Hiking and Backpacking

Sean Dwyer

How frequently the reward of beauty is associated with the dignity of toil, as if nature consciously reserves her noblest effects for those who take some care to earn them.

— Sir Arthur Lund
Hiking and backpacking provide avenues for personal adventure. The outdoor enthusiast is in for a treat every time, whether trekking along marked trails or venturing into the backcountry. There are many common practices that make hiking and backpacking adventures safe and enjoyable.

Hiking and backpacking differ slightly. Generally, hiking is a day trip where departure and return occur within the same day. Hiking appears easy. However, whether hiking for only an hour or for a full day, there is the potential for personal injury, getting lost, encountering wild animals, or having trouble maintaining proper body temperature.

Backpacking involves spending one or more nights in the outdoors, covering much greater distances. Although it seems obvious that a backpacker would carry a backpack filled with specialized equipment, the hiker should carry a pack, too. Many people have found themselves in trouble even while on small hikes. Weather and dehydration are two common threats to hikers who are unprepared for the conditions. Hikers should carry a basic first aid kit, food, water, and adequate layers of clothing in case conditions turn inclement. Backpackers need to be fully prepared to cook meals and set up shelter in preparation to spend the night.

Equipment

**Group Equipment**

Refer to each lesson plan for a list of equipment.

**Personal Equipment**

- Participants require suitable outdoor clothing for the weather conditions.
- Long pants should be worn when traveling through wooded areas, especially when gathering firewood.
- Gloves may be needed for cleanup efforts in streams and local parks.

**Equipment Care and Maintenance**

- All equipment should be in excellent working order.
- Old or damaged equipment should be replaced to limit discomfort when on the trail.
- An equipment maintenance kit consisting of items such as needle and thread, wire, pliers, extra plastic clips or hasps, extra webbing or straps, and patches should be taken on any long adventure.

Site Selection

- Study the objectives of each lesson to choose the best site for the lesson.
- Bearing in mind ethical practices in the outdoors, select sites that are effective for instruction but do not compromise the integrity of the outdoor environment.

Social Skills and Etiquette

- Participants should gain an appreciation of and respect for the environment.
- Participants need to follow instructions and cautions provided by the outdoor leader.
- Participants should respect all equipment, especially hiking and backpacking items belonging to the outdoor leader, in show-and-tell sessions.

Risk Management

- Be aware of the potential hazards that exist in an outdoor setting, including unstable footing, steep and slippery trail sections, sharp branches, participants separating from the group, and fire safety.
- Encourage participants to bring to your attention any equipment that is not in proper working condition.

Unit Organization

The lessons in this unit provide a general introduction to hiking and backpacking. Lessons include information regarding equipment, group organization, outdoor ethics, fire building, and expeditions.

**Lesson Plans**

**Lesson 1: Hiking and Backpacking Equipment.** Group gear and personal equipment are crucial to successful hiking and backpacking. In this lesson, participants will learn about some of the hiking and backpacking gear that exists and why each item is necessary. Participants need to understand that certain items must be packed to avoid jeopardizing safety and comfort.
Lesson 2: Ethical Practices in the Wilderness. Enjoying the natural environment is intimately linked with preserving it. Outdoor enthusiasts must accept responsibility for their actions when pursuing activities in natural surroundings. This lesson presents the principles of Leave No Trace (LNT) and proper waste disposal. Limiting the impact of human activities in the environment is the common thread throughout this lesson.

Lesson 3: Day Hike. A short hike of only an hour can demonstrate many principles that must be considered when taking a group on a hike. A full day hike will allow for more in-depth experiences where the group can become more involved in the activity. This lesson emphasizes the importance of staying together in a group and making a suitable trip plan with a clear itinerary. It also discusses walking pace and rest stops to ensure consideration and respect for all participants.

Lesson 4: Fire-Building and Lighting Techniques. Having a fire in the wilderness can be a calming and enjoyable experience. This lesson presents fire-building and lighting techniques to get the flames going. More importantly, it highlights precautions to ensure the safety of the environment and all participants. Site selection and dousing the fire need to be considered long before the gathering of wood or the strike of the first match.

Lesson 5: Footwear and Foot Care. The happier the feet, the happier the hiker. The duration of the hike and the terrain to be negotiated will determine the type of footwear needed. This lesson focuses on footwear for hiking and backpacking and foot care while on the trail. Maintaining happy feet will result in happy faces while on the move, at camp, and at the end of the trail.

Lesson 6: Backpacks. In this lesson, participants gain an appreciation of the many uses for backpacks, from the smallest daypacks to largest expedition packs. Personal needs and how much gear is to be carried will determine the pack required. Participants will gain experience in properly packing a backpack and will learn about sizing and the many adjustment features for maximizing comfort.

Lesson 7: Maintaining Comfort and Safety in Camp and on the Trail. This lesson highlights several tips for staying comfortable and smiling during the entire outing. Managing loads along the trail and commonsense practices around camp are addressed. Group cohesion and shared responsibility are key to the safe enjoyment of the outing.

Lesson 8: Backpacking Expedition. The culmination of this unit is an expedition with the group. Participants are involved in the planning and get a chance to put into practice their new knowledge and experience. Equipment, safety, route planning, and trip itinerary are all key factors that participants will have to incorporate into the trip plan. Opportunities to share highlights and reminisce with peers are an important part of the planning process as well.

Terminology

- **bar tacking**—Series of stitching perpendicular to the strap on a backpack that is very strong and used to attach straps on backpacks.
- **bivy bag**—Waterproof emergency sack similar to a sleeping bag commonly used by mountaineers as an alternative to a tent.
- **economic walking pace (EWP)**—Walking pace that uses the least amount of energy and can be maintained for extended lengths of time.
- **gaiters**—Knee-high, and often waterproof, leggings that keep debris and water out of the tops of hiking boots.
- **hip belt**—Wide belt on the bottom of a backpack that buckles around the hips to bear a lot of the load and keep the backpack from swaying.
- **layering**—Wearing multiple layers of clothing that can easily be put on or taken off according to temperature and activity.
- **Leave No Trace (LNT)**—Techniques for responsible use of outdoor spaces where users leave no indications through garbage, broken branches, or fire residue that they were ever in the area.
- **moleskin**—A blister care product that is soft on one side and adhesive on the other. It can be used to prevent blisters or make walking manageable when a blister has formed.
- **spindrift collar**—Closeable collar under the lid of a backpack that keeps debris out and can be used to extend the capacity of the pack.
- **sternum straps**—Small straps that attach from each of the main backpack straps and go across the chest. The objective is to keep the backpack straps toward the center to reduce strain on the chest and shoulders while carrying heavy loads.
• **suspension system**—The attachment of the main backpack straps to the top and bottom of the backpack; can be either adjustable or fixed.

