The Strawberry Vale Project Based Learning Program Inquiry Question:

How does the implementation of Nature Education principles and activities enhance learning?

Strawberry Vale School is a dynamic, innovative community of learners, facilitators and educators. Our goal is to teach to the whole child: teaching to the mind, spirit, and heart. We firmly believe in the physical, social, emotional and educational benefits of Nature-Based education (children learning in nature) and that Project Based Learning (PBL) provides students with the opportunity to realize their individual power to effect positive change on local and global issues.

In Project Based Learning the experiences become meaningful as students connect the topics to their own lives. We understand the importance of students having a voice and choice in their own education. Our role is to guide them through authentic, relevant experiential learning opportunities that are tied to curriculum outcomes, to provide structure for collaborative decision making related to inquiry, planning and research, and to give them the tools they need to share their knowledge in a way that is meaningful to them and their audience.

Our school grounds provide a wealth of opportunities for students to interact with nature. We have a Garry Oak meadow, a native plant garden, a stream, and a school pond that serve as outdoor classrooms. We are planning for the creation of the Strawberry Vale Nature Play Perimeter Pathway to provide even more outdoor learning opportunities. Environmental responsibility is a key part of who we are as a school, so PBL topics were planned for our students, which will extend out from local to global environmental stewardship. By having the student ask driving questions about nature in our immediate vicinity they will be linked to the health of our community and our planet and in so doing find relevance and meaning in the educational experiences.

In the 2014 /2015 school year every teacher participated in our Nature Centered, Project Based Learning program. Each participating teacher proceeded with PBL methodology to develop student driven inquiry questions that fall under this umbrella on Nature-Based education. Throughout the grade levels at our school, project based learning experiences that cover multi-disciplinary curricula were planned for the school year. Teachers decided to provide unity to our Nature-Based programs by considering a school wide, teacher generated inquiry question:

How does the implementation of Nature-Based principles and activities enhance learning?

One of our goals was to achieve the relevant and meaningful aspect of PBL by motivating student driven stewardship action. To do so our focus must began on the whole process of the child/nature experience. Just being in nature, then developing an awareness of nature, which in turn develops an appreciation for it, was often seen as the first step of Nature-Based learning. From this appreciation and love comes concern for nature and this typically results in the desire to care, protect and provide stewardship.

We want to use technology to record and enhance our experiences. By capturing the children's interactions and reactions with nature, using the technology of the portable iPads and MacBook lap tops, we allowed them to bring these experiences into the classroom where they can reflect on them, research topics of interest to expand their knowledge, and then communicate what they feel, what they know, what their concerns are, and their plans for action to address their concerns. In this way we use technology and nature to teach to

the minds and hearts of our students in a meaningful and relevant learning experience.

We see the process flowing in a path guided by the teacher but driven by the students: from appreciation and sharing of feelings come questions and concerns. From questions and concerns comes the quest for knowledge. From their quest for knowledge comes research and criterion referenced projects determined by student choices. Out of the knowledge gained by research and direct experience comes the desire for stewardship action. Enacting environmental solutions is where their learning becomes the most real world and relevant and for this project was often the highest level of achievement. It forms personal beliefs and values that will continue throughout life long learning.

The following is a summary of the Nature Centered – Project Based Learning Activities at Strawberry Vale School:

Nature Centered, Project –Based Learning Activities at Strawberry Vale School

1. Project Based Learning - Litter In The Animals' Habitat

Div. 13 -Kindergarten (Lori Rossato)

During nature walks the children observed litter in the animals' habitat. As a result the class decided to work on the problem. They brainstormed and implemented many ideas.

