Web Unit Plan

Title: Meet the Bears

Description: How many of ME would it take to outweigh a polar bear? Primary students look at bears from all angles and apply math and measurement skills to compare themselves with their furry friends.

At a Glance

Grade Level: K-2

Subject sort (for Web site index): Science, Mathematics

Subjects: Life Science, Measurement, Report Writing Skills

Topics: Animals

Higher-Order Thinking Skills: Analysis, Synthesis

Key Learnings: Natural History, Comparison, Measurement, Graphing

Time Needed: 3–4 weeks, 40-minute class periods, 3 class periods per week

Background: From the Classroom in Arizona, United States

Unit Summary

Working with older buddies, primary students become experts on eight species of bears. Students engage in a variety of comparison activities, including estimating and measuring the differences between themselves and bears. Students also compare the habitats, sizes, and needs of two bear species. Finally, students dig deeper to learn all they can about one bear species and apply their expertise as they make a guide for children who visit the local zoo.

Curriculum-Framing Questions

- **Essential Question**

  Are we like other animals?

- **Unit Questions**

  How are we different from bears?

  What do animals need to live?

- **Content Questions**

  What do bears eat?

  What are a bear's characteristics?

Assessment Processes

View how a variety of student-centered assessments are used in the Meet the Bears Unit Plan. These assessments help students and teachers set goals; monitor student progress; provide feedback; assess thinking, processes, performances, and products; and reflect on learning throughout the learning cycle.

Instructional Procedures

Getting to Know Bears: Prior to instruction, read the teacher background information for a basic introduction. Check out a mixed collection of fiction and

nonfiction books about bears. Arrange for study buddies from a fifth-grade class. Schedule times for older buddies to help younger students as they read, study, and write about bears.

- Give each student a large piece of folded construction paper. This folder will be kept throughout the entire unit to hold all papers and handouts. At the end of the unit, students can design a cover page for their folder. This may be used as an additional measure to assess students' understanding of the unit.
- Keep a student vocabulary page so students can track the new vocabulary they learn. Keep a list of the vocabulary and definitions on a piece of chart paper for the class to see. Students copy definitions from the teacher's chart, and draw and color pictures to represent each vocabulary word.

Week One: To begin the unit, start by reading the book *We're Going on a Bear Hunt,* by Michael Rosen. Have student volunteers or the whole class participate in a "bear hunt" with you by acting out the motions from the book. After the bear hunt is finished, have students fill out the KNOW part of their Know-Wonder-Learn (K-W-L) chart. Students can write words or draw pictures to represent what they know. After students have been given enough time to fill out the KNOW section of their chart, have them give you their ideas as you record them on the class K-W-L chart. Use their responses as a means for discussion along the way. Spark students' curiosity by asking the question, *What more do you want to know about bears?* Have students fill out the WONDER section of their K-W-L chart. Give students time to fill out their chart. Bring the group back together and have students share their questions. Record them on the WONDER section of the class K-W-L chart. Keep the K-W-L chart posted for students to see throughout the unit. Make sure to come back to the questions as they are answered during the unit.

Teach students the differences between fiction and nonfiction, and then engage in the following activity. Using a mixed set of books about bears, describe each book, and read the summary from the flyleaf or back cover. Ask questions, such as the following:

- *Is this book fiction or nonfiction?*
- *How can you tell?*

Introduce students to Internet navigation by having them engage in a bears scavenger hunt with a fifth-grade buddy at Bears at Enchanted Learning*. Post the Essential Question on a piece of chart paper, and challenge the students to answer the question, *Are we like other animals?* This question will elicit many ideas and can serve as the basis for a discussion about the characteristics of bears. Record thoughts and ideas on chart paper, and leave the chart paper posted so the class can add to it as the unit unfolds.

To answer the Unit Question, *What do animals need to live?* have students learn the LAWS of the land. On a sheet of paper, have students write the word *LAWS* vertically down one side. Explain that what all living things need to survive can be summarized by the LAWS of the Land:

- *L* stands for *land*
- *A* stands for *air*
- *W* stands for *water*
- *S* stands for *sun*

Have students write the words and do a quick illustration for each word. Refer to LAWS throughout the unit as you talk about what bears need to live and survive.

