



Tying science to history: Making rope by hand

Make cordage (rope) from fiber and begin exploring the development of technology as it relates to ropes and suspension bridge components.

Background

- People have had the need to make cordage and rope for thousands of years: from simple string to hang household items, to ropes to rig the sails and mooring lines in ships, to the steel cables in modern suspension bridges.
- Through experimentation people have learned to engineer stronger and longer lasting rope from different materials.

Materials

- Several strands of single strand fiber such as raffia, string, or wool yarn, cut into 15" lengths

Instructions

- Take two lengths of fiber and try to work this fiber into rope. Most will simply twist the fibers and will notice that the fiber unwinds too easily.
- Hold the two strands in your left hand, holding both of them at the top with your thumb.
- Grab the strand on the right with your right thumb, and rolling it between your thumb, twist the fiber clockwise.
- Wrap this strand around the other fiber in a counterclockwise direction, crossing it over and then under.
- Twist the fiber clockwise, and cross it over and under again.
- Repeat this twisting and crossing over until you have the length of cord desired.
- The pattern should look like a machine-made rope. The friction holds the fibers in place, locking them together.

Extensions

- Making most rope is easy, but the physics of ropes is fascinating! Research and discuss the development of rope-making technology through human history.
- Research the design of modern suspension bridges; build and test some bridge models.
- Use newly made rope to practice common mariner's knots.
- Research the advantages/disadvantages of various fibers used in ropes through history.
- Experiment with natural fibers from your area (like milkweed or dogbane), or recycle by using strips from plastic shopping bags.
- Investigate the types and sources of marine debris.



NOAA Education: Hands-on activities

Related resources

- Tied up in knots (activity): https://aamboceanservice.blob.core.windows.net/oceanservice-prod/education/for_fun/TiedKnots.pdf
- What is a "knot": https://oceanservice.noaa.gov/education/tutorial_currents/06measure2.html
- Ocean Today: Building good mussels (video): <https://oceantoday.noaa.gov/buildinggoodmussels/>
- NOAA Fisheries: Whale entanglements: <https://www.fisheries.noaa.gov/alaska/marine-life-distress/large-whale-entanglements>
- How NOAA disentangles whales: <https://sanctuaries.noaa.gov/news/nov15/whale-disentanglement.html>