

Technology in the Early Elementary Classroom -Lesson Plan:

Name: Brenda E. Thompson
School: Seventh-day Adventist Christian School, Saskatoon SK Canada
E-Mail: beethompson@hotmail.com
Subject: Science/Math
Grades: One through Four

Title: The Schoolyard Safari

Description: This is a **Science Discovery Lesson** with integrated, follow-up lessons in Mathematics, Language Arts, and the Fine Arts. This lesson is part of a larger unit of study I created to co-ordinate with *Saskatchewan Education's -Science Curriculum Guide for the Elementary Level*, which suggests **Vertebrates and Invertebrates** as an optional unit of study in Grade 4. It also coordinates with **Unit IV-From A to Z** in the Seventh-day Adventist Science/Health Text; *Rockets and Raisins, Series A*, which is meant to be used in Grades 1 - 4.

This lesson, along with the suggested follow-up lessons, is intended to run for two to three weeks

within the larger, twelve week unit on Vertebrates and Invertebrates. The mini-unit is entitled: **Monsters and Mini-Beasts or Spiders and Insects & Other Invertebrate Animals.**

Objectives: Student groups will be able to:

- 1) Collect and photograph a variety of mini-beasts (bugs) within a specific site or habitat in the school yard or nearby park.
- 2) Record the number and type of mini-beasts collected on an observation chart, which also lists method and site of collection.
- 3) Discuss safari methods and results in a science colloquium.
- 4) Report group results by making a poster, using various forms of technology to create graphs, digital pictures of each habitat and a typed Schoolyard Safari observation chart.

Faith Integration / Introduction to Activities:

The lesson may be introduced to the students on the day before or on the same day as the Schoolyard Safari, in the following manner:

i) Read Genesis 1: 24, 25:

“And God said, Let the earth bring forth the living creature after his kind, cattle, and creeping thing, and beast of the earth after his kind: and it was so. And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind: and God saw that it was good.” (KJV)

ii) Generate a list of living creatures that God made on the 6th day:

“When I read about the ‘living creatures’ that God made on the 6th day, what kinds of animals came into your mind ? “ *Have the students raise their hands as you quickly jot down their ideas on the blackboard or whiteboard. You’ll probably record lots of vertebrates like cats, dogs etc.*

“ We live in the world of the vertebrates, so they are what we know most about. But we tend to forget that God also created a world full of smaller creatures, that are every bit as varied and interesting as the vertebrates. I’m referring to the invertebrates- the insects, spiders, scorpions, mites, centipedes and crustaceans. We don’t take notice of their world very often. But even in the middle of a large city, you can find all kinds of insects and other relatives like spiders and centipedes. They are an important part of the world around us. God, also created them on the 6th day.” *Have the students generate some names of invertebrates to add to the blackboard list.*

iii) Optional Activity: Watch a portion of the Video/DVD, Honey I Shrunk the Kids,
Walt

Disney Co. & Amblin Ent. Inc., Burbank CA, 1989.

“ To really appreciate these mini-beasts or bugs, try to imagine what it would be like if you were shrunk down to the size of a ladybug. Now blades of grass would seem like giant trees. Everywhere there would be huge birds and other vertebrate animals, hundreds of times bigger than you are. Think about how you would travel to find food, where you would live and how you would hide from your enemies. This video will help you imagine what it is like to live in the world of an insect or spider. Right now, shrinking down to their size is just an imaginary adventure. Maybe when Jesus gives us a new body at his second coming, we really will be able to do such a thing. Only God knows. ”

iv) Introduce Schoolyard Safari:

“ Today we are going to enter a backyard jungle of our own to find out more about this invertebrate world of mini-beasts.” State objectives and introduce activities.

Curriculum Benchmarks / Common Essential Learnings / NETS:

Benchmark Objectives from ***Rockets and Raisins*** and the ***Saskatchewan Science Curriculum***:

1. To appreciate that God created an interdependence among creatures at the time of creation.
2. To enable students to understand and use scientific vocabulary, structures and expressions.
3. To develop an understanding of how knowledge is created, evaluated, refined & changed.
4. To develop student's abilities to access knowledge.

