

Photo Description



This image shows the inside of a wooden structure under construction, with exposed wooden beams, insulation material, and a window. The wooden frame is made from trees that have been cut down and processed into lumber. You can see how wood is used as a building material to create strong structures that protect people from the weather.

Scientific Phenomena

Anchoring Phenomenon: Why do we use wood to build things, and where does wood come from?

Wood is a renewable resource because trees can be replanted and grown again after they are harvested. When a tree is cut down, new trees can be planted in its place. Over time (usually 20-60 years depending on the tree type), those new trees grow large enough to be harvested for wood again. This is different from non-renewable resources like oil or coal, which take millions of years to form and cannot be replaced within a human lifetime. Forests that are managed responsibly can provide wood indefinitely, making it a sustainable material for building.

Core Science Concepts

- * **Renewable vs. Non-Renewable Resources:** A renewable resource is something from nature that can be replaced or regrown. Wood is renewable because new trees grow to replace harvested ones. Non-renewable resources, like coal and oil, cannot be replaced once they're used up.
- * **Tree Growth and the Water Cycle:** Trees grow by absorbing water from the soil through their roots and sunlight through their leaves. This water and energy help the tree create wood (the solid part of the tree trunk and branches). Understanding how trees grow helps us appreciate why we must plant new trees to maintain renewable forests.
- * **Material Properties:** Wood has special properties that make it useful for building—it is strong, can be shaped into different sizes, and provides insulation (helps keep heat in or out). These properties come from how trees are structured inside.
- * **Human Impact on Resources:** When we harvest trees for wood, we must replant new trees to keep the forest healthy and ensure we have wood for the future. This teaches students about stewardship and responsible resource management.

Pedagogical Tip:

Use a real piece of wood (a block, pencil, or small board) in your classroom for students to observe, touch, and feel. Ask them to describe what they notice—color, texture, weight, strength. This concrete experience helps Third Graders connect the abstract concept of "renewable resources" to something tangible in their environment.

UDL Suggestions:

Multiple Means of Representation: Show photographs of different stages of wood use—trees in forests, logging, lumber yards, and finished buildings. This visual progression helps students understand the sequence and stay engaged.

Multiple Means of Engagement: Allow students to sort pictures of renewable resources (trees, water, wind) vs. non-renewable resources (coal, oil, natural gas). This hands-on sorting activity makes the concept concrete and allows for movement.

Multiple Means of Expression: Students can draw, write, or dictate answers about where wood comes from and how it's used. Offer choice in how they demonstrate understanding.

Zoom In / Zoom Out

Zoom In (Cellular/Microscopic Level):

If you looked at wood under a microscope, you would see tiny tubes and cells that once carried water and nutrients through the living tree. These cells give wood its strength and structure. The rings you see in a tree stump show how the tree grew—one ring is added each year as the tree gets bigger. These microscopic structures are what make wood strong enough to build with.

Zoom Out (Ecosystem and Global System Level):

Forests are ecosystems where many plants and animals depend on trees for survival. When we harvest wood responsibly by replanting trees, we protect these ecosystems and ensure forests can continue to provide wood, clean air, animal habitats, and water for communities around the world. Sustainable forestry connects to climate change because growing trees absorb carbon dioxide from the air, helping reduce pollution. The global demand for wood affects forests on many continents.

Discussion Questions

- * "Where do you think the wood used to build this structure came from originally?" (Bloom's: Understand | DOK: 1)
- * "Why is wood called a 'renewable' resource, and what has to happen for it to stay renewable?" (Bloom's: Explain | DOK: 2)
- * "If a forest is cut down to build houses, what could people do to make sure there will be wood available in the future?" (Bloom's: Analyze | DOK: 3)
- * "How might cutting down forests affect the animals and plants that live in those forests?" (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

- * Misconception: "Once we cut down all the trees, we can't get wood anymore."
 - Clarification: Trees grow back! When loggers cut trees, people plant new trees in their place. A forest with responsible tree-planting practices will have trees available for harvesting again in the future. This is why wood is called a renewable resource.
- * Misconception: "Wood just comes from the store; it's not a natural resource."
 - Clarification: Wood is made from trees, which are living plants that grow in nature. We harvest (cut down) trees, process them into lumber at mills, and then use that lumber to make things we buy. But it all starts with a real tree growing in a forest.
- * Misconception: "All resources from trees are bad for the environment."
 - Clarification: Harvesting wood can be done in ways that protect forests and ecosystems. When companies replant trees, protect animal habitats, and don't cut down too many trees, they can harvest wood in an environmentally responsible way. This is called sustainable forestry.

