

FCS Lesson Plan: The Mindful Rainstick Project

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School: John Marshall Enterprise High School

Course: Mid-High School Family and Consumer Sciences (FCS)

Unit: Resource Management, Wellness, Consumer Sciences, and Creative Expression

Time Allotment: 3-4 Class Periods (approximately 50 minutes each)

| **FCCLA Connection** | National Program: Student Body / STAR Event: Repurpose & Redesign |
The project fulfills components of the *Student Body* program (focus on wellness and healthy choices) and aligns with the *Repurpose & Redesign* competitive event by turning trash into a functional treasure. |

1. FCS Learning Targets (Students will be able to...)

- **Resource Management:** Apply principles of reduce, reuse, and recycle by transforming a waste material (paper tube) into a functional and decorative item.
- **Human Development:** Recognize and apply auditory sensory techniques (sound) as a tool for stress management and mindful relaxation.
- **Consumer Sciences:** Demonstrate safe and effective use of tools (e.g., awls, scissors, glue guns) and materials (paper mache, toothpicks) to complete a design project.
- **Creative Expression:** Plan and execute a personal decorative design (art) that reflects cultural appreciation or personal aesthetic.

2. NASAFCS Standards Alignment

Standard Area	Standard/Indicator	Connection to Rainstick Project
Resource Management	1.0 Analyze resource allocation for individuals and families.	Students select and manage recycled/donated materials, demonstrating financial and material stewardship. Demonstrate: Demonstrate sustainable resource management by repurposing household materials (paper towel tubes) into a functional and meaningful product.

Human Development	10.0 Demonstrate skills for managing stress and achieving mental wellness.	The final product is a therapeutic tool used for auditory grounding and mindful practice. Analyze: Analyze the role of creative expression and rhythmic activities (like music creation) in managing stress and promoting positive mental health and emotional well-being.
Consumer Sciences	16.0 Apply design concepts, principles, and aesthetics.	Students utilize paper mache, paint, and texture to apply art principles in designing their finished stick. Explain: Explain the cultural significance and origin of the rainstick, fostering an appreciation for global resource traditions and artistic expression.

3. Instructional Procedure & Content

Day 1: Culture, Math, and Construction (Focus: Fibonacci & Cultural Connection)

1. **Introduction (10 min):** Hook: Play a recording of an authentic rainstick. [Show a short video of the sound.](#) Ask students: "How does this sound make you feel? What does this sound remind you of?" Introduce the project and the cultural/wellness background.
2. Discuss the origin of the rainstick, often attributed to the indigenous people of Chile and Peru (Atacama region), and similar instruments used in other cultures (like Aboriginal communities in Australia). See Appendix A & B. Emphasize that we are using this instrument to honor cultural history while practicing *recycling* and *wellness*. (Hispanic Heritage Month is September 15 - October 15)
3. **Discuss** the cost and environmental impact of *purchasing* a rainstick vs. *making* one from upcycled materials.
4. **The Science of Sound (10 min):** Explain the structure. The sound is created by seeds or beans cascading around internal pegs. Introduce the **Fibonacci Sequence**

(1,1,2,3,5,8,13...) and the Golden Ratio. Explain that arranging the internal toothpicks in a **Fibonacci spiral** (or helix) within the tube creates the most natural, random, and continuous sound of rain by maximizing the interaction points. [Show short video of rainstick project and how it sounds](#) when finished.

5. **Construction Demo (10 min):** Live or video demonstration of how to spiral the push pin holes, emphasizing safety (pushpins/glue) and then inserting the toothpicks.
6. **Construction Phase (30 min):**
 - Instruct students to lightly mark a spiral path down the tube or follow the natural folds in the tube.
 - Using a pushpin thumbtack to poke holes along the spiral path following an increasing Fibonacci sequence density (e.g., 5 pins in the first segment, 8 in the next, 13 in the next, etc., depending on tube length).
 - Insert the toothpicks into the holes. Apply glue to each toothpick and let dry overnight. Snip off the sharp exterior ends flush with the tube surface.