Benchmark Standards from ***National Educational Technology Standards for Students***:

1. ***Basic Operations and Concepts***- use keyboard and common input/output devices effectively.
- 3,4,5 ***Use Technology Productivity, Communication and Research Tools***- use Video/DVD, digital camera, computer, printer & Kid Pix software to facilitate learning, collaborative writing and publishing activities for audiences inside and outside the classroom.
6. ***Technology Problem-Solving and Decision -Making Tools***- for extended learning activities.

Materials/Hardware/Software:

General:

- Bible, Blackboard and Chalk
- *Honey I Shrunk the Kids* Video/DVD
- TV/VCR or DVD player
- Computers, Printers, paper etc.
- Kid Pix Studio Deluxe or Kid Pix Deluxe 3 CD Rom, Broderbund, The Learning Company.
- Microsoft Word template of Schoolyard Safari Observation Chart on each computer.
- Adobe Photoshop 7 or other similar program , photo quality paper
- Various Library or Reference Books on Invertebrates (See specific follow-up activities.)
- Whistle
- Bristol Board or poster paper
- Glue sticks, markers etc.

Per team of 2-4 Students:

- S.S. Observation Charts including headings for:
Time of Day, Weather Conditions, Collection Method, Habitat, Bugs Found, Observations etc.
- Pencil and eraser
- Digital Camera
- Collection Instruments (1 type per group):
 - Refer to *Monsters and Mini Beasts -Volumes 1 & 2* by Daniel G. Stoker, Waterdown Ontario, Canada (1980) for instructions on how to make the collection instruments.
 - Pooters + collection jars (mini straw-vacuums for sucking up beasts)
 - Squares of white cloth (12 x 12 “)
 - Soil sifters and small shovels
 - Clear Plastic cups and 4x4" squares of cardboard (traps)
- Collection boxes or bottles with perforated lids.
- Magnifying glasses for observing

Teacher Preparation:

- 1) Spend some time monitoring the amount of mini-beast activity in certain areas of the schoolyard, in order to determine the best sites for hunting.
- 2) Prepare the collection devices, S.S. Observation charts, computer template & assessment rubric.
- 3) Arrange for use of technological devices and supporting materials.

Student Preparation:

- 1) Instruct students on how to use the collection devices and on filling out the observation charts.
- 2) At least one student in each group needs to know how to responsibly use a digital camera.
- 3) Students need to know how to use the tools in Kid Pix Deluxe in order to graph their results.

Activities/Procedures:

1) Divide the class into groups of 2 to 4 students. Make sure the groups are balanced according to grade, sex and ability level. Assign each group a method and site for collection: For example:

Group 1: Pooters- Search only walls and sidewalks near buildings.

Group 2: White Cloths- Shake leaves and branches of trees and shrubs.

Group 3: Sifters- Search the sandbox, flowerbeds or loose gravel areas.

Group 4: Cup Traps- Search the long grass and weeded areas.

2) Explain Rules: In each group there will be at least 1 recorder, 1 photographer, and 1 collector:

The recorder will use the observation chart to write out all the data pertaining to the safari.

The photographer will take 3-5 photos in total. These will include the site before collection began and close-ups of the mini-beasts observed during the hunting/collecting.

The hunter/collector(s) will use the materials provided to find the mini-beasts and help the recorder to count them and name the types. They will collect one bug to share with the class during the colloquium.

A whistle will blow when the activity begins. Another will signal a warning that the students have 10 minutes to finish recording and collecting. A final whistle will signal the students to come back to the classroom for the sharing session or colloquium.

3) Carry out the Schoolyard Safari. Monitor the student groups to keep them on task, answer questions and evaluate student progress. Use the anecdotal assessment form to record results.

