

ENGINEER IT!

NATIVE INNOVATIONS



Do It Yourself Museum Activity Kit Guide



UNIVERSITY OF
OREGON

Engineer It! Native Innovations

DIY Museum Activity Kit Guide

Overview

A museum adventure to go! In 2020-2021 we proudly distributed more than 26,000 pre-packaged Museum Connection Kits, helping families in every corner of the state access hands-on learning adventures, museum-style! The bilingual English-Spanish activities from those kits are now available for free to libraries to download and create their own take home activities. The online program videos can also be accessed and shared for free.

How to Use These Resources

This guide is designed to help you create your own Museum Take Home Activity Kit for your community. From supplying all the activities pages and materials, to doing an in-person event with the activities, to simply sharing some of the resources online, there are options for every need you might have.

Suggested ways to provide activities and materials to youth and families in your community:

- **Full Size Museum Activity Kits:** Print the full Museum Activity Kit guide and supporting materials. Provide the main activity supplies needed for all the activities.
- **Individual Activity Kits:** Print the activity pages individually to be used for packing smaller take home activity kits that include one or two activities and the necessary supplies.
- **Online:** Provide families with a link for visiting the program video and finding all or some of the activities online. Activities can be downloaded and posted so they are shareable from your website or social media channels.



The Engineer It! Native Innovations kit program is made possible with support from the [Institute for Museum and Library Services](#).

- **In-Person Program:** Choose a few activities to do in-person onsite at your library, show the program video, and distribute one or two activities as a take-home kit for families that attend.

Tips and tricks for packing kits:

- Activity sheets and materials can be packed into 10"x13" flat paper bags or gallon size resealable bags.
- It's helpful to use smaller resealable bags for individual activity materials if you are including more than one activity in your kit.
- There are **printable bilingual bag labels** to attach to the take home activity kits. Download and print the [bilingual labels](#).
- If you want to include information about viewing the program video, the QR code fliers ([English](#) and [Spanish](#)) will direct participants to the specific video on the museum's Vimeo channel.

Activities

Listed below are the activities included in this program. Activities can be grouped together or done as stand-alone projects. The materials listed indicate what items participants will need to do the activity. You can include some of these materials in the take home activity bag and assume other items will be available for families at home. Tips and tricks for sourcing materials and packing are also listed below. All activities are available in English and Spanish.

1. Oregon's First Engineers

Native Americans have long used science and engineering to create tools, homes, clothing, cooking methods, and more—passing this knowledge down through generations. In this activity participants will explore the poster to see technologies designed by Oregon's first engineers. Then draw one that they use today.

Materials and Notes:

- Activity sheets: 2 pages. Download and print. ([English](#)) ([Spanish](#))
- Engineer It! Native Innovations Posters: 5 pages. Download and print. ([bilingual](#))
- Pencil or drawing materials



Tips and Tricks: Print posters on individual sheets if you want participants to be able to display them together as a larger poster.

2. Design a Boat

Native Americans in the Pacific Northwest developed methods for making effective watercraft using the resources available in their environment. In this activity participants will design their own aluminum foil boats to see how many pennies they can hold.

Materials and Notes:

- Activity sheets: 2 pages. Download and print. ([English](#)) ([Spanish](#))
- Aluminum foil sheets: The easiest method for this is to purchase a box of pre-cut foil sheets (approximately 12"x11"). Provide 2 folded foil sheets that participants can cut into quarters themselves. A roll of foil can be used but is harder to cut in even sheets. For in-person programs, pre-cut the foil into pieces approximately 6" x 6" in size.
- Scissors
- 30-50 Pennies or other small items to use as weights: easy to buy rolls of pennies from a local bank.
- Container of water
- Towels



Tips and Tricks: If doing this activity in person, allow participants to try multiple times, but you may want to limit the maximum number of attempts to have enough foil sheets for all participants. Each boat design should use just one sheet of foil and the foil pieces should all be a uniform size. It is helpful to have a towel placed under the water bin and extra towels available to dry the pennies and hands during the activity.

3. Design a Shelter

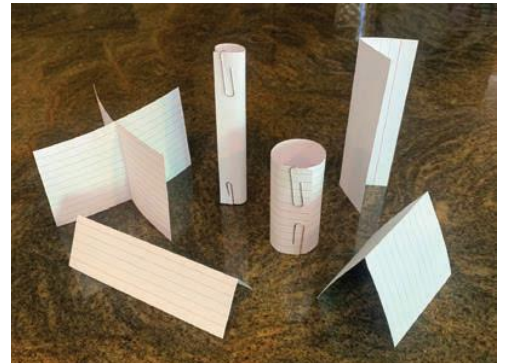
Early Native Americans built homes made from natural materials that were designed to fit their lifestyle, as well as the climate and surroundings of the area in which they lived. In this activity participants will design a shelter using only index cards and paperclips to meet the challenge requirements.

