Archery Lesson Plan

Indiana 4th Grade Lesson Plans

Objectives:

1. To learn the place of the bow and arrow in history and today as evidenced by listing three ways they have been used and listing how three different cultures used bows and arrows.
2. To learn the parts of the bow, arrow, and target as evidenced by naming the basic parts.
3. To learn how to use a bow and arrow safely as evidenced by listing at least three safety rules.
4. To improve coordination and skill through practice as evidenced by completing 2-3 rounds of target shooting.
5. To understand the physics behind shooting an arrow. To describe and understand speed, force, motion, mass, and gravity in context of shooting an arrow.

Key Terms:

1. **Atlatl =** A wood or bone shaft implement, held in one hand, and used to propel a spear. The tool functions as a lever, giving greater thrust and distance.
2. **Lyre =** A harp used by ancient Greeks for accompaniment.
3. **Fletching =** The feathers or vanes on an arrow.
4. **Nock =** To place an arrow on a bow string or the end where the sting fits in the arrows end.
5. **Shaft =** A rod that forms the length of an arrow pointer.
6. **Speed =** How fast something is moving, how far something travels in a certain amount of time i.e. miles per hour.
7. **Force =** An external cause responsible for any change of a physical system, i.e. gravity is the external cause that causes a change in the position of a rock when dropped.
8. **Motion =** A natural event that involves a change in the position or location of something.
9. **Gravity =** The force of attraction between all masses in the universe; especially the attraction of the earth's mass for bodies near its surface
10. **Friction =** The resistance to the movement of one body in relation to another body with which it is in contact.

Equipment: bows, arrows, targets, key for cabinet

Pre-Class Procedures:

***note more detailed instruction in file folder, along with background information*

1. Familiarize yourself with the background material, especially the safety information.
2. Check the equipment for anything that is unusable.
3. Check the area for safety hazards.
4. Get the key to unlock the cabinet.

Rain options: indoor straw dart and corn cob darts, ring and pin game (see attached instructions)

Procedures & Activities:

1. **History of the Bow (5min)**

   Discuss the role of the bow and arrow in history (protection, hunting, war, music, and sport) and the role it plays today (hunting and sport). Discuss how different cultures have used bow

and arrows.

a. The movement from the open plains area to more densely wooded areas eliminated the use of the atlatl and prompted the development of the bow.
b. Atlatl was a spear that sat in a grooved board and propelled by hand and at a higher speed with the help of leverage. It worked well in open areas but in wooded settings the motion of throwing was made difficult. There needed to be a better way to hunt in dense bushes and trees.
c. Bow and different types
    i. Woodlands Indians had medium bows that allowed them to hunt in the woods.
    ii. Plains Indians developed short, very powerful bows.
    iii. European countries developed longbows and crossbows to shoot long distances.
d. Inspired musical instruments like the harp and lyre.
e. Used in some cultures to create fire.

2. **Safety Rules (5min)**

Lead a discussion of basic safety rules. If students do not come up with them all, complete the list. A more extensive list is found on the archery cabinet.

a. Don't draw the bow back with an arrow unless you are going to shoot.
b. Don't release the string without an arrow.
c. Always make sure that the odd colored fletching is facing away from the bow.
d. Shoot only at targets. Never aim an arrow at another person for any reason.
e. Never retrieve arrows until you are told to do so (once everyone has finished shooting).

3. **Parts and Procedures (5min)**

- Examine bow, arrows, and target; go over the names of parts of the arrow: fletching, nock, shaft and tip.
- Demonstrate bracing the bow. Have volunteers practice this as well. Demonstrate proper shooting procedure. (See additional resources)
    a. Show proper stance
    b. Show proper position of hands
    c. Instruct them on placing the arrow on the bow with the odd colored fletching away from the bow. (It destroys the arrow and keeps it from shooting straight).
- Talk about the physics of shooting an arrow.
    - The more force (the farther the bow is drawn back), the greater the speed of the arrow.
    - With no force, there is no speed.
    - You increase the potential energy in the bow by pulling it back farther.
    - The heavier the arrows, the more force (draw) is needed to get it moving to the target.
    - Gravity has a pull on the arrows. This can be noticed by the curved path that the arrow flies. Aim above where you want to hit since gravity will act on it between you and the target.
    - Explain the terms: speed, force, and motion to the students.

4. **Shooting at Targets (30-40 min)**

Divide the group into three groups (one for each target). Line up one member of each group at the shooting line. First archers practice shooting with instructors coaching. Once they have

retrieved their arrows (all at the same time) the next person in line becomes the archer. Go through the rotation as often as time allows.

- After each group has gone through 2-3 rotations, then bring out the balloons, if you bring them out too soon the kids will get bored.

5. **Conclusion (5 min)**
   Conclude, you may wish to play one or two quick review games which cover safety rules, parts of the bow and arrow, physics of shooting a bow, and the history of archery.

6. **Optional: (5-15min)**
   Corn Cob Dart Game:
   To make corn cob darts, put long feathers in one end of an ear of Indian corn. Make 5 darts for each group. The hoop for this game should not be more than two feet in diameter. Mark a line five to ten feet away from the target. You will now have an opportunity to play this game. Each team member must stand behind the marked line. Each member will have five chances to throw the corn cob into the hoop on the ground.. Native American children play games designed to sharpen their hunting skills. One of these games involves throwing a corn cob through a hoop to increase accuracy at hitting a target. After the group seems to be getting the game you can progress to rolling a hoop on the ground and having the students try to throw the darts through the moving hoop.