4) Colloquium: Colloquium means ‘coming together to speak’. During this discussion, a circular arrangement of seating is recommended. The teacher’s role is not necessarily to direct the children to the right answer, but to encourage them to seek further investigation, questioning and discovery. It should stimulate the quest for new learning.

To stimulate discovery:

i) Pool observations and gather a collection of facts from each group:

Sample questions: “Group 1, can you report to us your findings during the safari?”

“How did you find the insects? Did you have to improvise or change your method of collection at all?”

ii) Explore contradictions/ Compare Results:

“Each group had a particular place to look for insects and a particular way of collecting them. What did you notice about your area? Was it a good place to find mini-beasts?”

iii) Formulating Explanations: “We found that Group 1 and Group 2 had the best luck finding ladybugs. Why do you think that happened? What made the difference? How do you know?”

iv) Testing Explanations: “How could we find out for sure if these are the reasons? What could we do next time to make sure Group 3 finds lots of insects? How could we change the design of the pooters so that they work better?”

Much of the discussion and questioning will be ongoing and spontaneous. These are sample questions that might come up or be helpful to guide the discussion; but they are by no means absolutely necessary.

5) Concluding Assignment: *These activities can be done immediately following the colloquium or during the next science period, whichever seems most logical.*

Using the appropriate technology, each member of the group will work together to create a poster that will summarize the results of the Schoolyard Safari. These posters will be put on display for audiences inside and outside the classroom.

Suggested division of labor:

1) Recorder: Type the observation chart neatly for display on the poster board, using the teacher-created template in Microsoft Word and the hand written observation sheet used during the safari. Attach sheet to the poster in consultation with the other group members.

2) Photographer: With assistance from the teacher, transfer the images from the camera to computer (Adobe Photoshop 7 or similar vehicle) and modify the two best images for printing. Print on photo-quality paper and attach to the poster display in consultation with other group members.

3) Hunter/Collector: Using Kid Pix Deluxe, create a graph depicting the number of each mini-beast on the vertical axis and the types found on the horizontal axis. Title the graph using the group number and site of collection. Attach to the poster in consultation with the other group members.

Follow-Up Activities:

Language Arts:

* **Poetry: Cinquains on Orbs-** Write a poem about a bug using the cinquain form. Using Kid

Pix, print the final version using a spider web as a background.

* **Poetry: Bug Noise-** The students read poems from, *Joyful Noise- Poems for Two Voices* by Paul Fleischman, Harper and Row Pub., New York, 1988.

* **Reading : *Charlotte's Web*** by E.B. White, Harper & Row Pub. New York, NY, 1952.

Leese Webster by Ursula K. Le Guin, Atheneum Books, New York, NY, 1979

The students respond to the books by doing a book report on a computer template, which includes questions on the plot, characters, setting, story validity etc.

Fine Arts:

* **Art: Create a New Insect-**Using pipe cleaners, plasticine and construction paper, create an insect using 6 legs, 3 body segments, antennae, eyes and wings.

* **Art: Butterfly Fans-** Fold colorful magazine pages into accordion-type fans. Cinch them together in the center with a pipe cleaner. Add antennae and display.

* **Drama/Music: Change is Strange-** The student uses his/her body as a means of expression when responding to music during a reading on metamorphosis. Reference- *Performing-The power of Pretending, Creative Activities... Programs*, Children's Press/Grolier Enterprises, Regensteiner Pub. Inc. 1974

Mathematics:

* **The Cricket Weather Report-** The student will calculate the temperature from the number of cricket chirps. Reference: Suzuki, David, *Looking at Insects*. Toronto Can, Stoddart Pub, 1986.

* **How much Lunch can a Caterpillar Munch?** The student will graph a caterpillar lunch. Reference as above, page 58-59.

Related Internet Sites:

* www.insecta-inspecta.com

* www.spiderzrule.com

* www.ex.ac.uk/bugclub

* www.gototem.com (see Insect graphics)

Assessment/ Evaluation:

1) Use the **Anecdotal Record Sheet** to observe individual students during the Schoolyard Safari and following Colloquium.