Materials and Notes:

- Activity sheets: 2 pages. Download and print. ([English](#)) ([Spanish](#))
- Index cards: 20 card per kit.



- Paperclips: ~30 per kit.
- [Ruler](#): Download and print on heavy weight paper. Be sure to do a test print and measure to make sure the rulers are truly 6 inches long. You may need to adjust your printer to the “actual size” setting.
- Scissors
- Beanbag or a resealable bag partially filled with rice, beads, or flour
- “People”—small toy people, animals, or blocks



Tips and Tricks: Paper can make a lot of shapes. Set up some examples on or near the activity station. You can print rulers, include a small purchased one, or not include a ruler at all. For an in-person event, it is helpful to have multiple beanbags available because participants will enjoy seeing how many beanbags their structure can hold before it falls.

4. Design a Basket

Twining is a traditional form of weaving that has been used for thousands of years to create baskets, sandals, woven mats, and other useful items. In this activity participants will use a traditional method of weaving to create a basket out of a paper cup and yarn.



Materials and Notes:

- Activity sheet: Download and print. ([English](#)) ([Spanish](#))
- 2 paper cups: Small 3–4-ounce cups work well.
- Yarn—2 different colors: Measure 7 comfortable wingspans (arms stretched out) of both colors of yarn together. Grab the ends after each length so that you finish with a neat bundle. Fold the bundle in half and then in half again. Twist yarn so that it wraps up tight into a compact ball. Stuff yarn into cups with loose ends in first.
- Scissors
- Pen



Tips and Tricks: This set of materials should be enough to make 2 paper cup baskets. For an in-person event, you can provide multiple colors of yarn and have participants cut 5-foot lengths of yarn as needed from the different colors. The twining process can be confusing at first, but once it has been repeated 3-4 times, it is easy to catch on. Participants in an in-person program will benefit from watching a live demonstration of the twining motions.

5. Design a Launcher

The atlatl is a hunting tool designed to improve strength and distance when throwing a dart. By doubling the length of a hunter's arm, an atlatl can launch a dart six times farther than if it were thrown. In this activity participants can design and build a tool that can “launch” a pom-pom.

Materials and Notes:

- Activity sheets: 2 pages. Download and print. ([English](#)) ([Spanish](#))
- Craft sticks: 10 per kit
- Rubber bands: 8-10 per kit, best to use strong rubber bands that are not too thin or easy to break.
- Plastic spoon: use a heavy-duty plastic spoon that will not break or just bend in half when pushed on.
- Pom-pom
- Bouncy ball (optional): this can be provided as a challenge to launch an object with a different weight. It can also be used in the “Design a Game” activity.
- Optional: masking tape; other recyclable materials such as plastic bottles, lids, or cardboard



Tips and Tricks: It is important to encourage many different possible designs, rather than only trying to create the one pictured design above. When you are engineering there are always multiple possible solutions to a problem or challenge!

6. Design a Game

Several Oregon Tribes played, and continue to play, a version of double ball—a game like lacrosse. The rules and equipment differed based on where a Tribe lived and the natural materials available. Games and sports teach teamwork, fairness, and how to be respectful to opponents. In this activity participants can invent a game to play with family or friends.

Materials and Notes:

- Activity sheet: Download and print. ([English](#)) ([Spanish](#))

Tips and Tricks: This is a wide-open design challenge and participants should be encouraged to dream up any kind of game they would like to make. If doing this activity in-person at the library gather materials such as balls, dice, string, paper, pens, crayons, scissors, tape, rubber bands, paper plates, cups or bowls, cardboard tubes, cereal boxes, plastic bottles, or other recyclable materials like plastic lids, twist ties, or boxes.



7. Posters

Native Americans have long used science and engineering to create tools, homes, clothing, cooking methods, and more— passing this knowledge down through generations. Participants can explore the 5 posters to discover more about the four regions of Oregon as well as the nine federally recognized Tribes in Oregon.

Materials and Notes:

- Posters: 5 pages. Download and print. ([bilingual](#))
 - Plateau
 - Western Valleys
 - Great Basin
 - Coast
 - Tribal Map



Tips and Tricks: Posters can be displayed around the library or included in the take home kits.

Full Activity Guide

Includes all activity pages in one document ready to print as a full packet. Additional material and poster pages will need to be downloaded as well.

- Download and print. ([English](#)) ([Spanish](#))



Program Video

The Engineer It! Native Innovations activities can be accompanied by a lively video presentation featuring interviews with scientists or other experts plus an introduction to the hands-on activities.

[Engineer It! Exploring Ancient Technologies](#) (28 minutes)



Note: the videos were originally made to go with the take-and-make activity kits and describe the pre-packaged kits. If you are showing the video live, feel free to stop the videos at the activity kit intro part if you are not supplying the full activity kits. Also, you can make all the activities accessible to your audience by downloading and posting the activities onto your website. Families can be directed to those resources in your program announcement.

