



Knowledge Holder

This lesson was created by Delmar Uqualla (Kiowa-Comanche, Havasupai, Kumeyaay) and Faith Wells (Cold Lake First Nations, Denesuline, Nehiyaw).



Materials

- Natural fibers (sheepskin/wool scraps, dried grasses, tallgrass clippings, yucca fiber, etc)
- Sticks (willow or any sturdy foraged twigs, approx. 6-8 inches)
- Twine, string, sinew, paste, or glue
- Chalk or clay for paint

Land Based Tool Making

Grades 6-8

Objective

Students will explore how Indigenous peoples, like the Kiowa Nation, craft tools for clothing, regalia, and art. Students are asked to challenge the myth that only store-bought, mass-produced tools are “real” or of quality. By creating their own paintbrushes from locally sourced natural materials, students connect to values of self-reliance, ingenuity, and the understanding that nature is the first and most enduring craft store.

Survivance Message

This lesson emphasizes that the Kiowa, Comanche, Haudenosaunee, and countless other Tribal Nations have never stopped creating with traditional methods. The making of sinew thread, bone needles, shell beads, paints, and customized tools is not a relic of the past but a living, breathing practice carried on by artists and their children.

Indigenous First Nations crafted luxurious, colorful, and unique garments from the gift of the earth. We do not rely solely on plastic/metal tools from corporate supply chains. Indigenous technology was (and is) biodiverse customization. A paintbrush made from bison hair and a porous bone or a needle made from an agave point is not primitive, yet lovingly and precisely engineered for a specific hand in a specific ecosystem.

Our modern culture often treats things as disposable, things we buy, use, and throw away without thinking of where they came from. When we take the time to find a fallen branch or yucca fiber to make our own tools, we must slow down. We start to really look at our home, and we learn to acknowledge the spirit of the relative, the plant or the animal, that gave us the materials we need. This reciprocal relationship fosters deep respect for the ecosystem; we cannot exploit or destroy a landscape when we intimately rely on its health for our everyday survival and artistic expression.

Activity

5 Min: Feel! Pass around samples of natural fibers: bison/sheepskin wool scraps, dried tallgrass, or a smooth stick. Ask students to close their eyes and feel the texture.

“Before a Kiowa artisan can paint a tipi or parfleche, they must know the land. Feel the fibers in your hand. This is not a ‘supply’ from a store, but a gift from the animal or the grass that lives right outside. Indigenous wisdom begins with listening to what the materials want to be.

Could this wool become a thread? Could this stick be a brush? What would these relatives like to see painted? Before mass production stores, this was all there was, and it was enough to create vast worlds of beauty.”



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Standards

This lesson aligns with national Social Studies, History, and Science frameworks by:

- Exploring how Indigenous ancestors created specialized tools from the earth for clothing, art, and daily survival.
- Challenging the idea that store-bought, mass-produced tools are the only standard for 'real' quality.
- Practicing intentional, land-based stewardship by learning to gather materials with respect and return scraps back to the earth.

Braiding Knowledge: Curriculum Standards

This lesson is part of a broader framework that weaves together the Next Generation Science Standards (NGSS) and Indigenous Traditional Ecological Knowledge (ITECK). We teach Western science through a localized, relational lens to honor the history and sovereignty of the land and its caretakers. For a detailed breakdown of how this lesson aligns with specific NGSS benchmarks, ITECK guidelines, and UNESCO climate action goals, please visit our [story map](#).

Kiowa Vocabulary

Teihye (pron. tay-hee-yeh): Sinew, thread made from animal tendon.

To guact a'de (pron. toh-gwakt ah-deh): Pen, pencil, tool for marking.

'A'yH houdl dH: Pendant, fringe, decorative hanging element.

[Pronunciation guide reference](#)

10 Min: Connect! For generations, learning to make your own tools was a part of growing up. You were expected to craft gear that fit your own hands, your own skills, and the specific place where you lived. Kiowa women, for example, spun bison wool by hand to make everything from garters to rope, and needles were shaped from the gifts of the land including flint, bone, moose antler, yucca, and even catfish spines. When we start to think that only store-bought plastic tools are real, we lose sight of the incredible engineering our ancestors practiced every single day.

Reflecting on the carbon footprint of tools: When we buy a plastic paintbrush, it was manufactured in a factory, packaged in plastic, and shipped across the world, all of which emit greenhouse gases. When we make a brush from a local stick and sheepskin, we are practicing low-carbon engineering.

