

Expeditionary Learning



Expeditionary Learning: Exploring Healthy Forests

By Val McKern and Greg Goodnight

What is a healthy forest? That is the question that Kettle Falls Elementary School fourth graders have been grappling with all winter. In order to examine this question, fourth grade teachers Sally James, Sydney Potestio and Judy Galli have designed an expedition with carefully scaffolded projects for their students. Through these in-depth, service-learning projects, students have been engaged in reading, writing, math, science, social studies and technology. In Kettle Falls we firmly believe that it takes a village to educate a child and we count on a cross curricular approach of teachers and many experts to make any expedition a success for our students. Our priority is creating engaging expeditions that have rigorous learning for ALL students.

Kettle Falls Elementary: an expeditionary learning school

An expedition is the format Kettle Falls Elementary uses to combine adventure and service with learning state standards. Each expedition has standards strategically embedded in field-work. The healthy forest expedition will combine many "I can"

learning targets based on state standards, with snowshoeing, animal tracking, trail cameras and forestry. In the end, students will deliver PowerPoint presentations to the North East Washington Forestry Coalition (NEWFC) as an authentic audience for their service learning work product. The expedition will provide an exciting and adventurous outlet for student learning and assessments on rigorous state standards. As an Expeditionary Learning School, Kettle Falls Elementary believes that expeditions are the primary way of organizing curriculum.

The subject matter of a learning expedition is a compelling topic derived from content standards. Expeditions feature linked projects that require students to construct deep understandings and skill and to create products for real audiences. Learning Expeditions support critical literacy, character development, create a sense of adventure, spark curiosity and foster an ethic of service. They allow for and encourage the authentic integration of disciplines. (Expeditionary Learning Schools Core Practice Benchmarks p.8.)

This learning expedition began as all expeditions begin at Kettle Falls Elementary. The staff went through a careful study of the new Washington State standards and determined the "priority standards" at each grade level. The standards are then written as long-term learning targets. Once these standards were determined, teams researched case studies that could become the focus of the learning expeditions. The life science standards addressed focused on life cycles, animal structures and behaviors, food webs, ecosystems and human impacts as the center of the expedition.

Literacy is embedded with in the expedition. Priority learning targets are written based on the standards of reading and writing. Reading comprehension strategies and the traits of writing are the focus of these targets. A content map is designed that assigns long term learning targets to each of three expeditions through out the school year. Each expedition runs for eight to twelve weeks.

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Learning targets are at the heart of our work. There is clear criteria for posting and referencing learning targets school-wide. Long- term targets, project targets, and scaffolding steps are organized so that students can track their achievement during the daily debrief. We emphasize "learning together, but assessing independently." Anchor charts that hold the thinking of the class are posted near the targets. The anchor charts will collect information that makes the learning target clear, whether it is knowledge or meta-cognitive thinking. All students are independently assessed on all learning targets.

Kettle Falls Elementary as a 21st Century School

Expeditionary Learning Schools set an expectation for service and authentic work. Kettle Falls Elementary teachers create expeditions that foster service in authentic ways.

Benchmark 3: B. Authentic Audiences

1. Products often meet an authentic need and have an audience and purpose beyond families or the classroom teacher.
2. Some of the products are particularly motivating because in themselves they are acts of service.

(Expeditionary Learning Schools Core Practice Benchmarks p.13.)

We are a Learn and Serve Grant recipient, which has helped us focus on the service aspect of our expeditions. This grant gave teachers release time to write rigorous expeditions and make the community contacts necessary for authentic service. It also supported the expedition through fieldwork and materials for a new expedition.

We knew that this expedition was an outstanding opportunity to educate our students in sustainable education. It meets many of Jaimie P. Cloud's EfS Frameworks:

Responsible Local/Global Citizenship — The rights, responsibilities, and actions associated with leadership and participation toward healthy and sustainable communities. Students will know and understand these rights and responsibilities and assume their roles of leadership and participation.

