

Narrative for Fifth-Grade Unit on Life Science

Target student population: The school is a Pre-K-8th Grade Chicago Public School. Last year, 947 students attended. There are four fifth-grade classrooms: Two monolingual, one bilingual and one dual language.

This unit was prepared for a classroom of 25 fifth-graders, most of who had been in the Dual Language program at the school since Kindergarten. Two of the twenty-five had left the program in the primary grades and have returned to the school during the current school year.

Socio-economic status: The easiest way to determine this is by which students receive free lunches. Ninety-six percent of the school's students fall into the low-income rate. Out of the 25 students in 5th Grade Dual Language, 23 receive free lunch, one pays reduced price lunch, and one pays full price. Most of the parents work full-time at least one job, although some mothers stay at home during the day when the children are home.

Cultural background: The school's student population is made up of the following ethnicities: 87% Latino, 11% Black, 2% White, and less than 1% Asian/Pacific Islander and Native American. All of the students in my classroom come from Latino backgrounds. The majority of my students are from Mexico. A few come from Central or South America, from countries such as El Salvador or Argentina.

Language and academic proficiencies: Thirty-six percent of the school's students were classified as Limited English Proficient last year. Only three of the students in my classroom have not had any bilingual services in the past. This means that the other 22 were enrolled in the bilingual program. During the current year, four students in the classroom are in year 5 of the bilingual program.

Approximately one third of my classroom is able to use English in the four domains with native or native-like proficiency. Fifteen students are bridging or transitioning, and one is in the beginning stage of English production. (She is the student who transferred back into the program in March.)

Twenty-two students use Spanish on a daily basis with their parents. Two of the remaining students are in the expanding stage of Spanish and one is still in the beginning stage of Spanish. Although his family is of Hispanic background, he does not speak Spanish at home at all.

Dual Language students are tested each year in Reading and Math in both English and Spanish. Half of the students scored in the 50th percentile or above on last year's Iowa Test of Basic Skills. Three fourths scored in the 50th percentile or above in math. Student scores on Logramos, the Spanish equivalent of the ITBS, were slightly higher than for the ITBS.

Affective considerations: All of my students are active and talkative except for the newest student. All students regularly turn in their homework. Their parents all attended the last Report Card conference, which indicates a strong level of support for their children's education. I have had few discipline problems this year. Most detentions result from students talking out of turn with occasional infractions of disrespect towards another student. Overall, the group is eager to learn and seems to have good home support.

UNIT PLANNING GUIDE

Theme
Life Science

Big Idea
Living things are defined by specific physical and behavioral attributes.

Lesson big idea
Plants and animals are made up of cells that contain organelles, which carry out functions necessary to life.

Lesson big idea
Both plants and animals can be classified into different groups based on physical and behavioral characteristics.

Lesson big idea
Plants and animals have common needs.

Lesson big idea
All organisms live in ecosystems where they depend on each other and the natural resources of the environment.

All Standards are from the State of Illinois Learning Standards:
<http://www.isbe.state.il.us/ils/>

Standards for Unit on Life Science

Lesson 1:

12.A.3a. Explain how cells function as “building blocks” of organisms and describe the requirements for cells to live.

12.A.3c. Compare and contrast how different forms and structures reflect different functions (e.g., similarities and differences among animals that fly, walk or swim; structures of plant cells and animal cells).

1.B.2a Establish purposes for reading; survey materials; ask questions; make predictions; connect, clarify and extend ideas.

Lesson 2:

12.A.2b. Categorize features as either inherited or learned (e.g. flower color or eye color is inherited; language is learned).

1.B.2b Identify structure (e.g., description, compare/contrast, cause and effect, sequence) of nonfiction texts to improve comprehension.

1.C.2a Use information to form and refine questions and predictions.

Lesson 3:

12.B.2b. Identify physical features of plants and animals that help them live in different environments (e.g., specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature).

1.C.2c Compare and contrast the content and organization of selections.

