



Did the Leni Lenape Use STEM?

Grade: 3 -6

Time: 1-2 hours

Objectives: Students will learn the definition of technology. They will learn to use the engineering design process and work in groups. They will gain an understanding of Native American culture.

Next Generation Science Standards:

K-ESS3-1, 1.LS1.A, 5.LS2.A, 5.ESS2.A, SL.K.5, 1-LS1-1

Materials:

Clipboards with worksheets (one per group)
Pencils
Laminated Task Cards
Baby Doll
Skulls, bones, turtle shells etc
Leather
Sinew
Feathers
Sea shells
Arrowheads
Seeds, pods, pinecones, etc
String
Rocks
And whatever natural materials you have on hand.

Teaching Context: This can be done indoors or outdoors

Preparation:

Gather all supplies.
Make copies of design sheets, place on clipboards

Procedure:

Let's think about the people who lived here hundreds of years ago.
Who were they? Leni Lenape
Were their lives similar to yours? In what ways were they similar/different?
Did they have technology?

What do you think of when you hear the word “Technology”? (Technology is science or knowledge put to practical use to solve problems or invent useful tools)

Is a hammer technology?

What do you think the very first hammer was like? Probably someone just picked up a rock to pound something. Then they decided to attach a rock to a stick, like a wooden handle. Over time, this was reengineered; someone was able to forge a metal head and put a hole through it in order to attach it to a wooden handle. Later they might have made a fiberglass handle, then the handle was slippery, so they added a rubber grip, then someone put the hammer down and couldn't find it, so they made it bright orange so it was easy to see. So if you go into Home Depot, you can probably find a bright orange hammer with a rubber grip and fiberglass handle. It has been engineered, but it does the same basic task of pounding something.

What about a trap or a fishing pole? Have they been engineered?

Discuss the engineering design process. Explain how engineers must design their ideas on paper first before they make a prototype. Then they must test their prototype and see how it works. After the testing, they will make changes based on what worked and what did not work.

If something about the project worked well, would you keep that part?

If something didn't work well, would you keep that part?

Today you are going to work in groups to solve some problems using only the supplies that the Lenape would have had 300 years ago. You are all part of the same village and will be working in small groups. Each group will have a different task, but this is not a competition. Please repeat after me, “This is not a competition.”

What supplies would the Lenape have had on hand? As the students name things, you can pull them out and show them.

Prompts: If they killed a deer, for example, what parts could they use? Meat for food; bones and antlers for tools; ligaments and tendons for string which is called sinew (our sinew is imitation, it is thin, strong and sticky) Show them bones, antlers and sinew.

*What about the beach? Did the Lenape go to the beach? They did, what do you think they did there? Have you ever gone to the beach? What do you like to do at the beach? Swim, collect shells, Do you like to get food at the beach? I do, the French fries by the beach are delicious. Did the Lenape go to the French fry stand? No, but they did collect fish and other seafood. What might they do with the shells: decoration, make tools, etc. Some shells were so valued they were used for trade called wampum, in fact the scientific name for this clam is *Mercenaria mercenaria*, which means money money! Have you ever been walking on the beach and step on a broken shell? How did it feel? They are sharp and can be used as cutting tools.*

What things might they have gotten from trees: wood, bark, leaves, and seeds.

Show them all the stuff and tell them they can add anything from the surrounding area that the Native Americans would have had access to. (Explain about not killing live plants/animals, etc.) Reinforce that they need to share the supplies among the groups. If two different groups need the turtle shell, for example, you will have to work together to decide who gets it. It is not a competition; you are all part of the same village.

Divide the class into 5 small groups and explain that there is a new baby being born in the village. Hand out the cards and have each group read their card aloud.

You might want to give each group member a number and a specific job. For example:

- #1 makes sure the group stays on task
- #2 comes up and gets the items
- #3 makes sure that everyone in the group is heard
- #4 serves as group representative in speaking to you.
- #5 has the clipboard and does the writing/drawing

Before you can make your item, you will design it on paper and create a supply list. Once you have your design, you can send one person up to get the supplies on the list.

Give them time to plan and have them come up and ask for needed supplies.

Be sure to explain that they will not be keeping the things they make with the exception of the artwork if you do that one.

Give them time to make their project, and then have them test it out. After testing, they can redesign it by answering the questions.

What worked well? Can we keep that part?

What didn't work well? How can we change that part?

How can we improve it?

Allow them time to redesign, rebuild and test. Then allow them to present it to the tribe. Play the game and the musical instruments, try out the tools etc.

Discussion:

What was the most difficult part of planning and constructing the project?

What might have made it easier?

What modern technology would have made it easier to design and build?

How would you do it differently if you could go to a craft store or hardware store and get supplies?

TASKS: (we have laminated colorful copies of these)

Congratulations! A new baby was born in your village. Your job is to make a warm and cozy bed for the baby to sleep in. Make sure it is soft, yet sturdy so baby won't fall out.

There are several young children in your village. Your job is to make a game or toy for them to play with. Make it safe and fun.

Every celebration needs music! Your job is to make musical instruments and play a song for the group.

With more mouths to feed, your village will need to expand its agriculture. Your job is to make new tools that can be used for farming.

Your village will need more hunting equipment. Your job is to make a snare, bow and arrow, or other hunting tool.