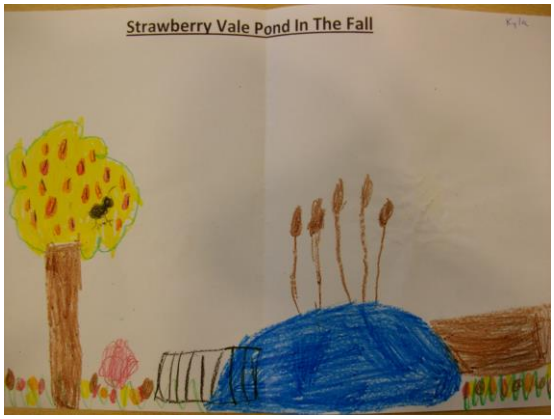
The following are ways that learning was enhanced by implementing Project Based Learning with a focus on nature:

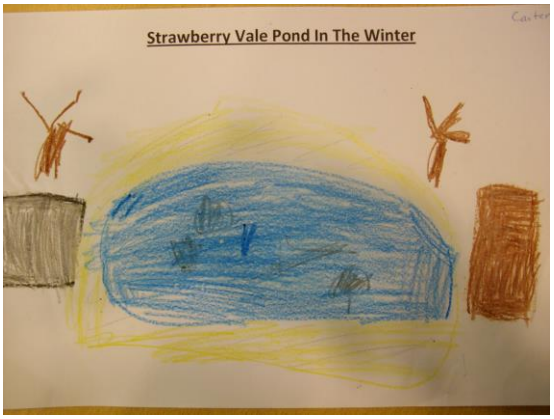
- Questioning the impact of litter on the environment
- Problem solving ideas on how to fix the problem
- Working with a partner to create a poster
- Creating clear art work and print so that others receive a message
- Communicating with others through announcements, posters
- Public speaking through the school PA system
- Teamwork to pick up litter
- Stewardship of the environment
- Evaluating the impact of the implemented ideas

How does implementing Nature Based Learning enhance learning in the classroom?

Children are:

- Connecting to the environment (e.g. stewardship)
- Making predictions related to nature
- Developing vocabulary related to nature (e.g. names of plants and animals)
- Using their senses within nature (e.g. touching, hearing)
- Connecting with big buddies and completing pond activities with buddies
- Cooperating with others (e.g. making a poster, clearing invasive plants)
- Developing oral language
- Using observation skills (e.g. seasons at the pond)
- Recording observations
- Experiencing hands on activities (e.g. math skills)
- Questioning things happening in nature (e.g. litter, invasive plants)
- Experiencing tranquility while being outside in nature
- Meeting people with careers related to nature (e.g. naturalist, compost presenter)
- Appreciating green spaces within a community





2. Project Based Learning – Vermicomposting

Division 12 – Kindergarten (Ann George)

This year, Division 12's nature based learning focused on decomposition. In the autumn, we examined fallen leaves as they changed from green to brown and revealed their exoskeletons.

In winter, a guest speaker from the Victoria Composting Centre taught the students about the role worms play in composting. The instructor also helped the children to mix their collection of decayed leaves with strips of newspaper and worm filled dirt to set up a classroom worm composting bin.

The children have been curious and involved in the vermicomposting project since its start. They are conscientious about feeding the worms weekly, saving fruit and vegetable scraps from their lunches, as well as bringing worm "treats" such as watermelon rinds from their homes. During Spring Break, I took the composting bin home to continue the weekly feedings, and when school reopened, was questioned closely by the students to ensure the worms had been cared for properly. While some children have always enjoyed handling the worms, others have needed more time to become comfortable touching them. Now, most children in the class participate in mixing the food scraps into the dirt and ask to handle the worms after the mixing is done.
Their curiosity as to what the worms would consume has led to the students burying chestnuts, sticks, pinecones, plastic, foil and even a mitten in the composting bin. Their discoveries have led to them being even more aware about recycling the foil and plastic wrappings from their lunches.

The spring focus on decomposition led to a forest field trip to study slugs and snails followed by comparing and contrasting that new information with what the children had discovered about worms.

By early May, the composting bin contained enough soil to use in planting flowers for Mother's Day gifts. The planting was done in compostable cardboard pots and wrapping paper and the mothers were asked to be "green" and place everything in the ground to feed the worms while they enjoyed their flowers. The children are anticipating the end of the school year when the soil and worms will be separated in order to begin a new composting bin. Each child will take home some of the harvested soil they helped to create to use in summer planting.

