

*Local
Landmarks*

FINDING YOUR WAY ON MT. ST. HELENS

- Focus** To introducing students to Mt. St. Helens Volcanic Monument's features through map study.
- Group Size** Entire class
- Time Required** 30-45 minutes
- Materials** Pencil
Mt. St. Helens National Volcanic Monument Rev. 4/1993 R6-GIP-RG063-90, available at Mt. St. Helens Natl. Volcanic Monument Visitor Center; 3029 Spirit Lake Highway; Castle Rock, WA 98611
Handout: *Finding Your Way on Mt. St. Helens*
- Physical Setting** Classroom at school before visiting Mt. St. Helens Interpretive Center
or Cispus Classroom before going to Mt. St. Helens.
- Process** 1. Students use Mt. St. Helens and Vicinity and Mount St. Helens National Volcanic Monument maps to answer the questions on the attached question sheet. This can be an introduction to the location of various features on Mt. St. Helens prior to visiting the interpretive center, or a trip to Mt. St. Helens itself.

Finding Your Way On Mt. St. Helens

A Forest Service map of Mt. St. Helens can be used and these questions modified

Mt. St. Helens and Vicinity

1. In which national forest is the monument located?
2. How far is it from Iron Creek Picnic Area to Pine Creek Information Center to _____.
Give your answer in miles. Use the scale.
3. Find the Crater of Mt. St. Helens. Does the map show the dome?
4. What is the name of the dark gray area in the center of the map?
5. What three services are available at the Mount St. Helens Visitor Center near Castle Rock ?
6. What does TTY stand for?

Mount St. Helens National Volcanic Monument

1. Spirit Lake is in which direction from the Mt. St. Helens Crater: northwest, north, or northeast?
2. What services are available at Lahar?
3. How far is it from Eagle Cliff Picnic Area to Clearwater?
4. What should you take with you to Clearwater?
5. If you wanted a drink of water, name the 4 places you could get one.
6. Name 3 places that you could go to take great pictures.

LAST INDIANS IN LAYSER CAVE

Focus	To learn about the culture of local indians 3500 years ago by reading and listening to a dramatization based on actual discoveries. The period of the dramatization coincides with an eruption of Mt. St. Helens that occurred during the time the cave was abandoned.
Group Size	Large or small groups
Time Required	50-60 minutes
Materials	Pen/pencil Writing surface Story: "NO BERRIES--BIG SMOKE" Worksheet: <i>Last Indians in Laysar Cave</i>
Physical Setting	Laysar Cave (<i>ask for directions from Cispus staff</i>) or any classroom
Process	Activity 1: LAST INDIANS IN LAYSER CAVE 1. Get your students comfortably seated. 2. The story, TO BE READ ALOUD, may be stretched between several reading periods. It takes 22-25 minutes to complete the story start to finish. 3. After reading the story pass out the worksheet activity. Allow your students to work together cooperatively. Extensions: 1. See other Laysar Cave activities in the "THE CISPUS EXPERIENCE, Curriculum Guide" 2. Watch the film, "Laysar Cave Silent Voices, Vital Clues," (20 min.) available from the Cispus Center film library. 3. Show the film, "This Place In Time," (24 min.) about the Mt. St. Helens eruption, and compare warning signs of how we coped with the rubble left from its fallout to how the band of indians in the story coped with their encounter with the "Mountain". The film is in the Cispus film library.

Last Indians In Layser Cave

1. For what purpose did the Native Americans in the story use the cave?
2. We named the cave after its discoverer, what name might they have given the cave?
3. Describe how work may have been divided up among band members.
4. How do you think the people in the story felt about their work?
5. In what specific ways did they show pride in their work?
6. Based on the description of their living quarters, draw a diagram of how you think the cave's living space was organized. Include sleeping spaces, space to process animal skins, tool making area, heating and cooking, food storage areas, water storage containers, and weapon storage. Show an outline, front of the cave, and back of the cave.
7. Who did you most identify with in the story? Why?
8. How do you suppose band members felt about each other? Give examples?

9. How were the Mountain's warning signs and eruption interpreted by Wise One?
10. Of what value were the meadows to the tribe? What activity was carried out there that was important to them?
11. How was it shown the Native Americans in the story had a balanced diet?
12. How was it shown they had a knowledge of medicine?
13. How do the eruption experiences of the characters in the story (warning signs, eruption, landscape changes), compare with what we actually experienced in the 1980 eruptions of Mt. St. Helens?
14. How did they know what the warning signs meant?
15. Why do you suppose they never returned to their cave?
16. List the names and show the relationships of the band members in the story. How many lived in the cave during the summer the story takes place?
17. What evidence is there of apparent spiritual values?
- 18.. In what specific ways could it be said the Native Americans depicted in the story were civilized, based on the following criteria:
Civilization= specialized occupations, calendar, writing, some form of governing or authority, a system of numbers, religion, and trading relationships with other groups.

No Berries Big Smoke

A Story of the last Native Americans to use Laysr Cave

by Mike Gullickson

Laysr Cave was discovered in 1982 by Tim Laysr, a Forest Service worker surveying the land for a timber sale. Entering the cave located on a steep south facing slope he was amazed at its size. Some 60 feet deep and 40 feet wide you could stand up in most areas. Turning back to face the opening, he glanced down to see the remnant of an ancient fire ring. To his left was a large stone, smooth on top. Nearby, partly buried was a stone tool used for cutting meat. It was wedged in the groove of a wood handle and bound with some kind of stringy fiber. Though not an archaeologist, Tim Laysr recognized at once that this was an important discovery. He immediately left and filled out a form identifying the site and filed it with his supervisor.

Within a few years plans were made to excavate the site. After the cave had been vandalized by looters in 1985 it became imperative that the excavation begin right away. So in 1986, archaeologists from the Forest Service and Washington State University began a scientific excavation at the site.