Day 2: Reinforcement and Art Base (Focus: Recycling & Art)

1. **Filling and Sealing (15 min):** Secure one end of the paper towel tube with cardboard and cardboard circle from recycled cereal box and heavy tape or layers of masking tape. Add the filling (rice, beans, lentils, navy beans, limas) or pebbles—various fillings produce different sounds). Seal the final end cap securely.
2. Students add the "rain" (fill) and test the sound, adjusting the amount of rice/beans to achieve the desired effect. They seal the final end. **Acoustic Check:** Discuss how more fill/more pins changes the "rain" duration.
3. **Paper Mache Prep (15 min):** Review paper mache technique (flour/water paste and newspaper strips). Discuss how this step adds strength, seals the holes, and creates a smooth, recycled base for painting. [Paper Mache Recipe](#)
4. **Construction Phase 2 (35 min):** Students paper mache the entire tube, ensuring the ends are completely sealed and the exterior is smooth. (Allow to dry overnight/next day).

Day 3: Decoration and Wellness Application (Focus: Art & Wellness)

1. **Decoration (30 min):** Once dry, students paint a base of brown tones to represent wood grains and let dry. Then students decorate their rainstick using paint, yarn, jute, acrylic markers or other art supplies. Encourage designs that are personally calming or inspired by nature/cultural patterns (avoiding appropriation).

3. Conclusion & Reflection (10 min)

Wellness Introduction (10 min): Mindfulness Practice: Use the completed rainsticks for a 3-minute guided breathing/grounding exercise. Practice using the rainstick mindfully. Close your eyes and focus only on the sound. Discuss how this sound can serve as an **auditory anchor** during stressful moments. Students journal a 3-sentence reflection on: 1) *What was the most challenging step?* 2) *How does the sound affect their mood?* 3) *How can they use this object for wellness at home?*

4. Cross-Curricular Connections

- **Mental Wellness & Health:** The sound of the rainstick is used for mindful meditation, auditory grounding, and anxiety reduction. It directly addresses self-regulation techniques.
- **Music (Acoustics):** Study the physics of sound and acoustics—how the internal structure (the Fibonacci spiral) dictates the continuous sound quality, frequency, and duration.
- **Art & Design:** The paper mache provides a canvas for decorative expression, applying principles of color, texture, and pattern.
- **Recycling & Sustainability:** Core skill of upcycling a common waste product (paper tubes) into a long-lasting, useful item.
- **Cultural Connections:** Research and discuss the history and significance of the rainstick in its traditional contexts.

5. Adaptation of Instruction for Accommodations and/or Modifications

Need/Challenge	Accommodation/Modification	Focus
Fine Motor Skills Tiered Options: Offer different internal construction methods: Option A (Modification): Use aluminum foil rolled into a spiral shape (baffles) instead of individually inserting 100+ pins. Option B (Standard): Use small nails/pins. Support: Pair students who need assistance with a peer helper for the pin-insertion stage.	Pre-drill holes for students struggling with the awl. Use a glue gun instead of paper mache for reinforcement (faster, less messy). Provide thicker toothpicks/skewers. Pre-Punched Tubes: For students with fine motor skill challenges (dysgraphia, mobility limitations), pre-punch holes in the cardboard tubes using a small nail or thumbtack, allowing them to focus on insertion rather than piercing.	Educational Needs Reduces physical difficulty in the most challenging step; maintains engagement and agency.
Visual Impairment	Use tactile markers (puffy paint, hot glue lines) for the Fibonacci spiral instead of pencil lines. Provide audio instructions for the	Educational Needs Leverages strengths and ensures the <i>sound</i> component of the project is

