Plant and Animal Biology

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Space / Flight

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2. Smithsonian Apollo 11: Walking on the Moon – Former NASA astronaut, Jerry Carr
3. NASA STEM Lessons from Space – Former NASA astronaut, Jerry Carr and Former NASA BioLab Researcher, Jay Buckey
Story Preservation Initiative is pleased to make this catalogue of our original primary source audio recordings and related projects and lesson plans available for your reference. This was designed to provide – what we hope you’ll find to be – a quick and easy overview of SPI topics that are currently available.

All catalogues will be updated quarterly.

The material that we provide is varied and can be integrated into learning environments in a multitude of ways.

1. We begin with the development and production of our primary source audio recordings. These are of people who have, through their work or life experience, altered the landscape; they are, in a word, change-makers. Some of the names you will recognize, some you will not, but all of the stories contained in the Story Preservation collection are of people of impact.

2. These audio stories are, for some of our recordings, the “jumping off point” for the development of original, standards-aligned lesson plans.

3. Or, they are the jumping off point for teacher prompts. These “Make it Your Own” projects give teachers and students alike the materials they need to design their own projects. This student-led approach has proven to be successful across the grade spectrum.

4. Next, SPI curates our Learning Lab sites by providing embedded links to related and highly trusted third-party sites such as the Smithsonian, the Library of Congress, PBS LearningMedia, and others.

5. And lastly, some of our stories are made available without accompanying material. These stories are appropriate for integration into existing units of study.

We love to hear from those who are using our material. Feel free to contact us at: info@storypreservation.net

Thanks for your interest!
Plant and Animal Biology

Portraying Photosynthesis

SPI Audio Story Engagement
Danny Chamovitz

Project
In this lesson, students will develop an understanding of the key biological process of photosynthesis and the environmental factors that impact this process. Through a game modeling the resource exchange that occurs during photosynthesis, students will explore the ways in which the environment can limit this process and the corresponding effect on the environment. Students will have a chance to investigate the concept of a chemical reaction, discuss the wide-ranging effects of photosynthesis on the surrounding ecosystem, and explore physiological and evolutionary responses to limited resources.

Living Life as a Plant

SPI Audio Story Engagement
Danny Chamovitz

Lesson Summary
Living Life as a Plant was developed by PBS Learning Media. In this lesson, students explore how plants are well adapted to their surroundings. First, a class discussion brings out that plants need a source of chemical energy, substances to build plant material, and water to survive. Students watch a series of short time-lapse videos in which they see how plants respond to their environment. Next, they view a video about plants living in the desert and identify ways in which plants are adapted to their surroundings. Finally, students extend their understanding by considering why some plants have evolved to get nutrients and energy from insects.

Objectives
- Give examples of plants sensing and responding to their surroundings
- Describe the challenge plants face living in the desert
- Give examples of how plants have adapted to life in the desert
- Explain why some plants trap and digest insects
The Human Body in Space

SPI Audio Story Engagement
Jay Buckley

Lesson Summary
The Human Body in Space is a series of lesson plans developed by NASA. The content supports the concept that the human body has systems that interact with one another. Students learn how microgravity and space radiation affect the human body.

Image taken from joint Story Preservation / TedEd animated lesson titled “Gravity and the Human Body”
Dear Tomorrow

SPI Audio Story Engagement
Gus Speth

Lesson Summary
Working in collaboration with the nonprofit, Dear Tomorrow, students will listen to the audio narrative of Natural Resources Defense Council founder Gus Speth as he discusses the history of the environmental movement and climate change.

Other appropriate resources on the site include the lesson plans and project prompts: Warming Up to Climate Change, How Can Ideas Be Corrupted, Climate Change as Scientific Theory, Is the World’s Climate Changing, as well as the New York Times interactive What is Climate Change? They will then access the Dear Tomorrow site and send a letter to their Future Self. Letters, some 10,000 strong, will be archived by Dear Tomorrow and available in the years 2030 and 2050.

Image credit: collective-education.com

Warming Up to Climate Change

SPI Audio Story Engagement
Gus Speth

Lesson Summary
Climate Change as Scientific Theory was developed by the PBS News Hour.

This lesson is designed to help students better understand the concept of scientific theory, then use what they have learned to evaluate the scientific theory of climate change. Students will explore one type of observation scientists use to study climate change — glaciers and sea ice melt — through online video and interactive media tools. Students will be asked to evaluate the strength of climate change as a scientific theory based on evidence they find, and reflect on what it means to both local and global communities.

Image credit: NASA
Best Buds: Understanding the Seasonal Cycle of Trees

Image: David Carroll, botanical sketch, used with permission of the artist.

SPI Audio Story Engagement
Danny Chamovitz

Project
For this project SPI recommends combining Danny Chamovitz’ audio recording *What a Plant Knows* with the botanical drawings of Naturalist David Carroll. Suggested supplemental materials include the books *What a Plant Knows* by Danny Chamovitz and *Seeing Trees / Discover the Extraordinary Secrets of Everyday Trees* by Nancy Ross Hugo, as well as *Smithsonian in Your Classroom: Introduction to the Nature Journal* (2006) developed by the Smithsonian Center for Education and Museum Studies.