Dated artifacts and carbon samples determined the last occupation was about 3500 to 4000 years ago, that prior to that the cave had been seasonally occupied for about 5000 years. The last use of the cave corresponded with a significant eruption of Mt. St. Helens.

What follows is a possible scenario of a band's last occupation there. The story itself is fictional, but the activities described and tools used are based on actual archeological discoveries made at Laysr Cave.

The dawn's first light filtered through the cave's opening. Little dust fairies floated into and out of the dim glow of early morning light. Chirping birds began to rise as the day woke up; once in awhile one flew into the cave and then quickly out again. This had been their band's summer base camp for as long as anyone could remember.

A wisp of smoke floated lazily up from the ashes of last night's fire. Mondo awoke as the morning light passed over his face. As he stretched and yawned, Morning Sun, his wife, awoke too. Already, Wise One, his father, and Claw, his older brother, were up and talking quietly. As Mondo glanced about, others in their clan were beginning to stir.

Wise One dropped peeled stems of a tall prickly plant into the cooking skin along with some water. Later, cooking stones would be dropped in to boil the mixture for several minutes. The softened stems would then be stirred in the water till they became like a soup, and then he would drink it all, hoping to cure his sore back. As Wise One knelt slowly over the ash covered coals he gave out a soft groan betraying his pain. Blowing ashes off the coals he added some shavings of cedar bark to use as tinder. A couple of puffs of his breath were all that was needed to ignite tiny flames. Placing small twigs, more tinder, then larger sticks, the fire grew. Then he took the two small round cooking stones and carefully placed them into the fire and added more fuel. Getting up slowly he began to realize that after 52 winters he had better let the younger ones haul the elk quarters down from the high meadows, where the herds grazed this time of year. His main concern this morning, though, was not his aches and pains.

His band had come to this cave, to this valley, to these hunting grounds and berry

fields for as long as he could remember. The Mountain and its spirits had inspired them with many stories and good memories. As he waited for the fire to heat the stones, Claw and he were in serious conversation about the Mountain. When Mondo joined them, Wise One motioned for the three of them to hold a conference at the nearby overlook of the Cispus Valley. Morning Sun placed more fuel on the fire. She saw that the three band leaders were in what appeared to be a serious talk. Wise One was motioning his arms to the sky in the direction of the Mountain.

“Your ancestors told stories of the Mountain. They told stories of its anger...that it smoked...that sometimes every 5 or 6 generations its anger would rise and the Mountain would throw out huge hot stones that would burn your hands; yet when they cooled were as light as a songbird. They said smoke ran down the Mountain and devoured some of the tribe’s elders. It ran many times faster than a deer could run and they could hear the screams of their elders in their dreams. Our tribe’s fathers said dark clouds roared from the Mountain’s mouth...would pass across the sun and our lands would become like night though it was day. The birds no longer brought music in the mornings. These huge clouds from the Mountain’s mouth would drop not water, but dust and drops of stone as big as berries.”

Morning Sun brought Wise One his drink. She’d already placed the smoking hot stones into the water of the cooking skin and stirred the bubbling mixture into a soup. Removing the stones, she poured the hot drink into a small tightly woven basket made of cedar root and long pine needles.

They stopped talking upon her approach, serious talk was not for a woman’s ear’s. Smiling, Wise One took the basket and drank the whole mixture. He grimaced and quickly drank a few gulps of water to clear his mouth. Mondo and Claw chuckled at that, but knew he was feeling some pain to want that particular medicine. Morning Sun returned

to the fire and rinsed the basket clean. She sensed the seriousness of their talk.

The rest of their clan, now up, sensed it too. Most had been with the hunting party yesterday in the berry fields. All had seen Wise One as he stood staring at the strange chalk colored cloud coming from the Mountains summit. He appeared mesmerized by how swiftly it had risen in the sky. They were always cheerful at summer camp because the Mountain’s beauty seemed like a friend while in the berry picking fields, where they could see it clearly.

Hunting elk there yesterday had been a good idea because they could also determine when the berries would be ready to harvest. There were just blossoms now so they knew it would be about 18 suns before they should return. The berries, sun dried and dried in troughs dug next to hot coal filled pits, were an essential source of nutrition for their whole tribe. Their band always brought back the largest harvest. The whole mountain top of the berry fields, above the trees, was bathed in colors of yellow, purple, red, blue, and white.

Wise One turned to watch Doe Eyes as she knelt and gathered some blue starlike flowers growing close to the surface of the grainy alpine soil. Placing them around her head, the young girl skipped and pranced around her cousin Night Hawk as he sat quietly with his atlatl ready to kill elk flushed from the trees by other family members. Night Hawk was irritated and waved her off because he sensed a group of elk were approaching. Doe Eyes sulked back to the women were gathering herbs and her mother, Meadowlark, was making berry baskets out of cedar bark collected on their way up to the fields.

Wise One’s eyes went back to the strange clouds and his expression became serious again. The women all noted this and watched the cloud too, before going back to their tasks. They sang songs of the flowers as they worked. Until the elk came, Wise One studied the clouds and talked to himself most of the day.

Stealth, Claws son, hit the first elk to emerge from the trees with his atlatl, and Mondo the second. The rest of the men rushed forward with their spears to kill the wounded animals. They couldn't carry any more meat back so they didn't bother pursuing the three other elk flushed from the brush and had raced off back into another part of the forest. Their atlatl's were well made by Owls Beak, Night Hawk's father, who had remained back in the cave. He had injured himself seven summers ago and had become one of the best tool makers of the tribe, because he could no longer climb to the hunting grounds.

When the group returned to the cave at sunset, Owls Beak had replacement darts ready for Stealth's and Mondo's arrows. All the conversation over the fire and freshly cooked meat had been about the great skill of the hunters. Everyone shared; Doe Eyes sat near Night Hawk; and the men took turns singing new verses to old songs of great hunts. All except for Wise One. He said little and walked to the cave's entrance several times looking in the direction of the Mountain, though it couldn't be seen from the lower elevation of their cave. But he was looking to see if that ominous cloud from its summit was visible in the moonlight. He was the last to go to his sleeping mat that night.

