

Best Practices of Technology Integration

Title: *It's a Penguin's Life!*

Subject Area: Science

Grade Level: K-1

Description: Students will be studying the penguin community to observe the physical characteristics of the penguin and the relation it has to its community through a distance-learning project with the Detroit Zoo. The relationship of one group of animals to another will be shown through the introduction of the concept of a food web. By using a journal, children will be able to keep track of information they observe through the Detroit Zoo's Internet web site. Other activities include those in art, language, math, technology, and science.

Narrative: Penguins have an interesting and complex community. Studying that community creates an opportunity to incorporate and learn basic knowledge. The penguin study serves as an arena to apply learned material (such as number and letter concepts) while opening the door to learning about the animal community.

Children can begin to understand the complexity of the animal world by looking at the way a penguin community functions. Using this study as a beginning point, children can begin to integrate language arts, math, fact gathering, and technology skills to gain and apply knowledge.

Benchmarks and standards guiding the learning of early elementary children can be introduced through the use of necessary skills needed to complete this short unit. Michigan standards call for early elementary students to be able to compare and classify familiar organisms on the basis of observable characteristics. Completing a compressed video session with the Detroit Zoological society to see the penguins in real time allows students to see the actual physical characteristics of the penguin, as well as the relation of the individual to the community. Introducing food chains and the interdependence of one organism to another is a second Benchmark covered in this unit.

Questions children would need to investigate include:

- Do penguins have a fun and interesting way of life?
- What are ways that we can find out more about penguins?
- What skills can we use to read, write and learn about penguins?

Using technology allows students to observe first hand how a penguin community functions. Seeing changes within the penguin community provides children with a window to the outside world; until recently, these changes could only have been seen by a daily physical visit to the zoo. Technology also enables students to use reference materials (electronic encyclopedia) in the media center, expanding their understanding that the media center is a more than just a place to check out a book.

Curriculum Benchmarks:**MI.SCI.II.1.E.4**

Develop an awareness of and sensitivity to the natural world.

MI.SCI.III.2.E.1

Compare and classify familiar organisms on the basis of observable physical characteristics.

MI.SCI.III.2.E.4

Compare and contrast food, energy, and environmental needs of selected organisms.

MI.SCI.III.5.E.1

Identify familiar organisms as part of a food chain or food web and describe their feeding relationships within the web.

MI.SCI.III.5.E.3

Describe the basic requirements for all living things to maintain their existence

Detailed Timeline:

The unit is for use over a one week time period. Depending on how you arrange your day, the unit may be used for a longer or shorter time. The lessons involve a daily large group lesson with center activities designed for small group and independent use. In my classroom (kindergarten), I allow for at least one hour of center activities for the children, and many of the centers are out for more than one day. The lesson plans here may be used for small centers, or may be adapted for a group lesson. They are designed to be used for a couple of days in order for all children to have chance to explore the center.

Materials/Hardware/Software:

- Informational texts with penguin information (see references for examples)
- Paper
- Crayons
- Adult/parent helpers
- Computer(s)
- Classroom projector (like an Epson® to be used for Kid Pix® projection)
- Internet access
- Electronic encyclopedia (with media specialist!)
- Ice
- Water
- Water table or small tubs for each child
- Chart paper
- Pictures of ecosystems*, and pictures of various types of penguins*
- Size chart of penguins
- Yard/meter stick

- Blue construction paper
- Goldfish crackers
- Celery sticks
- Peanut butter
- Various black, orange and white construction paper shapes
- Kid Pix® software
- Scheduled compressed video conference/ and or internet use
- Corks

* these need to be turned into cards that the children can handle during activities. It is difficult to include these resources with the publication of this lesson since many are copyrighted. Many books, teaching materials, and web sites contain pictures of a variety of penguins and their environments.

Teacher Preparation:

Have packets of materials ready for student use. Make arrangements with media specialist/clerk to demonstrate how to find information about penguins on the electronic encyclopedia. Have parent helper assemble student journals and cut shapes to build penguins. Set up volunteers to help students “write” their observations of the penguin and the community. Purchase and prepare food items for students to use. Set up meter stick within classroom for students to use in determining penguin size. Set up time for connecting to Detroit Zoological compressed video site, by contacting the Curator of Education at the Detroit Zoo. There is also a Internet cam site is to the Biodome in Montreal if a compressed video connection is not possible. For the web site make sure Internet connection is available.

Prerequisite Student Skills:

Students need to be able to sit, listen, and observe for short periods of time. They need to be able to talk/dictate/write what they have seen through words or pictures.