• **switchbacks**—S-shaped trails that skirt back and forth on a slope as an alternative to walking straight up or down.

• **trip itinerary**—Detailed plan of an expedition that includes the time of departure and arrival, a full description of every person on the trip, and the exact route and campsites. It is given to a responsible person who is instructed to notify emergency personnel if the expedition party is late returning or communicates an emergency.

---

**LESSON 1**

**Hiking and Backpacking Equipment**

**Overview**

Selecting personal gear can be reduced to a simple word—preference. However, certain group gear is a necessity. All equipment choices should be based on safety concerns, necessity (functionality and real purpose), and reliability in the field. With experience comes the inside knowledge that informs the outdoor leader whether the equipment selected is just a frill or whether it serves a purpose outside creature comfort.

**Learning Objectives**

• To learn about hiking and backpacking equipment and gain insight into the level of preparedness that is necessary

• To discuss the importance of safety and the equipment necessary for safe and comfortable trips

• To ask questions about the equipment to gain further understanding

• To handle and use the equipment to gain experience that will be useful later in the field

**Equipment**

1-2 backpacks filled with hiking and backpacking gear for show and tell:

• Hiking boots

• Gaiters

• Specialized clothing

• Hat and mitts (for any season)

• Stove and fuel bottles

• Cook set, utensil set

• Toilet paper and alcohol-based hand cleaner

• Biodegradable camp soap

• Waterproof match container

• Assorted fire starters

• Candle lantern

• Knife, multitool, compact saw, and axe

• Flashlight or headlamp
• Map, map case, compass, Global Positioning System (GPS)
• Mosquito net
• First aid kit
• Watch
• Mirror
• Sleeping bag
• Reusable camp towel
• Water filter system
• Rescue and safety rope
• Bivouac bag and emergency blanket

Risk Management

• Ensure that participants travel together when hiking to the show-and-tell location.
• Point out obstacles and risks along the trail.

Activity: Show and Tell in the Outdoors

This activity demonstrates the range and use of the many gear options that are available. If participants understand the relevance of selected items, they will be more inclined to grasp the complexity of an outdoor trip and the challenge of being away from urban supports.

Skill Cues

• This session is a hike and a show-and-tell of hiking and backpacking gear.
• Show participants several examples of equipment.
• Explain the use of each item to participants. This may interest them because many people are unfamiliar with the gadgets that are available for hiking and backpacking.
• Spread a small tarp on the ground and empty the contents of each backpack.
• Discuss the relevance of each item.

Teaching Cues

• Welcome questions from participants at any time throughout the presentation.
• Aim to be entertaining and keep the atmosphere light and interesting.
• Let participants handle the equipment and practice using it (if applicable).
• Present equipment to participants and have them suggest alternative uses for each item; this might be critical in an emergency situation, and bringing items that have more than one use will lighten the load.
• During the show and tell, have pieces of string (or duct tape) everywhere, such as in the pot set, tent roll, and so on. At regular intervals, take a piece of string out and demonstrate a practical use for it to reinforce the value of having such items on the trip.

Lesson Closure

Close the session by answering questions and reinforcing that it is crucial for participants to know how to properly use each item and that the equipment should be in good working order.

LESSON 2

Ethical Practices in the Wilderness

Overview
Preserving the natural world requires outdoor leaders to take their participants to actual settings. If participants can see the beauty of the outdoors coupled with its fragility, and if they understand simple techniques that allow outdoor groups to preserve the resource, they will be more accepting of LNT principles.

Learning Objectives
- To learn simple approaches to help preserve the natural environment
- To learn how to use LNT techniques in the natural environment
- To learn proper waste disposal techniques in the outdoors to prevent long-term negative consequences for the environment

Equipment
Garbage bags

Risk Management
When doing the cleanup activity, wear appropriate protective gloves, clothing, and glasses.

Activity 1: Leave No Trace
A starting point for instilling a sense of values regarding outdoor environments is to have participants begin taking care of the natural resources around them.

Skill Cues
- The purpose of LNT is to leave an area as it was found with no trace that anyone was there, except for footprints that do not cause damage or destruction to the environment.
- It includes no garbage, no tenting on fragile ecosystems, no breaking off living trees or twigs, and no walking across protected bog or marsh areas.

Teaching Cues
- LNT should be adopted by participants to protect the environment from human activity.
- Adherence to this principle should be lifelong and should be passed on to others to help minimize the negative results of human activity.
- Sandy or hard-packed gravel areas are the best areas for pitching tents, building fires, or having group gatherings because there is little or no potential for damaging the environment.
- Teach LNT with a purist attitude to model ethical practices in using and caring for the environment. Students can learn from your actions and gain an appreciation that caring for the environment is a commitment, not an option.

Activity 2: Waste Disposal

Taking responsibility for our actions extends to our interactions with the environment. This lesson brings forward the premise that we all have to manage our waste and determine best practices that will allow us to keep natural settings as pristine as possible.

**Skill Cues**

- The principle of “Pack it in, pack it out” should be employed on all outings.
- Any food or packaging that is carried into nature should be carried out with nothing left behind.

**Teaching Cues**

- Participants should come to appreciate the environment and realize that everything they throw into the environment is damaging and unsightly.
- Reinforce the concept that any foreign material disposed of in nature can upset the balance of the local ecosystem.
- Participants should understand that disposing of waste in the environment can be destructive and unsightly.
- Recycling and waste management activities in some areas are effective in managing human garbage and should be used (e.g., trails and high-traffic areas that are commonly used by the general public should be equipped with garbage cans to reduce impact).

