ELL Newcomers Science - Grades K-2

Description Elementary students in grades kindergarten to second grade will develop beginning English listening, speaking, reading and writing skills related to science.

Prerequisites English Language Level 1-2

Textbooks/Resources

Required Assessments ACCESS

Board Approved July, 2005

Revised

AASD Science Goals for K-12 Students

The ELL Bilingual Education program will enable students to:

- *Students will know about science themes and connect and integrate them into what they know about themselves and the world around them.*
- *Students will realize that scientific knowledge is public, replicable, and continually undergoing revision and refinement based on new experiments and data.*
- *Students will realize that science includes questioning, forming hypotheses, collecting and analyzing data, reaching conclusions, evaluating results, and communicating procedures and findings to others.*
- *Students will use science to explain and predict changes that occur around them.*
- *Students will use science to evaluate consequences in order to make responsible choices.*
- *Students will use their knowledge of science concepts and processes in making informed choices regarding their lifestyles and the impact they have on their environment, and enhance their natural curiosity about their environment.*
- *Students will understand that science and technology affect the Earth's systems and provide solutions to human problems.*
- *Students will use science to analyze topics related to personal health, environment, and management of resources; they will help evaluate the merits of alternative courses of action.*

AASD Science Standards* for Students in Grades K-2

I. Science Connections	A. Conduct science investigations, ask and answer questions that will help decide the general areas of science being addressed. B. Decide what changes have occurred when investigating a specific science-related problem. C. Investigate science-related problems and decide what evidence, models, or explanations previously studied can be used for investigation. D. Investigate science-related problems and decide what data can be collected to determine the most useful explanations. E. Decide which science themes are important in investigating a specific science-related problem.
II. Nature of Science	. Use references to help answer science-related questions and plan investigations. . Acquire information about people who have contributed to the development of major ideas in science.
III. Science Inquiry	. Use science equipment safely and effectively to collect data relevant to questions and investigations. . Use scientific content being learned to ask questions, plan investigations, make observations, make predictions, and offer explanations. . Develop record systems to organize and record information. . Use data collected to develop explanations and answer questions generated by investigation. . Support conclusions with logical arguments. . Communicate results of investigations in ways audiences will understand. . Ask additional questions that might help focus or further and investigation.
IV. Physical Science	. Understand that objects are made of more than on substance. . Understand the characteristics of solids, liquids, and gases. . Group and/or classify objects and substances bases on properties of materials. . Construct models of matter undergoing change. . Observe and describe objects at rest or in motion. . Discover the characteristics of energy.
V. Earth and Space Science	. Describe renewable and nonrenewable resources in the home and community. . Investigate and understand components of soil, its origin and importance to plants and animals. . Identify and describe land and water masses. . Identify the seasons and their characteristics. . Measure and record changes in weather conditions. . Investigate and understand basic types of clouds. . Identify celestial objects and note changes in their patterns. . Describe the sun as a source of heat and light.

VI. Life and Environmental Science	. Explain the basic needs of organisms. . Compare plant and animal structures and functions. . Give examples of plant and animal life cycles. . Explain that plants and animals grow to resemble the parents. . Explain how animals depend on plants. . Relate an organism's pattern of behavior and survival to the nature of that organism's dynamic environment. . Demonstrate that organisms cause changes, which may be beneficial or detrimental to the environment.
VII. Science Applications	. Identify the benefits of technology used on jobs in Wisconsin. . Describe technological advances in with workplace over time. . Determine science discoveries that have led to changes in technologies which are being used in the work place. . Identify the combinations of simple machines in a commonly used device. . Ask questions and find answers about how devices and machine were invented and produced.
VII. Science in Social and Personal Perspectives.	. Show how science has contributed to meeting personal needs. . Develop a list of issues about which citizens must make decisions and discuss ways of finding information about the issues. . Describe how science and technology have helped and sometimes hindered progress in state and local issues.

Standard 4: English language learners communicate information, ideas, and concepts necessary for academic success in the content area of **SCIENCE**.