Activities/Procedures:

Day 1: Penguin Introduction

Materials Needed:

- Informational texts with penguin information (see reference for examples)
- Paper
- Crayons

Large Group:

Introduce the subject of penguins to the students by collecting a group of informational texts from the school library (with the class if possible) and looking at different pictures without discussion, to encourage thought. Have the children formulate observations and questions based on the pictures that they are looking at. After the children have seen all of the pictures, display them on an easel or chalkboard ledge and then allow them to draw conclusions and formulate questions about penguins based on the pictures. This is the

time to have think-aloud activities, and group discussion. Have them point to the particular picture from which they gathered their evidence for their question or statement. Record questions and statements on a divided piece of chart paper with questions on one side and statements on the other.

Also introduce the children to the fact that they will be seeing penguins live from the Detroit Zoo at the end of each day and recording what they see in a special penguin note book.

Centers:

Writing center:

Have a parent helper staple together 5 half sheets of paper to allow the children to make their own penguin notebook for recording information learned from the compressed video teleconference. The children should make a cover that is relevant to the subject of the book. The parent helper could also start a penguin word list that children would like to use for the titles of their penguin books. Only a cover should be made at this point, because the book will be used after the video is viewed. Children need to save their books in a box or folder that will be available at this center during the penguin study.

Media Center:

Have the informational books introduced earlier available in a classroom center all week. Go to the library media center and have the media specialist show the boys and girls how to find penguins in the electronic encyclopedia. This is a demonstration for the students. Print a pictures of penguins/habitats from the electronic encyclopedia for use in the classroom library media center.

Supply the children with writing paper and writing/drawing materials. Encourage children to draw or write things that they find in the books. This is a wonderful invitation to get children to use and look at informational text. Also, make yourself or a parent volunteer available to read the captions and encourage learning.

Closing Group:

As a class, dial into the Detroit Zoological video connection (if the live display is not available, the Detroit Zoo will provide footage of penguin life from the Penguinarium), or use the web camera at the Biodome in Montreal (<http://www.discovery.com/cams/penguin/penguinmain.html?ct=3906ffee>) and look in on the Penguin display. Have the children take their penguin books (put together by the volunteer) and draw a detailed picture of ONE thing that they see. Make suggestions; model one or two items. Point out things that they see to give them something to ask about at the end of the week video conference.

Day 2: Penguin Environment

Materials needed:

- Pictures of various environments pasted onto cards

- Various pictures of penguins pasted onto cards

- Ice

Water

Water table or small tubs for each child

Large Group:

Color and mount picture cards of different environments, desert, arctic, forest and fields. Name each picture and explain it to give children background knowledge. Have a large poster board divided into 2 sections entitled "Penguin Environment, Not Penguin Environment." The group can then vote on the sorting of items into the two categories. Encourage children to use knowledge that they have learned about penguins and their environment from the previous day. Also, have children justify why they are voting a certain way. What are the reasons that they feel certain pictures should be included in the categories?

Math Center:

Penguin picture/Number matching

Paste pictures of penguins in groups of different numbers and numbers onto construction paper or tag board and laminate. Make a matching game like Memory. Each child takes a turn flipping over 2 cards. If there is a match, the child gets to keep the cards. If there is no match, the child turns the cards back over, and passes.

Science center:

Fill a water table with water and ice. The teacher, or parent volunteer, can play with the children in the water and ice. Ice is a part of the penguin environment. Include discussion about how penguins keep warm in the frigid water. Also, include discussion about floating and sinking. Children can use corks to simulate penguins swimming. Push the corks underwater to simulate penguins diving.

Closing Group:

Review the diagram made at today's large group. Review why the items that were placed with the penguin environment fit into that category. Then look and some of the other items that did not fit the category. Try to formulate some animals that would have those things in their environment and draw those animals next to the picture.

Day 3: Penguin characteristics

Materials needed

Chart paper

Size chart of penguins

Yard or meter stick

Large Group:

Today, we will talk about observable characteristics of penguins. On large chart paper, record children's answers of characteristics of penguins, such as color and description of actions, and body parts. Include the information that penguins have feathers on their body. Use the chart to explain that all penguins may not have the exact same characteristics. Use pictures of different species of penguins to illustrate the different

sizes, and characteristics of penguins. Have children add some different characteristics to the chart after seeing the pictures.

Math center:

Use a height chart to measure penguin's actual height on the wall. Have the children stand next to each penguin height and figure out if they are taller or shorter than that penguin. Take the child's measurement and have them record in information on the enclosed sheet: How do I measure up?

