

Hiking the Seven C's

A Model for Planning Field Excursions



Photographs: Whitney Anderson

Linville Gorge Looking South from Wiseman's View

By **Brad Daniel**

AS A FIELD EDUCATOR FOR over 35 years, I have derived great joy from taking groups into various outdoor settings to help them learn about the natural history of those places. In the field, students obtain knowledge and make new connections. They experience epiphanies stimulated in part by discovering new places. They make memories and develop community forged by common experiences in the outdoors. Yes, field excursions can be educational, inspirational, and fun.

Henry David Thoreau often went out to explore nature for hours, only to find that he did not travel far from his cabin at Walden Pond. There was simply too much to see close by. Today, local nature exploration is sometimes the main option in light of the pandemic-spurred travel restrictions. Luckily, you do not have to go far to find something in the natural world that stirs wonder. What is that bug? What animal made those tracks? Is this plant edible? Is it toxic? Questions abound as we carefully observe the beauty, simplicity, and complexity of the natural world.

Teachers sometimes express reluctance to lead field excursions because they feel they lack sufficient knowledge or expertise to make them meaningful. Yet one does not have to be an expert on mushrooms, trees, or geology to lead a successful field trip. In fact, some of the most memo-

orable learning occurs when teachers and students discover answers together. Field guides, phone apps, flash cards, and other resources can help with identification, but one of the most valuable skills we can ever help our students develop is the art of asking questions. Good questions lead to discovery, and an important component of any field excursion is to ask students to generate their own questions based on what they see.

Another barrier sometimes mentioned by teachers concerns not knowing how to plan a successful field trip. Over the years, I have developed a method for planning and organizing natural history field trips in order to encourage learning. The model, which I originally called the *3C Model of Field Instruction* (Figure 1), is a variation of an hourglass model — working from broad to narrow, before broadening out again. Over the years, I have expanded the model to seven C's — *Communication, Context, Concepts, Connections, Community, Closure, and Celebration*. While many of the trips I lead are with college students and vary from two to 10 hours, the steps can be adapted to plan excursions of any length with different age groups and using different modes of travel (e.g., canoe, snow skis). The model can be pared down for younger students, but it is best suited for high school and college participants.

Several important logistical matters should be addressed before the day of the trip. First, you should do some research on the location to be visited. If possible, visit it beforehand

to see what resources are available (e.g., displays, interpretive signs, rangers, models, visitor center) and what trails and/or meeting spots might be best for your particular group. If the area is fairly new to you, begin by looking at the broader picture through researching the physical geography/geology and topography of the area. What types of ecological communities will you be seeing? Cove Hardwood Forest? Heath Bald? Alpine Meadow? Spruce-Fir Forest? Which trails are easier? More difficult? Are there suitable places on the trail to gather for activities or discussion when needed? Knowing these types of things beforehand can help you plan a great field trip.

After researching the location, teachers and leaders should review any of their organization's policies that apply to field excursions, such as a risk management plan. You will have a much better idea of potential hazards (e.g., steep cliff face, slick trail) after visiting the location, and knowledge of the place and the policies can help inform your trip design. For example, if you have students with physical limitations, firsthand knowledge of potential obstacles can help inform your itinerary and route. Finally, be sure to collect any required forms (e.g., risk, medical) that must be completed and reviewed before the trip according to your school or program's risk management plan.

The First C: Communication

Good communication is important throughout all stages of the model, but pre-trip communication is particularly important and sets the stage for a successful field excursion. Students should receive a list of what they need to bring, including appropriate clothing and equipment. Is rain gear mandatory? Are shorts allowed or must participants wear long pants? Open-toed shoes, tennis shoes, or boots? Try to make the equipment list as specific to the trip as possible, although it is good to have some items, such as rain gear and layers, for practically any excursion. List any personal items students need to bring, such as a pen, notebook, camera, or journal. Pre-trip communication should also describe any equipment that will be provided for them (paddles, canoes, binoculars, etc.) so they do not duplicate by bringing their own. Again, be as specific as possible. If you are working with older students, find out who is certified in first aid, their level of training, and if their certification is current. This can help determine how many First Aid kits will be taken and who will carry them. Finally, double check the weather forecast and make sure that you have everything you need as trip leader/instructor (e.g., portable whiteboard, field guide, binoculars, etc.).

