PCS edventures!™

Experts in Hands-On STEM Education

Traveling Artist Individual Kit

Grades 4-6

CURRICULUM SAMPLE

ENRICHMENT PROGRAMS

edventures.com

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(800) 429-3110

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Traveling Artist Individual Kit

GRADES: 4-6

STUDENTS	TIME
1 per kit	12, one-hour lessons

SUBJECTS

- Physical Science
- Life Science
- Earth Science
- Art/STEAM
- Math Connections
- English Language Arts Connections
- Social Studies/ History Connections

SETTINGS

- Summer camps
- Classrooms
- Before & After-school programs

COMPLETE PROGRAM

PRINT MATERIALS

DIGITAL CURRICULUM

Learners experience the artistic traditions of the world through hands-on projects. Take creative thinking and **cultural awareness** head-on by examining the **STEAM** processes that make art possible.

TECH REQUIREMENTS / PREREQUISITES

- None

PRICING OPTIONS

- Each Kit: $69^{00}
- Minimum purchase: 20 kits

Scan or Click QR Code for:

PRODUCT ORIENTATION	FULL MATERIALS LIST	STANDARDS & ALIGNMENT

CONTACT US:
Call: **(800) 429-3110**
Email: **sales@edventures.com**
Web: **edventures.com**

Rev: 08/12/21

Suminagashi Paper

STEM CONNECTIONS

Science: Structure and Properties of Matter

Technology: Creative Communication

DURATION

60 Minute Lesson

MATERIALS

Materials Needed by Each Student:

- **Dish soap**
- **Flow aid**
- **Rice paper**
- **Paint palette**
- **Paper Towels**
- **Small plastic bin** (filled with water)
- **Suminagashi marbling ink**
- **Toothpicks**

Curriculum Resources:

- **Traveling Artist Daily Slides**

SCHEDULE

- Introduction (10 min)
- Japanese Suminagashi Paper (40 min)
- Clean-Up & Wrap-Up (10 min)

OBJECTIVE

Discover the history and origins of Suminagashi monoprints and the suspenseful science of surface tension.

ALIGNED STANDARDS

ISTE-S.6.b Students create original works or responsibly repurpose or remix digital resources into new creations.

NGSS* 5-PS1-3 Make observations and measurements to identify substances based on their properties.

HABITS OF MIND

- Creating, Imagining and Innovating
- Managing Impulsivity

21ST CENTURY SKILLS

- Creativity and Innovation
- Flexibility and Adaptability
- Social and Cross-Cultural Skills

BACKGROUND INFORMATION

Japanese Suminagashi paper is plain white rice paper that has been infused with a marbling of water and ink. Often used as a background for calligraphy or as decorative book covers, its creation is a delicate process, but one that creates vibrant designs that have been a traditional part of Japanese culture since before the 12th century. Originally, the marbled paper was reserved for only the Japanese upper class. They use the paper for short poems, haikus or as the base for other forms of art.

Now, in order to better understand this method of art, its name needs to be examined. The word "Suminagashi" translates to "floating ink," which describes exactly what the artist is doing when they create Suminagashi paper — they're painting on water with ink! Traditionally, the process starts with a small tray of water. Once the surface is still, the artist carefully drops special colored inks into the tray. The inks float above the water due to the water's surface tension. This allows the artist to "paint" with the ink by drawing with special tools or by gently blowing across the surface. As the ink moves across the water, the artist is able to control its path, forming delicate shapes and patterns. Once the design was complete, the artist laid a sheet of white rice paper across the water, allowing the blank page to soak up the vibrant colors.

While the designs of finished Suminagashi paper vary greatly, there is one rule that will always remain the same. From the moment you fill your tray with water, you have to be cool, calm and careful — one wrong move can disrupt the water's surface tension, destroy the design and force you to start from scratch!

Today, the way Suminagashi paper is created remains very similar to the original method perfected by 12th century Shinto priests. Although, with the help of science, modern-day artists have been using acrylic paints and fluid mechanics to produce even more complicated designs. By controlling the colors through the density of the pigments and the surface tension of the water, artists create beautiful landscapes full of fanciful animals before preserving the image on a sheet of rice paper.

