



BURN BRIGHTER

Week one: First aid

Explore: Look at your first aid kit and think of different ways you can treat common injuries. Is there anything you could add to your kit to be prepared?

Analyze: Learn the difference between first, second, and third-degree burns and how to treat each one.

Apply: The term "evidence-based medicine" applies the scientific method to different treatment practices. First-aid evidence is scarce - most recommendations come from practical experience or consensus. What are the risks and benefits of each avenue of recommendations?

Week Two: Trail Dangers

Explore: What do you do to treat yourself if you are affected by contact-poison plants?

Analyze: Study snake patterns and make an illustrated list of key characteristics and patterns of venomous snakes in your area.

Apply: Science says hiking is good for you. Look up the benefits of hiking to you and the environment. Is there something you can do to track these benefits to you or in your local park?

Week THREE: Natural Cordage

Explore: Look at the cord you made. What are the dimensions (length and cross section)? How thick is it? How many strands were used in making it? What does it feel like?

Analyze: Tensile strength is the largest amount of force that can be applied to an object being stretched or pulled until it breaks. Find an experiment online to test the tensile strength of different cords. Come up with a hypothesis and record your results.

Apply: Engineers use a stress-strain response when designing structures. Use what you've learned about tensile strength to build a structure with pre-made cordage or cord you've made. Can you display the weight on it? How does it hold up? What role does the design play in maintaining weight?

Week FOUR: Fire Starters

Explore: What is a fire starter? Discover at least three different methods of starting a fire. Start a fire three different ways. Which was the most successful?

Analyze: Why is damp or green wood unsafe to burn? What precautions should you take in collecting firewood? Why does it put off more smoke?

Apply: Do a color-changing fire experiment. Many materials produce different colors when they're burned. What chemistry is involved in your experiment? Do different colors equal different temperatures?

Week FIVE: Fire Starting

Explore: Explore fire safety rules. Make a poster with illustrations of all the rules.

Analyze: Fire science uses principles of science and engineering to study the causes, effects, and prevention of fire. What are the main areas of study for this degree path? What jobs are available to people in this field?

Apply: Learn about burn bans and wildfires. What are some causes, and how can you prevent them? Create a wildfire map or graph of fires this year and compare it to weather maps.

Week SIX: Journey Sticks

Explore: Discover what proper hiking clothes are. Put on a skit to demonstrate good and bad hiking clothing choices.

Analyze: Learn about "Leave no Trace" principles. Is there data available about outdoors areas' cleanliness and plant and animal habitats thriving since these practices have been put into place?

Apply: Journey sticks are used to tell a story of your journey. Use yours to develop your geographical understanding and spark creativity to tell a story to someone. Are there any conclusions you can draw from items collected on your stick and the location of your hike?

EXTENTION AVTIVITIES



Q: What do you give a sick lemon?

TRAIL BASICS

BURN BRIGHTER

Week SEVEN: Whittling

Explore: Your local area and find the best types of branches to whittle. Look for different properties, grains, hardness, and shapes.

Analyze: Look up the effects of tool wear, the tensioning of blades, wood species, and the cutting force have on the outcome of wood carving.

Apply: From the Neolithic period to the end of the pre-industrial age, the main way humans shaped wood was by splitting it along the grain. The arrangement of cells in wood gives it highly anisotropic mechanical properties. There are mathematical equations that can help determine the force and energy behind why wood splits in certain ways. Make predictions and test different types of wood and how they split. What is the best way to split wood evenly without breaking it? What's the best wood to use? What tools worked best?

Week EIGHT: Weapons

Explore: Visit a history museum of any era and compare the weapons or tools they used then vs. now.

Analyze: Survival-type weapons were used for protection but also as a tool. How are weapons and tools interchangeable? What makes one a weapon and one a tool?

Apply: Make a bow and arrow, spear, or drawback slingshot using natural materials you find on a hike. Send BU a picture with your name and community name to: learningoutside@barefootuniversity.org



Week TWELVE: Bandana

Explore: Tour an urgent care or fire department and see how they deal with different injuries.

Analyze: Research and compare different jobs in the medical field, their pay, and the amount/type of school you need to work in that profession. Create a poster to display your research. Send BU a picture with your name and community name to: learningoutside@barefootuniversity.org

Apply: Volunteer at a local health clinic or fair – better yet, organize one!

Week NINE: Tools

Explore: Look at a toolbox at home. What are different tools good for? Would you know how to use their help in a wilderness setting?

Analyze: Think about safe tool usage. What types of injuries could occur with what tools? How can those be prevented and treated?

Apply: Think about your toolbox at home. Take a nature walk and look for natural objects you can use to recreate some of those tools in a practical way.

Week TEN: Knots

Explore Different types of knots and their uses. Think of three practical reasons you would need a knot and what knot is best for the job.

