A Trail To Every Classroom (TTEC)
Curriculum Development Tool

UNIT DESIGN COVER SHEET

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School name, state and town: Ottauquechee School, Quechee, VT

Title: Animal Inquiries

Abstract/Vignette: Students will engage in a study of local animals that a hiker might see while on the AT in Vermont.

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
- [x] Literature and Language Arts
- [ ] Mathematics
- [x] Science
- [ ] Social Studies and Geography
- [ ] History
- [ ] Technology

Year Developed: 2011

Period (month, week, year): Year

Teaching environment:

- [x] In the Classroom (indoors)
- [x] On the Trail
- [ ] In the Community
- [ ] Online/Virtual
Big Idea
What is the main idea you want your students to come away from the unit knowing?
How animals survive.

Service Project
What project(s) could your class undertake that would actively engage your students in learning about this theme? What could the final product be?
Students will engage in a study of local animals that a hiker might see while on the AT in Vermont. Students will have opportunities to handle skulls, bones and pelts of local animals. They will be broken down into small groups or pairs to conduct in-depth studies on individual animals, which they will create posters for displaying at the school as well as informational pamphlets to be stored at a local AT shelter for hikers to read and learn about Vermont’s native animals. The unit will end with an interactive hike along the AT with students and parents.

Partnerships & Benefits
Who are potential community partners that could assist you in this project? What are the potential benefits for your class and your partners of working together?
- VINS (Vermont Institute of Natural Science)
  - Hands on resources.
  - Knowledgeable staff.
  - Greater awareness by students/families of a local resource.

State Standards (Objectives/Anchors/Outcomes)
Which elements of the state framework of standards does this unit address? What are the skills and outcomes you are working towards?
GE 3-4:30
GE 3-4:34
GE 3-4:35
GE 3-4:36
GE 3-4:39

Skills and Habits of Mind
What are the academic or life skills students will gain from this unit? What habits of mind do you expect them to demonstrate? Think all disciplines.
- Thinking like a scientist – observing, note taking, journaling, diagramming.
- Knowledge of local animals, habitats and animal signs.
- Understanding cause and effect as it relates to the food web.

Essential Questions (Unit Objectives)
What are the essential questions that will help guide students toward understanding the Big Idea?
- How do animals survive?

Student Role (Youth Voice)
How will you guide your students to express ideas, be involved in project decisions, and evaluate outcomes?
- Guide students in a discussion where they can generate a list of local animals – which they will eventually study in depth.
- Students will work together in groups, discuss options for things to include/not in their project.
- Students will write for a real audience – fellow schoolmates and hikers on the AT.

Community Connections
What opportunities or needs exist in your school or community that could be addressed by a student project related to your big idea for learning?
- Awareness of the Appalachian Trail in our community.
- Parent involvement with the school.
- Develop a dialogue between students and AT thru-hikers.

Resources
Describe resources (books, articles, materials, supplies) you will use to support this unit?
- Skulls, bones, pelts of animals from VINS.
- Books – Mammal Tracks by Lynn Levine and Matha Mitchell
- Library Books
- Internet

Models & Examples
How will students understand the expectations for their project? What exemplars of student work will they see? What opportunities will there be for them to critique each other’s work?
- Students will be given a rubric for their posters and pamphlets.
- Students will present posters to their class for feedback and then to the 3rd and 5th grades at a morning meeting.
- Seeing high quality examples from prior years.

Reflection
How will reflection be built into your curriculum and activity(ies)?
- Pre/Post unit journaling on local animals.
- Pre/Post hike journaling.
- Science Circle discussion

Student Assessment
How will you assess student learning? How will you know if they have met the goals for the established outcomes?
- Grading mini-lesson activities
- Pamphlet, poster completion
- Poster presentation

Project Name: Animal Inquiries
Teacher(s): Ross McGee, Nancy Mavis
Grade Level: 4th

Your Evaluation of the Unit
How will you evaluate the unit and make note of what worked well and what could be improved? How will you analyze and interpret project outcomes?
- Student journal responses.
- Student posters and pamphlets
- Team/teacher partner meetings and reflections
- Personal reflection journal for unit