DAILY PREP

- Gather a kit of materials for each student. Distribute ahead of time if needed for remote instruction.
- Read through the Background Information and lesson.
- If possible, create an example sheet of marbled paper to share with the group.

STEP-BY-STEP DIRECTIONS FOR INSTRUCTORS

Whole Group

INTRODUCTION

Welcome everyone back to *Traveling Artist*! Introduce Suminagashi paper marbling by reading from the Background Information or by talking through the Introduction slides. Then, break the surface tension by leading a short discussion:

- What kinds of surfaces do artists usually paint on? Is it possible to paint on other surfaces?
- What surfaces or materials seem impossible to paint on?
- Could it be possible to paint on water?

Small Groups

JAPANESE SUMINAGASHI

Set students free on Suminagashi by either reviewing the step-by-step directions printed in the Traveling Artist Journals or talking through the Materials and Directions slides with the group.

Tip:

- *Designate one toothpick for each color of ink.*
- *Wherever the toothpick is dipped in the water, the color will spread out. To spread the colors out even more, dip the tip of another toothpick in the center of the first dot.*
- *Once you've covered the pan, work to make designs with the ink by gently blowing across the water or by using a toothpick to carefully swirl the paint into patterns.*
- *When at least half the pan is covered in ink, gently lay a piece of rice paper across the water's surface. Then, as soon as it's completely soaked through, lift the paper straight up into the air — be careful not to drag it across the surface of the water.*
- *Have paper towels nearby where you can lay your Suminagashi paper down to dry.*
- *The wet paper becomes very delicate and may fold over onto itself. Do not try to fix it just yet. Instead, just lay it down to air dry. Once it is completely dry, unfold the paper and flatten it out.*

Group Discussion

CLEAN-UP AND WRAP-UP

Encourage students to save any leftover materials for future projects. Then, lead a short wrap-up discussion:

- How was the ink able to float on top of the water?
    - Is it less dense? (Try squeezing the bottle of ink high above a tray of water. It should sink beneath the surface, showing that the ink is actually more dense than the water.)
    - Why is it able to float when it's added gently? (Water is made of tiny molecules of H_2O, which like to stick together. Because they're so cohesive, a thin, invisible membrane forms along the surface, like a mini stretched-out layer of cellophane. With a lot of force, objects can break through the membrane. But, when added gently, the surface tension is strong enough to keep the object from breaking through, even if it's denser than the water. This is why paperclips can be carefully rested on top of water, water striders can run across streams and ponds and ink made with heavy pigments can float on top of water.)
- Why does the ink form a circle? (Because it can't pass through the surface of the water, the ink spreads out on top, forming a monolayer just one molecule thick. The ink has its own surface tension because of the bonds between its molecules, so it forms a circle on top of the water.)

CHECK FOR UNDERSTANDING

- When and where did the Suminagashi paper tradition start? (*The tradition started in the 12th century with Japanese Shinto priests.*)
- How was the ink able to float on top of the water? (*By resting on top of the water's surface tension, the more dense ink is able to float.*)
- Why did the ink form in the shape of circles? (*The ink has its own surface tension because of the bonds between its molecules, so, as it spreads across the surface of the water, it forms a circle.*)

EXTENSIONS

Art Extension

Give the Traveling Artist Journals a decorative, Suminagashi paper cover.

English Language Arts Extension

Write Traveling Artist Journal entries to record the day's travels. Where did you travel? What kind of art did you encounter? What does this type of art mean to the people in that culture and what does your creation mean to you?