While on the actual excursion, be sure to communicate with the group regularly. Discuss safety guidelines and check in with the group about their physical/emotional comfort. Maslow's *Hierarchy of Needs* is important to remember when teaching outdoors. Participants who are hungry, cold, fearful, or dehydrated will have difficulty learning.

The original three C's in the model stood for *Context*, *Concepts*, and *Connections* (Figure 1) and they comprise the next three stages. Each stage will be described below using an autumn hike in Linville Gorge Wilderness Area (LGWA) as an example. The focus is on landforms, ecological communities, and natural history. Although LGWA is located in North Carolina, again, the steps can be applied to trips in a variety of locations.

1. Context (geographic location, uniqueness)
2. Concepts (individual components - flora, fauna, processes)
3. Connections (issues, concepts, disciplines, or processes)



Icon made by Freepik from www.flaticon.com

Figure 1: Original 3C Model for Field Instruction (Daniel)

You have prepared for your trip and designed a plan. You have researched the site and taken care of logistics (e.g., transportation, policies, and forms). Finally, the day of the excursion arrives. When the group arrives and you are ready to start, gather them together before leaving and take the next step.

The Second C: Context

Setting the context for the trip involves describing three key elements: *purpose*, *frame*, and *geographic context*. The purpose describes why the trip is occurring along with any desired learning objectives. This also includes an explanation of the rationale for why this location has been chosen (e.g., uniqueness, biodiversity). For example, "The purpose of our trip to LGWA today is to understand the geomorphology of Linville Gorge and to learn how to identify the ecological communities created by the physical geography. We will also learn about the broader natural history of the gorge."

After stating the purpose, frame the experience by using a story, quote, question, song, or theme. Choose something that engages both the heart and the mind. Ask yourself how the excursion would be best framed with respect to the place, the goals, and the objectives. At the conclusion of the field excursion, circle back to whatever you use to close the loop as part of reflecting on the experience. For our autumn hike to LGWA, here are some examples of frames I might use:

- *Story*: I might share the story of how Linville Gorge got its name along with the names given by the Cherokee to each mountain and to the river that formed the gorge.
- *Quote*: Given the timing and location of the hike, I might share a classic quote by John Muir, a champion of wilderness: "Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop away from you like the leaves of Autumn."
- *Question*: As we hike around this mountain at the same elevation, how would you describe the dominant ecological communities? What types of ecological communities do you notice as we change elevation? I sometimes pose inquisitive statements such as "I wonder why the Blue Ridge Mountains are blue," and allow them to think, discuss, and share their theories.
- *Song*: Given LGWA's wilderness designation, I might play a song such as "[The Wild Places](#)" by Dan Fogelberg in the van while driving to the site. Music is a great way to engage thoughts and feelings.
- *Theme*: In wilderness we travel two landscapes: the



Why are the Blue Ridge Mountains blue?

The answer is a puzzle. Encourage your students to research the pieces listed below and then diagram and discuss the connections between them: hydrocarbons, isoprene, vegetation (such as oaks and other trees), heat stress, leaves.

outer landscape of mountains, valleys, and creeks and the inner landscape of hopes, dreams, and fears (an idea drawn from nature writer Barry Lopez). Pay attention to both landscapes, your thoughts, and your feelings, as we explore today.

Finally, to provide geographic context and connect the place visited to the greater geographic area, show the location on a raised relief map, topographic map, model, and/or satellite photo. Allow the group to make observations about what they might expect to see in the field once there. For example, for LGWA, I might ask students to locate it on a North Carolina physical relief map, then ask them to locate it again with a larger raised relief map of the specific area. I would ask questions to stimulate their thinking and front-load our time in the field. For example, “How is the gorge oriented? How might the orientation affect weather patterns or the location and development of ecological communities? Does the topography appear similar or different on either side of the gorge? What could account for this?” Getting an overview of the place by looking at it on the map helps students understand what they are seeing in the field. Once they begin seeing changes in such things as the geography and/or ecological communities, they have a context for interpreting what they observe.