**Lesson Closure**

- Review all aspects of the lesson and reemphasize the importance of caring for the environment for the enjoyment of oneself and others both now and in the future.
- Participants could reflect on ways to improve their treatment of the environment.
- Participants could share stories of local areas that are not cared for by users and comment on the results of such activities.

Lesson 3

Day Hike

**Overview**

Getting a group outside on a pursuit takes a great deal of planning and preparation; it is never as simple as just going outside and hitting the trail. With practice and time on the trail, many participants will be able to anticipate just what they need to allow for a safe and enjoyable experience. Advance preparation will provide more time to enjoy the company of the group and the benefits of being in the outdoors.

**Learning Objectives**

- To understand the concepts of safe travel in a group, even on a day hike
- To learn the importance of a lead person and sweep person to keep the group together
• To appreciate the feelings and rights of all group members
• To learn about trip itineraries
• To find an appropriate pace to accommodate all members of the group
• To understand the concept of economic walking pace (EWP)
• To use a topographic map and group demographics to discuss the variables of route planning
• To discuss the importance of rest stops and activities for maintaining cohesion in the group
• To discuss the preventative measures for and productive responses to being lost

Equipped

Trip itinerary forms (see figure 4.1)

Risk Management

• It is vital that the group remains together throughout the entire hike.
• Identify a lead person whom everyone stays behind and a sweep person to bring up the rear.
• The main first aid kit should be toward the rear.
• Primary navigational aids should be toward the front.
• Put slower hikers toward the front of the group to act as pacesetters.
• With larger groups, divide groups into pods of four to six per group.

Activity 1: Keeping Everyone Together

How fast is too fast? How slow is too slow? Finding the balance with a group takes a bit of flexing, but tweaking the pace ensures that all participants are comfortable and able to enjoy the outing versus feeling rushed or held up (figure 4.2). However, keep in mind that a group can only go as fast as the slowest member!

Skill Cues

• Review established rules of conduct for the hike—all participants follow the same path, no one goes in front of the leader, and no one falls behind the sweep.
• The group progresses only as fast as its slowest member.

Teaching Cues

Maintaining contact with all group members is mandatory in a school setting but may be a matter of survival on an outing in the wilderness.

Activity 2: Trip Itinerary

The importance of a trip itinerary grows with the duration of the trip. Small day hikes on well-marked trails may not require such measures; however, always letting someone know where you are going and when you will return is never excessive. A trip itinerary is a detailed plan that tells a responsible person the exact details of a trip, including the route, time of departure and return, number of people, clothing and tent descriptions, mode of travel, medical information, and so on. If the group does not return when stated, the person with the trip itinerary contacts emergency personnel to begin a search.
Figure 4.1  The trip itinerary form contains information that can save lives if a group encounters an emergency or becomes lost.

Skill Cues

- During a break, provide each participant with a copy of a trip itinerary.
- A trip itinerary is important to let family and friends know where the group is going, a description of group members, the planned route, and the approximate return time.

Teaching Cues

- The trip itinerary gives hope to those who are stranded and assists search-and-rescue personnel in locating people as quickly as possible.
- The trip itinerary should be left with a responsible person who will contact police and search-and-rescue personnel if the return time has passed beyond a reasonable delay.
- Present each feature of the itinerary in sufficient detail.

Links to Trip Itinerary and Trip Plan Forms

- [http://bcmc.ca/forms/BCMC_TRIP_PLAN.pdf](http://bcmc.ca/forms/BCMC_TRIP_PLAN.pdf)

Activity 3: Economic Walking Pace

Many health benefits can be realized simply from walking. By developing proper technique, participants can exact the health benefits while maintaining their personal comfort during the outing.

Skill Cues

- Walking should appear relatively effortless.
- Walking should maintain a rhythm that flows.
- Stride length should be shorter rather than longer and will change with terrain.
- Determine a personal EWP that uses the least amount of energy and can be maintained for hours; this often means slowing down!
- Recognize that everyone has a different EWP, and this should be respected.
- When hiking in a group, pair up with people who maintain a similar EWP.
- When navigating grades, use shorter steps and switchbacks.

Teaching Cues

- Discuss EWP at the beginning of a trek, but it is best determined over an extended distance.
- At the end of a hike, discuss whether the EWP appeared to change from the beginning to the end (i.e., if the pace was slower at the finish, the perceived EWP at the start was too fast).
- Hikers with slower EWPs should be in the front of the pack and frequently monitored.
• Some hikers just want to go, go, go; assign them responsibilities, such as monitoring others, going to the back of the pack to check on things, navigating, and doing observation probes (identifying what is around), in order to use their energy in a positive way and increase their stake in group success and enjoyment.

• Consider providing every participant with a map and list of things to see on the hike (see figure 4.3). Participants then use this list to stop, look around, and become observant.

• Have participants wear pedometers and compare distances. (Note: Pedometers are most accurate when pace is consistent.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>UTM/location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing hole</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steep hill or cliff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildlife</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birch grove</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best lookout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place to return another time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.3  Sample list of what to see on a hike.

Activity 4: Route Selection

Determining a route depends on many variables, including fitness levels of the participants, skill levels of the participants and the outdoor leader, and purpose of the activity, including goals of the outing, technical aspects, environmental concerns, and growth potential from the activity. Routes should not be chosen lightly. Once the weighing out of the variables supports the route choice, try to ensure a positive experience for participants.

Skill Cues

• Identify obstacles, hazards, associated risks, alternate route options, and advantages and disadvantages of routes.

• Steep grades require up to 10 times the energy and cover up to three times the distance (shown on a topographical map).

• Soft ground cover such as sand or bog requires more energy than hard-packed trail.

• Plan rest stops that take into consideration challenging trail sections, protection from elements (wind, rain), areas that offer broad vistas, recognized landmarks, navigational features, cultural history, and natural history.
Teaching Cues

- Discuss challenges and choices before each trail section, such as challenge of a hard hike up and over a mountain versus the choice of a longer but easier hike around the mountain. For each trail section, identify the challenges it is likely to present and the options the group has for dealing with the challenges. Analysis of challenges and choices should serve as the basis for route selection.
- After each section of trail, compare expectations with reality.
- Recognize that experience internalizes concepts essential for effective decision making in the future.