	construction steps. Sensory Focus: Provide pre-made models of rainsticks with different fillings (rice, beans, pebbles) and internal structures. Focus their assessment on the <i>acoustic analysis</i> (Learning Target 1 & 2) and the tactile elements of the decoration (yarn, textured paper).	accessible.
Cognitive/Focus (Executive Function/Attention)	Pre-measure the paper mache strips. Work in pairs, assigning one student the <i>marking/measuring</i> task and the other the <i>construction</i> task. Chunking & Checklists: Break the process into clear, manageable steps (1. Structure, 2. Fill, 3. Seal, 4. Decorate). Provide a visual checklist for students to track progress. Partner students for tasks requiring high concentration (like sealing the end caps).	Educational Needs Improves task management and reduces feeling of being overwhelmed.
Cultural Bias/Stereotype Discussion Prompt: Initiate a brief discussion on cultural appropriation vs. appreciation. Emphasize that we are <i>inspired</i> by the concept of indigenous instruments and are <i>learning</i> about the culture, not claiming the traditional item as our own. Language: Consistently	Instructional Focus: <i>Explicitly</i> discuss the difference between cultural appreciation and cultural appropriation. Guide students to create designs that are inspired by <i>nature</i> or their <i>personal heritage</i> rather than directly copying sacred or specific indigenous patterns without understanding and respect.	Stereotypes/Biases Prevents cultural appropriation and fosters critical thinking about global resource traditions in FCS.

use "inspired by traditional rainsticks" or "upcycled rain shaker."		
Visual/Kinesthetic Needs	Multi-Modal Instruction: Provide verbal, written (on the board), and visual (demo/video) instructions for construction. Allow students to hold and shake a finished sample rainstick before they begin.	Note: some students may have a sensitivity to textures - particularly if they are autistic. It might be upsetting to them and they might need a partner to do the paper mache sticky wet part of the project for them.
	Equity: Ensure all materials (especially the recycled tubes and decorative elements) are provided by the school. Do not rely on students to bring in supplies, as this assumes equal access to household waste and art materials.	

6. Interdisciplinary Focus and Wellness Integration

Focus Area	Connection to the Lesson
Mental Wellness & Health	Therapeutic Sound: Discuss sound therapy and how rhythmic, natural sounds (like rain) can induce a meditative state, reduce anxiety, and serve as a constructive coping skill. The creative process itself is stress-relieving.
Music	Rhythm & Instrument Design: Explore acoustics and how the internal structure (nails/toothpicks) and fill material (rice/beans) create the characteristic sound. Discuss the role of percussion in various cultures.

Art	Applied Design: Use decorative elements to personalize and aestheticize the functional object. Discuss patterns and symbolism used by indigenous cultures (like the Diaguita-Inca people of Chile) who traditionally made rainsticks.
Recycling & Resourcefulness	Upcycling: Directly apply the principle of upcycling by transforming a disposable waste product (cardboard tube) into a durable, functional, and decorative item, reducing consumer waste.
Cultural Connections Hispanic Heritage Month	Global Traditions: Research and discuss the history of the rainstick, traditionally made from dried cactus and used in rain-making ceremonies in South America, connecting art and resource use to cultural practice.

7. Instructional Resources, Technology, and Supplies

Category	Item	Quantity/Note
Supplies	Recycled Paper Towel/Wrapping Paper Tubes	1 per student
	Toothpicks (lots!) or Bamboo Skewers	~100 per student (extra for mistakes)
	Cardboard and Duct/Masking Tape	For end caps
	Filler (Rice, dried beans, small pebbles, dry pasta)	Variety for students to choose sound
	Paper Mache supplies (flour, water, newspaper)	Bulk quantity
	Acrylic Paint, Brushes, Sealer/Mod Podge	For decoration

Tools	Push Pins	1 per student (with safety reminder)
	Scissors, Wire Cutters (for snapping toothpicks)	1 per station (with safety reminder)
Technology	Projector/Smartboard	To display the Fibonacci spiral example, rainstick examples, videos and cultural images.



Rainstick Project: Wellness Reflection

Instructions: Now that you have completed your rainstick, please reflect on the process, your use of resources, and the mental health application of your finished instrument. Write your answers in full, thoughtful sentences.

Part 1: Resource Management and Creation

1. Describe one specific challenge you encountered during the construction of your rainstick (e.g., getting the toothpick pattern right, managing the paper mache, or sealing the ends). How did you apply problem-solving skills to overcome it?
2. Your rainstick was made using a *recycled* paper tube. In what other areas of your daily life (at home or school) could you apply the "reuse" principle of resource management to save money, materials, or time?