Wise One's conversation began again as Morning Sun went back into the cave....

"Our ancestors said that during the last days before this happened the mountain would spit white clouds high above its peak like a warning it was angry....My sons, many summers we have come here, to this camp, to this cave. And I came with your grandfather here too. These lands have provided us with much game, the meadows have filled our baskets to overflowing with sweet berries, and the mighty Cispus has sent us more fish than the stars in the sky. Nearby we collect the white stone for Owls Beak to use to make our arrows sharp and true.

"But my sons...never have I seen clouds of smoke coming from the Mountain like I saw yesterday...and three suns ago I saw it too, but remained silent. My sons...I feel we must leave here now. The Mountain is angry again... and will lose its patience if we ignore its calls. Soon it will begin spewing its rage upon us again, like the old ones told us of the past."

Now Claw spoke...."Father I have heard your words. I too have seen the smoke. But our season is only half over...the berries are not yet ripe the big fish have not yet returned to our fishing holes on the mighty Cispus. We have much to do before the first snows. I do not think the Mountain will be unkind to us now. Its just breathing and sighing. Let us finish the season, then look to the Yakima people for a new valley to have for our summer camp."

Mondo listened quietly as Claw spoke. He too, had seen the cloud and had pondered the meaning of the smoke coming from its mouth. Now the accepted leader of the band, he thought long and hard before speaking:

"This cave has sheltered us, heard our stories, and felt the warmth of many fires. Owls Beak has made many fine tools for us in this cave. Our women have prepared many deer, rabbit, bear, and elk skins here, and have sewn them into clothing, slippers, blankets, tool carriers...here in this cave. They have dried and smoked meat and fish, and berries here for many generations. This beautiful valley has been home to deer, bear and birds many colors. Their songs have greeted us each day. Trees here have supplied strong branches for our spears and atlatls, and frame work for the skins to pull the heavy loads of our summer bounty back to our village. We have shouted of the valley of the Cispus in high voices around many council fires. The Great Cispus has washed

the dust from our skin, and cooled us in the heat; It has sent us more fish than the stars in the sky....Yes, this cave, the Cispus Valley, the high meadows have provided well for us. The Mountain spirits have guided our good fortune.

“ Wise One knows the warnings of the past and the stories of the Mountain’s rage and anger....And the Mountain again is casting its anger our way. I do not know what we have done to cause this. Maybe we took too many elk from its hills, or too many fish from its streams...only the Spirits know. But the Mountain is warning us now, as in the past.”

“Claw speaks wisely in noting the hills not yet ripe with berries. Their blossoms this summer seem brighter than in past summers. He reminds us of the big fish which have not yet come to our fishing holes. These we always remember with joy because of the sweetness and nourishment our Mother Earth provides for us here. We always return to our village in the season of the first frost with the tribe’s largest fish and the biggest berries.”

“But, the Mountain is growing tired of our greed and won’t wait. Its warning signs are themselves a gift to us. It must burn and cleanse the land. Maybe it seeks to punish others further away and we are in between. We must listen and respond. Our Mother the Earth has allowed us to prosper here....And our ancestors have passed the stories of the Mountain’s anger down through the grandfathers. The spirits of the past in the Earth now speak loudly again...and we must listen.

“The berries may make the bears and the birds fat and plump-but they too will suffer when again the Mountain speaks. Let us begin now to prepare to leave. We will return to the village of our clan and see if others have seen these signs. Then if there is still time before the snows, we can hunt with our cousins, the Puyallup, seven suns towards the Big One. Today, we must cut

strong branches to tie our skins to so we can haul what we have collected so far.”

“We must leave here today; to not obey the Mountain would cause serious wrath to come upon all of our people.”

They all agreed, and returned to the cave and its warmth. As they sat and ate the fresh meat and cooked roots collected by the women, Mondo told them all of the Mountain’s warnings and the decision to return to their village. When some grumbled he scolded them, then directed everyone to specific tasks of preparation. Owls Beak hastily gathered all his tools that he could see, the bone chippers, and cores for microblades, as well as the darts and points he’d made for their summer hunts. He was sure to pack the black shiny rock he’d traded for from relatives across the big river; it made flakes for the sharpest knives. In his concern to make certain to pack the black shiny rock, he forgot his microblade cutter against the grinding stone always left near the fire ring. Leather straps made from elk and deer hides, long strings of sinew, and strips of cedar roots and cedar bark were all coiled and carefully placed in soft bags made of deer hide. Special core rocks gathered nearby were placed in other pouches so they wouldn’t damage completed tools. All of these items would be placed and tied onto the elk hides stretched between the long branches the men would pull. The women gathered other tools into their baskets, smoked meat was wrapped and added to the loads. The young men returned with the long green branches, and the carriers were then assembled. Doe Eyes and Meadowlark returned with fresh herbs for food on their journey. Wise One and Chip, his grandson, went to the top of the mountain near their cave to see if the Mountain would speak again today.

Just after midday the band gathered outside the cave and looked back down the Cispus Valley again before they left. Wise One

spoke, "I have seen again the smoke from the Mountain. It is becoming darker and I fear it may be getting impatient with us."

Mondo then said, "Wise One, go to the overlook and speak to the spirits that our journey may be safe and the Mountain allow us to return some day to our summer camp in this cave."

Upon Wise One's return, the clan began their descent to the valley floor. They kept going until dark and made a temporary camp late that night in the valley of the Big Bottom.