Once you have established the rules of the trail (e.g., stay together, don’t step off trail, don’t cut switchbacks, etc.) and appointed someone to be the last person (or “sweep”) to keep the group together, it’s time to begin your excursion. Be a good role model by following the guidelines and ground rules that you have set and by using effective outdoor teaching strategies. For example, upon finding something interesting, stop and gather the group together so everyone sees and hears the same information. When positioning the group, take environmental factors (e.g., sun, reflective surfaces, wind) into account.

Note: For a list of the most common teaching mistakes and their solutions, see [GT issue 91 from 2011 featuring an article by Brad Daniel].

The Third C: Concepts

With the purpose, frame, and geographic context presented, the excursion begins, and it is time to focus on specific concepts. This involves considering the *topics* to be taught and the best *sequence* for doing so. It also includes *summarizing* and *clarifying* the concepts throughout the trip.

The concepts should connect to the desired outcomes and objectives and might include topics such as the identification of *components* (e.g., flora, fauna, geomorphic landforms, rock types). It might include discussion of relevant *processes* such as photosynthesis, decomposition, soil formation, erosion, or weathering. While some concepts might be included as part of the trip plan, others will emerge spontaneously through teachable moments. For example, watching a thunderstorm develop in the distance is a wonderful opportunity to learn about stages of thunderstorm development, including dominant forces, associated cloud types, and safety precautions. Concepts should also be *sequenced* so they can build to higher levels of understanding. For example, weather patterns might be taught before airborne pollutants and their impact.

In addition to identifying components, it is important to always ask a few questions aimed at interconnections. For example, after identifying “Bear Corn,” in the field (PHOTO), the instructor might ask, “Do you suspect this organism is a plant, a fungus, or something else? On what would you base your answer? Why do you think it is growing in this particular location?” Asking these types of questions helps weave the tapestry of each individual trip experience. There is much to see on a good natural history trip, so periodically summarizing what the group has seen will help consolidate the information, clarify the concepts, and construct new connections.

The Fourth C: Connections

As the group approaches the end of the trip, the model broadens out to *Connections*. Making connections can begin with discussing and understanding some of the concepts and processes learned on the trip and then expanding them to include larger processes, such as dominant wind and weather patterns, impacts and sources of air pollution, and effects of slope orientation on ecological communities. The *Connections* stage provides a wonderful opportunity to employ critical thinking, apply what has been learned, and construct new knowledge. Questions and natural history mini-mysteries provide fun ways to learn. For example, I might ask the group to hypothesize why the north-facing slopes of mountains in the northern hemisphere are often more jagged and steep, while the south-facing slope is often less jagged, has a more gradual slope, and contains different dominant plant species. Finally, connections include discussion of any environmental issues related to the area visited along with ways that the group can get involved. For example, since wildfires are common in LGWA, should they be allowed to burn or be extinguished? This discussion requires understanding the definition of wilderness areas, fire ecology, ecological succession, and other factors.



Photograph: Blair Copburn

Bear Corn *Conopholis americana*

The Fifth C: Community

Groups on longer natural history hikes often develop a rudimentary sense of community. Sharing adventures in beautiful outdoor spaces can bring people together and provide opportunities for bonding. As a result, natural history field trips are more than just opportunities to learn. They help create special memories with other participants. I often frame my field excursions by saying, “We have but one chance in our entire lives to live this day and spend this time together exploring a special place. Let’s do it well.” If we think of field excursions as opportunities to make memories while encouraging learning and inspiring a sense of wonder, it will affect the way we plan them.

The Sixth and Seventh C’s: Closure and Celebration

Finally, consider incorporating two more C’s into your trip plan: *Closure* and *Celebration*. It is important to bring closure to the excursion by circling back to the original way it was framed and providing some time to reflect on the experience.

Reflection often gets jettisoned from outdoor experiences due to lack of time, so it is extremely important to plan adequate buffer time in your trip itinerary. Questions such as “What is one thing you learned today that really stands out to you or makes you want to know more?” or “What questions arose for you during today’s experience?” can provide feedback, solidify learning, and help make the trip memorable. Listening to *students’* questions and comments is very important. The questions they construct provide a basis for continued learning after the excursion is over. Good field excursions stimulate a hunger to learn more and to go deeper.