Domain	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
Listening	• explore movement of real-life objects by following commands (e.g., "Roll the ball.")	• follow movement of real-life objects by following multiple step directions (e.g. "The car goes backwards then forwards.")	• compare movement of objects based on oral statements by pointing to pictures or objects (e.g., "Which goes fastest, bikes, buses, or airplanes?")	• predict movement of objects by pointing to pictures or demonstration based on oral statements (e.g., "Show what happens when you let go of balloons.")	• interpret the effects of force on motion by pointing or demonstration based on oral descriptions
Speaking	• associate body parts with senses and physical actions	• give examples of how or when you use your senses or other body parts	• describe a series of activities that involve using your senses or other body parts	• explain why senses or other body parts are useful	• predict what you would do if one of your senses or other body parts was injured
Reading	• make posters from magazine pictures labeled with different forms of water or other natural resources	• search for words in big books or trade books associated with water or other natural resources (such as rain, ice, hot)	• distinguish activities that use water or other natural resources from those that don't, based on written phrases and pictures (such as "brush hair" or "take a bath")	• classify activities that you do *with* water or other natural resources from those you do *in* water (such as brush teeth or go swimming)	• sequence sentences to show how to do activities that involve water or other natural resources (such as cooking rice)
Writing	• collect, identify, label (and make collages of) objects made of different materials and textures (such as paper, cotton, or wool)	• match objects or pictures of different materials or textures with their sources (such as rubber with trees)	• describe objects made of different materials or textures from pictures or realia (e.g., "Silk is shiny and smooth.")	• produce a sequence of the process for making different natural and synthetic materials	• evaluate the usefulness of different produced goods from natural and synthetic materials

ELP Standards – WIDA (Classroom)

Standard 4: English language learners communicate information, ideas, and concepts necessary for academic success in the content area of **SCIENCE.**

Domain	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
Listening	• identify pictures pertaining to health or safety from oral statements (such as fire, weather) • identify objects according to chemical or physical properties from pictures and oral statements (e.g., "The ball is round.")	• classify pictures of safe/unsafe or healthy/unhealthy conditions from oral directions • match objects with their chemical or physical properties from pictures and oral statements	• identify symbols related to safety or health precautions from oral descriptions • identify and group objects according to chemical or physical properties from oral statements (e.g., "Water and milk are liquids.")	• identify examples or rules related to safety or health precaution from oral discourse • analyze objects based on their chemical or physical properties from oral descriptions (e.g., "Ice is cold because…")	• predict consequences of not following safety or health precautions from oral scenarios • analyze objects based on their chemical or physical properties from oral reading of grade level **science** text
Speaking	• use words or phrases related to weather or environment from pictures/photographs (such as temperatures, seasons, or precipitation)	• restate **scientific** hypotheses about weather or environment from pictures or photographs	• ask WH- questions about weather or environment from pictures or photographs	• predict results and provide reasons based on **scientific** hypotheses about weather or environment from oral or written information	• evaluate and weigh options related to **scientific** hypotheses about weather or environment from oral or written information
Reading	• identify living organisms from symbols, photographs, labels, • graphs, or charts	• classify living organisms (such as birds and mammals) by using pictures or icons	• complete graphs or charts using pictures or icons to address questions related to living organisms	• respond to questions about graphs or charts related to living organisms by using icons and text	• interpret graphs or charts related to living organisms by using icons and explicit, grade level **science** text
Writing	• identify similarities or differences of **science**-related objects through drawings or copying labels	• note **scientific** change by identifying the stages of processes or cycles (such as from seeds to plants or from caterpillars to butterflies) through drawings, words, or phrases	• describe **scientific** change through the graphic or written depiction of processes or cycles	• compare/contrast **scientific** change by inserting words or phrases into graphic organizers	• explain the process of **scientific** change with complete thoughts

ELP Standards – WIDA (Large Scale)

A. Science Connections

Course Objectives	Performance Indicators	Classroom Assessments
1. Activate prior knowledge related to scientific concepts.	**Performance will be satisfactory when the student:** . identifies and uses prior knowledge related to content, asks questions, and plans investigation. . uses background knowledge to form a model or explanation.	• Graphic organizers (KWL chart, web, mind map) • Think, pair, share
2. Determine what data are necessary to solve the problem.	**Performance will be satisfactory when the student:** h. brainstorms all possible data sources. h. given types of data, chooses the data relevant to the problem.	• Graphic organizers • Think, pair, share
3. Identify changes that are occurring or have occurred over time.	**Performance will be satisfactory when the student:** a. uses pictures to show changes over time. b. creates a timeline to show changes over time.	• Graphic organizers • Journals • Timelines
Above objectives aligned with AASD Standard: Science: Science Connections		

B. Nature of Science

Course Objectives	Performance Indicators	Classroom Assessments
1. Use the parts of a book to locate information (index, table of contents, glossary).	**Performance will be satisfactory when the student:** . completes an information gathering and/or parts of the book treasure hunt.	• Think, pair, share
2. Identify and describe contributors to the development of major ideas in the sciences.	**Performance will be satisfactory when the student:** b. identifies a person who has contributed to the sciences. b. matches significant inventors and their inventions.	• Graphic organizers • Journals • Drawings • Matching activities
Above objectives aligned with AASD Standard: Science: Nature of Science		