STEM Extension

Water molecules are sticky! Not only do they stick to each other (a phenomenon known as cohesion), they can also stick to other surfaces (a similar process called adhesion). Paper is hydrophilic (aka "water-loving), so the water has no trouble sticking to its surface. As the water bonds with paper, it pulls more water along with it (remember, water's sticky) and within seconds, the ink has completely transferred to the paper. That's why paper towels are so good at cleaning up spills and why plants are able to fight gravity as they send water from their deepest roots to their highest branches. With this information, make a hypothesis about the adhesive properties of other kinds of paper. Which paper is the most hydrophilic? The least? Then, conduct an experiment to test it out.

To Adapt for Asynchronous Remote Instruction

Send home a kit of materials to each student and share the Traveling Artist slides for learners to work through independently. For tech-free implementation, students can find all essential information in their Traveling Artist Journals.

Suminagashi Paper

BACKGROUND INFORMATION

Japanese Suminagashi paper is plain white rice paper that has been infused with a marbling of water and ink. Its creation is a delicate process. Suminagashi paper is often used as a background for calligraphy or as decorative book covers. The vibrant designs have been a traditional part of Japanese culture since before the 12th century. Originally, the marbled paper was reserved for only the Japanese upper class. They use the paper for short poems, haikus or as the base for other forms of art.

Now, in order to better understand this method of art, its name needs to be examined. The word "Suminagashi" translates to "floating ink." This describes exactly what the artist is doing when they create Suminagashi paper — they're painting on water with ink! Traditionally, the process starts with a small tray of water. Once the surface is still, the artist carefully drops special colored inks into the tray. The inks float above the water due to the water's surface tension. This allows the artist to "paint" with the ink by drawing with special tools or by gently blowing across the surface. As the ink moves across the water, the artist is able to control its path. Their goal is to form delicate shapes and patterns. Once a design is complete, the artist lays a sheet of white rice paper across the water. The blank page begins to soak up the vibrant colors.

The finished designs of Suminagashi paper vary greatly. It's all up to the artist's vision. Yet, there is one rule all artists share. From the moment you fill your tray with water, you have to be cool, calm and careful. One wrong move can disrupt the water's surface tension. A bump of the table can destroy your entire design!

Today, Suminagashi paper is created very similarly to the original 12th-century method. With the help of science, modern-day artists have been using acrylic paints and fluid mechanics to produce even more complicated designs. They work to control the colors through the density of the paints and the surface tension of the water. Skilled artists can create beautiful landscapes full of fanciful animals.

MATERIALS


Dish soap

Flow aid


Paint palette


Paper towels

Rice paper

Small plastic bin

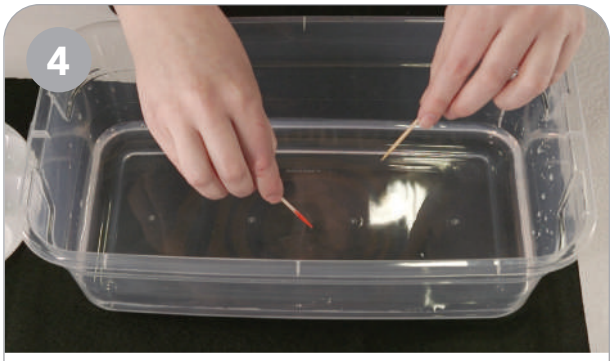

Suminagashi marbling ink


Toothpicks

Cut the rice paper to fit inside the plastic bin. Then, fill the bin with 1-2 inches of warm water.

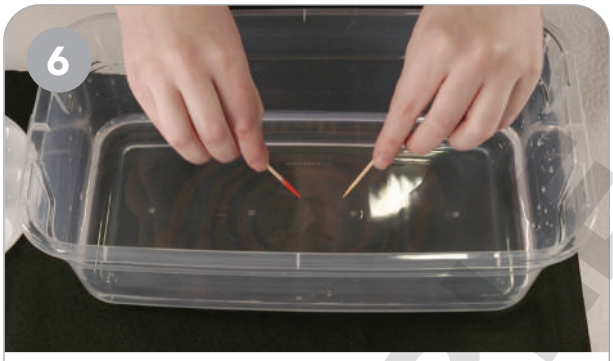
In the paint palette, fill one well with about 25 drops of marbling ink and 1 drop of flow aid. Repeat for each color.

