

GRADE: 4th-Adult
TIME: 1 hour-1 ½ hour
SEASON: Spring-Fall

Atlatl (Native Americans)

National Science Teaching Standards:

- A.** Science as **INQUIRY**
- C.** **LIFE** Science
- E.** Science **TECHNOLOGY**
- F.** Science in **PERSONAL** and **SOCIAL PERSPECTIVE**
- G.** **HISTORY** and **NATURE** of Science

Background Information:

Atlatls are ancient tools. They are known as one of the first true weapons system of the human race. The earliest rudimentary atlatls originated in Europe over 30,000 years ago and then spread all over globe as humans moved from continent to continent. To put this date into perspective, people have only been on the continent of North America for 12,000 years! Atlatls truly are an example of ANCIENT technology. The history of the atlatl on our continent is as old as the first people to enter our land!

Atlatls are the result of early humans realizing that throwing a spear by hand was not very effective. By adding length and extra pivot points to the throwing arm, humans could hunt at a safer distance and with much more force. As extra trivia, the name 'atlatl' comes from the Aztecs. The Spanish army that invaded the Aztec homeland were afraid of only one weapon, the atlatl, because it could pierce their armor.

It's important to note that atlatls were used to hunt **megafauna**. "Megafauna" is a word used by archaeologists and anthropologists to describe any large bodied mammal that lived in a specific range of time. Elephants are the closet modern animal that might be considered megafauna. However, the ancient megafauna were much more "mega" than elephants! Ancient megafauna are usually described by woolly mammoth, mastodons etc. Can you imagine hunting an elephant using just your atlatl? Now imagine a mammoth that was twice the size of an elephant, with thick thick hair and tusks that could easily pierce through you. But this mammoth could keep your entire family alive for months...but all you have is your atlatl. Are you ready for the hunt?!

Objective:

- The students will participate in this unique and prehistoric sport.
- The students will learn about the physics behind the atlatl and why it was such a successful weapons system.
- The students will practice the safety needed to participate in this sport.
- The students will learn how to continue developing the interest in prehistoric technology.

Equipment:

- atlatls
- atlatl spears
- one target (optional)
- a 3D target (optional)

**If you are throwing in a small space place a target NEAR, but not at, the end of your range. This will cause students to focus on accuracy instead of throwing the spear as far as possible.

Procedure:

1. Begin by discussing the history of the atlatl including why it was used and what it was used to hunt. Encourage students to put themselves in the place of a hunter facing a long, cold Iowa winter. While atlatls allowed spears to fly with greater force than ever before, they did not have the range of modern bows and arrows. A hunter still had to get much closer to their prey than might be desirable. Plus, if they made their presence known by missing or wounding the animal, the hunter would be faced with an angry over 10 foot tall animal so accuracy was a must!
2. Discuss the safety rules for this sport:
 - Spears must always be carried point down and at a walking pace
 - Spears must only be pointed in the direction of the target
 - The spear should not be set into the atlatl until the thrower is set.
 - Boundaries must be observed. All students stay behind the sidewalk, those that are “on deck” may step onto the sidewalk, and only the two throwers may move into the grass. The two atlatl lids are set as the mark where each thrower must throw from.
 - Students not throwing need to remain quiet to minimize distractions
3. Discuss the parts of an atlatl:
 - spur: the balance point for the arrow
 - shaft: the main portion of the atlatl, this can vary from shorter to longer depending on the use of the atlatl.
 - arrow: the length will vary depending on atlatl size and the size of your target. An atlatl weight can be added to the spear shaft to increase the momentum and speed of the arrow. Again, this depends on the size of your target.
4. Discuss the physics of an atlatl:
 - spur of the atlatl = the string of a bow
 - A bow moves in a straight line while the atlatl gains energy from the arc of your arm as you are throwing the arrow.

A quick and easy explanation of the physics of the atlatl: tell the students to place their elbow against their side. Now try to throw an imaginary ball without moving your elbow. Now allow them to make the same throwing motion with elbow movement. Much easier right?! It is the length addition of your upper arm and the power in your shoulder joint that allows you to throw. Throwing an atlatl simply adds more length and 2 more joints (at your wrist and between the spur and the spear) to your throw making it more powerful!

5. Start with a slow motion demonstration. Begin by explaining that you pull your arm back and then move it forward as through you were throwing a ball. You must flick your wrist to actually release the spear. Explain that, if you were throwing a Frisbee, you must end up with your hand pointing in the direction that you want your Frisbee to go. The same is true with the atlatl. If you flick your wrist too soon then the spear will go up, too late and your spear will drop to the ground.
6. For the proper lead in to the throw: in bowling you don't stand with both feet on a single line and expect to bowl from that position. The same is true for atlatl. You must take 2 or 3 steps to add some momentum into your spear throw. If needed, place your opposite hand in front of you to use as a counterweight for your throw.
7. Begin throwing the atlatl, two students at a time throwing two spears each. With a large group, maintain order by using birthday month to select throwing order. Example: call all January birthdays "on deck" (standing on the sidewalk), pull January birthdays two by two out to throw.
Send students to retrieve spears only after all the spears have been thrown. It can be easier to use just the last two throwers to carefully collect all of the spears.
8. In the second round of throwing, challenge the students. If they still aren't completely convinced that the atlatl is helpful, tell them to throw one spear without the atlatl and then throw another spear immediately after using the atlatl. They will see how much more power the atlatl adds. Emphasize that it's not just distance that matters. Force of the throw matters too. A throw without the atlatl may go just as far but it will NOT penetrate as deeply into the ground. After all, atlatls were hunting tools and you don't want your spear to simply bounce off your mammoth!

Post Activity:

*If students and/or teachers desire to learn more about atlatl and prehistoric technology point them towards the World Atlatl Association at www.worldatlatl.org.

*Instructions are also included that allow for construction (**under adult supervision**) of a very basic atlatl and spear.



Here is an African elephant (the largest elephant species) at 3.5 meters tall (11 feet) being compared with the largest known mammoth skeleton, *Mammuthus Sungari* found in Japan at 5.3 meters tall (17 feet) , and a human at less than 2 meters tall (6 feet).

