Let’s Learn About
PAPER & NATURAL MATERIALS

Quick View

How Do We Combine Paper and Natural Materials to Make Useful Everyday Items?

By taking a fresh look at two previously explored materials, Paper & Natural Materials, we will compare and contrast these two materials and find out how they are often combined.

Materials
Sweaters, scarves, mittens made with wool or cotton yarn, coats, pillows, cloth toys made of cotton or other natural fiber, books, newspaper, paper bags, flower seeds, construction paper, leaves, glue sticks, pine cones, cotton balls, crayons, construction paper.

A more detailed list can be found on Page 2.

Standards
NCECDTL, ELOF: Goal IT-ALT 3, 4, 5, 6, 7, 8, 9; Goal P-ATL 6, 7, 8, 9, 10, 11, 12; Goal P-LC 1, 2, 3, 4, 5, 6, 7; Goal P-LIT 4, 5; Goal IT-C 1, 2, 3, 5, 6, 7, 9, 10, 12; Goal P-MATH 7, 8, 10; Goal P-SCI 1, 2, 4, 5, 6; Goal IT-PMP 1, 2, 3, 4, 5, 6, 7, 8; Goal P-PMP 2, 3; MI Standards SS 1, 3.

Model i Innovation Learning Framework
Throughout this lesson, there will be opportunities to bring in Model i’s Habits of an Innovator and Actions of Innovation.

More information on Model i can be found at: thf.org/education/teaching-innovation/modeli

Lesson Overview

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<td>Ask what characteristics students remember about paper and natural materials. Students should talk about what is made from each material. Show images from The Henry Ford collections. Why might these materials be combined?</td>
<td>Explore the classroom and playground (if possible) for items made of paper and natural materials. Ask students to think of other items made from paper and natural materials.</td>
<td>Students can use glue sticks to make shapes on construction paper and sprinkle seeds on the glue to take home and plant. Students can make pine cone baby owls with paper feet, eyes and ears. Students can use leaves and other natural materials to create their own hedgehogs, owls or turkeys.</td>
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<td>Read stories related to the learning: Nature’s Day: Discover the World of Wonder on Your Doorstep by Kay Maguire and What Do You Do with a Chance? by Kobi Yamada.</td>
<td>Show students pictures of Thomas Edison’s bamboo and cardboard filament lamp. Show the Story Bots Great Inventors clip. Talk about the numerous failures of Edison and his men before finding the filaments that worked.</td>
<td>Ask students specific and open-ended questions. Family Connection worksheet to send home. Coloring sheet to send home or work on in class.</td>
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Materials

Explore
Activity — Touch Exploration
• Wool and cotton sweaters, scarves, mittens, toys
• Teachers should provide as many examples of objects that are made of paper and natural materials as possible for touch exploration.

Create
Project One — Seeds to Plant
• Glue sticks
• Seeds
• Construction paper

Project Two — Pine Cone Baby Owls
• Pine cones, 1 per student
• Cotton balls
• Construction paper, white and black, to make eyes (googly eyes are an option)
• Construction paper for feet
• Glue

Project Three — Natural Materials Animals
• Animal figures: hedgehog, turkey, owl
• Leaves of various sizes and shapes
• Construction paper, white and black, for eyes
• Construction paper, various colors, cut in circles for owl and turkey bodies (optional)
• Crayons, colored pencils or markers
• Glue
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Lesson Guide

Explore

Stay Curious, Uncover
Compare, Contrast,
Combine ........................... Page 4
Activity: Touch Exploration ........ Page 4
Links & Photos ..................... Pages 5-15

Discover

Stay Curious, Collaborate
Activity:
What Do We Have Made of Paper and
Natural Materials? .................. Page 16

Artifact of the Day

Stay Curious, Learn from Failure
Edison’s Carbonized Cotton Thread
Filament Light Bulb ............... Page 17
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Create

Design, Learn from Failure
What Can We Make
with Paper and Natural Materials?
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Baby Owls ....................... Page 21
Project 3: Natural Materials
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Inspiring Stories

Collaborate, Be Empathetic
Read Stories to Inspire
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Review & Extend

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Ask Students Specific and
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Compare, Contrast, Combine

Teachers can ask students, “What do we remember about paper and natural materials?” and elicit responses such as paper comes from trees; things that grow, such as cotton, grasses, leaves, etc., are natural materials, so are stones.

Teachers can show students images and items related to what is made of each: from the Pottery Shop, a clay jug and pitcher, where paper patterns are used to mark the pottery for painting; from the Carding Shop, where wool from the sheep is combed and separated so it can be woven into yarn; from the Weaving Shop, where the jacquard loom uses a system similar to punch cards to create beautiful patterns in weaving; from the Print Shop and presses where paper with linen and cotton is pressed into embossed (raised) designs and the early newspaper press could make many more copies in a much shorter time.