Activity 5: Rest Stops

Preventing an accident is the best form of risk management. Key components in prevention versus reaction are proper nutrition, hydration, and rest.

Skill Cues

Rest stops are important and should be used for the following:

- Goals: breaking the hike into sections
- Hydration: water in, water out
- Temperature control: adjustment of layers
- Foot care: blister prevention and treatment
- Pack adjustment
- Navigation: reviewing position, landmarks, and upcoming route
- Communication and monitoring
- Rest and rejuvenation

Teaching Cues

- Use rest stops as needed for all skill cues and available teachable moments.
- Continually reinforce good EWP to avoid the rush and rest syndrome, which leads to excessive perspiration, exhaustion, and decreased motivation. When a very intense pace is set that cannot be maintained, the person gasping for breath is forced to stop and rest.
- The last group to arrive may decide when to move on.
- Avoid resting more than 10 minutes unless absolutely necessary.
- Rest stops should consider weather and trail conditions. For example, if participants are sweating, the rest area should be protected and the stop should be short to avoid severe cooling.

Activity 6: Camouflage Game

Camouflage is an ideal game to play along the trail. Its low energy requirement offers a less-than-obvious rest filled with adventure and excitement.

Skill Cues

- The ideal location for this game is a small clearing surrounded by a wooded area.
- The seeker stands in one spot in the center of the clearing.
- As with hide-and-seek, the seeker counts to 20 and all other participants hide.
- The seeker cannot move from this spot to seek out the other participants once the game commences.
• The hiders must stay as close to the seeker as possible.
• The seeker can turn on the spot and try to identify participants hiding in the woods.
• If caught, participants return to the clearing but are not allowed to help the seeker find other participants.
• Once the seeker cannot find any others, the seeker raises one hand and holds up a certain number of fingers, turning a full circle while announcing that a number is being held up.
• Participants can be caught while they peek to see the number.
• Upon lowering the hand, the seeker invites all participants to come out and whisper to the seeker the number that they saw.
• The first person caught could be it for the next round, or you could select a participant among those who did not identify the number of fingers correctly.

Teaching Cues

• This game is great for a new group when you would like to reinforce name learning for participants.
• Explain the game and be the first person to seek in order to demonstrate the game.
• Participants who hide too far from the seeker will not be able to see the number and will lose the point of the game.
• Hiding as close to the seeker as possible adds to the excitement of the game and encourages participants to be creative in their endeavors to stay as close as possible without being seen.

Risk Management

• Participants must obey instructions not to hide too far from the person who is seeking.
• Participants should use caution when walking and ducking through tree branches to find a hiding spot.

Activity 7: We’re Lost—Now What?

Many of us have experienced a temporary sense of being lost, and a few of us have experienced what it means to be geographically displaced. When this occurs away from what is considered recognizable—that is, urban supports—the lost sensation can be magnified. Outdoor leaders should help participants become better prepared to deal with being lost, learn key coping strategies, and learn tips that allow for a positive resolution.

Skill Cues

Lead a discussion of what happens when you become disoriented or lost in the wilderness. The following list offers several practical suggestions, some of which require planning before embarking on the outing.

• Never go into the wilderness alone; always leave a trip itinerary.
• Do not allow the group to separate to try to find the way back.
• Once it is discovered that the group is lost, the group should not proceed any further without making a plan.
• If sure and only if sure, retrace steps to the last known location.
• Consult GPS (if currently in use) and check the track log.
• Mark the location on GPS and check Universal Transverse Mercator (UTM) coordinates on the map to determine current location.
• Move to high ground and survey the area by consulting the map and comparing topographic features.
• Follow safety bearing to a prominent landmark and place the group back on course.
• If in possession of a cell phone or communication radio, call for assistance and help searchers by lighting a signaling fire.

**Teaching Cues**

• Have participants discuss what they would do if lost.
• Discuss each of the options in the skill cues and determine which courses of action are first and which are reserved as a last resort.
• Lead participants on a hike into the wilderness.
  – Ask participants to identify as many characteristics of the trail and surroundings as they can.
  – After each contribution, have participants indicate whether they noticed a particular feature.
  – The key to this discussion is to highlight how important it is to be aware of surroundings.
  – Point out that it is a good idea to turn around occasionally and view the trail from the reverse perspective.
  – Take participants to an area where they can triangulate their position with a map and compass.

**Lesson Closure**

• Emphasize that getting lost can be a dangerous situation that results from and can lead to poor judgment and decision making.
• Lead participants back to the starting point and reemphasize points discussed along the way by having participants accept the responsibility of being the lead and sweep of the group.

---

**LESSON 4**

**Fire-Building and Lighting Techniques**

**Overview**

In environmentally sensitive areas, fires may not be recommended, and in hot climates, fires may not be necessary. Yet for people who hike and backpack in temperate environs, fire-lighting skills can mean the difference between life and death in many situations. Hence, those who travel in the wilderness should practice fire-lighting skills. If the area is sensitive, a practical, environmentally friendly alternative is to provide the tinder, kindling, and wood to practice fire-building strategies and simply discuss fire-lighting strategies. This activity may be done close to the base of operation or on the trail.
Learning Objectives

- To select a suitable site for fire building
- To address the risks of lighting fires in the wilderness
- To understand the components of fire building and the requirements for a fire to burn effectively
- To practice fire-building techniques
- To understand the responsibility of properly extinguishing a fire

Equipment

- Matches for each group of three participants
- Container for water to douse fire
- Small shovel

Risk Management

- Getting burned is the most apparent risk with fire building. Participants must be careful when handling sticks on the fire because burns can occur when repositioning sticks.
- Smoke inhalation is another concern, and participants should use caution, especially in the early stages of lighting the fire (when it is most smoky).
- Participants must be careful exposing clothing and hair to the fire.
- No green wood should be added to the fire because it causes the greatest amount of smoke.
- Wind direction should be noted to find the best position around the fire to avoid exposure to smoke and damage to personal (clothing) or group (tents) equipment.
- Materials made from synthetic fibers such as nylon tents, polypropylene, fleeces, and waterproof and breathable rain gear are extremely vulnerable to sparks and flames; on contact with embers or flame, the material melts instantly and is capable of causing severe burns.
- Burning sticks should not be waved in the air or transported in order to avoid accidental ignition of other sources of wood or clothing.

