **de-grade** of A for helping make a healthier planet by up-cycling! (Sorry... we got carried away there on the degrade theme...☺)



18. ***Patterns & Trash –***
From Nature to Art

This lesson extends your kids' understanding of patterns in data to help them discover patterns in nature and then use them in their own artwork. Sit back and let our gorgeous slide show presentation lead the way. Best of all, because the kids need to create their own mosaic from their re-purposed materials, they get to creatively design and problem solve using an open-ended process with endless solutions. Your students will have fun making wildly fun patterns in art while helping the planet be healthier through up-cycling!