Particularly after longer excursions (e.g., ½-day to a day), a great way to end the experience is with a small celebration. This could include such things as sharing a meal or ice cream together or awarding small tokens such as trail or park stickers. Celebrations can also occur later by showing photos and/or sharing stories.

We have now hiked the seven C’s. Taking students into the field on any type of outing anywhere requires good planning, and it is well worth the time. It is remarkable to watch students have epiphanies, obtain and construct new knowledge, and make positive memories while exploring a place together. Wherever you take students on field excursions — whether to the park, the schoolyard, a river, or a wilderness area — make them educational, inspirational, and fun.

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Hawksbill Mountain Looking Across the Gorge from Wiseman’s View

North- and south-facing slopes

As noted above, many north-facing mountain slopes in the Northern Hemisphere tend to be more jagged and steep, while south-facing slopes are usually less jagged, more gradually sloped, and covered with different plant species. A number of factors can affect these stark differences, but here is one that is fun to consider: In the Northern Hemisphere, north-facing slopes tend to be cooler and wetter because they receive less direct sunlight. In winter, the moisture can freeze and contribute to mechanical weathering of the rock faces (i.e., frost wedging) which can help sculpt them into steep, jagged cliff faces. The differences in moisture and temperature on each side can affect the dominant vegetation type(s) as well as the development of ecological communities.

Sample Plan for Planning A Hike Using the Seven C's

| Stage | Linville Gorge Wilderness Area (LGWA) |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Communication</p> <p>Place</p> <p>School/ Organization</p> <p>Participants</p> | <ul style="list-style-type: none"> • Website, calling or visiting trails and visitor centers, speaking with staff • Available onsite educational resources • Hazards • Travel protocols and logistics • Risk Management Plan, policies, and forms • Clothing and gear list • Tentative schedule |
| <p>Context</p> <p>Purpose</p> <p>Frame</p> <p>Geographic Context</p> | <ul style="list-style-type: none"> • To understand the geomorphology of Linville Gorge and to learn how to identify the ecological communities created by the physical geography • Rationale for visiting location: uniqueness, biodiversity • John Muir quote: Leaves in Autumn • 5-minute story: history of LGWA • Thought-provoking question: LGWA is called North Carolina's Grand Canyon. What is the difference, if any, between a gorge and a canyon? • Students locate LGWA on the NC Physical Geography raised relief map • Students locate LGWA on the Western North Carolina raised relief map |
| <p>Concepts (to be covered on the Hawksbill Trail)</p> | <ul style="list-style-type: none"> • Dominant flora: trees and shrubs • Ecological communities: Dry Ridge Forest, Rocky Outcrop, Heath Bald • Slope variation: physical characteristics of the N, S, E, W-facing slopes • Teachable moments (e.g., trail erosion, Peregrine Falcons) • Rock types, geomorphic landforms and processes |
| <p>Sequence</p> | <ul style="list-style-type: none"> • Start-> Slope orientation/characteristics-> Identify trees, shrubs, and flowers as indicators of ecological communities (Dry ridge-> rocky outcrop, crevice)-> Transition zones between communities-> (Top) Identify peaks-> compare topography E&W-> gorge formation processes-> geology and rock types-> circle back to how topography here helps determine ecological communities. |
| <p>Connections</p> | <ul style="list-style-type: none"> • Coal-fired power plants and prevailing wind patterns • Air pollution legislation • Fire ecology in LGWA: wildfire policies in wilderness areas and parks • Peregrine Falcons and rock-climbing |
| <p>Community</p> | <ul style="list-style-type: none"> • Mini-frame: "... one chance to live this day together in this place. Make the most of it." • Group and individual photos • Share quotes about the experience |
| <p>Closure</p> | <ul style="list-style-type: none"> • What ecological communities did you identify today? How? What types of vegetation characterize them? What physical characteristics cause them to be located where they were seen? |
| <p>Celebration</p> | <ul style="list-style-type: none"> • Dinner at Louise's Rockhouse Restaurant |

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