Lesson 4:

12.B.2a. Describe relationships among various organisms in their environments (e.g., predator/prey, parasite/host, food chains and food webs).

1.C.2f Connect information presented in tables, maps and charts to printed or electronic text.

3.B.2a Generate and organize ideas using a variety of planning strategies (e.g., mapping, outlining, drafting).

3.C.2a Write for a variety of purposes and for specified audiences in a variety of forms including narrative (e.g., fiction, autobiography), expository (e.g., reports, essays) and persuasive writings (e.g., editorials, advertisements).

Big Idea/Essential Understanding: Plants and animals are made up of cells that contain organelles, which carry out functions necessary to life.

Language of instruction: Spanish

Preview Stage:

Activities:

Content Objectives – Students will:

- ✓ Understand the general structure and functions of cells by comparing plants and animals.
- Language Objectives – Students will:
 - ✓ Make predictions about cells (listening)
 - ✓ Describe the reasons for sorting organelles with visual support (speaking)
 - ✓ Classify or differentiate between animal and plant cells based on illustrated sets of features, characteristics or properties (speaking)

Strategies:

- ✓ Use open word/picture sort with key words in Spanish and color pictures to preview what students know about organelles in plant and animal cells
- ✓ Use an affinity diagram poster to sort after discussion among class members and teacher

Differentiation:

- ✓ Use numbered heads together to make sure everyone has participated in sorting and can explain their reasoning
- ✓ Make sure native English speakers have a chance to say something in Spanish

Flexible Grouping

- ✓ Groups of 4 for sorting
- ✓ Whole class for sharing
- ✓ Individuals for completing Venn diagram

Instructional Assessment:

- ✓ Note prior knowledge
- ✓ Students follow oral instructions for oral sort and affinity diagram
- ✓ Students actively participate in discussion

Focused Learning Stage

Activities:

Content Objectives – Students will:

- ✓ Describe the requirements for cells to live.
- Language Objectives: - Students will:
 - ✓ Follow oral directions for placing organelles cells onto a diagram (listening)
 - ✓ Explain or discuss the functions of organelles in cells (speaking)
 - ✓ Interpret information on organelles from charts, tables, graphic organizers or written text (reading)
 - ✓ Maintain scientific journals based on observations (writing)

Strategies:

- ✓ Draw and label a plant and animal cell based on oral and visual directions.
- ✓ Read an assigned section about plant or animal cells and “write something” about the text.
- ✓ Write what they learned in their journals

Differentiation:

- ✓ Pair native Spanish-speakers with native English-speakers to the greatest extent possible

Flexible Grouping:

- ✓ Individuals complete diagram
- ✓ Read in pairs for reading and “write something”

Instructional Assessment:

- ✓ Students can summarize what they read by giving the main idea
- ✓ Students complete diagram in Spanish accurately

Application Stage:

Activities:

Content Objectives – Students will:

- ✓ Compare the structures in a cell to a city
- ✓ Make a three-dimensional model of a plant and an animal cell and label with functions.
- Language Objectives: - Students will:
 - ✓ Show proof or disproof of hypothesis about cells (listening)
 - ✓ Report on the relationships among different organelles (speaking)
 - ✓ **Apply information on cells to new contexts using grade level science text (reading)**
 - ✓ Maintain scientific journals with explanations of observations (writing)

Strategies:

- ✓ Read about different functions in a city and functions of cell organelles.
- ✓ Match functions of city to organelle (i.e., “The vacuole stores water and food for the cell. What company does the vacuole represent in a city?” Answer: Warehouse).
- ✓ Use manipulatives such as play-doh and seeds to make a 3-D model of a plant and animal cell and present to the small group what the functions of each organelle is.
- ✓ Use a Venn diagram to write about the similarities and differences of plant and animal cells after the affinity diagram is made.