Activity 1: Fire Site

Where to build a fire depends as much on balancing environmental need as it does safety. Outdoor leaders should consider the many factors needed to facilitate the fire-building process.

Skill Cues

- Sandy areas are the best locations for fire lighting because the underlying ground will not be damaged by fire as would a grassy or mossy surface.
- The overhead area should be noted because a fire could cause overhanging trees to ignite, leading to a forest fire.
- Fires should not be located too near water in order to avoid contamination.

Teaching Cues

- Determining an appropriate site for a fire involves many considerations.
- Participants should be asked what considerations are involved in building the fire at one site versus another.
• Participants should display sensitivity for the environment and suggest a site that has the least impact on the environment.

**Activity 2: Fire Starting**

A good fire requires three things: fuel, heat, and oxygen. The trick is getting these things in balance to provide the end result—fire!

**Skill Cues**

• An effective fire starter must be able to burn by itself for as long as possible.
• A fire starter that can burn by itself will stay lit long enough to burn off surface moisture and ignite the larger sticks.
• Progress by adding larger sticks once the fire is hungry and can withstand the extra sticks.
• Care should be taken not to add too many sticks too fast because the fire can be overwhelmed by a reduced oxygen supply.
• Blowing sideways at the base of fire can help fan the flames and cause the fire to roar through the small sticks or tinder.
• Birch bark is an excellent fire starter but should not be stripped from the trunk of the tree; loose pieces can be used to avoid harming the tree.
• Small, dry sticks should be gathered and placed on birch bark prior to lighting.
• The dryness of sticks can be generally determined by how they crack; they should snap easily without requiring repeated bending.
• Larger sticks can be broken by placing them between two trees and prying to the side to break the sticks. An easier method is to lay long sticks on the fire and move them inward once they have burned sufficiently.

**Teaching Cues**

• There are many commercially available fire starters. Relying on these can leave a participant without the skills to start a fire if faced with an unexpected emergency, but they should be included in a personal survival kit.
• Using available materials in the environment is the best method of securing effective fire-starting skills.

**Activity 3: Fire-Building Techniques**

Building the fire allows participants to practice the big three: using the right amount of fuel, generating the needed heat, and supplying the required amounts of oxygen. Maintaining a clean fire is never as simple as lighting a match.

**Skill Cues**

• Crisscrossing sticks or building a miniature log cabin allows the sticks to maintain a flow of air into the base of the fire and ensures that the fire will continue burning: sticks can be continually added in this manner to gradually build the fire (figure 4.4).
• One of the most common approaches to building a fire is to build a tepee structure with larger sticks and stuff the middle with small sticks and tinder.
• The downside to this approach is that as the smaller sticks in the middle burn away, the tepee can collapse.
**Teaching Cues**

- Air flow is critical to building and maintaining a fire.
- Stacking sticks in the same direction restricts air flow and decreases surface area of the wood presented to the fire.
- Discuss alternative fire-building methods: crisscross (good air flow), log cabin with tepee in middle, star (long sticks that are fed into the fire as they burn).
- Consider appropriate fire size: Cooking fires should be small, whereas fires in an emergency or for warmth should be larger.
- Have a cookout using outdoor cooking techniques over an open fire.
- Have a hot dog and marshmallow roast.
- Have each participant make a hot dog spider by placing a hot dog sideways on a roasting stick and slicing the ends of the hot dog into quarters with two slices on each end. During the roasting process, the sliced portions of the hot dog curl and resemble a spider with eight legs.
- Organize a fire-building competition where participants compete to be the first to boil a kettle of water. Adding some dish liquid to the water before the start of the competition causes the water to boil over the top of the pot and clearly indicates when the water is boiling.

**Activity 4: Putting Fires Out**

Dousing a fire involves more than just dumping on some water. Putting out a fire is a deliberate, careful act that requires practiced vigilance. If participants become careless, they may very well find their natural surroundings engulfed in flames because of their inattention to a powerful force in nature—fire.

**Skill Cues**

- Allowing a fire to burn well down before dousing will reduce the mess and debris of incompletely burned sticks.
- Douse the fire using a container of water; pour water all around the base of the fire to prevent it from spreading.
- Use a stick to stir the embers, exposing ignited areas not doused by the water.
- If the fire pit is in turf or peat, take extra care to ensure the fire is out and there is no fire in the ground.
- A fire is much easier to douse if it has burned down to embers.

**Teaching Cues**

- Fires need to be fully extinguished before you leave the area (figure 4.5).
- A fire should never be left unattended, even if only a small bed of embers remains; winds could arise and spread small embers to nearby areas of grass and dry sticks, causing an unplanned fire.
- Such a fire could destroy a large land area and upset the balance of an ecosystem.
• Participants should understand that fire is a natural phenomenon in nature, but a major fire caused by humans is unacceptable.
• Some cone-bearing trees (e.g., black spruce) must have their cones exposed to fire in order to be properly prepared for germination.

Lesson Closure
• Remind participants of the safety considerations when having a fire.
• Fire starting and building are skills that need to be practiced in case of emergency.
• Green or living trees and branches are ineffective in fire starting; participants should be able to tell the difference between good tinder and green wood.
• Discuss fire size and environmental impact.

Figure 4.5 Burn the fire to ash and clean the area so no trace remains.

LESSON 5
Footwear and Foot Care

Overview
Taking care of equipment is important, but an equally important maintenance topic is body care. One part of the body that tends to take high levels of abuse is the foot. Caring for the feet requires participants to understand the footwear that is required for hiking and backpacking. A most important skill for participants to practice is how to care for their feet, thus preserving the experience—sore feet can ruin a participant’s experience.