Post-Class Procedures:

1. Remove any defective equipment and either throw it out or take it in for repair.
2. Lock the equipment cabinet and return the key.

Archery

Standards:
History:
Indiana
4th Grade

4.1.1 Identify and compare the major early cultures that existed in the region that became Indiana prior to contact with Europeans.

4.1.8 Recognize and explain that any invention may lead to other inventions.

4.5.6 Investigate the contributions and challenges experienced by people from various cultural, racial, and religious groups in Indiana during different historical periods by reading biographies, historical accounts, stories, and electronic media.

Science
Indiana
4th Grade

4.6.2 Show that something may not work as well, or at all, if a part of it is missing, broken, worn out, mismatched, or incorrectly connected.

5th Grade

5.2.6 Write instructions that others can follow in carrying out a procedure.

5.3.6 Demonstrate that things on or near Earth are pulled toward it by Earth's gravity.

5.3.11 Investigate and describe that changes in speed* or direction of motion of an object are caused by forces*. Understand that the greater the force, the greater the change in motion and the more massive an object, the less effect a given force will have.

5.3.13 Demonstrate that Earth's gravity pulls any object toward it without touching it.

* speed: the rate per unit time at which an object moves

* force: a push or a pull that can cause a change in the motion* of an object

* motion: the change in position of an object in a certain amount of time

Michigan
6th Grade

P.EN.06.11 Identify kinetic or potential energy in everyday situations (for example: stretched rubber band, objects in motion, ball on a hill, food energy).

P.EN.06.12 Demonstrate the transformation between potential and kinetic energy in simple mechanical systems (for example: roller coasters, pendulums).

Archery Review Sheet

1. Name the safety rules to follow when shooting a bow and arrow.

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2. Write out the proper procedure to follow when using a bow and arrow. This should be a step by step process that can be duplicated by someone else. _____

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3. Name three past and present uses of the bow and arrow. _____

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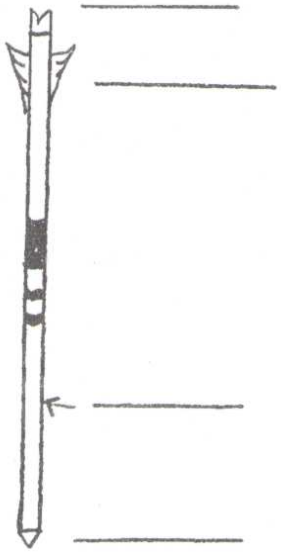
4. Label the parts of the arrow: shaft, nock, fletching, tip, winged section



5. What was the importance of the bow and arrow in the story?_____

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6. How did the arrowhead develop over time? _____

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'A Shot in Time'

(A Brief History of Archery)

Pre 25,000 BC -The discovery of the first stone arrowheads in Africa tends to indicate that the bow and arrow were invented there, maybe as early as 50,000 BC.
It was probably developed in conjunction with the invention of the spear thrower.
A short bow would be a better hunting weapon when used to stalk animals in wooded areas, rather than carry around long spears.

25,000 - 18,000 BC -Fire hardened points used on the arrows. Flint arrowheads shaped to a point and inserted into a slot and tied with sinew to the front of the arrow. Feathers were glued and tied with sinew to the arrow shafts.

15,000 BC - One of the earliest musical instrument discoveries showed a harp-like instrument on rock paintings in France.

1227 AD - pipe rolls list a person named Robert Hood as a fugitive.

1307 AD - William Tell - because William refused to bow towards a hat placed on a pole as a sign of imperial power, has was ordered to shoot an apple off his son's head, (he was known as an expert crossbowman.) He succeeded in shooting the apple. The story of his feat also stated that he had a second crossbow bolt hidden behind his belt in case he failed and killed his son, he would have quickly reloaded and killed the official who had ordered him to shoot the apple off his son's head.

1333 AD - 19th July - Battle of Halidon Hill. Scottish army is defeated by Edward III of England demonstrating for the first time the full potential of the English Longbow in battle. (22,000 Scottish heavy cavalry defeated by 2,000 English archers and 500 knights.)

1520 AD - the musket is invented and will soon replace the bow as a weapon of war.

1971 AD -Discovery of a secret escape tunnel under Nottingham Church dating back to the 12th Century may be the same tunnel used by Robin Hood and his men to escape the Sheriff of Nottingham. A medieval document has a story about Robin and his men being surrounded by the Sheriff's soldiers at the church, but when the soldiers broke down the church doors, Robin and his men were no-where to be found. This may mean that the story of Robin Hood really is true !

Native American History - In the open plains strong bows of great range were used and in the woodlands where stealth and cunning was needed, lighter bows were used. The bow of the Eskimos, which was constructed out of spruce tree and sinew, was used for hunting, as well as, warfare. The arrows that they used were either one of two things, driftwood or splintered mammoth bones, held together with feathers from a ptarmigan. The bow became such an important tool that it was regarded as a symbol of magic, power, or prowess.

Other uses – Many cultures use a fire bow to start fires.