"When you choose to make a tool from what is already here, you are choosing a path that respects the earth's limits. How does our modern habit of throwing things away (and buying new ones) change how we treat the land?"

15 Min: Play! Students select a stick after testing several to find one that fits their grip comfortably. They should choose a bristle material: sheepskin wool tuft, dried grass blades, or fibrous plant matter.

Using glue or sinew, affix the bristles tightly to the end of the stick. Have students dip their brush in water mixed with crushed chalk or dirt and test the stroke on paper or pavement. *"How does this stroke feel and look different than a store-bought brush? How can you adjust it? What kind of tool have you never seen in a store but wish existed? How would you build it using only what is in your backyard?"*

Reciprocity through Stewardship

Toolmaking is never an act of pure extraction; it is an exercise in deep relational accountability with the land. When we harvest wood, stone, bone, or plant fiber to create a tool, we are receiving a gift. Reciprocity requires that our gratitude takes the form of active, physical protection, ensuring that the ecosystems providing these materials remain healthy, balanced, and vibrant.

Students can practice an act of stewardship and honor this relationship through these intentional protocols:

- Before gathering any raw materials, whether it is a fallen branch, a specific stone, or fibrous stalks, always ask permission of the space, never take the first piece you find, and never harvest more than what is strictly needed. Leave the area looking as though you were never there, minimizing footprints and disturbance.

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English Vocabulary

Sinew, regalia, biodiverse, parfleche, carbon footprint, material life-cycle, reciprocity, climate resilience, synthetic, biodegradable, dibble stick

Resources

[Kiowa Language Vocabulary](#)

[Video: Katherine Dickerson, Kiowa Storyteller & Craftswoman](#)

[Video: Kumeyaay Tools Demonstration](#)

[DIY Nature Paint Brushes Guide](#)

Book: *The Way to Rainy Mountain* by N. Scott Momaday (Kiowa)

Book: *Crafting an Indigenous Nation* by Jenny Tone-Pah-Hote

[The Cultural Conservancy Native Arts](#)

[We R Native – My Culture](#)

- When processing raw materials for a tool, the remaining scraps, shavings, or bark should not be thrown into a plastic garbage bin to go to a landfill. Instead, return those organic elements directly back to the earth or the compost pile. By returning your wood shavings and plant fibers back to the ground, you are helping the earth stay healthy. Let them break down naturally into the soil, where they become food for the insects, fungi, and roots that keep our ecosystems alive.

Adaptations & Extensions

- The Material Life-Cycle Challenge: Have students select a modern tool they use daily (like a plastic pen, a metal spoon, or a synthetic paint brush). Ask them to map the journey of that object from a factory to the store and finally to the trash. Then, challenge them to design a Land-Based Alternative using only natural, biodegradable materials found near the school. *How does the life-cycle of your handmade tool differ from the store-bought version? If everyone in our school used handmade brushes instead of plastic ones, how much waste would we save?*
- Climate Resilient Garden Tool: Introduce the concept of a dibble stick, a traditional tool used by many Nations for planting seeds without overturning the soil (which helps keep carbon in the ground). Have students forage for a sturdy, naturally shaped branch to turn into a planting dibble. *By using a dibble stick, we protect the soil structure and the tiny fungi/micro-relatives living beneath the surface. This is a form of climate resilience: healthy, undisturbed soil holds more water during droughts and keeps the earth cooler.*
- The Ancestral Engineering Lab: Research and experiment with different natural adhesives (e.g., mixing pine resin with charcoal powder, or experimenting with flour-water paste). Compare the strength of these natural glues to commercial school glue. Discuss why Indigenous Nations preferred materials that would eventually return to the earth without leaving behind toxic residues.
- Dyes from the Earth: Take the Engineering Lab further by exploring how local Tribes and Nations across Turtle Island historically created pigments for pottery, dyes for regalia, and inks for storytelling. Bring these stories to life by researching and experimenting with local materials like clays, ochre, lichens, barks, roots, and flowers. By processing these, such as boiling bark for tannins or grinding minerals for paint, students discover the sophisticated science behind traditional artistry. This shows that Indigenous technology is not just about the tool itself, but about a deep, shared understanding of the materials that make the tool's work possible.