Learning Objectives
• To select suitable footwear that matches the demands of the hike duration and terrain
• To ensure proper foot care while on the trail for safety and personal comfort
• To learn tips for keeping feet healthy and happy while hiking

Equipment
• First aid kit (moleskin, scissors)
• Multiple layers of duct tape (for preventing blisters in blister-prone areas)

Risk Management
Participants should wear comfortable and properly fitting hiking boots to aid in foot comfort and to prevent blisters.
Activity 1: Footwear

Not all boots are equal. This activity helps participants see how a boot is structured and the benefits this structure will provide their feet during a hiking or backpacking experience.

Skill Cues

- Light hiking sneakers or trekking shoes are suitable for day hikes on easy and even terrain.
- More challenging terrain on uneven ground requires rugged footwear such as hiking boots with stiff soles and high-cut uppers to provide much-needed ankle support.
- When backpacking, it is especially important to have rugged hiking boots with exceptional ankle support to handle the increased load of a full backpack.

Teaching Cues

- Along the trail, discuss the main elements of footwear (ankle support, sole stiffness, laces, water resistance, sole tread pattern).
- You should be wearing footwear that is suitable for the conditions and purpose of the trip.
- Participants should evaluate their footwear and determine how suitable it is for the current outing.
- Waterproof boots should be used to keep water out, but if they get wet inside, they are slow to dry out and tend to stay wet.
- Over the course of a long hike, waterproof hiking boots can trap water inside, which can leave unpleasant odors (even when dried out at home).

Activity 2: Foot Care on the Trail

Little inconveniences can become big problems if left unchecked. A little blister has the potential to grow and become a constant irritant, taking away from the more enjoyable aspects of the outdoor experience. If left untreated, the blister can become debilitating, making it next to impossible for the participant to hike out.

Skill Cues

- Keeping the feet dry and comfortable on the trail determines comfort while hiking and backpacking.
- Foot comfort and care is aided by dry socks and moleskin (for hot spots or blisters).

Teaching Cues

- Participants should appreciate how foot comfort is critical to enjoyment on the trail.
- Use rest stops to take care of the feet by changing into dry socks or clearing debris from socks.
- Blisters should be avoided by treating hot spots with moleskin to prevent the full development of blisters.
- Demonstrate how gaiters can help keep the feet dry when walking through water and mud and how gaiters are effective in keeping trail debris out of hiking boots.
- Debris and water in the boots can lead to discomfort and contribute to cuts and blisters as debris rubs between the foot and the boot.
Overview

Internal frame, external frame, day pack, overnight pack, weekender, expedition—selecting the right pack depends on the type of trip, and not all packs are equal in carrying capacity, comfort, or even functionality. Packing a backpack effectively and efficiently, donning a pack correctly, and shucking a pack are important skills to learn. Backpacks require good technique, and if essentials can be mastered, participants will be much more comfortable while carrying their load on the trail.

Learning Objectives

- To recognize the types of packs that are available for various load-carrying capabilities and outings
- To learn how to properly pack a backpack for easy accessibility of important items and for even weight distribution for personal comfort
- To introduce the many features of backpacks that provide comfort when carrying larger loads

Equipment

- Several backpacks filled with hiking and backpacking gear
- Participants’ own backpacks and gear (if possible)

Risk Management

- Ensure that participants travel together when hiking to the show-and-tell location.
- Point out obstacles and risks along the trail.

Activity 1: Packing a Backpack

Packing in the proper order is a starting point for an easier carry. Organization is key to packing well so that you can easily access your gear and put it all back together again.

Skill Cues

- Pack light and seldom-used items such as the sleeping bag and some clothing at the bottom of the bag.

Lesson Closure

Highlight the importance of safety and foot care—a heavily blistered foot will slow a hiker or make walking impossible without excruciating pain.
• Pack heavier items such as food and water close to the back and in the middle of the pack.
• Pack sharp or protruding objects such as cook sets and stoves in the middle of the pack but not against the back.
• Pack fuel and stoves below food to avoid contamination if a leak should occur.
• Pack frequently used items toward the top of the pack, such as a rain coat, clothing layers, and hat.
• Top and side compartments should contain an emergency first aid kit, water, snacks, map, knife, matches in a waterproof container, camera, flashlight, and radio or cell phone.

**Teaching Cues**

- Involve participants in this process by having them take turns packing backpacks.
- Ask which items should be packed at the bottom, middle, and top of the pack.
- Ask which items should be stored in the top or side compartments.

**Activity 2: Features for Comfort and Adjustability**

Most packs have various methods that allow for making minute adjustments to provide maximum comfort (figure 4.6). Understanding weight distribution is important, but fitting a pack properly is critical if a participant is expecting to carry a backpack for any length of time.

**Skill Cues**

- The suspension system of a backpack is either fixed or adjustable.
- Fixed systems need to be matched to the size of the wearer’s back; adjustable systems can be fitted to several sizes.
- The hip or waist belt is one of the most important features on a backpack because when the backpack is secured snugly, the hips receive the majority of the weight (figure 4.7).
- Shoulder straps should be padded and adjustable to help manage loads and keep the pack from swaying too much when walking and negotiating obstacles.
- The sternum strap keeps the shoulder straps together, which helps relieve stress on the shoulders and chest.
- The sternum strap should not be fastened so tightly that it restricts breathing; it should have elastic built in to allow for chest expansion during inhalation.
- A spindrift collar keeps dirt and rain out of the main compartment of the pack.
- Some backpacks have a floating lid that allows for larger loads.
- A map pocket under the top lid keeps the map dry and in good condition.
- Stitching on the backpack should be doubled or bar tacked, which is strong and durable.

The material of the backpack should have a waterproof coating to help protect contents.

**Teaching Cues**

- Point out that there are many types of packs, including waist packs, day packs, rock-climbing packs, cycling packs, ski packs (narrow to permit free arm movement), overnight packs, and multiday and expedition packs.
- Explain that backpacks may have different features.
- Fit a backpack on a participant while explaining the features; ensure that the backpack is full in order to clearly demonstrate each feature.
- More features on a backpack generally mean more weight.
- Arrange a hiking trip to have participants experience what it is like to wear a weighted pack for an extended time.
- Participants will practice unpacking and packing a backpack during rest stops and meals.

**Lesson Closure**

Hike back to the starting point, giving all participants an opportunity to wear a backpack and fit it to their body by adjusting the straps.