This year's focus on small, slow moving creatures has developed a strong sense of caring and empathy in the children. They are very protective of the caterpillars currently found in the schoolyard and surrounding area, telling other children not to step on them and hiding them in rock crevices and under leaves to shield them from passing feet.

Our next classroom project is to observe the life cycle of butterflies as they change from caterpillars into the chrysalis stage, culminating in the release of butterflies in June.

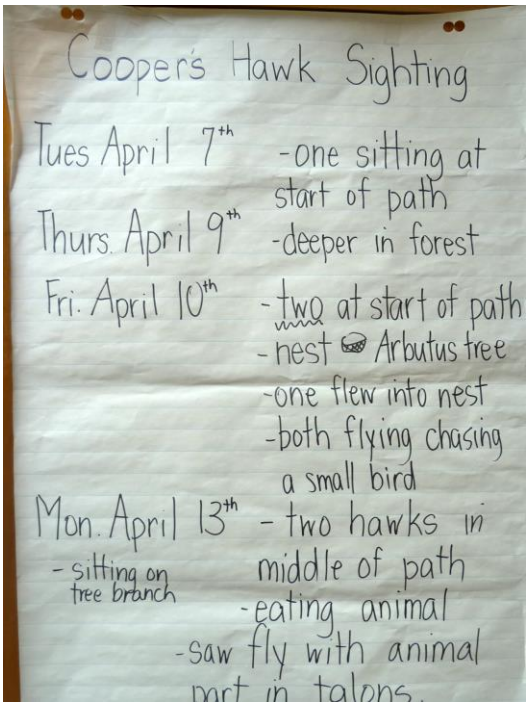
3. Project Based Learning – Local Plants & Animals Have Observable Features

Division 11 – Kindergarten/Grade One (Colleen Neves)

We go for a walk every morning through our schools grounds and adjoining Rosedale Park. This constant exposure has led to many observations and inquiry questions from students about the local plants and animals. Being able to observe the same plants and animals over an extended period of time has enabled students to feel connected to the environment and delight in the seasonal changes that occur with both the plants and animals.

Example:

Recently we have had the opportunity to view a pair of hawks building a nest, hunting and eating. The students have had many inquiry questions that we have been able to explore. We make predictions about what we will see each day and record these observations through a shared writing log.



This has led us to do research as a class about what different types of nests birds construct. The students used loose parts gathered from out schoolyard to construct their own nests.

We have also read books about hawks, watched videos and discussed the body structures that enable them to catch their

prey. We coloured and labeled diagrams. We wrote about what we observed in our journals.

Many days we don't see the hawks, but we do see other birds. This has led to wonderings about how those birds are similar and different than hawks. We have had many interesting discoveries as we observed and researched hummingbirds, robins, woodpeckers, seagulls, eagles, and crows. We made different types of beaks with plasticine and students drew pictures of what they eat.

The students wanted to create a bird watching station with binoculars in outdoor centre time, as well as bird construction in the art centre. We have added birds to the puppet theatre and the students created their own books with vocabulary words at the writing centre.
Finally, we have explored a few birds through aboriginal storybooks.

4. Project Based Learning – Outdoor Play Centers

Division 9 – Grade One (Jenn Horton)

In my grade one classroom, we typically have three 30 minute educational "play centers" times each week. One day, I told the children that we would go outside for "nature centers" instead of staying inside for "play centers". They were excited, and the following questions arose:

What will the centers be?

What will we do?

Can we take out the skipping ropes, hoops, and balls?

I think these questions show that some of the students realized this opportunity would be different from a recess time. I told them that I had not planned what any of the centers would look like, and that they would be able to decide the activities for the centers.

A conversation (and more questions) unfolded:

What is a nature center? What does it look like?

Can we take stuff outside with us? Or does it have to be only "nature"?