Differentiation:

- ✓ Pair native Spanish-speakers with native English-speakers to the greatest extent possible
- ✓ Make sure native English speakers have a chance to say something in Spanish

Flexible Grouping:

- ✓ Paired reading and matching
- ✓ Groups of four for making cell models

Instructional Assessment:

- ✓ Observe how students construct cells
- ✓ Use a cloze exercise similar to “connect two” to show how a cell functions like a city
- ✓ Students complete Venn diagram in Spanish accurately

Big Idea/Essential Understanding: All organisms live in ecosystems where they depend on each other and the natural resources of the environment.

Language of instruction: English

Preview Stage:

Activities:

Content Objectives – Students will explore a land environment to test what living things need to survive; explore how change in one population can affect an ecosystem.

Language Objectives – Students will: follow oral directions to play a game and make predictions about what will happen when a member of an ecosystem disappears (listening); discuss how organisms impact everyday life (speaking); write parts of a cycle in a graphic organizer (writing and reading)

Strategies:

-Use a Prior Knowledge Survey to find out what students know about ecosystems.
 -Play food Web game with string using desert ecosystem. Students stand in a circle wearing labels with a picture and a name of an organism in the desert, then toss a ball of string from one person to the other describing a relationship with the other organism; After a web is formed, some animals or plants go “extinct” and drop their string. Students observe what happens to the web, then discusses outcome.

Flexible Grouping

-Whole group for game and discussion
 -Groups of four to complete organizer and Prior Knowledge Survey
Instructional Assessment:
 -Note prior knowledge
 -Students follow oral instructions for game

 -Students actively participate in discussion
 -Students complete graphic organizer accurately.

Focused Learning Stage

Activities:

Content Objectives – Students will: describe various ecosystems and the biotic and abiotic factors involved in them; identify and explain the relationship between food chains and food webs.

Language Objectives: - Students will: read and write content obligatory language in context (Ecosystem, ecology, abiotic factor, biotic factor, population, community, habitat, niche); interpret information on scientific terms from charts, tables and graphic organizers (reading)

Strategies:

-Explore a website and view a video about the Chihuahuan desert
 -Use concept attainment to come up with biotic/abiotic features in an ecosystem
 -Read an assigned section about ecosystems; use Numbered Heads Together to “Connect Two.”

 -Interpret illustrations of food chains and food webs

Differentiation:

-Text with many pictures/graphics

Flexible Grouping:

-Whole class for concept attainment and video viewing

 -Groups of four for Numbered Heads Together
 -Individuals to interpret illustrations and explore website
Instructional Assessment:
 -Draw a food chain with at least three plants and animals in it; write an accompanying paragraph

Application Stage

Activities:

Content Objectives – Students will: discuss variables that can affect population size and survival; describe a food pyramid and the roles various organisms play in them

Language Objectives: - Students will: read and write content obligatory language (Biome, grassland, taiga, tundra, desert, deciduous forest, tropical rain forest), describe relationships among members of an ecosystem in an oral and written museum display (writing and speaking)

Strategies:

-Use within-team jigsaw to become experts in different desert animals/plants
 -Draw a food pyramid with their animal or plant’s niche indicated
 -Complete post knowledge survey
Differentiation:
 -Text with many pictures/graphics

Flexible Grouping:

-Group of four by animal/plant classification, i.e. mammals, reptiles, birds, monocots, dicots, etc.
Instructional Assessment:
 -Design a museum display (diorama or poster) about a desert ecosystem. Individual students will prepare a report and display for an animal or plant in the desert, including its adaptations and role in the food pyramid. Students from other 5th grade classes will observe and present their biomes.