Final Celebration
How will you celebrate the success of your unit and share its results with the school and community?
- End of unit field trip to the Appalachian Trial in West Hartford for an interactive hike with VINS.
- Pamphlets will be placed in the Thistle Hill Shelter along the AT in West Hartford to be read by hikers over the next season.
- A response notebook will be left for hikers to respond to the student pamphlets. Students will see these during the following year as 5th graders.
Ross McGee  
Animal Adaptations unit

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>VINS</td>
<td>Food Web Activity</td>
<td>Ecosystem lesson</td>
<td>Change, adaptation lesson</td>
<td>Habitat lesson</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 6</th>
<th>Day 7</th>
<th>Day 8</th>
<th>Day 9</th>
<th>Day 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run-over from previous lessons</td>
<td>NECAP Bird Beak Experiment</td>
<td>Science circle on vocab and VT animals</td>
<td>Lab research</td>
<td>Lab research</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 11</th>
<th>Day 12</th>
<th>Day 13</th>
<th>Day 14 Group assignments, poster &amp; pamphlet assignment, Amos presentation?</th>
<th>Day 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal assignments, library research</td>
<td>Animal research</td>
<td>Animal research</td>
<td></td>
<td>Poster &amp; Pamphlet work (tie in with ART)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 16</th>
<th>Day 17</th>
<th>Day 18</th>
<th>Day 19</th>
<th>Day 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster &amp; Pamphlet work</td>
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<td>Poster presentation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 21</th>
<th>Day 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster presentation</td>
<td>AT Hike with VINS</td>
</tr>
</tbody>
</table>
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Ecosystem Lesson Plan

Hook: Ecosystem activity

Material: Index cards with names of ecosystem inhabitants, transparency overheads

Learning experiences: The ecosystem activity will help students internalize and conceptualize what an ecosystem is.

Adaptations/Accommodations: By having the students participate in the Ecosystem activity, they will move around the classroom, interact with one another and discuss their ideas together.

Procedure:

Does anyone know what I mean when I say system? Let's brainstorm some different kinds of systems. **System: A whole that is made up of parts that work together.** Brainstorm a couple of different kinds of systems. Solar System (interaction: planets/moons, planets/sun, planets/planets, energy: gravity, the sun), Respiratory System (interaction: lungs/oxygen, oxygen/blood, nose/mouth, energy: muscles), Political System (interaction: democrats/republicans, senators/congressmen, country/country), Healthcare System, Transportation System (cars/trucks/buses/trains/airplanes/bicycle, energy: gas/humans), Criminal Justice System, Ecosystem (interaction: animals/animals, animals/plants, energy: sun). So in an ecosystem, we have animals that interact with each other and with plants, and depend on each other for survival.

I am going to pass out some index cards. On each of these cards you will find the name of something found within a certain kind of ecosystem. Once all the cards are distributed, you need to find the other people that belong with you in your ecosystem. For example, if someone had a card that said ‘Whirligig Beetle,’ you would look for other people with cards that belong in a wetland environment.

Pass out cards.

Once you have found your group (there will be five people in each group), come up to me and I will give you the rest of your assignment.

Now that you know your environment, and some of the biotic things found there, I want you all to come up with an idea for a video game that takes place in your ecosystem. You will need to come up with the main character/hero of your game, what happens in the actual gameplay, what things they need along the way to help them reach the end of the game, where they will battle against the enemy (given to students). Think about the different interactions that take place in your environment, and what your hero will need
to have in order to reach the end bad guy (energy). Try not to have the character do things they might not otherwise do normally in their environment (i.e. a jaguar cannot fly), but it is ok if they can talk to other animals etc. Write down your ideas and then try to organize them in a way that makes your game understandable. Once you have done this, bring your game ideas to me, and try to ‘sell’ me your game. Pretend I am the CEO of Nintendo and you want me to make your game.