Analyze: Scientists have found that knots can be found in water, air, and other places – possibly unlocking the mystery of turbulence. Research these theories and scientists behind these thoughts; Lord Kelvin, William Irvine, and Randy Kamien.

Apply: Create a knot display piece of art and label the knot(s) you used. Send BU a picture with your name and community name to: learningoutside@barefootuniversity.org

Week ELEVEN: Ropes Courses

Explore: What muscles and motor skills did you use to complete your ropes course? Are there other obstacles you can create to use different muscle groups?

Analyze: Research different ways obstacle courses are good for your health. What are the benefits mentally and physically? Write a commercial or presentation for your family to sell their benefits of them.

Apply: Virtual obstacle courses are being used to train real robots and animals. Can you create an obstacle course from items around your house for your pet to go through? Send us a video: learningoutside@barefootuniversity.org



HEAT ENERGY

Using your survival skills to do science

Thermal energy is present in molecules of objects. When an object is hot, the molecules move fast – thus having a lot of energy. The Second Law of Thermodynamics states that heat will always move “downhill” – from hotter objects to cooler ones. Heat transfer is the flow of heat (thermal energy) – or the movement of thermal energy as it transfers from one object to another due to temperature changes. For example from a flame to a hand that is too close to the flame. Don’t confuse heat (energy) with temperature (the measurement of that energy.)

In 1990, Maurice Ward invented Starlite – he demonstrated on TV that his miraculous paint could prevent an egg from cooking when it was heated by a blowtorch. After several minutes, the egg was still raw! Everyone was amazed by his invention and the science community reached out to him to find out more about his thermal-resistant material. He kept his 21-ingredient recipe a secret until he died in 2011 and now it’s protected by his friends and family.

You can make your own *non-official* Starlite recipe with just a few ingredients at home to find out what happens when thermal energy transfer is interrupted. Here is what you need: 10 teaspoons of cornstarch, 1 teaspoon of baking soda, and 4 teaspoons of Elmer’s PVA glue. Mix the three ingredients together with your hands until you get putty-like material. Too dry? Add 1/2 tsp more glue. Too wet? Dust with cornstarch.

Then try a version of Ward’s experiment.: Make a small hole in the top of 2 eggs using a knife or something with a fine, sharp edge. Coat one with Starlite and leave one egg without. Place them over the candle flame for about 3 minutes each, the plain one without Starlite should start bubbling over while the one with it should stay stable. Crack each egg in a bowl to inspect the difference on the inside comparing the protected material with the non-protected.

How can a material that could stop heat transfer stop other heat? Could it stop the spread of fire?

A: Lemon-aid

Cycle One Vocabulary

First Aid – immediate treatment given to someone who is injured or is suddenly ill.

Strain – an overstretched muscle or tendon.

Sprain – the tearing of ligaments at a joint.

Dislocation – separation of a bone from its position at a joint.

Bruise – damage to soft tissues and blood vessels causing bleeding under the skin.

Pressure Points – place on the body where blood flow can be stopped by applying direct pressure to a major artery.

Tourniquet – a device that stops all blood flow to a limb.

Fracture – a crack or break in a bone.

Splint – support that helps keep a possible fracture from moving.

Heat Exhaustion – a condition in which the body overheats and loses large amounts of water and salt through heavy sweating.

Heatstroke – this is a condition in which the body temperature rises but no sweating occurs.

Frostbite – a condition that occurs when body tissue freezes.

Bight – any part of a rope between the ends of the curved section of a rope in a knot.

Loop – what a bight becomes when two parts of a rope cross.

Crossing Point – place at which two parts of a rope meet in a loop.

Elbow – place at which two or more loops bend.

Working End – the end being used to make a knot.

Standing End – the end that is not involved in making a knot.

Lashing – something used for securing or binding.

Reptiles – vertebrates that live on land, scales cover the body, lay eggs, cold-blooded.

Cold Blooded – having body temperature varying with that of the environment; poikilothermic.

Venom – a poisonous substance secreted by a snake or other animal.

Contact Dermatitis – an itchy rash caused by direct contact with a substance or an allergic reaction to it.

Urushiol – an oily mixture of organic compounds with allergenic properties found in plants.

Flames – the blazing part of the fire we can see.

Fuel – less combustible, burns slowly and steadily once it has ignited.

Oxygen – a colorless, odorless reactive gas, the chemical element of atomic number 8, and the life-supporting component of the air.

Flint & Steel – a two-piece fire-starting implement: you’ve got your carbon steel on one hand and on the other, you’ve got a hard rock like flint, chert or quartz to strike the steel and create sparks.

Bow Drill – set of Native American fire-starting tools, a wooden bow with a thong secured to stick. The stick is attached to a fire-starting board with a hole in the bottom, as with a fire drill.