Is bouncing a ball or skipping with a rope in nature a nature center?

Can playing in the sandbox be a nature center?

If we draw things in nature, is that a nature center?

Do we get to move around to various centers or do we have to stay in one center for the whole time?

Together, both in small groups and in the larger group, they came up with some ideas and some materials to take outside. Here is what they started with:

- Nature Art: Take materials outside to sketch and draw what they observe in nature.
- iPads: Make an iMovie Trailer about our Garry oak meadow.
- Sandbox: Create a nature scene in the sandbox.
- Observation: Use binoculars and magnifiers, and sketch/draw what they see.
- Scavenger Hunt: Create lists of things for others to find in the Garry oak meadow.
- Nature Dancing and Music: Take out drums/instruments (or make their own from "found in nature" materials). Make music and dance.
- Nature Art Sculpture: Create sculptures with "found in nature" materials, to be left in interesting, natural spaces for others to enjoy.

After their first experience in these self-designed outdoor centers, I facilitated a discussion around what worked well, and what could use some improving. There was more discussion around what a "Nature Center" should be like. Here is what they shared:

<u>What Worked Well:</u>

- Planning together cooperatively
- Making up our own games
- Having some materials to work with

<u>How We Can Make It Better:</u>

- Making the area smaller so everyone is closer together
- Everyone cooperating
- Not enough materials to work with

- Having all the materials in a container

After this evaluation, I provided them with some plastic tubs, and they began to adapt their ideas and materials. This is an evolving process. Each time, they work with the same general theme for the centers, but as a group, they are responsible for coming up with ideas for what they want to do, and for gathering the specific materials that they need.

Now that they have been outside for "Nature Centers" on several occasions, they are getting used to the process:

1. Choose a center (not everyone gets their first choice, but they are usually good at finding solutions to this problem (e.g. agreeing to switch groups, or switching part way through our outside time).
2. Meet in groups (with other center members and decide what activity they want to do and which additional materials they need to place in the tub.
3. Head outside!

The students seem to really enjoy this part of their week.

5. Project Based Learning – Outdoor Learning

Division 7 – Grade Two (Kathy Mead)

In addition to our usual outdoor activities like our daily morning walks (see description in How Nature-Based education enhances learning), this spring we are exploring nature by taking a closer look at bugs and dirt. We have taken the new nature bags outdoors and students have used the magnifying glasses to find bugs in the dirt, on plants, in the air and in the water at the pond.

Students are very excited about this very hands-on approach to learning about bugs. I'm finding that we are doing less Science inside the classroom and more time outdoors actually looking at nature.

This study enhances our butterflies that we are hatching in the classroom and will release into the environment we have been observing. Students can decide on where they think the best place to release the butterflies will be. We are just embarking on the project based learning portion where students will each choose a different bug that they want to learn more about and will research and present information to the class in whatever form they want in June.

I am anticipating that we will have everything from computer and iPad presentations on the Smartboard to hand-drawn pictures and oral presentations. I'm excited to see what they come up with!

6. Project Based Learning – Nature Education

Division 6– Grade Two / Three (Jennifer Parlee)

My Grade 2/3 classroom is set up to promote self-regulation, and I have been interested in observing the ways in which nature education can support the different domains of this important skill.

Self-regulation strategies help students to be calm, alert and focused when completing their schoolwork. Students often struggle to focus during their afternoon class time, so we take a daily afternoon “body break” which happens in a natural setting outside of our classroom.

I love watching the students navigate the ways in which to play in an area that contains grass, rocks and trees. A couple of years ago, students were quite challenged in figuring out how to play in a natural setting. This year, the students clearly had nature experiences in their earlier grades as they took over the natural space quite quickly.

Because the students take the time to identify what their bodies want to do at this time of the day, the result is a wonderful collection of varied activities. Some students will simply run and yell, others sit on the rocks and watch for bugs and flowers, and others start up a team sport. Some students will play imagination games that have a storyline based on a favourite book series from the classroom and will return to the continuing storyline each day.