Week Two: Research time. Support teams as they spend the week researching questions about bears. Have students participate in a Bears Compare team study and contrast two bear species to answer the Content Questions:

- *What do bears eat?*
- *What are a bear's characteristics?*

Brainstorm a list of everything that can be compared, such as size, lifespan, biome and habitat, habits, diet, growth and development, hibernation patterns, and whether a particular species is endangered. The compare the bears sheet can be used to record student responses. In addition, have students record the weight, length, and diet for each bear on large Bears Compare posters. The information from this activity is used in the upcoming Bears and Me activity.

Students study their topics using cooperative experts, such as wildlife biologists at the local ranger district, books, and Web sites like Bear Den*, Bears*, Polar Bears International*, and Bears at Enchanted Learning*. Students then present what they have learned to the class. As a break, consider using this mother bear movement activity*.

Bears and Me

This activity addresses the Unit Question, *How are we different from bears?* Use the Bears and Me sample as a guide for Activities 1 and 2. Have each student choose one bear species. Then, have students compare the bears to themselves.

1. *Activity 1: Compare What We Eat.* Using information from the Bears Compare poster, have student pairs compare their diets to the diet of one bear species, and make a Venn diagram of similarities and differences. For a greater comparison, make a Venn diagram with three circles, comparing three bears. Show students how Venn diagrams display overlapping information by completing an example on chart paper for the whole class.

2. *Activity 2: Compare Our Size.* (Prepare your computer projection system for this demonstration.) Ask the following questions:

   - *How many of us would it take to weigh the same as a bear?*
   - *What do you want to know before you make your best guess?*

   Answer questions and write predictions on the board. Ask, *How can we answer this question?* Refer to the weight data of the different bear species from the Bears Compare poster and ask students to choose which bear they want to be compared to. Weigh students one at a time, and guide students as they add the weights until the pounds add up to the weight of the bear. Have students being weighed stay in a cluster at the front of the room until weighing is complete. Next, have students work with buddies to do repeated addition (or multiplication) of their individual weights to see how many "Andrews," for instance, would be needed to weigh the same as one bear. Try to get all the species represented. Show students how the information can be shown in a spreadsheet, and model how the data can be presented in a graph or chart. After students have their comparison to their bears, distribute the spreadsheet handout and have students walk around and ask each person how many of them it took to equal the bear's size. Have students fill in their spreadsheet form to keep track of each person's comparison. Use the spreadsheet student example and graphing student example to get an idea of what a finished product might look like. Have each student also create a

graph that compares the student's weight with the bear's weight. The graphs are used later in the student brochures.

After both activities are completed, have students discuss in a pair-share format the Essential Question, *Are we like other animals?* Have students take a few minutes to discuss their ideas together and record them on paper. Bring the discussion back to the whole group and add ideas to the chart paper created at the beginning of the unit.

Have students get out their K-W-L chart and begin to fill out the LEARN section with what they have learned so far. Have students revisit the questions in the WONDER section to see if they have been answered yet. Have volunteers share some of their responses to add to the class K-W-L chart.

Week Three: Develop linear measurement concepts with this activity. Cut a piece of string the length of the bear the students chose in the Bears and Me activity. Then have students find objects in the school that are the same length, smaller, or bigger than the string. Tell students to record their findings by listing the name of the object they are measuring and whether the object is bigger, smaller, or the same size as the bear. Have students illustrate the findings to show the comparison of size. Help students illustrate their findings on chart paper. In cooperative groups, have students and their buddies use butcher paper to create a life-sized image of their bear. Then, use butcher paper to trace and cut out each person in the group so students can compare their height to the height of the bear.