2) Use the **Schoolyard Safari Observation Chart** forms during the safari and follow-up

work.

3) Use the **Rubric** to do a final assessment on the Group Poster Project.

Anecdotal Record Sheet for Schoolyard Safari and Colloquium:

Student :	Group/Sit e	Listening Skills:	Communicatio n:	Participatio n:	Accuracy :

The Schoolyard Safari

1) Date and Time of Day: _____

2) Group Number: _____

3) Group Members
(names and grades):

4) Weather Conditions: (Underline the term(s) that describe the weather.)

Sunny Cloudy Rainy Windy Calm Cold Hot
Warm Cool Thunder Lightning Rainbows
Other _____ (please specify).

5) Collection Method: (Underline the one used by your Group)

Pooters White Cloths Sifters & Shovels Cup Traps

6) Habitat Searched: (Underline the area searched by your group)

Walls and sidewalks near building.
bushes.

Branches and leaves of trees and

Sandbox, flowerbeds and/or loose gravel.

Long grass and weeded areas.

7) Use the chart on the next page to record the type and number of each mini-beast found.

Schoolyard Safari Observation Chart

Each **X** represents one bug observed or seen.

Be careful to put the X's in the column with the correct bug name.

If you don't know the name of the bug, put it in the unknown area.

You may also cross off bug names and add names if you find one that is not on the list. **Remember to collect one bug in your jar to bring back to the school when the last whistle sounds. Later, you will use this chart to make a Kid Pix Bar Graph. Record Carefully.**

Title (Include Group # and Area of Search): _____

Number of BUGS													
16													
15													
14													
13													
12													
11													
10													
9													
8													
7													
6													
5													
4													
3													
2													
1													
0	Ant Unknown Other	Bee	Aphid	Ladybug	Fly	Spider	Beetle	Grass- Hopper	Wasp	Butter- Fly	Dragon	Fly	

TYPE OF BUG

Lab Report : Schoolyard Safari Poster

CATEGORY	10 Points	9-8 Points	7-6 Points	5-0 Points
----------	-----------	------------	------------	------------

Participation	Used time well in lab and focused attention on the project.	Used time pretty well. Stayed focused on the project most of the time.	Did the lab but did not appear very interested. Focus was lost on several occasions.	Participation was minimal OR student was hostile about participating.
Observation Chart	Professional looking and accurate representation of the data. Included all categories on the original table.	Accurate representation of the data. Table is labeled and titled.	Accurate representation of the data in written form, but missing information from several categories.	Data are not shown, inaccurate or incomplete.
Bar Graph	The relationship between the variables is accurately and clearly portrayed. The graph includes a Title, and both axes are labeled as specified in the assignment.	The relationship between the variables is shown and trends/patterns logically analyzed. The axes are properly labeled.	The relationship between the variables is shown but one or more of the labels is missing or the number of bars is less than desirable.	The relationship between the variables is not shown. Many aspects of the assignment have been ignored.
Digital Photographs	Clear, accurate photos are included and make the report easier to understand. Photos are labeled neatly and accurately.	Photos are included and are labeled neatly and accurately.	Photos are included and are labeled, but do not depict an accurate representation of the report.	Needed photos are missing OR are missing important labels.
Poster-Appearance/Organization	Poster report is highly organized, professional and attractive. Headings have been used to visually organize the material.	Poster report is neat and uses headings to visually organize the material.	Poster report is neatly arranged, but formatting does not help visually organize the material.	Poster report is incomplete and looks sloppy with cross-outs, multiple erasures and/or tears and creases.
Use of Technology	Evidence of mastery of use of the Word chart template, Kid Pix program, digital camera and associated technology.	Demonstrates a good understanding in the use of technology. Mastery in two areas.	Demonstrates a fair understanding in the use of technology. Mastery in one area.	Poor demonstration of technological mastery. Assignment is incomplete or not finished.

Date Created: **February 21, 2005**

Date Last Modified: **February 22, 2005**