Teachers can also show the advertising posters where linen is combined with paper to make sturdier, longer lasting advertisements.

Teachers can show students a baseball cap explaining that the bill is often made of cardboard covered with fabric and the picture of a woman’s hat made from paper and natural materials.

Teachers should ask students why they think paper and natural materials might be combined and what kind of products might result.

Activity

Touch Exploration

Teacher should have students talk about what things are made with paper and what are made with natural materials.

Ask specific questions to help students remember and identify why some items are made of paper but others are made from natural materials.

Students may also include items they discovered at home made from these materials.

Have students touch wool and cotton sweaters, scarves, mittens, toys, etc.; describe what they see and feel; and think about why these items are made from natural materials but not paper.

Model i Innovation Learning Framework

Stay Curious, Uncover

- Ask questions like what, why, how.
- What do you see (characteristics, properties)? What problems does this material help us solve?

Links and photos for this section are on Pages 5-15.
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4-Gallon Stoneware Jug, 1850-1875

thf.org/collections-and-research/digital-collections/artifact/218966
Let’s Learn About
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Wedgewood Pitcher, circa 1815
thf.org/collections-and-research/digital-collections/artifact/117331
Let’s Learn About
PAPER & NATURAL MATERIALS

Carding Machine, 1850-1890
thf.org/collections-and-research/digital-collections/artifact/245864#slide=gs-226468
Jacquard Loom, Modeled After 1804 Design

thf.org/collections-and-research/digital-collections/artifact/354319

Note punch card system – same principle as early computer programming.
Let’s Learn About
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Explore

Carole Ashley at the Jacquard Loom, Plymouth Carding Mill (now Gunsolly Carding Mill), Greenfield Village, 1977

https://www.thehenryford.org/collections-and-research/digital-collections/artifact/408542
Let’s Learn About
PAPER & NATURAL MATERIALS

Jacquard Coverlet, 1848
thf.org/collections-and-research/digital-collections/artifact/370875#slide=gs-249474
Let’s Learn About
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Columbian Press, 1857
thf.org/collections-and-research/digital-collections/artifact/178957
Let’s Learn About
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Potter Cylinder Press, 1879-1893, Newspapers in Volume
thf.org/collections-and-research/digital-collections/artifact/140002
Let’s Learn About
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Explore

Advertising Poster, Virginia Sweet Brand Self-Raising Pancake Flour, 1912-1917

thf.org/collections-and-research/digital-collections/artifact/251513

![Advertising Poster, Virginia Sweet Brand Self-Raising Pancake Flour, 1912-1917](image)
Let’s Learn About
PAPER & NATURAL MATERIALS

Drawing of Used Car Lot Advertising “Big Used Car Round Up,” 1939
thf.org/collections-and-research/digital-collections/artifact/440343
Let's Learn About
PAPER & NATURAL MATERIALS

Bonnet, circa 1870, Straw, Cotton, Paper

thf.org/collections-and-research/digital-collections/artifact/16783#slide=gs-177784
Activity
What Do We Have Made of Paper and Natural Materials?

Students can explore their classroom and playground (weather permitting) to find items made with paper and natural materials, such as pictures, wood picture frames (natural materials and cardboard back), greeting cards, toys (many items such as play kitchens have wooden structure with paper/sticker covering), books with cloth incorporated in covers or cloth tape on spines, etc.

Model i Innovation Learning Framework
Stay Curious, Collaborate

• Ask questions like what, why, how.
• Talk about helping, working together.
Let's Learn About
PAPER & NATURAL MATERIALS

Artifact of the Day

What Is Edison’s Carbonized Cotton Thread Filament Light Bulb?

Thomas Edison and his team of workers experimented with many materials to create the first practical light bulb, including bamboo and cardboard. On October 21, 1879, Edison’s bulb with a filament (the tiny wire that glows inside the bulb) made of carbonized cotton sewing thread burned brightly for over 40 hours and was declared a success. The use of a natural material led to the development of this important scientific discovery that we use in our homes and businesses every day. How cool is that?

Teachers can also show the following clip of Story Bots Great Inventors: Thomas Edison

youtube.com/watch?v=b1lKwZTtzIY

Links and photos for this section are on Pages 18-19.

