A Trail To Every Classroom (TTEC)
Curriculum Development Tool

UNIT DESIGN COVER SHEET

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School name, state and town:
The Outside School, Dawsonville, GA

Title: Hike Inn Educational Facility Tour

Abstract/Vignette: A 50-60 minute educational tour of The Len Foote Hike Inn’s history, recreation opportunities on the Appalachian Trail, conservation efforts, and environmental building design.

Grade level(s): Please check all that apply.

- K-2
- 3-5
- 6-8
- 9-12
- College and Lifelong Learning

Discipline: Please check all that apply.

- Art and Music
- Health and PE
- Foreign Language
- Literature and Language Arts
- Mathematics
- Science
- Social Studies and Geography
- History

Year Developed: 2015
Period (month long unit vs. week long):
Facility Tour is given every day – application specific for student learning

Teaching environment:
- [ ] In the Classroom (indoors)
- [ ] On the Trail
- [ ] In the Community
- [ ] Online/Virtual
### UNIT DESIGN TEMPLATE

**Unit Title:** The Len Foote Hike Inn Tour  
**School:** The Outside School  
**Grade level/s:** 6th – continued education  
**Discipline/s:** Math, Science, Art, Social Studies, English, Physical Education  
**Unit Designer/s:** Corinne Peace, Katy Trietsch

<table>
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<tr>
<th>Stage 1 – Desired Results</th>
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| What do we want students to know, understand, and be able to do?  
How can we use students’ place (home, classroom, school and schoolyard, neighborhood,  
community) to help them learn this? |

What real community needs and opportunities are we trying to address?

### A. Big Ideas

A facility tour of The Len Foote Hike Inn is given daily for guests. Students attending the tour will develop an understanding of the mission of The Len Foote Hike Inn “protecting nature through education and recreation” by exploring the human history and land use of North Georgia, the Chattahoochee National Forest, the Appalachian Trail and the Hike Inn. The relationship of people to this land has changed from indigenousness habitation to natural resource extraction to preservation. This stewardship is reflected in the LEED certified green building practices of the Hike Inn, the conservation biology efforts of Len Foote and the Hike Inn, and the recreation and conservation opportunities of the Appalachian National Scenic Trail. The facility tour demonstrates power of place, interdependence and sustainability. Their experience increases the student's eco-literacy, stewardship, and ability to solve problems.

### B. Enduring Understandings

**Students will understand:**

Being in nature and hiking is fun and healthy for them. The close connection of ecological principles with environmental building design. They have a role in protecting nature through their individual and collective actions.
C. Essential Question(s):

Students will keep considering:

What does it mean to have a relationship with nature?
Do I feel better after being in nature?
Does hiking make me feel stronger and empower me?
Is learning to identify plants and animals a fun challenge?
How are my actions (positively and negatively) impacting the environment?
Does learning about issues and solutions inspire stewardship?

D. Content Standard(s):

Codes – “CS” Characteristics of Science, 6 and 7 grades CS are the same. “E”
Elements of Science
S6CS1 a & b, S6CS2 a, b & c, S6CS3a, b, c & d, S6CS4 a, b, c & d, S6CS5 a & b, S6CS7 a & b, S6CS9 c, S6E1d, S6E2c, S6E3a & b, S6E5 b, c, d, h, i, & j, S6E6 a & b, S7L12 & b, S7L2 a-e.

S6CS1 Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

a. Understand the importance of—and keep—honest, clear, and accurate records in science.

b. Understand that hypotheses can be valuable, even if they turn out not to be completely accurate.

S6CS2 Students will use standard safety practices for all classroom laboratory and field investigations.

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate techniques in all laboratory situations.

c. Follow correct protocol for identifying and reporting safety problems and violations.

S6CS3 Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.

a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers and decimals.

b. Use metric input units (such as seconds, meters, or grams per milliliter) of scientific calculations to determine the proper
c. Address the relationship between accuracy and precision and the importance of each.

d. Draw conclusions based on analyzed data

**S6CS4 Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.**

a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.

b. Estimate the effect of making a change in one part of a system on the system as a whole.

c. Read analog and digital meters on instruments used to make direct measurements of length, volume, weight, elapsed time, rates, and temperature, and choose appropriate units for reporting various quantities.