Week Four: In this activity, the following Unit and Content Questions are reintroduced and answered:

- *How are we different from bears?*
- *What do animals need to live?*
- *What do bears eat?*
- *What are a bear's characteristics?*

Students demonstrate their understanding of these questions by first completing research on a particular bear species and then summarizing the information in a brochure to be distributed at the local zoo. Before this lesson begins, show students how to use the bears brochure checklist as a guide for content and quality as they create their brochures. Go over the bears rubric so students are aware of what criteria you will be using to grade the brochures. Have students collect information about their bears' habitats and compare the information with a bear found at The Bear Den*. Students color world maps showing where the various bear species live. Have buddies work together for the next part of this activity. Import a graphic of a bear, either by scanning original paintings or drawings by students or using photo galleries on the Internet (such as Kaboose*). Guide students as they research facts about their bears and record their findings on the bear facts recording sheet. Students use the information from this recording sheet when they create their brochures with their fifth-grade buddies.

Concluding Activities: Have students get into groups of four. Organize groups so each participant has a different bear. Have each student show his or her brochure picture and choose two facts about the bear to share with the group.

As a whole group, discuss the Essential Question, *Are we like other animals?* Have students give ideas as you record them on the class chart that you started at the

beginning of the unit. Have students finish filling out the LEARN section of their K-W-L chart with at least two more facts or ideas they learned from the lesson.

Have students go back to the Essential Question—*Are we like other animals?*—and record their ideas for their folders. Tell them to use their folder contents, brochure, and any other handouts or resources they would like to use to help answer the question.

Prerequisite Skills

- Students may need mini-lessons on spreadsheet and keyboarding use.
- Prior experience with word processing and file management is helpful.
- Previous cooperative learning and Internet use would be beneficial.

Differentiated Instruction

Resource Student

- Make modifications as dictated in the student's IEP
- Have the student work with more able buddies
- Provide the student with additional picture books about bears
- Have the student work with parent volunteers or teacher's aides

Gifted Student

- Encourage broad and deep research
- Have the student make additional comparisons, such as life span
- Have the student research more than one bear and complete a three-ringed Venn diagram

English Language Learner

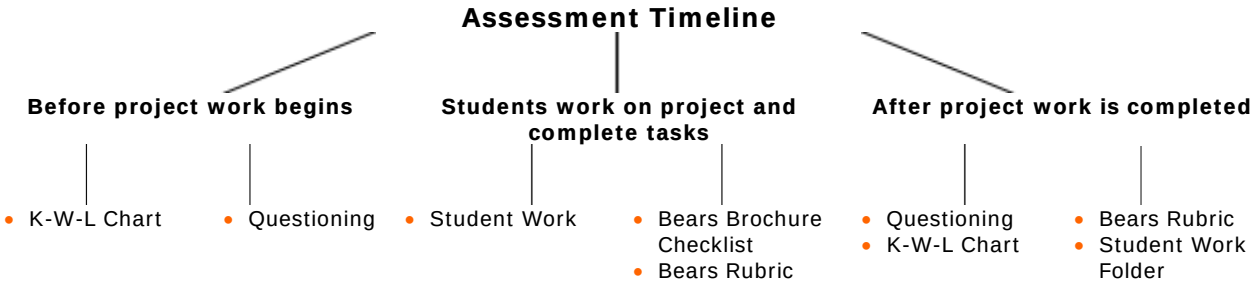
- Encourage support from first language speakers who are more proficient in English
- Provide extra time for completing the assignments
- Have parent volunteers or teacher's aides provide assistance
- Offer teacher-created templates and graphic organizers for the student to fill in
- Use visuals, manipulative learning tools, and illustrated text

Credits

Marika Koch and Leigh Pitts participated in the Intel® Teach Program, which resulted in this idea for a classroom project. A team of teachers expanded the plan into the example you see here.

THINGS YOU NEED

Assessment Plan



Questioning using the Curriculum-Framing Questions and other high-level questions prompt student thinking and spark discussion throughout the unit. A Know-Wonder-Learn chart is used to tap students' prior knowledge about bears, prompt questioning and investigation of their own questions, and assess and offer recognition of learning. Student are given the bears brochure checklist and bears rubric to follow as they create their brochure and use as a final checklist before turning in the final brochure. The bears rubric is used to grade the students' brochures. Other assessments used to assess student performance are the written assessment, the folder contents, and informal observations. Informal folder checks ensure students are completing their work and understanding the concepts being taught.