Publicity Toolkit

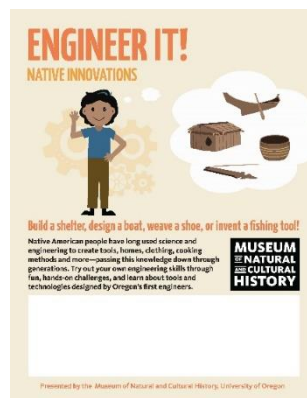
The Engineer It! Native Innovations publicity toolkit includes resources you can use to promote and publicize your event, including posters, fliers, photos, videos, and more.

These downloadable resources can also be found online on the [Publicity Toolkit: Engineer It! Native Innovations](#) page.

Fillable Fliers

Add your event times and location, then print and post! (Found in the Engineer It! Toolkit)

- [Download the English flyer](#)
- [Download the Spanish flyer](#)



QR Code Fliers

If you plan on sharing the program video with your community as an optional at-home experience, use the QR code fliers for ease of finding the video online. (Found in the Engineer It! Toolkit)

- [Download the English flyer](#)
- [Download the Spanish flyer](#)



Social Media Templates

Use these customizable social media posts, along with any of the photos, art, or videos below, to promote your program. Feel free to add language about how and when families can pick up the take-and-make activity kits.

FACEBOOK AND INSTAGRAM

We're excited to partner with @oregonnaturalhistory to bring you Engineer It!—a family program that will inspire learning and fun at home. Join us on **YOUR PROGRAM DATE** to explore traditional Native American technologies, visit with an archaeologist, and try out hands-on engineering challenges! **YOUR EVENT LINK**

TWITTER

We're partnering with @UO_MNCH to bring you Engineer It!—a family program that will inspire learning and fun at home. Join us to explore Native American technologies, visit with an archaeologist, and try out hands-on engineering challenges! **YOUR EVENT LINK**

After your program, share the following message along with the THANK YOU video below. We appreciate your help spreading the word about the museum's many family resources!

FACEBOOK AND INSTAGRAM

Thanks for joining us for Engineer It! We hope you enjoyed learning about traditional Native American technologies and trying your hand at some fun engineering challenges. Want to explore more family-friendly science and culture activities? Visit the Museum of Natural and Cultural History at mnch.uoregon.edu/museum-home. #StayConnectedStayCurious #MuseumFromHome

TWITTER

Thanks for joining us for Engineer It! We hope you enjoyed learning about Native American technologies and trying your hand at the engineering challenges. Want to explore more science and culture activities? Visit @UO_MNCH at mnch.uoregon.edu/museum-home. #StayConnectedStayCurious #MuseumFromHome

Video Promos



SHOES ACROSS THE MILLENNIA

Entice your audience by sharing this 30-second video highlighting one of the museum's most famous artifacts, the Fort Rock sandal.

[Preview and download the video](#), then post it to your social media accounts.



ARTIFACT SPOTLIGHT

Share this 10-second video spotlighting the atlatl, a spear-throwing device designed by Native American engineers.

[Preview and download the video](#), then post it to your social media accounts.



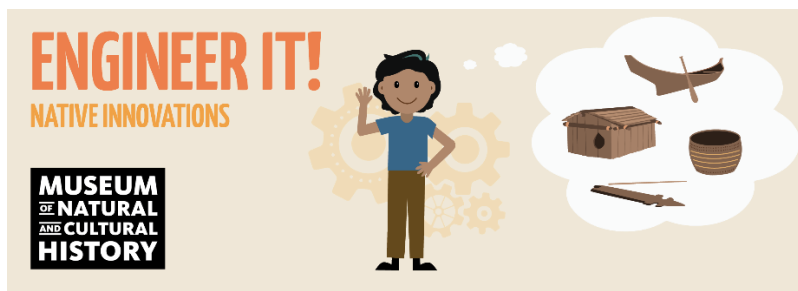
THANK YOU! (a post-program video)

After your program, use this this fun, 30-second video to thank your participating families and inspire them to explore more science and culture!

[Preview and download the video](#), then post it to your social media accounts.

Art and Photos

Use our original artwork to promote the program in your newsletters, on your website, and on social media. You can download* the artwork, as well as publicity photos of the program activities, directly from the gallery [online](#). A few examples are included below and more available online.



Additional Resources

The Museum of Natural and Cultural History's [Explore From Home / Explora desde casa](#) pages feature hands-on science and culture activities, crafts, games, and more! Pages include a variety of topics such as Ice Age animals, Oregon basketry, plants, and the Civil Rights Movement.

The Museum of Natural and Cultural History's [Little Wonders online](#) is designed for preschoolers and their adults. Together they can download activities including crafts, games, and stories.

Explore the [Oregon—Where Past is Present](#) online gallery from the Museum of Natural and Cultural History to view more artifacts related to the activities.