Part 2: Math, Sound, and Mindfulness

1. How did following the **Fibonacci pattern** impact the final sound quality of your rainstick? If you changed the pattern, what was the outcome? (Be specific about the sound—e.g., *Is it a continuous stream, or does it sound more like individual drops?*)
2. Take a moment right now: Hold your finished rainstick and slowly turn it over twice. Close your eyes while doing this.
 - Describe the feeling or emotion you experienced while listening only to the sound.
 - How could the use of this auditory stimulus serve as a grounding technique or a momentary break when you feel stressed, overwhelmed, or need to reset your focus during a busy day?

My Reflection: (Space provided for student to write responses)

Appendix A

The South American rainstick is a traditional percussion instrument that mimics the calming sound of falling rain. Typically crafted by indigenous groups in Chile and Argentina—most notably the Mapuche and Diaguita peoples—it was originally used in spiritual rituals to pray for rainstorms.

History and Origin

The origins of the rainstick are deeply rooted in the dry, arid landscapes of the Atacama Desert region. Indigenous peoples historically crafted them by cutting and hollowing out the dried, woody stalks of local cacti (like the *Copado* cactus). While the Mapuche and Diaguita tribes of Chile and Argentina are primarily credited with its invention, the instrument eventually spread to other parts of Central and South America.

How It's Made

The design of the rainstick is surprisingly clever, relying entirely on the natural shape of the plant.

- **The Frame:** The dried flesh of a cactus, reed, or bamboo is used as the primary tube.
- **The Internal Lattice:** Artisans push the spines of the cactus inward, or insert small thorns or wooden skewers, forming a spiral lattice barrier along the interior of the tube.
- **The Filler:** The tube is partially filled with small pebbles, beans, or seeds.
- **The Seal:** The ends of the stick are firmly plugged and traditionally wrapped with decorative yarn or braided fabric.

How It Works

When the rainstick is slowly tilted or rotated, the internal seeds or pebbles cascade downward through the hollow tube. As they fall, they strike the intersecting spines inside, producing a soothing, rhythmic trickle that perfectly mimics the sound of a steady rainstorm or a heavy downpour.

Uses Today

Today, the rainstick is widely embraced beyond its cultural and ceremonial origins.

- **Music:** Musicians use it as a versatile percussion instrument for adding atmospheric texture.
- **Wellness & Meditation:** Its calming white-noise effect makes it a popular tool in sound therapy, meditation, and sensory relaxation spaces.



[Rainstick, South/Central America](#)



[Organology - Rainstick](#)

Appendix B

While **rainsticks** are often associated with the cultural practices of Indigenous groups globally, including indigenous farming communities in the Americas, their association with Australian Aboriginal culture primarily involves Aboriginal-inspired art styles or confusion with [Aboriginal message sticks](#).

Key Characteristics of Rainsticks

- **Sound:** The instrument produces a cascading sound that mimics falling rain as beads, seeds, or pebbles trickle down through a series of internal pins.
- **Origin:** Traditional rainsticks are historically attributed to South American cultures (such as the Diaguita people in Chile) and various African and Mexican tribes.
- **Function:** Globally, they were used in tribal, spiritual ceremonies and rituals intended to encourage rain during times of drought.

Aboriginal Connections and Interpretations

- **Inspiration vs. Origins:** While Aboriginal Australians used percussion instruments like *clapsticks* and the wind instrument *didgeridoo*, the traditional rainstick is not a foundational instrument of Aboriginal tribes.
- **Modern Crafting:** Many rainsticks sold today are crafted from hollowed-out, termite-eaten branches—a method used in Indigenous Australian woodwork.
- **Artistic Fusion:** Rainsticks are frequently decorated with [Aboriginal-inspired dot and line motifs](#) utilizing earthy pigments to merge the rainmaking concept with Indigenous Australian artistic traditions.
- **Message Sticks:** Often confused with "rainsticks," Aboriginal message sticks were traditionally used to carry news or reinforce oral histories across language groups, rather than for making music or calling for rain.

Additional Resources

1. [What do the shapes and symbols in Aboriginal art mean?](#)
2. [Aboriginal Rain Stick Tutorial](#) with foil & rice
3. [How to make a Dot Painting Aboriginal Style Art Canvas](#)



[Example 1 from Etsy](#)



[Example 2 from Etsy](#)