Extension Activities

- * Tree Growth Timeline: Create a visual timeline on the classroom wall showing the stages of wood use: seed !' young tree !' mature tree !' harvested tree !' lumber !' building. Have students arrange pictures or draw each stage to understand the complete process.

- * **Build with Wood Blocks:** Provide students with wooden blocks, dowels, or craft sticks to design and build a small structure (like a wall or roof frame). This hands-on activity helps them understand why wood is useful for building—it's strong, stackable, and can be shaped. Discuss what properties of wood made their structure successful.
- * **Responsible Forestry Research:** Show students pictures of forests that are being replanted after harvesting. Create a class poster about "How to Keep Forests Healthy" that includes ideas like planting new trees, protecting animal homes, and not cutting too many trees at once. Students can illustrate or write one way people can take care of forests.

Cross-Curricular Ideas

- * **Math - Measurement:** Measure wooden objects in the classroom (pencils, blocks, rulers) using non-standard units (paper clips, finger widths) and standard units (inches, centimeters). Students can record data and compare sizes, connecting measurement skills to real materials.
- * **ELA - Informative Writing:** Read an age-appropriate nonfiction book about trees or forests, then have students write or dictate 2-3 sentences explaining where wood comes from and why we should plant new trees. This builds informational writing skills while reinforcing science concepts.
- * **Social Studies - Community Helpers:** Invite a local carpenter, builder, or forestry worker to the classroom (virtually or in person) to explain how they use wood in their job. Students can interview the visitor or write thank-you letters, connecting science to career awareness and community.
- * **Art - Nature Collage:** Collect natural materials (bark, leaves, twigs, wood shavings) and create a classroom collage or mobile showing different parts of trees and wood products. Discuss the colors, textures, and patterns found in nature, integrating art, science, and observation skills.

STEM Career Connection

- * **Forest Manager/Forester:** A forester cares for forests by deciding which trees to harvest, planting new trees, and protecting the forest ecosystem. They make sure forests stay healthy and can provide wood for many years. Foresters work outdoors and use science to manage nature responsibly.
 - Average Annual Salary: \$60,000–\$75,000 USD
- * **Carpenter/Builder:** Carpenters use wood (and other materials) to build houses, furniture, and other structures. They read plans, measure materials, and use tools to create sturdy buildings that people live and work in. Carpenters take raw wood and turn it into useful things.
 - Average Annual Salary: \$50,000–\$70,000 USD
- * **Environmental Scientist:** Environmental scientists study how humans use natural resources and how to protect the environment. They research sustainable ways to harvest wood and help companies manage forests responsibly so nature stays healthy. They work to balance human needs with environmental protection.
 - Average Annual Salary: \$65,000–\$85,000 USD

NGSS Connections

Performance Expectation:

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. (In this context, using insulation and sturdy framing to withstand heat and wind).

Disciplinary Core Ideas:

- 3-LS1.C (Organization for Matter and Energy Flow in Organisms—how organisms use energy and materials from the environment)
- 3-ESS3.A (Natural Resources—natural resources are materials or things that come from the environment and are needed or valued by people)

Crosscutting Concepts:

- Cycles (Trees grow in cycles; forests are managed in cycles of planting and harvesting)
- Cause and Effect (When trees are planted, they grow; when they are harvested responsibly, new trees are planted, creating a cycle)
- Stability and Change (Renewable resources remain stable when managed carefully; they change when overused without replanting)

Science Vocabulary

- * Renewable Resource: Something from nature that can be replaced or regrown after it is used, like trees and water.
- * Harvest: To gather or collect something that has grown, such as cutting down trees for wood.
- * Lumber: Wood that has been cut from trees and is ready to be used for building or making things.
- * Sustainable: Using resources in a way that allows them to last a long time and doesn't harm the environment.
- * Insulation: A material that helps keep heat inside or outside a building, like the gray material shown in the photo.
- * Ecosystem: A community of living things (plants and animals) and their environment all working together.

External Resources

Children's Books:

The Giving Tree* by Shel Silverstein—A classic story about the relationship between a boy and a tree, exploring themes of generosity and natural resources.

Where Do Trees Come From?* by Jean McElroy—An informative picture book explaining how seeds grow into trees and how forests are important to our world.

Forests* by Gail Gibbons—A clear, illustrated nonfiction book describing different types of forests, the plants and animals that live in them, and how humans use forest resources.