Recently, after coming back from a tiring field trip, students used the rocks that they usually jump across for their chasing games as

a place to rest and chat. A slide is just a slide, but a rock can be a myriad of items.

Nature-based education enhances student learning by helping to promote self-regulation strategies. The result is a calm and focused group of students who are ready to get to work. Students engage in social skills as their outdoor play requires them to clearly communicate in order to problem solve, join in a game and resolve disagreements. Not only is the interaction with the natural space promoting self- regulation, but it also provides opportunities for students to achieve social responsibility goals.

7. Project Based Learning – Making a positive difference in your natural community.

Division 5 – Grade Three (Bev Ross)

Before starting any unit, students should have multiple opportunities to be outdoors in nature in a variety of ways so they can deepen their connection to the natural world:

- Free play
- Class walks
- Independent reading
- Shared story-time
- Deskwork that is usually done inside can be taken outside
- Independent explorations and observations of natural surroundings
- Guided explorations and observations of targeted natural areas
- Art
- Math manipulative using found objects in nature and/or within a natural setting
- Field trips to local areas

There should be a balance of individual, small group and whole class experiences outside.

In preparation for sharing their PBL experience with others, consideration must be taken in the beginning phase, as to how they will share out. This is where technology, such as iPads, can be incorporated. Technology can be used to bring their initial,

ongoing and cumulative experiences outside back into the classroom. The creative ways to do this are virtually endless.

A PBL question can be either one question for the whole class or an umbrella question that guides small groups to develop their own question.

Example umbrella question: How can you make a positive difference in your natural community?

Small groups develop their own specialized questions according to what they want to explore, which can be based on their experiences and observations from being in nature:

- How can we help the birds in winter?
- How can we protect the native plants?
- How can we keep our school-grounds garbage free?
- How can we reduce air pollution in our community?

For either one class question or small group questions, students start with baseline observations and then begin research. This is an opportunity for students to go beyond books and the Internet, to connect with knowledgeable citizens and groups in the community, including Aboriginal.

What are the current conditions? _____ What are the optimum conditions?	What information do you need? How can you get the information?

The research process may result in realizations that they might not be able to completely solve a problem; it also fosters empowerment that as individuals they can make a positive impact. It also provides opportunities for them to understand the interconnectedness of all things in an ecosystem, and their place/responsibility within it.

From that, students then create a W5 Action Plan with specific steps they will take:
WHO does WHAT: WHEN, WHERE and HOW? (The WHY part is embedded)

The action plan drives the learning and their learning drives the action plan. For each W5 decision they make, other questions or realizations may arise, which could cause them to make adjustments to their plan. There is a role for the teacher during this process to guide them.

While formulating their action plan, students should ask:

- How will we know we have made a difference?
- How will we measure the impact we have made?

Once the action plan is finalized, it is put into action. This can be done solely within the group or can include local experts, other classes, families, the whole school, or the community at large.

Students assess the immediate impact of their actions and may predict the long term impact.

Finally, students prepare to share their Project Based Learning with others. This may include suggestions of how others can make a positive difference in the community or future goals. The

sharing out is an opportunity for students to express their emotions and sense of stewardship.

Evaluation is through ongoing observation of different skills: research, group dynamics such as organization and cooperation, as well as self evaluation of how effective their action plan was in making a difference. These are their observations (e.g. how much ivy was taken from the site and measurements e.g. how many fewer people are taking cars to school)

Because the group activities have been spread out over 4 months, they will not do a final sharing out until the last group is done in May. At that time they will choose which pictures will go in a whole class PBL Smilebox video, will do a final self evaluation of the impact they had to make a positive change in their community, and will do a self reflection activity about their experiences doing PBL.

Details:
Group 1: Helping Animals.