C. Science Inquiry

Course Objectives	Performance Indicators	Classroom Assessments
1. Use examples to demonstrate scientific vocabulary.	**Performance will be satisfactory when the student:** l. lists examples (in pictures, words, or symbols) from the student's own experience related to the unifying themes. l. expands and applies vocabulary appropriately in speaking and drawing.	• Graphic organizers • Journals • Illustrate vocabulary
2. Observe, predict, and explain based on scientific experiments.	**Performance will be satisfactory when the student:** . completes experiments related to the science concepts. . uses simple science equipment to complete an experiment (e.g. rulers, balances, thermometers). . collects and applies data based on the experiment. . summarizes and supports the results of the experiment through charts, diagrams, models, etc. . identifies questions to further an investigation.	• Visuals (charts, physical models) • Journals • Presentations
Above objectives aligned with AASD Standard: Science: Science Inquiry		

. Physical Science

Course Objectives	Performance Indicators	Classroom Assessments
1. Understand the basic physical science themes including light, sound, matter, and energy.	**Performance will be satisfactory when the student:** b. identifies basic concepts of light (shadows, reflection, refraction). b. describes sources of light and how light travels. b. identifies basic concepts of sound (vibration, volume, pitch). b. describes how sound is created and travels. b. identifies the states of matter and the characteristics of each state. b. compares and groups objects based on their properties. b. investigates the various forms of energy (sound, light, and heat).	• Sorting objects • Drawing and labeling diagrams • Graphic organizers • Compare/contrast • Create a model of how light works (create a shadow, reflection) • Create a model of how sound works (vibration, pitch, loudness)
Above objective aligned with AASD Standard: Science: Physical Science		

E. Earth and Space Science

Course Objectives	Performance Indicators	Classroom Assessments
1. Understand the basic concepts of earth and space science themes. **2. Demonstrate understanding of farming and forestry in Wisconsin.**	**Performance will be satisfactory when the student:** . identifies different land and water forms (e.g. mountains, lakes, rivers, oceans). . identifies types of weather, along with appropriate clothing and activities. . identifies, compares and contrasts the characteristics of the four seasons. . compares/contrasts the properties of water (snow, rain, ice). . identifies celestial objects (stars, sun, moon, planets). . explains the importance of the sun as it relates to life on earth. . identifies the characteristics of day and night. . identifies resources humans use from farming and forestry (i.e. paper from trees, food from crops, recycling).	• Graphic organizers (Charts, Timelines, etc.) • Murals • Presentations • Draw and label diagrams • Models • Role playing
Above objectives aligned with AASD Standard: Science: Earth and Space Science		

F. Life and Environmental Science

Course Objectives	Performance Indicators	Classroom Assessments
1. Understand the basic concepts of life science themes including animals, plants, and the human body.	**Performance will be satisfactory when the student:** . compares and contrasts living and non-living things. . recognizes basic needs of living things. . classifies animals in the animal kingdom based on characteristics. . identifies parts, uses, and basic needs of a plant. . discusses the importance of recycling. . names and locates selected body parts and their functions. . identifies selected organs (heart, lungs, stomach, intestines, brain, liver, kidneys). . describes the function of bones and muscles. . illustrates life cycles of living things (butterflies, plants, farm animals, etc.).	• Graph animal homes • Graphic Organizers • Poems & Songs • Mural of animal habitats • Sequencing life cycles • Drawing and labeling diagrams • Journals • TPR
Above objective aligned with AASD Standard: Science: Life and Environmental Science		

G. Science Applications

Course Objectives	Performance Indicators	Classroom Assessments
1. Understand the relationship between science technology developments and how it affects daily life.	**Performance will be satisfactory when the student:** b. identifies machines used in everyday life (e.g. Levers, pulleys, wheels, refrigerators, vehicles of transportation). b. identifies and describes major changes in science technology over time. b. identifies scientific discoveries. b. illustrates how technology impacts the quality of life.	• Graphic organizers • Class Inventions • Student-created books • TPR • Songs and Poems (e.g. Wheels on the Bus)
Above objectives aligned with AASD Standard: Science: Science Applications		

H. Science in Social & Personal Perspectives

Course Objectives	Performance Indicators	Classroom Assessments
1. Understand personal needs.	**Performance will be satisfactory when the student:** . identifies personal needs (food, water, shelter, sun, air, clothing). . shows how science contributes to personal needs. . identifies and categorizes food into food groups. . identifies the health benefits of exercise and nutrition. . identifies the characteristics and functions of the five senses.	• Sorting foods • Graphic Organizes • Compare/Contrast • Mural (Food Pyramid) • TPR • Games • Cooking • Journal • Student-created books
Above objectives aligned with AASD Standard: Science: Science in Social and Personal Perspectives		