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Bilingual Methods and Materials (National #CIL-506) or Innovative Methods for Teaching Bilingual (National #CIC-585F)

Annotated Bibliography 5th Grade Unit on Life Science

Websites

Website URL	Lesson phase	Grouping	Activity	L1/L2 differentiation	Learning strategies	Connection to Big Ideas
http://www.cellsalive.com/	Preview	Individual or paired computer time	Students familiarize themselves with parts of the cell.	English, but it has a link to translate the page into Spanish.	Sketch to stretch; open and closed picture sort from printed pictures. Interactive visual activities.	<ul style="list-style-type: none"> Cells have organelles that carry out the functions necessary to life.
http://www.urbanext.uic.edu/gpe_sp/index.html	Focused learning/Application	Model with a whole class with a projector. Later, during individual computer time	Web quest to explore plant topics	Bilingual. Students can toggle between Spanish and English or teacher can use one language on a projector.	Cloze, word scramble, experimenting with plants/soil/com post etc.	<ul style="list-style-type: none"> Plants can be classified into different groups. Plants have common needs.
http://yahooligans.yahoo.com/content/animations/	Application	Individual or paired computer time	Various pages about any animal a student might want to research	English. Use during Language Arts as a reading/research activity.	Learning logs for research report	<ul style="list-style-type: none"> Animals can be classified into different groups. Animals have common needs.
http://jmarcano.topcities.com/index.html	Preview	Individual or paired computer time	A site dedicated to planet earth. Includes mini-	Use during Science with students whose L2 is Spanish.	Fill in web diagram showing relationships	<ul style="list-style-type: none"> Plants and animals have common needs.

			lessons on living things and ecosystems.		between different living things in the ecosystems.	<ul style="list-style-type: none"> • Living things depend on each other.
http://hamminkj.cafeproggressive.com/webquest/desertanimals.htm .	Focused learning	Whole class in computer lab	A Web quest about animals in the Chihuahuan desert.	Bilingual. Use during Science in Spanish.	Learning logs for research report	<ul style="list-style-type: none"> • Plants and animals have common needs. • Living things depend on each other.

Books

Title	Genre	Description	Reading level
1990. Cherry, Lynn. <i>El Gran Capoquero</i> . (In my classroom)	Fiction	The Great Kapok Tree translated into Spanish by Alma Flor Ada. Animals speak to humans about how to care for the rainforest. For Preview Stage.	Easy
Cole, Joanna. <i>Magic Schoolbus</i> series. Several titles deal with animals and plants. Scholastic.	Fiction.	English chapter books. Some titles are published in Spanish as picture books. For SSR.	Easy
1988. George, Jean C. <i>Mi Rincon en la Montana</i> . Scholastic.	Fiction	Spanish translation of My Side of the Mountain. Shows how a boy living in the wild adapts to the forest environment. For SSR.	Hard
<i>Highlights for Children</i>	Magazine	Contains both fiction and non-fiction about plants, animals, cells and ecosystems. For Focused Learning/Application stages.	All levels
National Geographic <i>Explorer!</i>	Magazine	Contains both fiction and non-fiction about plants, animals, cells and ecosystems. For Focused Learning/Application stages.	Medium
1993. Bakalian, et. al. <i>Parade of Life: Monerans, Protists, Fungi and Plants</i> . Prentice Hall. (In my classroom)	Textbook	Well-organized treatment of subject with many photos. In English. For Focused Learning stage.	Hard