They initially wanted to help squirrels, but through research discovered that grey squirrels are invasive, so they changed their focus to bird feeders and birdhouses. They (with my help) found online examples of easy to make feeders and houses using plastic bottles. They made a prototype of each and then led the class in a feeder/house

making activity. We then hung them among the trees in the back school grounds. They monitored the levels of seed in the feeders and checked for signs of use in the houses. Unfortunately someone took all the houses down over a weekend, but a few feeders are still in use.

Group 2: Plant Native Plants.

This is the group Sylvia Samborski, a retired teacher volunteer with expertise in plant restoration work, worked with. She had a few instructional sessions with this group before the mulch arrived and took them out to help unload it when it did arrive. They took on the role of leaders by organizing a leaf mulching day with the other classes. As each class came out, this group gave a short presentation about the science of leaf mulch, how to spread it in the native plant garden and then supervised the activity. Sylvia brought 7 evergreen huckleberry seedlings to put in the garden. This group was in charge of deciding, with her, where they should be placed. They then supervised our class in the planting of the seedlings. It was suggested that information and protection signs be placed at each seedling. They have been monitoring the health of the seedlings as part of their evaluation.

Group 3: Protect Native Plants.

This is the ivy pull group. They used prior knowledge about invasive species and then looked for areas around the school being threatened by ivy. Garry Oak Corner had lots of ground ivy,

so they decided it was a suitable place to do an ivy pull. They researched what kind of ivy it is, why is threatens native plants, how to pull it and what to do with it once it's been cut. They organized an ivy pull afternoon for the primary classes. They prepared a presentation to prepare children for the ivy pull, organized tools and safety equipment, and supervised the event. Their evaluation was observational---the amount of ivy on the tarps and the bald patches in Garry Oak Corner when ivy had been pulled.

Group 4: Pollution.

This group narrowed their initial plan to stop all pollution around the world, to reducing the school community's carbon footprint when traveling to school. They did a lot of online research about carbon emission and air quality. Their action plan was to run a 2 week campaign encouraging everyone at school to Walk or Wheel to school. They wrote up an announcement for the school newsletter and spoke on the morning announcement to introduce the campaign and report on the outcome at the end of the campaign. They led the class in making posters for inside and outside the school. Their evaluation is comparing the difference between their baseline and follow up survey of the number of people who came to school by individual car, car pool, carbon free wheels or walking. (Taking the bus was not included because they assumed most people don't take the bus) They will know they made an impact if the carbon footprint of the school has reduced.

As a final wrap up of all 6 projects I set up parameters for groups to orally evaluate the success of their Helping the Community project. I used and explained these terms, then gave examples of how I, as their teacher, evaluated their success (group dynamics / organization/ leadership / learning / etc.):

CRITERIA --they have to choose what criterion defines the success of their project.

EVIDENCE--they have to discuss what evidence they collected of that criteria (information & data, reactions and experiences, etc)

CONCLUSIONS--they have use draw conclusion about the success of their project based on the evidence collected

RECOMMENDATIONS--based on their evaluation of the success of their project, they have to come up with recommendations: in this case for similar projects in the future Other recommendations could be made with regards to expanding the project or creating school policies, etc.

8. Project Based Learning – Rosedale Park Stewardship

Division 3– Grade Four (Len Ross)

During the winter months and early spring students identified a local park, Rosedale Park, to study in depth. We arranged a walking tour with a municipality of Saanich park technician and the coordinator of volunteers to learn about their perspectives and concerns regarding the park. Students then embarked on a project based learning experience about this theme. They:

- Brainstormed positive features and concerns about the park.
- Created a list of questions that came to mind about the park.
- Broke into groups based on an area of study that interested them.
- In small groups they researched their topic trying to find answers to their questions, form new questions, build a data base of facts and issues, and finally identify a clear problem they wanted to focus on.
- Working collaboratively they then developed an action plan to help resolve the issue in the park they had identified, and in so doing began to provide stewardship for their local environment.
- Worked with community groups, other classes, and volunteers to enact action plans such as:
    - Education campaign to explain the problems with dog feces.
    - Education campaign to explain the problems with cats in parks.
    - Park litter clean up day.