**S6CS5 Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.**

a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts. (For example: El Nino's effect on weather).

b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model's purpose and complexity.

**S6CS7 Students will question scientific claims and arguments effectively.**

b. Question claims based on vague attributions (such as "Leading doctors say...") or on statements made by people outside the area of their particular expertise.

d. Recognize that there may be more than one way to interpret a given set of findings.

**S6CS9 Students will investigate the features of the process of scientific inquiry.**

Students will apply the following to inquiry learning practices:

d. Scientists use technology and mathematics to enhance the process of scientific inquiry.

**S6E1. Students will explore current scientific views of the universe and how those views evolved.**

a. Explain the motion of objects in the day/night sky in terms of relative position.

**S6E2. Students will understand the effects of the relative positions of the earth, moon and sun.**

c. Relate the tilt of the earth to the distribution of sunlight throughout the year and its effect on climate

**S6E3. Students will recognize the significant role of water in earth processes.**

a. Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.
b. Relate various atmospheric conditions to stages of the water cycle.

**S6E5. Students will investigate the scientific view of how the earth's surface is formed.**

b. Investigate the contribution of minerals to rock composition.
c. Classify rocks by their process of formation.
d. Describe processes that change rocks and the surface of the earth.

   h. Describe soil as consisting of weathered rocks and decomposed organic material.
   i. Explain the effects of human activity on the erosion of the earth's surface.
   i. Describe methods for conserving natural resources such as water, soil, and air.

**S6E6. Students will describe various sources of energy and with their uses and conservation.**

a. Explain the role of the sun as the major source of energy and its relationship to wind and water energy.
b. Identify renewable and nonrenewable resources.

Clarifying objectives

**S7L1 Students will investigate the diversity of living organisms and how they can be compared scientifically.**

a. Demonstrate the process for the development of a dichotomous key.

**S7L4. Students will examine the dependence of organisms on one another and their environments.**

a. Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments.
b. Explain in a food web that sunlight is the source of energy and that this energy moves from organism to organism.
c. The student will recognize that changes in environmental conditions can affect the survival of both individual species and/or entire population.
d. Categorize relationships between organisms that are competitive or mutually beneficial.
e. Describe the characteristics of Earth’s major terrestrial biomes (i.e. tropical rain forest, savannah, temperate, desert, taiga, tundra, and mountain) and aquatic communities (i.e. freshwater, estuaries, and marine).

Habits of Mind:

**S7CS1. Students will explore of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.**

a. Understand the importance of—and keep—honest, clear, and accurate records in science.
b. Understand that hypotheses can be valuable, even if they turn out not to be completely accurate.

**S7CS2. Students will use standard safety practices for all classroom laboratories and field investigations.**

a. Follow correct procedures for use of scientific apparatus.
b. Demonstrate appropriate techniques in laboratory situations.
c. Follow correct protocol for identifying and reporting safety problems and violations.

d. Draw conclusions based on analyzed data.

**S7CS3. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.**

d. Draw conclusions based on analyzed data.

**S7CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific investigations.**
c. Learn and use on a regular basis standard safety practices for scientific investigations.

S7CS6. Students will communicate scientific ideas and activities clearly.
a. Organize scientific information using appropriate simple tables, charts, and graphs, and identify relationships they reveal.

S7CS7. Students will question scientific claims and arguments effectively.
a. Question claims based on vague attributions (such as “Leading doctors say...”) or on statements made by people outside the area of their particular expertise.
b. Identify the flaws of reasoning that are based on poorly designed research (i.e., facts intermingled with opinion, conclusions based on insufficient evidence).
c. Question the value of arguments based on small samples of data, biased samples, or samples for which there was no control.
d. Recognize that there may be more than one way to interpret a given set of findings.

The Nature of Science:

S7CS8. Students will investigate the characteristics of scientific knowledge and how that knowledge is achieved.
Students will apply the following to scientific concepts:
a. When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful.
b. When new experimental results are inconsistent with an existing, well-established theory, scientists may pursue further experimentation to determine whether the results are flawed or the theory requires modification.
c. As prevailing theories are challenged by new information, scientific knowledge may change.