Kindling – flammable material that you add to the burning tinder.

Tinder – dry material that ignites with little heat.

Conflagration – large, destructive fire.

Heat – is a form of energy that flows between two samples of matter because of their differences in temperature.

Temperature – the degree or intensity of heat present in a substance.

Hook Knife – designed to carve shapes and rounded edges.

Sloyd Knife – single blade for whittling and roughing wood out.

Chip Knife – small, sharp, thin point to carve precise details.

Shavings – pieces of wood that have been whittled off the design.

Wood Grain – arrangement of wood fibers resulting in a pattern on the wood from growth parameters on a cut piece of wood.

Blood Circle – also known as a safety circle, the area within the radius of the arm and blade length combined, when using a knife, saw ax, or other tools.

Cut Resistant Gloves: protective gloves that have built-in cut resistance designed to reduce the chance of injury from accidental blade slips.

FOOD FOR THOUGHT

Have a Trail Mix Pot Luck

Gather friends together to make this fun trail snack

Host a fun trail mix bar, potluck style. Invite some friends over to snack and chat over this fun, energy-boosting snack.

Give everyone a different category to bring their favorite trail mix ingredient - sweet, crunchy (grains), fruity, and nuts & seeds. Have bags handy so everyone can create their own flavor mix and let the adventure begin!

The history of trail mix has several versions of the origin. One being, that a man named Horace Kephart wrote a camping guide in 1910 and mentioned it as his snack mixture. Another origin goes back to 1968 when a couple of surfers in California combined peanuts and raisins. Other sources say that Native Americans ate dried nuts and fruits, thus inspiring this snack.



TRAIL BASICS



READING SUGGESTIONS

- Forest Craft by Richard Irvine**
- The Young Adventurers Guide to (Almost) Everything by Ben & Penny Hewitt**
- My First Book of Knots by Berndt Sundsten & Jan Jager**
- First Aid Manual: The Step-by-Step Guide for Everyone by Dk Books**
- My Side of the Mountain by Jean Craighead George**
- Snakemaster: Wildlife Adventures with the World's Most Dangerous Reptiles by Austin Stevens**
- Bite, Sting, Kill: The Incredible Science of Toxins, Venom, Fangs, and Stingers by Julie Beer**
- A Walkin the Woods by Bill Bryson**

RHYTHM FIRE • CYCLE ONE

X E I K E P B R H G O Q J N N X Q S X S N C Z F O
F I K Z F Y H Y X N H U I L Q D P Q R N T I O H F
N T U O C T B E Y I I B C A E L U C S D F G I A Q
T A H G R D G H D D F N W H I A E Z P H C R L D L
G Q F F M T E V W E E G O N Q P K G R E D E K C S
J Y L J B A S I V E N E T D O B K R A K T L J S N
A U O A L V I T M L I E Y N S C U J I Q T L Y N Z
R L W I U X O S A B R H D C G F M E N B M A P F J
C N N Y U J S P B E C O H C M I F D N J V G L X X
N G F N Q G G Z B Q H N E I E B X Q U L L F X S C
J D S B Q A Q K Y W U Y X X R J B E N G J Y L J M
A V A B I A M R I N H B N I Z Q I P O B G I C N V
Y H L B C T K Y U V J P X H F A F Y Q G N Q K P N
P C F V B H E A N A D N A B I F L Y J G F P V U X
S T I N G O Z X T M A E Q L P K J S N E D R W T B
Q K Y P I N J U R Y C G F D D R U R T D H Z V Y L
E R W E Q W Q F G V K G Y L V Y S T U G C S I U J
U Q D J H F G C H E T T A W U Y F F D E A W L H K
H S P D Q N K I Z D V V C A U T I V Y L G E S I U
B S I W H F Q A R Z K I F N Z F E J B I C L S P P
Y L R P V Q H I Q K V P T R F S D Y M B I L J E N
D Q L W K T Z M Q Z C B B S I A K O Q J J I J V I
F Y U S X F O R U G T Q U U V M D A K J J N Q U R
Z W T D E M O E S A G K R V H T H R A I D G Y M V
J E D W R K A H E T R B J N R U B R I D C T E L J
J F R Q U A O T F O R H V O P S W W T U F O Q Q W
O B E D S Y Q O G Z U A B G S W Q F W E O Q Q U S
H M W I G F A P J K C G I W W H K V E Y U Q W A J
N B G E X M H Y D I Y L Z N V F S V E W H Q N R X
Q N L D A U T H U U C G G I V L D U Z V J T Y V N
P A A V G Q C F R H C X Q H Y V P M E U C G R A G
M N K U T P K T V C W Q L R H Q Z B R A W J W Q O
W T R S E D I M Q R M C B G S Y C D S I W X L E K
H E R A E P R I S O R L Z E W T F V I J X G P R B
U I Z A M S J N Q Z V Y V B J R N R J A I M U H U
F H U R A P O Q A B K F I F H X A O M T D R G N J
I H W J K E D B P D V H L L O A Y G O E U N R K N
J N U D M I E Y J Q V S S X Y X H D I I C C A J K
R W R E L B E O B L R N B D F Q Z E I V T D Q B C
X Z J T Z I I M U I F E J P V Z A M L A L Q E F Z