    - Education plan about the rarity and value of wild flowers and native trees in the park.
    - Broom Bash and Ivy Pull day to remove invasive species in the park.
- Reported on their experience using a variety of methods and technology such as making a written report, an iMovie, a poster, a brochure, sings, a Garage Band song, or a Path On slide show.

9. Project Based Learning – Classroom activities to explore resources, sustainability, survival, and interaction with the environment, and to develop a clear sense of place.

Division 2– Grade Four / Five (Kiersten Brookes)

It is important for students and children to know their neighbourhoods, and have contact with soil, rocks, water, plants and animals. Students should know their special places and have adventures in these places to create a healthy childhood, create balance in life and have good mental health.

Outdoor, nature-based, place based education can provide this much needed balance. I start out making sure children are aware of and appreciate their place. I have students list the plants of their childhood to have them access their previous knowledge and begin to establish sense of place awareness. We then do a deeper study of an often unknown local plant community. The students search for lichen in our neighbourhood. They identify it, collect samples, take pictures and even get there best photos added to the UBC lichen website. We call this exploration into their local environment “Enlichenment.” It helps students develop a sense of wonder and awe about what exists right around them every day in nature.

Then we begin a series of inquiry focused, project based learning projects around a variety of place-based environmental education themes. The following are examples of some of the activities and questions that come up in my class when we are doing our resources unit and environmental education topics.

Inquiry Question:

Our basic needs are healthy food, clean water, shelter and clothing. Can we eat local foods if we had to survive in our local environment?

- Student groups research the local plants and animals that are edible and medicinal for maintaining life for humans and identify possible problems.
- What can farmers do to create less harm on the local plants, animals and watershed? Will farmers be able to still live and sustain a living if we do not buy their products? What kind of farming does your family want to support?
- Do some of the plants we eat harbour more pesticides and herbicides than other types of plants? What effects do pesticides and herbicides have on human bodies, plants, other animals, our water systems?
- Research other world views. Look to local Aboriginal knowledge about how they used camas, fruits/plants of our area, plantain, dandelion, salal, and the many other plants that can be used for food.
- Chief Seattle's quotes and concepts of how the water, trees, plants, rocks, soils, animals, insects, all interdependent upon one another for health. Thank the plants animals for their lives to sustain our own lives. Respect life. Remember the Aboriginal concept of not taking more than you need. Let some items stay so that the population of moss, lichen, salmon can produce more and sustain itself instead of eventually becoming an endangered species.
- Examine Interdependence: We are dependent upon native bees, honey bees, bumblebees, butterflies and other methods of pollination to create most fruit and

vegetables. It is imperative that bees are healthy so we can continue to produce food for human consumption. Recent colony collapse disorders of bees has been related to neonicotinoids and other glysophate herbicide and pesticides including Roundup.

Action Plans:

- Grow milkweed for the monarch butterflies which are in danger presently. There is only one type of milkweed native to the Fraser Valley but gardens around BC do plant non native species constantly, so is it fine to grow non-native milkweed? Should we grow only native milkweed?
- Is our local fresh water healthy to drink and play in? Could we drink the rain water that runs off our roof? Could we drink the water that runs to our pond? Is it safe to play in the ditches? Do the ditches and run off streams to the ocean contain harmful chemicals or sewage?
- Test local water samples from the roofs, from ditches, and water flowing to the oceans. Partner with your local water testing agency or group and share your results. Which seasons have the most harmful run off? Walk around your neighbourhood weekly and notice where your water goes.
- Do products we use have harmful chemicals in them for our watershed? For our bodies? Conduct tests to find out. Make your own Earth friendly shampoo, conditioner, deodorant, and weed killer. It is simple, effective, and much cheaper than buying commercial products and you do not need to be faithful to a company to buy these products for your entire life.

What other products may contain harmful chemicals to plants or animal organisms?

Inquiry Question:

Logging, has been a large BC resource industry for over 100 years and the nature of sustainability. Is the forestry industry sustainable?