Fill another well with soapy water. Mix each well with a separate toothpick.



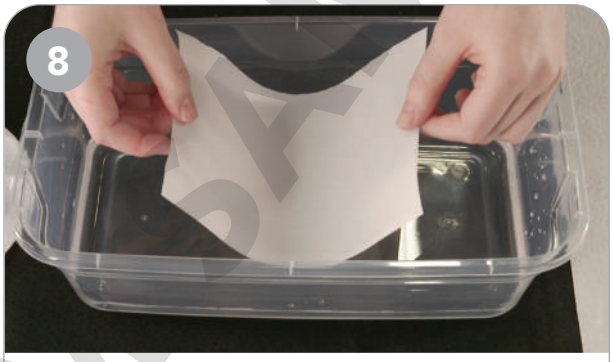
Lightly touch the ink toothpick to the surface of the water. The ink will spread out in a circle.

Touch the soap toothpick in the center of the ink circle. This pushes out the ink and creates a ring.

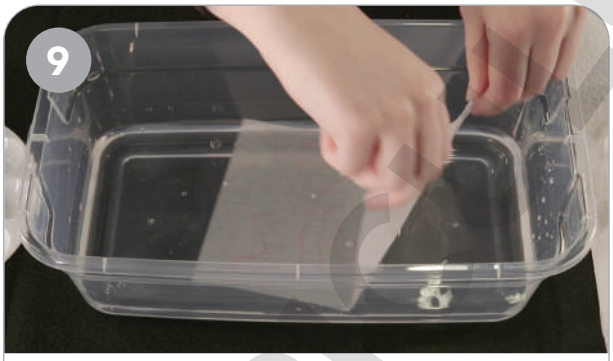


Alternate between the ink and soap to make a design.

Try dragging a clean toothpick back and forth across the surface to create swirling designs.



Once you've painted most of the water's surface, lay a sheet of rice paper on the water, shiny-side up.



Carefully hold one side of the paper with both hands and lift. Lay it on paper towels to dry.

If the paper folds, wait until it dries to unfold it. Wet rice paper is extremely delicate.

おめでとう

You Created Suminagashi Paper.

Journal Entry

DAY 7: Suminagashi Paper

Today I traveled to...

_____

Circle it on the map.

where they make

_____ ,

which is / are...

_____

_____

The reason the locals make this art is....

_____

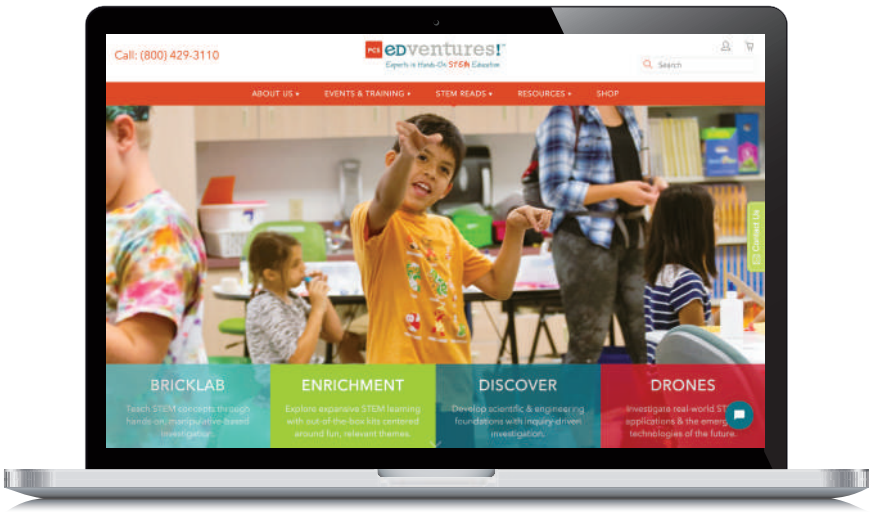
_____

My favorite thing about this art is...

_____

_____

_____



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