The next morning a thundering explosion jerked them awake. The concussion of the explosion was followed by a deafening roar; a blast of warm air came over them and rushed across the valley. The trees bent from its force waved like grasses. The band huddled in the overhang of a cliff that looked across the Big Valley. Terror was in their eyes as the sky began to darken from a huge cloud. Small sharp edged stones began falling from the cloud; some bounced into their shelter. The air was thick with these stones. It was difficult to see more than two spear lengths out of the shelter. Wise One began chanting something in the old language to the Great Spirit. It stayed dark the whole day. They stayed there...waiting...not knowing what would happen next, but trusting their appeals to the Great Spirit would keep them safe. They nibbled on small amounts of herbs and smoked elk, and drank small allotments of water stored in skins. The next morning came without the normal bird chirps. It just became gradually lighter to reveal a ghostly scene. There was no more wind. Trees nearby appeared to be covered with dust or snow. On the ground everywhere was a thickness of berry-like bits of rock that rained down from the clouds the previous day and night. It was so thick that no flowers and most bushes could be seen and it covered the whole Big Valley. Everywhere, it was as bright as the sun's morning light reflected off

the surface. It was like nothing they'd seen or heard of before.

At last the silence was broken by whimpers of fear from Doe Eyes. Mondo got to his feet and said, "Everyone eat now, drink what's left in the skins. We must hurry to the village to see if anyone is left there."

The Village was located up a valley towards the setting sun. Traveling was difficult and awkward. The surface was mushy from the showers of rain and every step was a labor. The mushy soil wore new moccasins smooth. Milky water of the Cowlitz river was especially distasteful. The quietness as they traveled worried them, but no one spoke. Everyone wondered worriedly if the other bands had made it back.

Late that afternoon their questions were answered by wails and cheers from a few of their tribe still in the village. A few of the old ones were all that remained in their tribes main camp. Two bands, Jeruds and Smoke, had not returned. The rest of the tribe, some 140 men and their families, had packed up and moved west to the lands of the big water.

They never found out what happened to the other two clans. There were no berries that year. And the clan of Mondo never went back to the cave.

LIGHT IN THE DARK: The Braille Trail

Focus To learn about forest ecology utilizing senses other than sight. Guided inquiry is used on an existing path designed for the sight impaired.

Group Size Up to 20, with students working in pairs.

Time Required 1.25 hours

Materials Clipboard Writing tools
Good blindfold Partner
Handout: *Light in the Dark: The Braille Trail*

Physical Setting The Cispus Braille Trail (*from the Education Building follow the short trail that leads to the main road and painted crosswalk. Once across the road you will see the wooden sign designating the beginning of the Braille Trail.*)

Process

1. Pair up your students. The sighted student will act as guide and recorder, the blindfolded student will act as the "observer". Half way through the course they should switch roles. Adults or counselors should be posted at a few points along the trail just to ensure all is going properly (they shouldn't interact unless needed).
2. The blindfolded person should place their right hand on the rope and follow along the path, maintaining contact with the rope at all times. Their guide can help through verbal directions to make some observations away from the rope. Along the rope are small circular metal tags with numbers and Braille symbols for the corresponding numbers. The pair should stop at each of these points and answer the same numbered question in the activity.

3. The guide may have to give verbal clues in order to find some items to examine. The guide will read questions, and record answers accurately.

Option:

Use a portable cassette recorder to record the dialogue between the guide and observer, and play back later.

4. In addition to learning from observations made using senses other than sight, the trust-responsibility-communication relationship developed between the observer and guide/recorder will be especially important. The last few questions, 13, and 14, will address this topic.

Light In The Dark: The Braille Trail

1. At the start of the trail (before you pass the sign) , to your left, at about knee level, is a rotting log. Reach down and touch it. Allow your hands to move along the log (your guide will help you rejoin the "lifeline" after examining the log).
 - a. How does this rotting log feel?

b. How could it support new life?

(Return to the lifeline, take a deep breath, smelling the air in this spot. Begin walking, using the rope to guide you. Your next stop will be a half dollar sized disc attached to the rope with the figure 2 raised on the surface with the Braille symbol)

2. With your right hand on the rope near the #2 reach your left hand out and find the trunk of a broadleaf maple. Feel the trunk.
 - a. What is found there besides the bark? How does it feel?

b. Reach with your left hand back about 1 foot from the broadleaf maple and find the trunks of four smaller trees. How do they feel different? These are vine maple, and commonly grow in groups.

3. Have your guide help you find the evergreen tree on the left; feel it.
 - a. How is it different than the maples'?

b. What would you guess its age to be?

4. Find the smaller smoother trees near the evergreens (your guide will help you).
 - a. These smaller trees all seem to be leaning one direction. Why do you suppose this is?

b. Slowly turn in circle. What did you notice about the the direction in which they lean?

5. Reach over the other side of the rope and find several small evergreens. They are not all the same variety. Feel and find the different tree.

a. How are most of them alike?

b. How is the one Douglas fir different?

6. You have come to a new section of the woods. Sniff the air and sense the difference.
 - a. How does it "taste" different from earlier in your trek?

b. How is the temperature different here, to what do you attribute this difference?

THE GUIDE NOW TAKES THE BLINDFOLD AND YOUR ROLES CHANGE

7. The guide needs to direct you with verbal clues to the big tree. Study this tree with your senses.

a. How would you describe its "bigness"?

b. This single tree is most responsible for others of its kind for being here, explain.

(Give the tree a hug before going on to #8.)

8. Guide, direct your partner to the large nurse log.
 - a. Feel this ancient tree. How many different kinds of plants can you find growing here?
 - b. What animals, big or small, might use this log for some purpose? Name some and explain how they might use it:

9. Describe a number of different ways this site is different than the last.

10. How does this spot feel different from the last?
 - a. There are a number of vine maples curving nearly overhead; knowing that, how do you feel now?
 - b. As you leave the creek note how the sound changes. Does anything else change too?
11. Guide, take your partner to the large cut tree trunk. Feel the annual rings indicating the age of the tree. Estimate the age of this tree.
 - a. Find the center of the tree with your fingers. Your fingers should tell you that this tree wasn't exactly round. Why was this so?
12. This is the last stop. How is this area different than that nearer the creek?
 - a. What sounds are new?
 - b. How is this area different than what you both felt at the beginning of the Braille Trail?