---

**LESSON 7**

**Maintaining Comfort and Safety in Camp and on the Trail**

**Overview**

Camp living is a skill that requires practice and teamwork. Successful camp life depends on the ability of group members to collaborate, share, cooperate, and communicate effectively. A fun camp experience rests on the positive attitude of the participants, and the outdoor leader plays a key role in fostering this camaraderie. Group attitudes can shift during the pursuit; thus it is imperative that the outdoor leader remains in tune with the group every step of the way.

**Learning Objectives**

- To learn about the importance of comfort and safety while on the trail and while in camp
- To ensure that backpacks are properly adjusted and packed for comfort
- To share duties at camp to ensure comfort and environmental responsibility
- To recognize the importance of communicating personal discomforts and problems to the group for the safety of all
- To recognize dangers associated with setting up a camp for a large group, such as location of fire, location of the cooking area, and firewood gathering
Equipment
Typical equipment of a fully packed backpack

Risk Management
- When in camp, keep all equipment organized and in its place to prevent accidents (e.g., axes, saws, stoves).
- Have procedures in place to ensure that the group stays intact while on the trail to prevent participants from becoming separated.

Activity 1: On the Trail
Individual attitudes are easily strained when physical discomfort dominates the experience. Take the time to prevent much of the trail pain in advance by assisting participants in donning and fitting their packs properly.

Skill Cues
- Ensure that all straps are properly adjusted.
- Participants should not have overloaded backpacks; practice load sharing of common items such as saws, stoves, and cook sets.
- When crossing waterways above the knee, release the hip belt and sternum strap and hold the backpack with only one shoulder strap in the event of a fall.
- When crossing even terrain, give shoulders a break by tightening the hip belt and loosening the shoulder straps slightly.

Teaching Cues
- The backpack should be packed and fitted properly to ensure that the weight is high and toward the center of the body.
- Rain covers for backpacks are useful in keeping contents dry as well as keeping debris out and helping to prevent straps from snagging on trees and bushes.
- When walking through wooded areas, ensure that participants walk far enough apart to avoid being flicked with branches, or else ensure that branches are held for the next person.
- Frequently perform attendance checks or roll calls to ensure that the group is intact and does not spread out on the trail.

Activity 2: Around Camp
This is living! Camp life has the potential to generate numerous positive memories, and it is a shared effort by all participants. Maintaining a positive camp experience requires effort and clear social expectations. A clean, orderly camp is half the battle.

Skill Cues
- Participants set up camp in small pods to keep equipment organized and less likely to be scattered and walked on by fellow campers.
- The campfire should be located away from tents and the cooking area, where stoves and flammable fuels are located.
- Firewood storage, cutting, and splitting should be done on the outskirts of camp to avoid injuries from an axe or saw and from flying wood.
Teaching Cues

- Set up camp and have participants do an inventory of potential dangers.
- Inform participants of their individual responsibilities for keeping the camp orderly and picking up equipment that might be lying around and posing a danger.
- Involve participants in choosing the safest site for tents, cooking, and the fire.
- Encourage participants to communicate any discomforts experienced during time in camp, such as being cold, having blisters or cuts, or any other problems.
- Present safety scenarios that could happen on the trail or in camp and ask for suggestions for dealing with such concerns.

Lesson Closure

- An enjoyable hiking and backpacking trip is declared primarily when all participants have returned free from personal injury.
- Emphasize the importance of all participants accepting a role in ensuring the safety of others.

LESSON 8

Backpacking Expedition

Overview

There is no better way to test the skills associated with backpacking than to lead a trip where participants live out their learning in an actual setting. Experience has a way of teaching us what we are capable of and what we need to practice. Most importantly, the trip can become a landmark experience that changes lives. A backpacking expedition has the potential to allow people, environment, and learning to converge within the pursuit.

Learning Objectives

- To experience the process of planning an expedition with a large group
- To complete a route plan and trip itinerary
- To discuss topics to consider when planning an expedition
- To determine individual responsibilities for participants and small groups
- To plan fun activities during the expedition that involve all group members (e.g., digital-photo scavenger hunt)
- To record and report highlights of the trip to the group while on the expedition and to others when at home afterward

Equipment

- Topographic maps
- Navigation devices (compass, GPS)
- Communication device (two-way radio, cell phone)
- Typical equipment of a fully packed backpack so that participants are fully prepared for a multiday backpacking expedition
Risk Management

- Due to the nature and duration of this trip, it is critical to employ adequate safety practices in planning and practice.
- You must have a quick system of checking attendance regularly during the trip to ensure that the group remains together, such as a checklist of names or numbering system whereby participants call out their own number in order.

Activity 1: Planning the Trip

A good trip starts with a sound plan. Trip planning requires the outdoor leader to attend to the many details that will contribute to a positive, safe experience. However, no trip should be planned in isolation; all participants should actively contribute to planning the trip.

Skill Cues

- Determine the best location for an extended backpacking trip. This can be done with the group as a learning experience.
- Route planning allows participants to apply the skills of navigation and route planning (if learned previously).
- Plan a route that has several vistas that provide excitement and are great opportunities for rest and rejuvenation after long routes.
- Complete a trip itinerary form for the group and include all details that will assist search-and-rescue personnel or assistance personnel.
- Use discussion topics for trip planning:
  - Goals and objectives for the outdoor pursuit
  - Special training and certification
  - Equipment needs, such as tents and canoes
  - Transportation
  - Personal equipment
  - Group gear
  - Gear rentals
  - Park permits
  - Maps
  - Route card
  - Weather concerns
  - Emergency plans
  - Updated medical forms (updated forms and health concerns must be discussed every 3 months)
  - Permission forms
  - Buddy system
  - First aid kits
  - Water purification
  - Trip purpose
  - Areas of concern
  - 24-hour day (one-third traveling, one-third maintenance, one-third relaxation)

Teaching Cues

- Check local regulations regarding wilderness backpacking and camping and determine whether to plan an original route or follow an established, authorized route.
- Involving participants in the planning of a backpacking route can be an educational experience.
Historic Tookalook Trail Hike Day 1
- Our Tookalook Trail adventure begins in ________________.
- It is a small town located ____________________.
- We will arrange accommodations, an orientation session, and a gear check.
- There will be time to explore this unique area.
- Features to see in the area include ________________.