Index Cards:

**Desert Environment:** Cactus, Tarantula, Giant Scorpion, Horned Lizard, Rattlesnake
   Enemy: Heat Monster ?

**The Ocean:** Seaweed, Shrimp, Herring, Tuna, Hammerhead Shark
   Enemy: Pollution Monster ?

**Tundra:** Arctic grass, Caribou, Arctic Fox, Arctic Wolf, Polar Bear, Snow Rabbit
   Enemy: Cold Monster ?

**Tropical Rainforest:** Coconut Tree, Parrot, Tree Frog, Howler Monkey, Jaguar
   Enemy: Wildfire Monster ?
Ross McGee

Food Web Activity

Objectives: Students will understand what a food web is. Students will understand the complexity of energy transfer in a forest ecosystem. Students will understand how things in an ecosystem are interdependent.

Focusing Question: It is important to understand food webs because they help illustrate the connections between all animals/plants in an ecosystem. They learn that even harming/removing one species can have a ripple effect felt through the entire system.

Procedures:

Brainstorm different life forms found in our local forest ecosystem, discuss the Food Chain of certain animals, predator/prey scenario

Food Web Activity

Discussion of Chief Seattle’s Quote

“Teach your children what we have taught our children that the earth is our mother. Whatever befalls the earth befalls the sons and daughters of the earth. This we know. The earth does not belong to us; we belong to the earth. This we know. All things are connected like the blood which unites one family. All things are connected. Whatever befalls the earth befalls the sons and daughters of the earth. We did not weave the web of life; we are merely a strand in it. Whatever we do to the web, we do to ourselves.”

“When one tugs at a single thing in nature, he finds it attached to the rest of the world.” John Muir

Material: Ball of string, Food Web Badges, tape

Hook: The Food Web Activity involving the Ball of string

After brainstorming some ideas and talking about the results, tell the kids:

We are going to go to the multi to create a model of a food web. It is important that you guys listen carefully to directions once we get out there, or this won’t work. Discuss proper nature trail walking etiquette, and remind students about our rules on TONTO. Assign badges to the students. Ask the students to tape them to their chests. Go to TONTO and hike to the upper classroom. Explain that we are going to simulate a food web. So-and-So is the Sun. All energy on Earth comes first from the sun, so this person will start with the ball of string. They then pass it one level up the food chain,
someone who is a plant. The plant can then throw to someone who eats plants, that person to someone who eats them and so on. You can either move up or down the food chain as you see fit, and you need to try to toss to someone who hasn’t yet been brought into the food web. Toss the ball under the Web.

Once students have completed making the Web, ask them to slowly step back until all the slack has gone out of the string.

What happens when a predator goes on a hunt?

What happens when one organism leaves the web? Goes extinct/eliminated?

What happens when a new predator is introduced to the ecosystem?

What happens when you place a weight on the web? Other factors are affecting it

FORREST ECOSYSTEM

1. Sun
2. Grass - Sunlight
3. Shrubs - Sunlight
4. Young trees - Sunlight
5. Deer – young trees, shrubs
6. Bobcat – Rabbit, deer, skunk
7. Coyote – rabbit, deer, skunk
8. Great Horned Owl - skunk, insects, small rodents
9. Skunk – eggs, insects
10. Porcupine – insects, eggs
11. Rabbit - grass
12. Black Bear – berries, wasps, fish
13. Beaver – young trees, waterlilies
14. Squirrel
15. Mouse
16. Fox
17. Fish

WATER ECOSYSTEM

1. Sun
2. Caddisfly Larva – algae and plants, some insects
3. Damselfly larva – other larva
4. Dragonfly – carnivore, other flying insects
5. Yellow perch – insects, crayfish, fish eggs
6. Largemouth bass – smaller fish, crawfish, eggs, eels
7. Crayfish – living and dead plants and animals
8. Algae globe – sunlight
9. Eel grass – sunlight  
10. Whirligig beetle – insects and invertebrates  
11. Snails – algae and plants  
12. Water strider – insects, other small invertebrates  
13. Chain pickerel – fish, crayfish, newts  
14. Dobsonfly larva – insect larva  
15. Diving beetle – carnivore, small fish  
16. Cattails – sunlight  
17. Minnow – plants and small fish  
18. Otter – animals and fish  
19. Pike – fish  
20. Humans – Fish and Plants  
21. Osprey - Fish