Remove the blind fold and proceed to the end of the Braille Trail. Take notes below on the new things actually observed with the aid of your eyes. Use describing words that help depict size and color.

MT. ST. HELENS 2000

Focus To create a literary time-line of recovery for Mt. St. Helens' environment using creative writing skills. This is a post-Cispus/Mt. St. Helens activity. *Uses information learned in Mt. St. Helens Eco-Comparisons (p. P16).*

Group Size Entire class in groups of 1-8 students

Time Required Research (*variable*)
Pre-write (*30 min.*)
Writing (*30 min.*)
Sharing (*30 min.*)

Materials Videos Paper
Pencil Newspaper and magazine articles
Field trips to Mt. St. Helens Interpretative Centers

Physical Setting Classroom or Pavilion

- Process**
1. After students have gathered information through any and all avenues available to them, they are to produce a document which shows change in an area of Mt. St. Helens which was greatly affected by the May 18, 1980 eruption. Example on following page.
 2. Students may produce a story, collage, or anything in between which displays the changes (over time) in Mt. St. Helens' ecosystem.
 3. If this is a straight individual writing project the activities and times will follow the lesson times given above. If students work in groups the times must be increased.
Sharing of information between groups is important.

Example: INDIVIDUAL INSTRUCTIONS

I. You are to remember (or record) all of the information that you received when:

1. We went to the Mt. St. Helens Visitors' Center
2. We saw films about the 1980 eruption
3. What we saw when we went up on Mt. St. Helens while we were at Cispus.
4. Any information from hand-outs or booklets
5. And from any other source

Example Worksheet
This is meant only as a starting point

Complete the following:

If we took an area (such as the Lahar mud flow, on the south side of Mt. St. Helens or Windy Ridge on the north side) that appeared to be completely bare of all live plants and animals in June 1980, and returned on June 1st of each year, what would you expect to find? List your ideas in the appropriate time slots below. *(Use photographs, news reports and your personal observations while you were at Cispus to complete the information grid. Possible things to include in your literary time-lines. What surprising things did you notice? Which plants and animals do you think were survivors and which migrated into the area?)*

Years	What Plants	What Animals	Soil Changes	Water Changes
1980-85				
1985-90				
1990-95				
1995-2000				

II. Using the information above, write a newspaper article for the Columbian for May 18, 2000 with the title "*Mt. St. Helens: 20 years later.*" Be sure to include Who, Where, When, What, and Why.

MT. ST. HELENS ECO-COMPARISONS

Focus To investigate the differences in ecosystems between three areas starting at the edge of the Mt. St. Helens' Blast Zone and proceeding to Windy Ridge near Mt. St. Helens' Crater

Group Size A bus load: approximately 60 students plus counselors

Time Required 6-6.5 hours, see detailed schedule below

Materials	Mint Life Savers	Sack Lunch
	Cameras	Plastic-lined paper bags
	Water test kits	(for motion sickness)
	Soil test kits (<i>Lamotte</i>)	Activity sheets

Physical Setting Mt. St. Helens Volcanic Monument
Bear Meadow, Meta Lake, Windy Ridge

Process

1. Transport Students to the three sites using a school bus. Be sure to have the bus driver take his/her time to minimize motion sickness. Also arm counselors with motion sickness sacks and a roll of mint life savers. Leave Cispus at approximately 8:45 and travel to Bear Meadow (approx. 60 min).
2. At Bear Meadow students observe and record information concerning types of plants, animals, soil conditions and water forms present at the edge of the blast zone (approx. 30 min).
3. Travel to Meta Lake (approx. 15 min). Have students observe and record information concerning types of plants, animals, soil conditions and water present at Meta Lake. Divide the 60 students into 3 groups for the 3 sites. At 20 minute intervals the groups rotate until all three groups have visited all 3 sites. An adult accompanies each group along with 3 counselors. Some bus drivers are willing to be actively involved with a group. Total time is about 75 minutes, including rotation time.

GROUP 1 starts with a discussion and observations of the area from the miners' car; including past multiple use of the area vs. monument status, topography (why trees that were blown down are lying the direction they do), why plants have come back where they have.

GROUP 2 starts at the road cut near the trail to Meta Lake. They take the pH and temperature of the soil in various spots and depths along the road cut. They also make observations on plants and animals present.

GROUP 3 starts at Meta Lake to determine the dissolved oxygen, pH and temperature of the water at Meta Lake. They also make observations on plants and animals present.

4. Now travel to Windy Ridge (approx. 15 min). Eat lunch in the amphitheater over-looking Mt. St. Helens and Spirit Lake. Sometimes a Forest Service interpretive guide is present to lead a discussion during lunch. After lunch hike to the top of Windy Ridge and observe soil, water, plants and animals present. Be sure to have students take their cameras.

5. Point out the different volcanoes visible from Windy Ridge. Also point out how the "Tidal" wave has stripped the soil from the ridge which runs from the north into Spirit Lake. This "Tidal" wave was produced by the avalanche during the Mt. St. Helens May 18, 1980 eruption. This effect has been called the "Bathtub Effect"

Attached is a set of student pages to help record and compare the differences in the ecosystems of the Mt. St. Helens area.

MT. ST. HELENS:
 MT. ST. HELENS STUDY
 INTRODUCTION TO A VOLCANO

Name _____

Teacher _____

I. As we move by bus **up the foot hills of Mt. St. Helens** we will see **changes** in plants, soil, water, and animals. List some of the changes that you notice. Example: What kind of water is present, standing, running, dew, etc.? What kinds of plants and animals can use this kind of water? Write some of the reasons that you can think of for these changes. Scientists do not know all of the reason for the changes you see, so be sure to write down your reasons.