Historic Tookalook Trail Hike Day 2
- We will get a shuttle ride to the trailhead.
- Today, we will hike 11 kilometers (7 miles) through the forested trail to ________________.
- Natural features in view of this beautiful campsite include ________________.
- This is a great warm-up hike that helps folks get used to their packs and hiking hills and uneven terrain.

Historic Tookalook Trail Hike Day 3
- We leave ____________________.
- The trail passes ____________________.
- After lunch, the trail climbs at a steady rate.
- By 4 p.m. we arrive at Cramalotin Campsite.
- Total distance for the day is 26 kilometers (16 miles).
- Those interested in an additional 1.5-hour return hike to the summit of Mount Tookalook, departure time is 6:45 p.m.
- The scenic trailside is covered with waterfalls and wildflowers.

Historic Tookalook Trail Hike Day 4
- Lunch is at ________________.
- Arrive at trail’s end at ________________.
- This is where the journey ends, but the memories will last forever.
- Total distance for the day is 16 kilometers (10 miles).

Figure 4.8 Sample activity list for Tookalook Hike.

- Route planning must take into account the number of participants, their physical capability, and their level of experience.
- Completing an activity list form with the participants reinforces lessons taught earlier in this unit on planning and being proactive where safety is concerned.
- Use the sample activity list in figure 4.8 to show students the categories required and the level of detail needed.

Activity 2: Participant Responsibilities
A positive trip requires participants to take responsibility for the outing; all group members need to take ownership of a trip component. Every group needs a trip roster to help prompt participants and keep them accountable for their assigned responsibilities. Every camp should know who is responsible for what chore, and these responsibilities should be shared.

**Skill Cues**

- Participants should be involved in planning the trip and should also be given responsibilities during the trip.
- Participant responsibilities include firewood collection, fire maintenance, latrine preparation and maintenance, camp setup and takedown, campsite checks, navigation assistance, cooking and cleaning duties, first aid assistance, and picture taking.

**Teaching Cues**

If participants are involved in all aspects of the trip, they will be more likely to take ownership and experience greater enjoyment and satisfaction in the trip.

**Activity 3: Digital-Photo Scavenger Hunt**

The ease of using certain technological devices in backcountry experiences has provided many unique learning opportunities—the only necessary ingredient is the creativity of the outdoor leader. Doing fun activities with learning outcomes can lead to rich opportunities for participants to continue discovering new things while in the field.

**Skill Cues**

- Each group must carry a whistle.
- Group members must stay together within a 5-meter (15-foot) radius.
- All items must be photographed from the trail or trailside.

**Teaching Cues**

- This activity may be presented as a one-off activity during a rest or lunch stop, or it may extend from the start to finish of the expedition.
- Clearly define boundaries and expectations; all items must be photographed from the trail or trailside.
- Change the list in figure 4.9 to reflect the local topography and ecosystem.

<table>
<thead>
<tr>
<th>Item</th>
<th>Point value</th>
<th>Item</th>
<th>Point value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fir tree 1.5 m (5 ft) tall</td>
<td>5</td>
<td>Mushroom red</td>
<td>10</td>
</tr>
<tr>
<td>Birch tree 6 m (20 ft) tall</td>
<td>5</td>
<td>Indian pipe plant</td>
<td>25</td>
</tr>
<tr>
<td>Squirrel</td>
<td>20</td>
<td>Blueberry bush</td>
<td>5</td>
</tr>
<tr>
<td>Picture of another group violating safety or environmental stewardship guidelines</td>
<td>50</td>
<td>Picture of competing groups</td>
<td>5 per person</td>
</tr>
<tr>
<td>Gull</td>
<td>15</td>
<td>Moose track</td>
<td>10</td>
</tr>
<tr>
<td>Ideal campsite</td>
<td>25</td>
<td>Bear scat</td>
<td>25</td>
</tr>
<tr>
<td>Gray jay</td>
<td>15</td>
<td>Good kindling</td>
<td>10</td>
</tr>
<tr>
<td>Grouse</td>
<td>30</td>
<td>Fern</td>
<td>10</td>
</tr>
<tr>
<td>Worm</td>
<td>5</td>
<td>Picture of people demonstrating environmental stewardship</td>
<td>50</td>
</tr>
</tbody>
</table>

*Figure 4.9  Sample scavenger list and point value.*
• Consider some skill-related items, such as an east (90 degrees) view from a certain landmark.
• Photographs from the scavenger hunt may be a part of a slideshow and reminiscence after the expedition.

Activity 4: Recording and Reminiscence

Technology has reached new heights, following people into even the remotest areas. The digital camera has allowed many outdoor leaders to facilitate debriefing sessions with participants. The digital image becomes a snapshot in time, allowing participants to actively reflect on the experience—a critical element for experiential learning. The only limit is the outdoor leader’s creativity in opening up the reflective worlds of the participants.

Skill Cues

• Record highlights and memorable moments with a daily journal; the more specific and detailed, the better. In the absence of time, use bullets as cues for later detailing.
• Document route and activities with poems, stories, photographs, and video.
• When documenting a trip with images, take a variety of images, some that are close up and show detail and others that show the big picture and vistas.
• Write a magazine article on the expedition.
• After the expedition is over, create a display board of the trip for your organization.
• After the expedition is over, meet to share the memories.

Teaching Cues

• Allocate time in the trip itinerary for reflection, sharing, and recording.
• Consider a daily sharing (maybe at the end of the day) of highlights and memorable moments.
• Schedule a time after the trip for reminiscence such as a potluck or slideshow.
• Add participant reflections, photos, and video clips to the organization Web site.
• Have participants plan other aspects of the expedition such as games and fun activities to be used at rest stops and while at camp.

Lesson Closure

• Participants should understand the extent of backpacking expeditions through their experience in planning and partaking in the event.
• The details of any backpacking expedition depend on the nature and location of the trip.
• Participants should feel a sense of autonomy and personal satisfaction with their involvement in the development and completion of the trip.

References and Resources