Find these words:

aid
allergic
bandaid
bandana
bite
bleeding
bruise
burn
cut
gauze
healing
heatstroke
hypothermia
injury
ouch
sling
splinter
sprain
sting
strain
swelling
tweezers

FIRST AID WORD SEARCH

Q: How do you survive a fall without a parachute?

GET CREATIVE:

BURN BRIGHTER

Write a story about getting lost on the trail. What did your hike look like? Who was there? Did you encounter any trail dangers? What was the weather like? Did you run into any other hikers? How did you find your way back?



A large writing area with a red border and blue horizontal lines. A vertical red line is positioned on the left side, creating a margin for writing.

BURN BRIGHTER

FIRE ART & WHITTLING

Art Credit: Barefooter Reagan, Southlake, TX



A: Just like any other season

Fire Art You Can Keep

1. Take a nature walk and collect some small sticks.
2. Once you get inside, "build" your favorite Fire structure by gluing the sticks onto some paper.
3. Grab some paint in your favorite fire colors. Squirt a good amount of paint on your paper close to the sticks.
4. Using a straw, blow the paint in different directions creating flames.
5. Get creative and think outside the box. Can you add in other colors? Can you paint smoke?
6. Use whatever technique you want WITHOUT using a paintbrush!

Once you're done: Email us a picture of your artwork along with your name, age, and BU community and we might feature you on our social media page.

MAKE A FEATHER STICK

Practice your whittling and fire-starting skills by making - and using a feather stick.

What is a feather stick?

Feather sticks are a whittling/bushcraft project. They're very useful if you have wet wood you are having trouble lighting. The little "feathers" catch a spark quicker. It's a fire starter you can make on the go - all you need is a knife and a stick.

- Find a branch 10-18 inches long, with a smaller diameter (less than 1.5 inches). It should be dry. It should be knot-free and have a straight grain.
- Hold the bottom of the stick on the ground and use a horizontal push stroke, starting at the top. The blade should make continuous, slow contact with the wood.
- At a downward angle, make small feathered strips towards the end of your stick, stopping before you reach the end. Keep the blade angle inward and apply pressure as you cut. A 90-degree angle won't work.

Getting the perfect feathers take some practice, but anyone can do it! When you begin to shave your stick, the feathers still attached to your sticks, will eventually curl into a dense bunch. Keep the curls as close as possible. You probably won't have perfect feathers right away. The inside edges of the wood will create longer feathers. Once you get a good base, make thicker curls.

Use your feather stick: Use a lighter or match to light the end of the stick. Use it to light your tinder. You can use your stick to create oxygen in your fire by moving it around the fire.

CAN YOU FIND ?

whittling tool, first aid kit, hiking boots, figure 8 knot, snake, poison ivy, bandana, fire



TRAIL BASICS

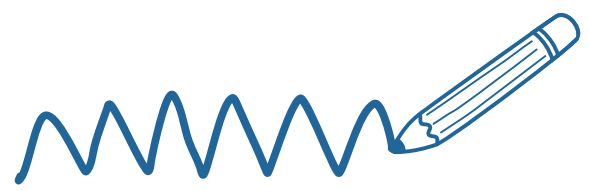


CYCLE ONE SKILLS

- Slip Knot
- Bowline Knot
- Lean-To Fire
- Flint & Steel Starter
- Basic first aid
- Identify venomous snakes in your area
- Identify contact poison plants
- Rough Cut
- Pull Stroke aka Pairing Cut
- Thumb Push
- Natural Cordage
- Tool Usage
- Figure 8 Knot
- ID tinder, kindling, fuel
- Tee-Pee Fire
- Bow Drill

JOURNAL

Date:
Weather:
Location:



BURN BRIGHTER

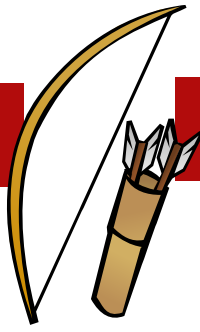
Find a shady spot to sit and draw your classroom.

How the sky looked:

A plant I saw:

Favorite thing I've done at forest school:

Design a Survival Tool



Rhythm Fire • Cycle One



How will your tool or weapon work? What materials are used?

Use your rope and knot skills to create a macrame design for a wall hanging, key chain or other decoration. Send BU a picture with your name, age, and your community name to : learningoutside@barefootuniversity.org



KNOT PRACTICE