Area name	Change Water, Plants, Soil, Animals, Other	Reason for Change
Green forest		
Bear Meadow		
Blow-down Area		
Meta Lake		
Windy Ridge		

**MT. ST. HELENS STUDY:
BEAR MEADOW HABITAT**

Name _____

Teacher _____

B.I. Describe the Bear Meadow area completely, being sure to include any evidence that there was a volcanic eruption in this area. Look close to you as well as far away.

B.II. What plants do you find in this area? Fill in the chart below.

What plants do you find here. Were they here before the eruption (survivors) did they move in later (pioneer) Name or describe them	What do these plants need to live here?	By living here, how will these plants change this area?

B.III. What animals (or animal signs) do you find in this area? Fill out the chart below.

Name or describe each animal that you find in Bear Meadows (evidence)	What does each animal need to live here?	By living here, how will these animals change this area?

MT. ST. HELENS STUDY:
 BEAR MEADOWS HABITAT CONT.

Name _____

Teacher _____

B.IV. What is the soil like at Bear Meadows? Fill out the chart below.

Name the soil location "Road cut near.." What layer of soil?	pH acid base	Texture, feel	Temp.	Moisture wet or dry	Evidence of plant/animal

B.V. What is the water like at Bear Meadow? Fill in the chart below.

What water are you testing? Where? Describe it, are you near the edge, middle, etc. of the stream, lake, swamp	pH acid base	Temp.	Dissolved Oxygen. Your group will take a sample and fix the oxygen then complete the test at camp	Evidence of animal or plants

B.VI. Other Observations:

**MT. ST. HELENS STUDY:
META LAKE HABITAT**

Name _____
Teacher _____

M.I. Describe the Meta Lake area completely being sure to include any evidence that there was a volcanic eruption in this area. Look close to you as well as far away.

M.II. What plants do you find in this area? Fill in the chart below;

What plants do you find here. Were they here before the eruption (survivors)? Did they move in later (pioneer)? Name or describe them.	What do these plants need to live here?	How will these plants change this area by living here?

M.III. What animals (or animal signs) do you find in this area? Fill out the chart below.

Name or describe each animal that you find in Meta Lake (evidence)	What does each animal need to live here?	How will these animals change this area by living here?

MT. ST. HELENS STUDY:
 META LAKE HABITAT CONT.

Name _____

Teacher _____

M.IV. What is the soil like at Meta Lake? Fill in the chart below.

Name the soil location "Road cut near.." What layer of soil?	pH acid base	Texture feel	Temp.	Moisture wet or dry	Evidence of plant/animal

M.V. What is the water like at Meta Lake? Fill in the chart below.

What water are you testing? Where? Describe it: are you near the edge, middle, etc. of the stream, lake, swamp?	pH acid base	Temp.	Dissolved Oxygen Your group will take a sample and fix the oxygen, then we will complete the test at camp	Evidence of animal or plants

M.VI. Other Observations:

**MT. ST. HELENS STUDY:
WINDY RIDGE HABITAT**

Name _____

Teacher _____

W.I. Describe the Windy Ridge area completely being sure to include any evidence that there was a volcanic eruption in this area. Look close to you as well as far away.

W.II. What plants do you find in this area? Fill in the chart below.

What plants do you find here. Were they here before the eruption (survivors)? Did they move in later (pioneer)? Name or describe them.	What do these plants need to live here?	How will these plants change this area by living here?

W.III. What animals (or animal signs) do you find in this area? Fill out the chart below.

Name or describe each animal that you find in Windy Ridge (evidence)	What does each animal need to live here?	How will these animals change this area by living here?

MT. ST. HELENS STUDY:
WINDY RIDGE HABITAT CONT.

Name _____

Teacher _____

W.IV. What is the soil like at Windy Ridge? Fill in the chart below.

Name the soil location "Road cut near.." What layer of soil?	pH acid base	Texture feel	Temp.	Moisture wet or dry	Evidence of plant/animal

W.V. What is the water like at Windy Ridge? Fill in the chart below.

What water are you testing? Where? Describe it: are you near the edge, middle, etc. of the stream, lake, swamp?	pH acid base	Temp.	Dissolved Oxygen Your group will take a sample and fix the oxygen, then we will complete the test at camp	Evidence of animal or plants

W.VI. Other Observations:

PHYSICAL RELIEF AT CISPUS

- Focus** To learn about features of the Cispus area.
- Group Size** Entire class
- Time Required** 3, one hour periods
- Materials** Topographical map of the Cispus area - duplicated.
Carbon paper
Cardboard or tag board(*depends upon amount of relief desired*)
Pencil shavings or sawdust
Elmer's glue
- Physical Setting** Classroom, pre-teaching the area prior to arrival at Cispus.
- Process** If you want to prepare materials for your students, get enough cardboard for each of the contour lines on the contour map. It is easiest to precut the layers with a jigsaw, using 8 1/2 x 11 pieces of cardboard. If you want to let the kids do the cutting (with X-acto knives) it is probably better to use tag board.
1. Trace the contour lines onto one layer of cardboard. Put multiple pieces in a stack, using C-clamps to keep them together. Cut the pieces and put similar elevations in a marked container. Repeat with each elevation. Some elevations may have multiple pieces representing different mountains.
 2. Have children pick up a piece from each container, labeling each piece with its elevation.
 3. Each child should have a topographical map as a reference in placing the pieces. After positioning, students should glue the pieces.
 4. To add texture and smooth the contours "paint" the surface of the completed layers with Elmer's glue and put pencil shavings over the surface.
 5. Paint the geographical features onto the completed map i.e., Tower Rock - gray, the mountains - green, rivers and streams - blue or green, roads - black, trails - red, etc.
 6. Be sure to bring the maps along and see if the kids can orient themselves to their surroundings.

PINTO ROCK: VOLCANIC PLUG

Focus To use field observation and guided inquiry to learn the origins of many mountains in the area between the Cispus Center and Mt. St. Helens. Students will employ some creative writing skills.