S7CS9. Students will investigate the features of the process of scientific inquiry.
Students will apply the following to inquiry learning practices:
a. Investigations are conducted for different reasons, which include exploring new phenomena, confirming previous results, testing how well a theory predicts, and comparing competing theories.
b. Scientific investigations usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations to make sense of collected evidence.
c. Scientific experiments investigate the effect of one variable on another. All other variables are kept constant.
d. Scientists often collaborate to design research. To prevent this bias, scientists conduct independent studies of the same questions.
e. Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator’s credibility with other scientists and society.
f. Scientists use technology and mathematics to enhance the process of scientific inquiry.
g. The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research.

S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.
a. Demonstrate the process for the development of a dichotomous key.
b. Classify organisms based on a six-kingdom system and a dichotomous key.
E. Place-based Service Learning Lens

**Grounded in Place**

In what ways is your unit a direct reflection of local landscapes, resources, culture, and values? Why does doing this unit with these students in this community make sense?

It allows students to learn a variety of lessons in an outdoor wilderness environment at an environmentally sustainable LEED certified facility. Our unit establishes Place-based Service Learning by student’s experiencing the importance and value of National Forests in watershed protection, wildlife habitat, and recreation; by exploring the role of humans in conservation and sustainability through the inspirational stories of biologist Len Foote, architect Garland Reynolds, and the Hike Inn’s new pollinator garden; by participating directly in the LEED (Leadership in Environmental and Energy Design) certified environmental building design and sustainability features of the Hike Inn: use of solar energy for heating showers and generating electricity, use of composting toilets for reduction of water use, rain barrels for collecting water; emphasis on using food as a resource, limiting waste, and composting kitchen and office scraps using our vermiculture system; by learning and practicing Leave No Trace principles on the trail and at the Hike Inn.

**Real**

What authentic, real-world need or opportunity exists in your community that students will address through their project?

Wilderness nature immersion and experiencing healthy exercise during the five mile hike in and then out the next day; communication and team building; increasing ecological intelligence, and a deepening sense of stewardship. Students will have ample opportunity to reflect on how they can have a more sustainable relationship within their home and community. For example, water shortages are real-world issues in Georgia; making use of composting toilets and rain barrels could limit inter-basin transfers in Georgia.

**Empowering**

How will your students help determine what project they take on? How will they help design the project, make decisions along the way, and evaluate their success?

Time permitting, students choose a project by The Hike Inn staff based on the teacher’s assessment of student’s interest and the education value while at the Hike Inn; for example, working on trail or native garden maintenance. At their school they may create a pollinator or food garden, start a worm composting system, or become a citizen scientist with Natures Notebook or GA Adopt a Stream monitor. Students will discuss and communicate to each other the needs and wants of the project’s design before evaluating the success through a reflection activity.
Collaborative
What opportunities will students have for mutually beneficial collaboration with other disciplines, community or public land partners? To answer this, identify how each of the partners will benefit.

Many opportunities exist for students to experience art, history, science and physical health while also collaborating with a variety of Hike Inn partners. All of our partners have an education outreach mission and they benefit from collaboration on student projects.

1) Trail maintenance on the Hike Inn trail: resource partner Richard Wannall and Eric Graves with Georgia Appalachian Trail Club.
2) Hike Inn native garden maintenance and or creating a school pollinator garden as part of Georgia Monarch Watch and the Rosalyn Carter Butterfly Trail: resource partners include Trecia Neal, Monarch Conservation Specialist; Beth Rothermel, Monarchs Across Georgia; and Roxanne Langford, Georgia Native Plant Society.
3) Hike Inn food garden maintenance and or creating a school food garden: resource partners Rosalyn Kent UNGA Appalachian Studies Heirloom Seed Bank Project and Brandy Hall of Shades of Green Permaculture Design.
4) Starting a Citizen Science project- Stream monitoring with GA Adopt A Stream: resource partner Lori Forester
5) Starting a Citizen Science project- Phenology with Nature’s Notebook and the USA-National Phenology Network: resource partner Katharine Gerst, Data Product Coordinator

F. Acquisition:

Students will know:

1) The increasing societal knowledge of and participation in ecology, conservation biology, and environmental building design
2) The human history of North Georgia: Cherokee, gold rush miners, loggers, National Forest Service designation
3) The environmental history of National Forest lands (Weeks Act) and watershed protection
4) The cultural history of the Appalachian Trail: National Historic Scenic Trail and Leave No Trace principles
5) How environmental building design practices compare with forest ecology principles

* Photovoltaic and thermal panels; energy capture, storage and transfer like photosynthesis
* Rain barrel water collection/storage and the role of the forest in the watershed
* Composting toilets and water conservation
Vermiculture/vermicomposting and nutrient cycling
- The role of creating native and pollinator gardens for plants, animals and insects.