Make copies of the chart and have the children use the chart to cut and paste penguins in order from smallest to largest.

Writing Center:

Have the children watch the Penguinarium video from the Zoo's compressed video site or from the Biodome in Montreal, or use stock footage that the zoo will provide. Have them record (with pictures) in their penguin journal different heights of the penguins that they observe in the video. Are they all the same size? Are there babies that are smaller? Are there different penguins that are different sizes?

Closing Group:

Have children sit in an author's chair to share some of their observations about penguins. Encourage others to ask questions to prepare them for the video conference that will occur on day 5. Encourage the author to describe what his picture is about, and why he wrote about it.

Day 4: Penguin food

Material needed:

- Blue construction paper
- Goldfish crackers
- Celery sticks
- Peanut butter
- Various black, orange and white construction paper shapes

Opening Group:

Tell children that they are going to learn about penguin's food web. Explain that penguins eat fish, and other animals may eat penguins. Explain how a food web works where all animals depend on something else for this survival. Use *KidPix* (and a data projector) to draw a Penguin food web (use stamps) with the children.

Math center

Have blue construction paper with goldfish crackers in a cup for each child. Have the children spread out their fish on the paper. Supply each child with a celery stick with peanut butter on the end. Show a number flash card, and the children can "fish" for that amount of fish, catching them on the end of their celery stick with peanut butter.

Art center:

Shape penguins using large and small circles, triangles, ovals, squares and rectangles. Supply the children with pictures of penguins from the informational books and pictures gathered from the media center. Allow the children to put the shapes together to make a penguin.

Closing group:

View video from web site from the Biodome in Montreal

<http://www.discovery.com/cams/penguin/penguinmain.html?ct=3906ffee> or connect to the Detroit Zoo compressed video site.

Write in journals.

Day 5: Video Conference

Opening group:

Prepare children for today's videoconference by taking out their penguin journals and formulating questions based on their observations. Generate a list of questions the boys and girls would like to know. For small group activities, each child would take their penguin journal and draw a picture that represents their question.

Videoconference:

Children should convene in the area where they will have to be to communicate with the animal caretaker from the zoo. Take journals so children will be able to ask questions based on their questions (pictures).

Assessment/Evaluation:

Because I am working with kindergartners, I would base my evaluation on observation of them during the time spent in the classroom, as well as the time spent during the video conference. Their "picture" journals would also be used for evaluation.

Follow up Activities:

Develop a food web for kindergartners.

Use the Internet to look in on other zoo animals.

Locate information in the electronic encyclopedia about the home habitat of the penguin (South Pole, South America). Find pictures of this environment and other animals/people that might live where penguins live.

Find books by a particular author in the school media center. Use the media center electronic encyclopedia to find out information about the author.

Resources:

For additional center and extension activities:

Echols, Jean C. *Penguins and their young*. Gems, 1995.

Reference books for children:

Arnold, Caroline. *Penguin*. New York: Morrow Junior Books, 1988.

Barret Norman. *Picture Library: Penguins*. New York: Franklin Watts, 1991.

Dalmais, Anne-Marie. *Animal World: The Penguin*. Mahwah, N.J.: Watermill Press, 1983.

Robinson, Claire. *Life Story: Penguin*. Marwah, N.J.: Troll Associates, 1994.

Wexo, John B. *Zoobooks: Penguins*. San Diego: Wildlife Education, 1988.

WorldBook Online Encyclopedia 2000, WorldBook Inc., 2000.

Video

Penguin Odyssey. San Francisco: Marine Mammal Fund, 1988.

Penguins (series: Alphabet Zoop) Creative Video Concepts, 1988

Web Sites

Detroit Zoological Society	www.detroitzoo.org
Pete and Barb's Penguin Pages	http://ourworld.compuserve.com/homepages/Peter_and_Barbara_Barham/pengies.htm
The Penguin Page	http://home.capu.net/~kwelch/penguins/
More About Penguins	http://www.discovery.com/cams/penguin/learn.html
Discovery.com's Penguin Cam	http://www.discovery.com/cams/penguin/penguinmain.html?ct=3906ffee
Penguins, a SeaWorld Education Department Resource	http://www.seaworld.org/Penguins/pageone.html
Perfectly Puzzling Penguins	http://www2.lhric.org/pocantico/fitzgerald/99/penguin.htm
For the Love of Penguins	http://members.xoom.com/pingvin/pengindex.htm

Submitted By:

Name: Lisa Meneghin

School District: Warren Woods Public Schools

School: Westwood Elementary School

Address: 11999 Martin, Warren, MI 48093-7800