Group Size Maximum 35 (*limited to number of vans available*)

Time Required 1.25 hours driving
1.25 hours activities

Materials Whistle Sketching pens Clipboard/flat surface
Gifford Pinchot National Forest map
Handout: *Pinto Rock: Volcanic Plug*

Physical Setting Pinto Rock

Process

1. Drive out of the main entrance to the Center, and turn left. Go to the stop sign by the Yellowjacket Creek bridge, and turn right onto road 28. Check your odometer mileage at this point. Follow the signs toward Mosquito Meadows. At about 9-10 miles from the stop sign, pull off when you can see Pinto Rock clearly (there will be signs nearby identifying Pinto Rock). Do the first few activities.
2. Return to the vans and proceed to the Pinto Rock turn-off another 1-2 miles up the road. Turn right onto road #77 and drive 2 miles to the Pinto Rock parking lot. Pull-off near Pinto Creek (9-10 miles from stop sign near Yellowjacket Creek bridge), and at Pinto Rock base. There is a steep path about 200 yards long from the parking area to the actual base of Pinto Rock. Before allowing students to go up the path, caution them to be conscious of safety, and have an adult go up the path first and remain near the top to monitor student behavior. Students will complete the rest of the activities there. Use the whistle or a van horn to signal return to the vehicles. The adult should remind students again about safety precautions before they descend the path.

FACTS TO KNOW: Pinto Rock is basically a volcanic plug. The magma came near the top of a vent, stopped and solidified. Over the centuries the surrounding mountain weathered away leaving behind the grotesque landform of Pinto Rock. It is 5113 feet above sea level. There are a number of similar rocks, or peaks in the area, but none as accessible as Pinto Rock.

Pinto Rock: Volcanic Plug

1. In the space below draw the panorama around Pinto Rock.
2. Now, from this vantage point, draw a close-up of Pinto Rock itself.
3. How do you think Pinto Rock was formed?
4. How far is it from where you are standing to Pinto Rock?
5. Looking at Pinto Rock from the parking area, describe your feelings and impressions now that you can see it up close.
6. What is the source of the granular particles in the soil?
7. Examine Pinto Rock up close. Describe its general appearance.
8. Standing next to Pinto Rock, describe the appearance (textures) of 1 square foot of the rock.

9. Move carefully around to the side of the rock near the road. Describe what it was like here at 8:30 a.m., May 18, 1980.
10. Looking at the surrounding area, what animals probably make their homes here?
11. Carefully return to the parking lot using the established path. Now that you've seen Pinto Rock up close and from different angles, draw one more picture of it that includes some of your impressions and feelings.
12. Compose a poem (like a diamante, or haiku, or...) that helps express what you are seeing and feeling.

SILENT VOICES, VITAL CLUES

Focus	To learn about Layser cave, even if weather or transportation problems don't allow your group to visit the actual site.
Group Size	Entire class
Time Required	40 minutes
Materials	VCR Pen/pencil Writing surface Film: " <i>Layser Cave: Silent Voices, Vital Clues</i> " (20 min.) Handout: <i>Silent Voices, Vital Clues</i>
Physical Setting	Standard Classroom
Process	<ol style="list-style-type: none">1. Have a VCR set up and ready to go, be sure to preview the film before showing it.2. Tell the students about Layser Cave. <p>Layser Cave is a large cave (60 x 40 ft., with a ceiling 10 ft high in the center) a few miles from Cispus that had been used for several thousand years by local Native Americans. Its use continued until 3,500 years ago, when it was abandoned for unknown reasons. The cave was rediscovered in 1982 by a person working for the Forest Service, his name was Tim Layser, and the cave was named after him.</p>3. Show the film to the students. The film tells the story of Layser Cave's discovery, the vandalism and theft of artifacts, subsequent excavation by archaeologists, and conclusions made based on their findings. Afterwards, complete the handout and discuss the activity.

Silent Voices, Vital Clues

1. How was Layser Cave discovered?
2. What did Tim Layser see that lead him to believe the cave could be an archaeological site?
3. Describe what happened before the site could be scientifically excavated?
4. Why were these actions illegal?
5. How did we lose as a result of these actions?
6. How is a scientific excavation conducted?
7. What sort of tools were used to excavate and process the found artifacts?
8. What types of specialists were involved in the entire excavation process?
9. List and describe at least 5 of the artifacts found at the site.
 - 1.
 - 2.
 - 3.
 - 4.
 - 5.
10. What do these artifacts tell us about the people who lived here?
11. How did the scientists determine the age of the artifacts?
12. What should you do if you find an artifact (like an arrowhead) while on public land? Why can't you keep it?
13. Based on what you've seen , how important do you think an archaeologist's job is?

STONE AGE TOOL MAKING

- Focus** To understand the skills and materials used by Native Americans to make tools and weapons by observing a demonstration by a local professional flint knapper.
- Group Size** 15-30
- Time Required** 1-2 hours
- Materials** 2 large tables set up end to end
Chairs set up close in semi-circular arrangement
Resource Person: LARRY NELSON, local #: 497-5630
Handout: *Stone Age Tool Making*
Cispus Center, large classroom
- Physical Setting**
- Process** *Make arrangements with Larry Nelson at least a month ahead of time (although at times he's available within a few hours notice).*
- Larry is a professional flint knapper as well as a specialist in law enforcement pertaining to archaeological sites and artifacts. He has a slide show that would add 1/2 hour to 1 to hour the program.
He likes to speak about the law and archaeology sites, local Native American culture, and the manufacturing of replica artifacts. He has a display of actual and replica artifacts and demonstrates the manufacture of sample points. He shows the varied materials used and allows examination of many items in his display. His presentation can last up to 3 hours (with breaks) if needed.