- Research different types of trees used in BC's logging industry what are the features of each type of tree that is sought after and what purposes are each used for?
- How did they Aboriginal people select trees for harvest? Why did they not participate in clear cut methods?
- Should humans interact with their environment by wiping out species and letting other species take over to recover the health of the land? What types of succession happen after a clear cut? Could strip cuts /clear cut strip cuts no wider or longer than a certain width or length be helpful for our ecosystem?

Action Plans:

- Research Merv Wilkinson's method of sustainable forestry at his property called Wildwood. His legacy should be remembered. There are ways to keep the ecosystem intact and increase production of harvest instead of decimation of hundreds or thousands of species at a time through clear cut.

Inquiry Question:

What is happening to the sea stars? Why is there a die off happening?

- Research ocean acidification, global warming, or the melting of the ice caps in the Arctic or Antarctic. What can be done to reverse global warming?
- Research the Great Pacific Garbage Patch. Where does the plastic come from? Why is it a problem? How many Gyres of plastic are there? Micro plastics are becoming an issue – what are alternatives to micro beads in facial cleansers? What does plastic do to the ocean, the water system, the plants and the ocean animals?

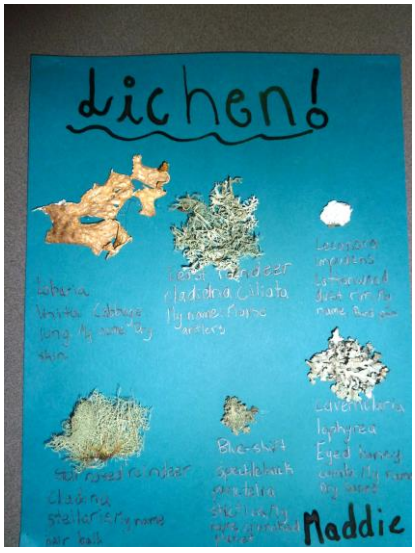
Action Plans:

- How can we make the water more clean?
- Why is ocean algae important? What creates most of the earth's air? Who are our breathing buddies? Can CO2 be absorbed and used by plants and animals? What is a Carbon sink? What are the most effective carbon sinks?
- Why are our local aboriginal people called the people of the cedar and the salmon? Research the different species of salmon and their uses. Research the different species and aboriginal uses of cedar. How have salmon contributed to different industries and life in BC?
- What other resources have been important to the Aboriginal peoples of BC? Oolichan, camas, copper, cedar, salmon, water, dentalia, ocean spray for shafts of arrows or spears, obsidian, hooves, deer, bear, wolf, hummingbird, frog, eagle, raven….

Inquiry Question:

Is sustainable collection/harvesting possible?

- Method of Aboriginal farming – ocean creatures, camas, methods of cooking and collecting of resources. Aboriginal inventions and science.
- Aboriginal ways of knowing. Is it possible for you to have knowledge passed on to you from your grandparents, great grandparents, parents, relatives and friends. How do we learn from them and remember from them?
- Can future generations learn from what our ancestors have done?
- Do you have special places in your life, to your family, to your grandparents? Why are these places special? How do you feel when you are in these special places?



10. Project Based Learning – The Bug Zoo

Division One– Grade Five (Karine Tregear)

Division 1 Project Based Learning 2015

A great project based questions that I worked with for Skylar's group was around the bug zoo. Then we took his question, wrote out in boxes on paper all his learning. Then we created an I-movie, which is not quite done.

The PBL question was:

What have we learned about bugs from the creation and maintenance of the bug zoo?

All the groups have come up with their own question for their own topic. I wanted each I-movie to be created from an individual interest, so all the groups have a different question. I found this really motivational, as each group was "self-interest motivated." The students were able to join a group with a project that interested them and this really helped with the motivation level and also with maintaining the interest. Making the I-movie was just icing on the cake. They all love to create an I-movie.

Nature Education is a big success at Strawberry Vale School!