Model i Innovation Learning Framework

Stay Curious, Learn from Failure

• Ask questions like what, why, how.
• Talk about “trying again,” what’s another way to...
Let’s Learn About
PAPER & NATURAL MATERIALS

Artifact of the Day — Links

Edison Lamp, 1879, Paper Horseshoe Filament

thf.org/collections-and-research/digital-collections/artifact/199162
Let’s Learn About
PAPER & NATURAL MATERIALS

Artifact of the Day — Links

Edison Bamboo Filament Lamp, 1880
thf.org/collections-and-research/digital-collections/artifact/10019
Let’s Learn About
PAPER & NATURAL MATERIALS
Create — What Can We Make with Paper and Natural Materials?

Project 1: Seeds to Plant
Students can use glue sticks to make shapes on construction paper and sprinkle seeds on the glue to take home and plant.

Materials
• Glue sticks
• Seeds
• Construction paper

Instructions
1. Give students glue sticks to draw on construction paper.
2. Sprinkle seeds over the glue areas.
3. Take home, cut paper into sections and plant in soil. Construction paper will break down.

Model i Innovation Learning Framework
Design, Learn from Failure
• Make, build and create.
• Talk about “trying again,” what’s another way to...

Create — What Can We Make with Paper and Natural Materials?
Project 2: Pine Cone Baby Owls

Students can make pine cone baby owls with paper feet, eyes and ears.

Materials

• Pine cones, 1 per student
• Cotton balls
• Construction paper, white and black, to make eyes (googly eyes are an option)
• Construction paper for feet
• Glue

Instructions

1. Give each student a pine cone and 2-3 cotton balls.
2. Pull cotton ball out to thin and create more of a string of cotton.
3. Begin wrapping pulled cotton around pine cone, tucking in between rows of scales. Repeat with each cotton ball until cone is completely covered.
4. Cut white circles and small black circles for eyes.
5. Glue small black circles onto white circles and glue to pine cone. (Googly eyes may be substituted for the construction paper ones.)

Model i Innovation Learning Framework

Design, Learn from Failure

• Make, build and create.
• Talk about “trying again,” what’s another way to...

Create — What Can We Make with Paper and Natural Materials?
Let’s Learn About PAPER & NATURAL MATERIALS

Create — What Can We Make with Paper and Natural Materials?

Project 3: Natural Materials Animals

Students can use leaves and other natural materials to create their own hedgehog, owl or turkey.

Materials

• Animal figures: hedgehog, turkey, owl
• Leaves of various sizes and shapes
• Construction paper, white and black, for eyes
• Optional: Construction paper, various colors, cut in circles for owl and turkey bodies
• Crayons, colored pencils, or markers
• Glue

Instructions

1. Choose which figure to use or give students a choice of figures.
2. If using pre-drawn figures, allow students to color figures with crayons, colored pencils or markers.
3. Cut circles of white paper and small circles of black for turkey or owl eyes.
4. Give students a variety of colors and sizes of leaves to cover body of hedgehog or make tail of turkey or wings of owl.
5. Assist students in gluing leaves in place on their figure.

Figure outlines are on Pages 23-25.

Model i Innovation Learning Framework

Design, Learn from Failure

• Make, build and create.
• Talk about “trying again,” what’s another way to...
Turkey Outline
Let’s Learn About
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Read Stories to Inspire Your Students

*Nature’s Day: Discover the World of Wonder on Your Doorstep*
by Kay Maquire

*What Do You Do with a Chance?*
by Kobi Yamada

Model i Innovation Learning Framework

Collaborate, Be Empathetic

- Talk about helping, working together.
- How did the characters in the stories feel? How might the stories make others feel?
Let’s Learn About
PAPER & NATURAL MATERIALS

Review & Extend

Ask Students Specific and Open-Ended Questions

• How do we know if something is a natural material?
• What other kinds of items do you think can be made with paper and natural materials?
• What would you like to make using paper and natural materials?
• What happened in the story today?

Model i Innovation Learning Framework

Stay Curious, Collaborate

• Ask questions like what, why, how.
• Talk about helping, working together.

Family Connection

Send the worksheet on Page 28 home with students to be completed at the end of the lesson.

Coloring Sheet

Have students color the picture on Page 29 as a part of the lesson, or send it home to be colored.
Let’s Learn About
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Take the Learning Home

We are learning about paper and natural materials as they are combined to make many items we use every day. Please take your student on an "I Spy" adventure through your home and neighborhood to see what paper and natural materials items you can find. What are some of these things? Have them draw what they find.

These are some of the stories related to our learning. You might enjoy reading them with your student.

*Because of an Acorn* by Lola M. Schaefer and Adam Schaefer

*I Will Try* (Mindful Mantras Book 5) by Laurie Wright

*Beautiful Oops!* by Barney Saltzberg
Let’s Learn About
PAPER & NATURAL MATERIALS

Coloring Sheet

Edison Bamboo Filament Lamp, 1880