Targeted Content Standards and Benchmarks

Arizona Science and Math Standards

Students will:

- Describe the life cycles of living organisms
- Identify animal structures that serve different functions (such as sensory, defense, and locomotion)
- Recognize and distinguish similarities and differences among diverse species
- Recognize that a single object has different attributes (such as length, color, size, and texture) that can be measured in different ways
- Develop an understanding of number meanings and relationships
- Organize data using graphs (such as pictographs and tally charts), tables, and journals

National Council of Teachers of Mathematics Curriculum Focal Points and Connections

As of 2006, the National Council of Teachers of Mathematics (NCTM) released math curriculum focal points to describe an approach to curriculum development. The approach focuses on areas of emphasis in each grade from prekindergarten through grade 8. (Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics*)

This Unit Plan meets the following curriculum focal points and connections:

Focal Points

- Kindergarten: Measurement: Ordering objects by measurable attributes
- Grade 1: Number and Operations: Developing an understanding of whole number relationships, including grouping in tens and ones

- Grade 2: Measurement: Developing an understanding of linear measurement and facility in measuring lengths

Connections

- Kindergarten: Data Analysis: Collect data and use counting; sort objects by attributes to solve problems
- Grade 1: Measurement and Data Analysis: Strengthen sense of number by solving problems involving measurements and data
- Grade 2: Geometry and Measurement: Estimate, measure, and compute lengths in solving problems involving data, space, and movement through space

National Educational Technology Standards (NETS)

Students will:

- Use technology tools to enhance learning, increase productivity, and promote creativity
- Use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works
- Use technology to locate, evaluate, and collect information from a variety of sources
- Use technology tools to process data and report results

Student Objectives

Students will be able to:

- Describe a bear's physical characteristics
- Compare the sizes of different types of bears and humans
- Compare the basic needs of one bear species (habitat, diet, and so forth) to humans
- Use a spreadsheet or graphing software to display measurements of bears and humans by collecting, sorting, and displaying data
- Synthesize information into a brochure

Materials and Resources

Printed Materials

Fiction and nonfiction books about various types of bears, such as:

- Feeney, K. (1997). *Pandas for kids*. Minnetonka, MN: Northwood Press.
- Rosen, M. (1989). *We're going on a bear hunt*. New York, NY: Simon and Schuster.
- Tracqui, V. (1998). *The panda.* Watertown, MA: Charlesbridge Publishing.
- Wexo, J. (2000). *Bears*. San Diego, CA: Wildlife Education.
- Wexo, J. (1997). *Giant pandas*. San Diego, CA: Wildlife Education.
- Wexo, J. (1999). *Polar bears*. San Diego, CA: Wildlife Education.

Supplies

- Pictures of bears

Internet Resources

- Bears.org

  www.bears.org/*

  Bear information and resources
- Polar Bears International

  www.polarbearsinternational.org/*

  Research and education to promote conservation
- Bears at Enchanted Learning
  www.enchantedlearning.com/subjects/mammals/bear/Bearcoloring.shtml*

  Illustrations and facts about bears
- Education Place

  www.eduplace.com/activity/mother.html*

  Mother Bear and Cubs activity
- The Bear Den
  www.bearden.org/Eight%20Species.htm*
  Information about bears sorted by species
- National Geographic's Bear Beginnings
  www3.nationalgeographic.com/animals/mammals/polar-bear.html*
  Multimedia presentation and other features highlighting the polar bear
- Kaboose

  www.kidsdomain.com/clip/*

  Clip art for kids

Technology—Hardware

- Internet connection to enable bears research
- Scanner to insert original paintings or drawings by students into brochures

Technology—Software

- Spreadsheet software for graphing activities
- Desktop publishing to publish brochures
- Encyclopedia on CD-ROM for bears research
- Web browser to research bears and complete activities throughout the unit
- Word processing to complete the brochure