2002. McMillan/McGraw Hill <i>Science/Ciencias</i>	Textbook	Available in English and Spanish. First two units deal with plants, animals and ecosystems.	Medium
1963. di Palma, Gaetano. <i>Animals in Winter</i> . (In my classroom)	Non-fiction	Older book but in good condition. Shows how animals adapt seasonally. For SSR.	Easy.
1991. Gilbreath, Alice. <i>The Great Barrier Reef: A Treasure in the Sea</i> . (In my classroom)	Non-fiction	Lots of photos and graphics. Use as a companion with La Gran Barrera de Arrecifes. For SSR.	Medium
1990. Goor, Ron & Nancy. <i>Insect Metamorphosis: From Egg to Adult</i> . (In my classroom)	Non-fiction	Grade-appropriate text showing life cycles of insects. For SSR.	Medium
1994. Gore, Sheila. <i>Our Planet: Swamps</i> . (In my classroom)	Non-fiction	An informational book with photos and graphics. For SSR.	Medium
1993. Gouck, Maura. <i>La Gran Barrera de Arrecifes</i> . The Child's World. (In my classroom)	Non-fiction	Photos of the Great Barrier Reef with grade appropriate text. For SSR.	Medium
1969. Hess, Lilo. <i>The Misunderstood Skunk</i> . (In my classroom)	Non-fiction	Older book with photographs. For SSR.	Medium
1980. Jaspersohn, William G. <i>How the Forest Grew</i> (In my classroom)	Non-fiction	Simple, straightforward text about the birth of a forest. For SSR.	Easy
1999. Kalman, Bobbie. What is a Biome? (In my classroom.)	Non-Fiction	Shows different biomes with grade-appropriate text and photos.	Medium
Marzollo, Jean. Coleccion de ciencias. (<i>Soy una semilla, Soy una hoja, Soy una oruga</i> , etc.) Scholastic.	Non-fiction	Simple explanation of how seeds germinate and grow, life cycles, etc. For possible use as a book sharing experience with younger grades.	Easy
1997. Micucci, Charles. <i>The Life and Times of the Peanut</i> . (In my classroom)	Non-fiction	Lots of interesting facts about this versatile plant. For SSR.	Medium

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Bilingual Methods and Materials (National #CIL-506) or
Innovative Methods for Teaching Bilingual (National #CIC-585F)

2002. Nadeau, Isaac. Food Chains in a Desert Habitat.	Non-Fiction	Very pertinent focus on deserts.	Easy
1994. Murray, Peter. <i>El Rio Amazonas</i> . The Child's World. (In my classroom)	Non-fiction	Photos of the Amazon region with grade appropriate text. For SSR.	Medium
1981. Rinard, Judith. <i>Zoos without Cages</i> . (In my classroom)	Non-fiction	Book for advanced readers about animals living in open-range parks. For SSR.	Hard
Romeu, Emma. 2003. <i>Animales de America/Animals of America</i> series. Santillana.	Non-fiction	Bilingual English/Spanish books covering the Grey Wolf, Bee Hummingbird, Manatees, Flamingos, and Monarch Butterflies. For SSR.	Easy
1990. Parsons, Alexandra. <i>Asombrosas serpientes</i> (DK-available at IRC).	Non-Fiction	Spanish text with many illustrations	Medium
1973. Simon, Seymour. <i>Projects with Plants</i> . (In my classroom)	Non-fiction	This book is meant to challenge the more advanced students with fun plant experiments. For Application Stage.	Hard
1984. Sopsis, Kenneth and Josephine. <i>Six Great Mammals</i> . (In my classroom)	Non-fiction	Older book, but focuses on interesting animals like zebras. For SSR.	Medium
1990. Stuart, Gene S. <i>Animal Families</i> . (In my classroom)	Non-fiction	National Geographic book with many photos. For SSR.	Easy
1994. Vieira, Linda. <i>The Ever-Living Tree: The Life and Times of a Coast Redwood</i> . (In my classroom)	Non-fiction	With more text than The Great Kapok Tree but similar beautiful illustrations. For Preview Stage.	Medium
1962. Sullivan, Walter. <i>Polar Regions</i> . (In my classroom)	Non-Fiction.	Companion book to Parque Nacional Glaciar. Contains many illustrations. For SSR.	Medium

classroom)			
1993. Markert, Jenny. <i>Parque Nacional Glaciar</i> . The Child's World. (In my classroom)	Non-fiction.	Beautiful photographs with grade-appropriate text I Spanish about Glacier National Park. For SSR.	Medium
1996. Silverstein, Alvin/ Silverstein, Virginia B./ Silverstein, Robert A. <i>Plants</i> .	Non-fiction.	Describes the world of plants and the various parts of specific plants, such as flower, seed, roots, and trunk. For Focused Learning stage.	Medium