



Picture-Perfect STEM Lessons: Using Children's Books to Inspire STEM Learning, K-2
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Lesson Descriptions

Chapter 6: The Handiest Things

Students explore a variety of technologies -from chopsticks to calculators - that solve problems in our everyday lives. They learn that all technologies have various parts that work together to solve a problem, and then brainstorm some new parts to improve an invention they use everyday – a backpack.

Chapter 7: Build It!

Children love to build. In this lesson, they use their creativity to build structures out of everyday materials. Next, they are introduced to a variety of iconic buildings and learn about the architects who designed them. Finally, students design and build architectural models of some of these famous structures.

Chapter 8: Robots Everywhere!

After sharing what they know about different types of robots, students model how robots are programmed to perform tasks. They learn that every robot is designed for a specific job, and that job determines what a robot looks like. They also make a labeled drawing of a robot that could complete a particular task in their own home, and compare it to another technology designed to solve the same problem.

Chapter 9: Feel the Heat

Students explore the warming effects of sunlight on Earth's surface by comparing the temperatures of sunny surfaces to shady surfaces on their school grounds. Then they design, build, and test models of shade structures that could provide a place to cool off on the playground.

Chapter 10: Move It!

Students explore simple cause and effect relationships with forces and motion by experimenting with a toy dog (named Newton) and a toy car. They read about how pushes and pulls can stop and start motion as well as change an object's direction. Then they apply their knowledge to complete a design challenge: getting Newton into his doghouse!

Chapter 11: Let's Drum

After reading an inspirational story about a young female drummer, students learn about different types of drums, the basic parts of a drum, how drums make sound, and how repeated sound patterns are called rhythms. Each student designs and builds their own drum out of everyday items, explains how it makes sound, and creates their own rhythms using their handmade drum.

Chapter 12: Get the Message

Students read a tall tale featuring the invention of the electric telegraph, learn how to decipher Morse Code, and explore the impact of the telegraph and various other communication innovations over time. Then they design and build devices that use sound and light to communicate over a distance and compare the strengths and weaknesses of each.

Chapter 13: Science Mysteries

After reading a story about an extraordinary young scientist and then exploring the properties of matter, students learn that good scientists ask lots of questions and make careful observations. They also learn that scientists can use their skills to solve mysteries!

Chapter 14: Crayons

Crayons provide a fun and familiar context for learning about science and engineering. Students observe their properties, explore how they can be changed by breaking, melting, and cooling, and learn the many steps involved in manufacturing crayons. After designing their own process for recycling broken crayons, they demonstrate their understandings through a creative writing activity.

Chapter 15: Design a Habitat

After reading a picture book about a boy who is begging his mom for a pet iguana, students learn about the needs of living things and the diverse habitats that provide those needs. Engineering design comes into play when students apply their knowledge about the needs of animals by designing and building a model habitat for an imaginary pet of their own.

Chapter 16: Plant a Tree

Students hear the inspiring true story of Wangari Maathai, a Kenyan environmentalist who was responsible for planting 30 million trees in Africa and won the Nobel Peace Prize. They learn about the many benefits we receive from trees and then plant a tree of their own.

Chapter 17: Pillbots

After making observations of pill bugs, students are challenged to solve a human problem through biomimicry by designing a device that mimics a pill bug's structures and behaviors.

Chapter 18: Flight of the Pollinators

Students learn about the process of pollination, the variety of pollinators involved, and how both plants and pollinators benefit from the system of pollination. Then they develop a simple model that mimics a pollinator and use it to demonstrate how it pollinates plants.

Chapter 19: A Birthday is No Ordinary Day

Every trip around the sun brings us to another one – birthday that is! There aren't many events in a child's life quite as exciting as their own birthday. Through an engaging picture book, students are invited to consider each birthday as a celebration of one more trip around the sun. They investigate how many hours of daylight there will be on their next birthday and compare this number to other students' birthdays, concluding that the hours of daylight are greater in the summer months and fewer in the winter months. Then students design a birthday card for a family member or friend that teaches the recipient how truly remarkable a birthday really is!

Chapter 20: Our Blue Planet

This lesson focuses on where water is found on Earth, and how technology can help us map the shapes and kinds of water in an area. By exploring with maps, globes, and satellite images of Earth and reading a book that describes bodies of water, students identify where both liquid and solid water (ice) are found on Earth. Students also use the Google Earth application to take "virtual field trips" to different places on our planet, and to locate the bodies of water closest to their school.