Learning Activities
1. This activity is designed to begin in the late winter / early spring when trees are in late stage dormancy.
2. Students identify a live tree and a branch with live buds that is at eye level for close observation.
3. Students tag the branch with yarn or other material to identify it as “theirs.”
4. They then draw a leaf bud on the branch in their notebooks with drawing materials provided.
5. Students will return to their bud on a bi-weekly or monthly basis. Each visit will include a drawing to be added to the notebook along with reflective writing. Students will observe and identify insects, birds, and/or other life form found living on, in, or around their tree.
6. Students will identify the species of their tree and conduct research, including habitat and average life span.
7. This lesson can be combined with the SPI project “Portraying Photosynthesis.”
Observing Nature / Turtles

SPI Audio Story Engagement
David Carroll

Project
All objects in the natural world have a ‘story.’ It can be about how they survive the season, how they choose their mates and protect their young, or about their life cycle. Observing Nature is designed to inspire students to investigate and document those stories through observation, research, writing, art, and scientific inquiry. Ultimately, students are tasked with sharing what they learned by creating a nature journal, writing and illustrating a book, or a authoring a scientific article.

David Carroll’s unfinished children’s book TURTLE’S JOURNEY has been uploaded to the SPI Learning Lab site. Teachers can download and print the book, allowing students to add on to and / or complete the story.

Observing Nature / Birds

SPI Audio Story Engagement
Don Kroodsma

Project
This project is similar to Observing Nature / Turtles; however, in addition students will participate in the Cornell Lab of Ornithology Project FeederWatch Program; learning fundamental observation skills; create field journals in which they document and reflect upon their observations; research birdsong, wildlife, North American birds, and other areas of personal interest.
Disturbing the Forest

SPI Audio Story Engagement
Tom Wessels

Overview
In this lesson students, in small groups, will build two-dimensional models of a forest to explore some of the forces involved in maintaining forest structure and biodiversity. Through a cooperative game representing the balance between forest succession and disturbance, students will develop an understanding how the biosphere interacts with the atmosphere, the geosphere, the hydrosphere, and—the most influential components of the biosphere—humans. Students will have the opportunity to demonstrate the use of graphs to address scientific questions, and, as a written summative assessment, combine information from reliable media to explain the phenomenon of forest dynamics.

Biomimicry

SPI Audio Story Engagement
Tom Wessels

Overview
Tom Wessels makes the case that human communities can learn much by modeling themselves after the natural world. This extends to design and innovation. Using Tom Wessels audio, Track 04 "Natural World as Model" as a jumping off point, educators may want to consider having students view 99 Percent Invisible's audio "Biomimicry: How Designers are Learning From the Natural World" and learn more about Biomimicry from the Biomimicry Institute. Student projects begin with a class-wide brainstorming session.
NASA International Space Station Learning

SPI Audio Story Engagement
Jerry Carr

Overview:
*NASA International Space Station Learning* is a tremendously comprehensive series of lesson plans developed by NASA.

Goal
To encourage, inspire, and motivate students to enter Science, Technology, Engineering, and Math (STEM) related fields by first encouraging students’ interest in STEM activities during the latter grade levels of elementary school, during the middle school years, and throughout high school; subsequently, pursuing STEM related disciplines in colleges, universities, trade schools, and other educational institutions.

Smithsonian Apollo 11: Walking on the Moon

SPI Audio Story Engagement
Jerry Carr

Overview
*Smithsonian Apollo 11: Walking on the Moon* is a series of lesson plans developed by Smithsonian Education. In 1957, the Soviet Union launched Sputnik, touching off a space race with the United States that led to one of America’s greatest technological achievements—sending a man to the Moon. In the Smithsonian’s Walking on the Moon Idea Lab, students will explore primary sources—such as photographs and audio and video recordings—to learn about the Apollo crew and spacecraft, the history of the space race, and the incredible technological advancements that put a man on the Moon. The lab also features writing exercises that students can submit for posting on the site.
NASA STEM Lessons from Space

SPI Audio Story Engagement
Jerry Carr and Jay Buckey

Overview
NASA STEM Lessons from Space is a series of lesson plans developed by NASA. Have you ever wondered what kind of STEM activities occur on the International Space Station? Follow astronauts as they demonstrate STEM concepts such as Newton’s Laws of Motion, surface tension, advances in technology and more.

Students select a topic to go beyond textbooks, and use the videos and additional resources to supplement classroom activities.

Image credit: NASA
Mailing Address
Story Preservation Initiative
PO Box 280
Andover, NH 03216

Phone
603 738 7477

Email
General inquiries: info@storypreservation.net

TO ACCESS THE Story Preservation Initiative 4-12 Learning Lab, go to:
https://www.spi-learninglab.org/

And to find out more about the organization,
WWW.STORYPRESERVATION.ORG