6) Student involvement with Citizen Science (Phenology with USA-NPN and GA Adopt A Stream)

Vocabulary:
Ecology, conservation biology, natural resources, renewable resources, sustainability, environmental building design, LEED, environmental history, habitat protection, citizen science, migration, species at risk, invasive species, climate change, Equinox (vernal and autumnal), cardinal points, food web, nutrient cycling, pollination, water cycle, radiation, evaporation, photosynthesis, photovoltaic panels.

Students will be skilled at:
- Listening, speaking, writing skills
- Making observations, asking questions, proposing an explanation, gathering data and testing predictions, drawing conclusions, sharing results
- Comparing and connecting
- Problem solving

Stage 2 – Acceptable Evidence
How will we know if students are learning/have learned this?

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<tr>
<th>Performance Task(s):</th>
<th>Evaluative Criteria</th>
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<tr>
<td>Learners will show that they really understand by:</td>
<td>Observation Check-lists and Hike Inn survey to determine the effectiveness of the program and what can be improved</td>
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<td>Discussion workshops/graffiti workshop</td>
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<td>Concluding what the students learned at The Hike Inn through a written essay or presentation</td>
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Students will know...
- Vocabulary, geographic and physical understanding of the Appalachian Mountains (soil, plants, insects and animals), environmental issues of invasive species and species at risk, phenology, citizen science, ecosystem services, habitat protection, migration, climate change, Equinox (vernal and autumnal), cardinal points; environmental building design techniques;
<table>
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<td>Comparing and connecting</td>
<td>Problem solving</td>
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**Other Evidence:**
*Students will show they have achieved Stage 1 (Desired Outcome) goals by…* observation check lists, discussion worksheets, essays, *ari, projects completed*

**Stage 3 – Learning Plan**
*What learning experiences will enable students to learn this?*

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<tr>
<th>Learning Activities:</th>
<th>Progress monitoring through pre-assessments, simulations, formative &amp; summative assessments</th>
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<td>50-60 minute tour activity plus evening program that introduces environmental discussion on environmental history, conservation biology, the Appalachian Trail, environmental design building; solar panels, rain barrels, composting toilets and vermicomposting.</td>
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<td>1) Human Use History: Cherokee, Gold Miners, Loggers, National Forest preservation; National Scenic Trail and recreation; Len Foote and conservation biology</td>
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<td>2) Environmental Design Building and LEED certification</td>
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<td>3) Natural History/Science (plant and tree identification; wildlife – mammals, birds, snakes, insects; invasive species - hemlock wooly adelgid; soil science and erosion)</td>
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<td>4) Forest Resources and watersheds</td>
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<td>5) Monarchs Across Georgia pollinator garden</td>
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<td>6) Citizen Science (Phenology with USA National Phenology Network, GA Adopt A Stream)</td>
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<td>7) Celestial Star Calendar and Earth Science</td>
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<td>8)</td>
<td>Physiographic Regions of GA</td>
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<td>9)</td>
<td>Vermicomposting</td>
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<td>10)</td>
<td>Leave No Trace Principles</td>
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<td>11)</td>
<td>Orienteering</td>
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**Adaptations**

*Learner-centered and context-sensitive adaptations for our TTEC unit include:*

Can be adapted to diverse age groups. Educators can work with staff on what discussion items should be focused on/discussed more.

**Reflections**
Post-instruction reflections by TTEC unit designer(s)/instructor(s) include:

- Continual individual reflection of each staff participant
- Continual Hike Inn education team reflection, evaluation, and adjustment after each school/youth group

Attachments:
Include substantial supporting materials such as:
- Detailed lesson plans
- Partners contact list
- Instructional materials and supplies
- Resources: books, articles, web links
- Exemplars and benchmarking models
- Checklists and rubrics
- Diverse samples of student work/artifacts
- Press releases