Healthy Commons — That upon which we all depend and for which we are all responsible. Students will be able to recognize and value the vital importance of the Commons in our lives, their communities, and the places in which they live.

Multiple Perspectives — The perspectives, life experiences, and cultures of others, as well as our own. Student will know, understand, value and draw from multiple perspectives to co-create with diverse stakeholders shared and evolving visions and actions in the service of a healthy and sustainable future locally and globally.

A Sense of Place — The strong connection to the place in which one lives. Students will recognize and value the interrelationships between the social, ecological and architectural history of that place and contribute to its continuous health. (Cloud, p. 172-173.)

The North East Washington Forestry Coalition (NEWFC) agreed to partner with Kettle Falls Elementary School. This expedition reaches each of these components of Cloud's framework. It is the basis of an expedition with an authentic purpose, service, purposeful fieldwork, multiple perspectives and rigorous content.

Kettle Falls Elementary Bangs monitoring project

Three KFE classes will be engaged in a hands-on learning

experience that includes in-class preparation and learning and fieldwork designed to teach them about the life cycles of natural systems, sustainable resource management, and community collaboration. The project will include wildlife, tree, and plant monitoring within the Bangs Mountain Wildland Urban Interface project on the Colville National Forest, as well as presentations and instruction from school and community experts in the field and in the classroom, including members of the Northeast Washington Forestry Coalition. The students will work with the Coalition to complete a final report in the form of a PowerPoint presentation, documenting their monitoring work and educational experience with photos and written reporting. The final report may be posted on the Coalition's web site, and a final press release may be prepared for local newspapers to share the outcome of the project with the broader community. Derrick Knowles, Education Outreach, NEWFC.

NEWFC is a local organization that believes in demonstrating the full potential of restoration forestry to enhance healthy forests, public safety, and community economic vitality. Because Kettle Falls is community that relies on the timber industry to survive, we wanted to create an expedition that would have many viewpoints. We felt that NEWFC would have the multiple perspectives within the organization that would make our study to compelling to students and community members, since NEWFC is comprised of members who come from the timber industry to those in Conservation Northwest. Our students are seeing that there is not one "right" answer to their question of "What makes a healthy forest?"



Kettle Falls Elementary fourth grade expedition: the stories tracks tell

Case Study One: Indicator Species of Bangs Mountain

Our Learn and Serve Grant gave a team of six staff members the opportunity to participate in a SEA (Service, Education and Adventure) training this fall. This adventure included learning to track with Tom Murphy of Edmonds Community College and the LEAF (Learn-n-serve Environmental Anthropology Field) school. This so engaged the teachers that we were determined to give our students the same opportunity. Murphy was able to create an alternative winter course that brought 12 college students to Kettle Falls for a week. During that time, the LEAF school taught the students how to recognize tracks and gaits of our local animals. The focus was on five animals: whitetail deer, turkey, snowshoe hare, lynx and coyote. These animals were chosen with help from the Forest Service because of their status as indicator species for the Bang's Mountain area. Students spent time in the forest that week, learning to track, photograph tracks, and measure tracks. They also learned to set trail cameras along trails in order to capture photos of the elusive animals.

Students from Kettle Falls High School Wildlife class with teacher Jono Esvelt participated in each of these activities supporting the fourth graders throughout this expedition. They also took on the task of writing "field guides" for the fourth graders to use

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in their work.

This project focused on the learning targets of

- I can independently sort animals by the structures and behaviors that help them survive in their environment.
- I can independently list 4 parts of an animal and describe how the parts help the animal meet its basic needs.
- I can independently generalize from multiple forms of text to learn about forest animals.
- I can independently elaborate using details and/or examples about one forest animal.
- I can edit for capitals against the class capitalization chart.