STONE AGE TOOL-MAKING

1. What materials did Native Americans use in making tools and weapons?
2. What specific kinds of rock were used?
3. Which rock was favored by Native Americans?
4. Where were the best source areas for this rock?
5. How did Native Americans here obtain samples of this rock?
6. What rock material was available locally?
7. What was the purpose of "heat treating" projectile points, blades and stone knives?
8. Which kind of stone provided the sharpest cutting edge?
9. What is an "atlatl"?
10. Which was used first, the atlatl or bow and arrow?
11. Just how effective was an atlatl?
12. How and why was the atlatl's design changed?
13. How has Mr. Nelson changed his artifact-making tools from those originally used by Native Americans?
14. List 3 or more new things you learned from Mr. Nelson's talk and demonstration.
 - 1.
 - 2.
 - 3.
15. What is the purpose of the small stone tied onto the atlatl?
16. Why do we all lose if artifacts are removed from where they are found?
17. If you came upon something that looked like an artifact while walking in the forest, what should you do?
18. What motivates some people to rob Native American gravesites?

THE DIG

Focus	To encourage an appreciation for prehistoric occupation of an archaeological site, through visitation, guided inquiry, and poetry.	
Group Size	Entire class	
Time Required	1 hour	
Materials	Flashlight Writing surface Handouts: <i>"The Dig,"</i> by Tim Lichen <i>The Dig--Layser Cave</i>	Pens/pencils Cispus of School District passenger vans
Physical Setting	Layser Cave	
Process	Activity 1: GETTING THERE 1. Drive out the main Cispus Center entrance, turn left and continue 1 mile along the road until you come to a stop sign. Turn left again, crossing Yellowjacket Creek. You will cross the Cispus River after 1/4 mile, continue driving until you reach the next stop sign. At the sign turn left, heading towards Randle. After 2 miles you should see a small sign for Layser Cave. Turn right, onto the indicated road, driving 1 1/4 miles to a small parking area. The road is gravel and steep in some places, but safe. Activity 2: LAYSER CAVE 1. Walk across the road to the Layser Cave trailhead. Proceed a short distance to the first interpretive display board and discuss it with your students (especially note that the atlatl preceded the use of the bow and arrow). 2. Then continue to the Cispus Valley overlook, taking the left fork of the trail. Look at the view, imagine how many others have stood here before you. Read the interpretive display, see if you can identify landmarks. 3. From the overlook, take the right fork of the trail to the cave entrance and interpretive display. 4. Before entering the cave, remind students they are entering a summer home used by Native Americans, then abandoned suddenly 3500 years ago, never to be used again until it was rediscovered in 1982. They can pretend that with each step into the cave they are going back 500 years (about 7 steps) to the time when the cave was used. 5. Quietly enter. Have everyone get comfortable, and then read <i>"The Dig,"</i> a poem by Tim Lichen about the cave and the archaeological excavation. 6. After reading, complete the handout <i>The Dig--Layser Cave</i> .	

The Dig

by
Tim Lichen
September 20, 1990

Indian Summer shines where it has not shown for centuries;
beaming into a hole torn into the Earth.

In the trenches we find treasures from another time:
chips and chunks, flakes and points;
vignettes of a stone-poor culture.

Who were the people who sat here before,
where we sit today?
What stories did they tell,
songs did they sing,
plans did they make?
Had they any idea of people beyond their own lifetime--
of we,
who now touch their past?

And I wonder if the future will be as interested in rescuing
the refuge we leave behind--
in some Indian Summer
many centuries from now.

The Dig--Layser Cave

1. What is the poem referring to when it speaks of a "...hole torn into the Earth."?
2. Why were "chips and chunks, flakes and points..." referred to as treasures?
3. From what you have learned from the interpretive displays along the trail, describe the people who spent their summers here 4000 years ago:
4. "What stories did they tell..." as they spent their nights here?
5. What "songs did they sing..." as they sat around the fire?
6. What "plans did they make..." as the season progressed?
7. Do you think they ever thought of a future 35 centuries (3500 years) away?
8. Will people 35 centuries from now show the same curiosity for our culture that we have shown for this cave and other archaeological sites? How will our sites be examined? What new technology can you imagine will be used?
9. What artifacts will we leave for future archaeologists? List 10 items that you think might be found of our culture:
10. Using your list of artifacts, what do you believe these archaeologists will learn about us, our values, beliefs, lifestyles, and technology?
11. What items would you NOT want them to find? Why not?

WHERE WAS THAT ? ***revisiting the Braille Trail***

- Focus** To note details, locations, and relationships of both natural and man-made sites in a specific area for the purpose of making a detailed map.
- Group Size** Entire class up to 20; divided into small groups of 3-5
- Time Required** 1 hour
- Materials** 1 camp map
1 enlarged copy of Braille Trail map per group for rough drafts
Paper and pencils for recording observation information
1 copy of Braille Trail map for each student for final copies
Colored pencils, fine tipped colored pens etc.
- Physical Setting** Indoor classroom or outdoor area with tables
Braille Trail
- Process** **Activity 1: GETTING READY**
A. Discuss map of camp; note important information provided to make a group legend .
B. Discuss the Braille Trail, its setting and purpose and the experiences of the group if they have done a "blind walk" on the trail.
C. Present task
- Activity 2: WALKING THROUGH**
Large group: With NO maps, pencils, pens, etc., walk the Trail discussing marked sites, natural features between sites, relative distances, plant growth, etc.
- Activity 3: REVIEWING AND RECORDING**
Small groups
A. Group members discuss their recently gathered information, plan strategies for organizing information, and compiling it on their rough drafts.
B. Walk the Trail in groups making a single rough draft with legend.
C. Return to tables.
- Option:**
To increase the challenge, students could draw their own maps rather than recording the sites on the individual maps.
- ACTIVITY 4: CARTOGRAPHERS AT WORK**
At the tables each person will use the information gathered by the group and record it on individual maps. Display maps in cabins or dining hall.