Students learned about each animal through predicting structures and behaviors by analyzing a collage of photos and YouTube videos. Predictions were recorded before reading field guides and predictions were confirmed or not. Once the recording sheets were completed, the students wrote expository papers on the survival structures and behaviors of each animal. These were combined to create PowerPoint slides that will be included in their final product, some with actual photos of the tracks or animals that were photographed at the Bangs Mountain site. The good news was that some animals were captured by the trail cams, but some remained elusive!

Case Study Two: Food Webs of Bangs Mountain

This project really focused on the interdependences within the forest ecosystem. Learning targets in this investigation focused on giving students the knowledge to be able to complete the narrative prompt:

You are a wildlife biologist researching animals on Bangs Mountain. One of your jobs is to report to the community of Kettle Falls the stories the animal tracks of an indicator species told you while doing your fieldwork. To do this you will need to describe where the tracks were found and your inferences of what the tracks are telling you about that animal's daily life:

- I can describe the interdependences in a forest ecosystem.
- I can explain how a forest ecosystem impacts animal population.
- I can independently generalize from multiple forms of text to learn about forest ecosystems.
- I can write a narrative with a clear beginning, two events and a clear ending.

In order to make this narrative realistic students needed to understand the actual role of a wildlife biologist. Learning about careers while in engaging expeditions opens our students' eyes to the world of possibilities. Students continued their fieldwork, checking their trail cams, snag counts (their first monitoring experience), searching for tracks and other sign of life in their plots and were prepared for snowshoeing (though there simply

wasn't enough snow for them this year). Using the reading skill of "generalizing to understand" helped student comprehend the interdependence of the forest and was built through reading, photography, experts, media, data and many simulation games. After each activity students recorded "new learning" on anchor charts that build the content schema. They also recorded their use of the skill "generalizing" on anchor charts to show their ability to be meta-cognitive about comprehending new material. Students were able to use the information gathered from the multiple sources to write their narrative.



Case Study Three: Bangs Mountain as a Changing Ecosystem

Now that the students have developed a level of knowledge about the interdependence of forests they are ready to move on to the changing ecosystem. This is when they really become experts and begin to look at the many stakeholders of the forest. Their fieldwork becomes very data based. Through skill building in P.E. they learn about pacing. Each child is responsible for pacing off 104 feet, using a compass to keep their lines straight, they determine a half

acre plot for their team. They use a tape to measure their accuracy after pacing and the corners are marked on the GPS so that their plot can be found on Google Earth. Students are now collecting data on the canopy by measuring open and covered areas. They have learned to use transect lines during their monitoring. This data is part of the baseline that will be used in the study. They identified three plants in the understory and did a plant count of their plot. Their study of the animals in their plot also continued, with data from tracks and trail cam photos. The most common track and photo taken was squirrels, though they are not one of the indicator species. Students found little evidence of the lynx at their plot. Animal population changes will be one indicator of increased health of the forest over time.

During this project students learned about many changes that can happen to forests over time. The learning targets for this project are:

- I can independently describe how one population may affect other plants and/or animals in the forest ecosystem.
- I can independently evaluate one population in different forests, determine which will thrive and give clear reasons.
- I can independently describe three ways that humans can improve the health of the forest ecosystem.
- I can independently assess the author's effectiveness for a chosen audience.
- I can independently organize my writing.

This means:

- I will write an introduction, supporting details using examples, and conclusion in an expository writing.

Each day of this project focuses on a change in the forest

ecosystem. Some are changes that have taken place at the Bangs Mountain Project and some are changes that could eventually happen. All students receive the same reading each day, but they read the articles for a different purpose: natural or man-made changes, population changes, or gradual or rapid changes. Each student becomes an "expert" on their article. The students then "jigsaw" their articles once they have recorded the important information. The student experts then share out in small groups, creating a real need for students to comprehend and analyze their text. Special Education and Title I students are pre-loaded with vocabulary and content before the article increasing their ability to fully participate while in class. Once the information has been analyzed students come together to complete anchor charts where they record the changes and determine if human impact was positive or negative. They also determine the author's purpose and if the author was successful in delivering their message.

By the end of this case study they have a thorough understanding of thinning, prescription fires, recreation management, forest flu and other healthy management issues.

We believe that reading is only one vehicle to understanding new ideas. Fieldwork, media and experts are also key components to creating powerful learning tools. Experts from the timber industry, Forest Service, Conservation NorthWest, and Department of Fish and Wildlife have all volunteered to work with our students, ensuring that students are learning realworld applications of the knowledge. Each of these experts will not only share their expertise on managing forests and their personal perspectives of what makes a healthy forest, but also about their careers.

The students will complete this project with a simulation from Project Learning Tree, "The 400 Acre Wood." Students will determine the actions taken to manage a forest much like their plots on the Bangs Mountain Project. This project has a balance of Vibrant Economy, Healthy Environment, and Equitable Society, as recommended by The Sustainable Design Project Teacher Manual. (Wheeler, Bergsman, Thumlert 2008.)

The Final Presentation of "What is a Healthy Forest?"

The final project is a culmination of all of the data that the students have collected while completing this project. Data is compiled in a variety of ways. The animal monitoring is a graph of the sightings caught on the trail cams, the plant monitoring is a graph as well, both done on Excel. The canopy is drafted on graph paper, indicating the cover and open space. There is also the map from Google Earth, indicating each plot for future reference and to gauge changes over time. This work is gathered in a Power Point to be presented to NEWFC at a future meeting.

Kettle Falls Elementary: expeditionary learning and 21st century intertwined

Our students had the opportunity to become engaged in their local forest, gathering a respect for the land, observing the interdependence and understanding the decisions made by others that use our forests. Students were able to meet rigorous learning targets and assessed independently on each target. They collaborated to

create authentic projects that reach beyond their school walls.

The expedition included many different modes of learning during this project that are key to Heidi Hayes Jacobs' Tenets for Purposeful Debate leading to Content Upgrades:

- A personal and local perspective is developed and presented in the content area, where natural and viable.
- The whole child's academic, emotional, physical and mental development is thoughtfully considered in content choices.
- The possibilities for future career and work options are developed with an eye to creative an imaginative directions.
- The disciplines are viewed dynamically and rigorously as growing and integrating in real-world practice.
- Technology and media are used to expand possible sources of content so that active as well as static materials are included. (Jacobs p 31).

Through compelling expeditions students at KFES achieve many 21st century outcomes. Students build strong habits of work, through both performance (traits that enable students to perform to their potential) and personal relationships (traits that enable students to be good people and community members). They are motivated to learn. Students believe that they have the ability to meet their targets, have clear targets that they can self-assess their progress against, and are connected to their school through the work they do. We believe that academic achievement is increased when students are engaged in learning. Through authentic expedi-

tions like "The Stories Tracks Tell" students build life and career skills. Real world problems increase students' critical thinking and problem solving skills. The use of technology opens the classroom to wider world, with meaningful examples of the work our students are doing. Our students increase their understanding of 21st century themes such as environmental literacy. (Hulleman, Hartl & Ciani 2009). Through compelling expeditions our students are engaged, supported and held accountable to high standards.

References

- Hulleman, C., Hartl, S., & Ciani, K. (2009). Character, Motivation, and Engagement in Expeditionary Learning Schools, Review of the Relevant Literature and Available Measurement Instruments. Nellie May Education Foundation. Expeditionary Learning Core Practice Benchmarks (2003). Garrison, NY: Expeditionary Learning Outward Bound.
- Jacobs, H. H. (2010). Curriculum 21: Essential Education for a Changing World. Alexandria, VA: ASCD.
- Wheeler, G., Bergsman, K., and Thumlert, C. (2008). Sustainable Design Project Teacher Manual. Olympia, WA: Office of the Superintendent of Public Instruction.



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