

ELL CENTER SCIENCE A

Description An inquiry-based science survey course with an emphasis on developing English communication skills and vocabulary relevant to science content. Matter is the focus of “ELL Center Science A” and energy is the focus of “ELL Center Science B”. These two courses are offered in alternating years in middle school.

Credits

Prerequisites

Textbooks/Resources MacMillan/McGraw – Grade 4

Required Assessments District-Wide Standards-Based Assessment

Board Approved October, 2005
Revised

AASD Science Goals for K-12 Students

- *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 Grades K-4 Students

- | | |
|------------------------|--|
| I. Science Connections | <ul style="list-style-type: none">A. Conduct science investigations, ask and answer questions that will help decide the general areas of science being addressed.B. Investigate science-related problems and decide what evidence, models, or explanations previously studied can be used for investigation.C. Investigate science-related problems and decide what data can be collected to determine the most useful explanations.D. Decide which science themes are important in investigating a specific science-related problem.E. Decide what changes have occurred when investigating a specific science-related problem. |
| II. Nature of Science | <ul style="list-style-type: none">A. Use references to help answer science-related questions and plan investigations.B. Acquire information about people who have contributed to the development of major ideas in science.C. Show how the major developments of scientific knowledge have changed over time. |
| III. Science Inquiry | <ul style="list-style-type: none">A. Use vocabulary of the unifying themes to ask questions about science.B. Use scientific content being learned to ask questions, plan investigations, make observations, make predictions, and offer explanations.C. Select multiple sources of information to help answer questions selected for classroom investigation.D. Use science equipment safely and effectively to collect data relevant to questions and investigations.E. Use data collected to develop explanations and answer questions generated by investigation.F. Communicate results of investigations in ways audiences will understand.G. Support conclusions with logical arguments.H. Ask additional questions that might help focus or further an investigation.I. Develop record systems to organize and record information. |
| IV. Physical Science | <ul style="list-style-type: none">A. Understand that objects are made of more than one substance.B. Group and/or classify objects and substances based on properties of materials.C. Understand the characteristics of solids, liquids, and gases.D. Observe and describe changes in matter and construct explanations for the changes.E. Construct models of matter undergoing change.F. Observe and describe objects at rest or in motion.G. Discover the characteristics of energy (including light, heat, electricity, sound, and magnetism). |

AASD Science Standards for Grades K-4 Students (continued)

- | | |
|---|---|
| V. Earth and Space Science | <ul style="list-style-type: none">A. Investigate and understand components of soil, its origin, and importance to plants and animals.B. Investigate the composition of rocks, minerals, and soils.C. Identify and describe land and water masses.D. Identify the seasons and their characteristics.E. Investigate and understand basic weather found in Wisconsin.F. Find patterns and cycles in the earth's daily, yearly, and long-term changes.G. Describe renewable and nonrenewable resources in the home and community.H. Give examples of resources used in mining, forestry, farming, and manufacturing.I. Identify celestial objects and note changes in their patterns. |
| VI. Life and Environmental Science | <ul style="list-style-type: none">A. Explain the basic needs of organisms.B. Compare plant and animal structures and functions.C. Give examples of plant and animal life cycles.D. Explain that plants and animals grow to resemble the parents.E. Explain how animals depend on plants.F. Relate an organism's pattern of behavior and survival to the nature of that organism's dynamic environment. |
| VII. Science Applications | <ul style="list-style-type: none">A. Identify the benefits of technology used in jobs in Wisconsin.B. Describe technological advances in the workplace over time.C. Determine science discoveries that have led to changes in technologies which are being used in the work place.D. Identify the combinations of simple machines in a commonly used device.E. Ask questions and find answers about how devices and machines were invented and produced. |
| VIII. Science in Social and Personal Perspectives | <ul style="list-style-type: none">A. Describe how science and technology have helped and sometimes hindered progress in state and local issues.B. Show how science has contributed to meeting personal needs.C. Develop a list of issues about which citizens must make decisions and discuss ways of finding information about the issues. |

WIDA English Language Proficiency Standards (Grades 6-8)

Domain	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
Listening	<ul style="list-style-type: none"> • match science domains or their tools with pictures from oral statements (such as earth, life, or physical science) • match oral statements of scientific facts with illustrations (e.g., “White is made up of all colors.”) 	<ul style="list-style-type: none"> • categorize science domains or their tools with pictures and words from oral directions (such as a telescope and sun dial go with the heavens) • create scientific models based on illustrations and oral directions (e.g., “Show how light or sound travels;” “Show how the earth goes around the sun.”) 	<ul style="list-style-type: none"> • identify science domains or their tools from oral descriptions of examples • classify examples of properties (of light, sound, stars or planets) based on illustrations and oral directions 	<ul style="list-style-type: none"> • compare/contrast examples of science domains or their tools and uses from oral descriptions (such as the difference between telescopes and microscopes) • apply oral descriptions of properties (of light, sound, stars or planets) to everyday life 	<ul style="list-style-type: none"> • give examples of science domains or their tools from oral reading of grade level science text • seek explanations of the properties (of light, sound, stars or planets) through oral scenarios
Speaking	<ul style="list-style-type: none"> • use vocabulary associated with scientific events or discoveries based on illustrations (such as x-rays or vaccines) • chart change over time and offer information from charts or graphs (such as phases of the moon, temperatures, daylight hours) 	<ul style="list-style-type: none"> • describe scientific events or discoveries based on illustrations • describe differences over time based on information from charts or graphs 	<ul style="list-style-type: none"> • compare/contrast scientific events or discoveries described orally with visual support (e.g., “__ is similar/ different from __ because __.”) • compare differences based on information from charts or graphs 	<ul style="list-style-type: none"> • predict future scientific events or discoveries based on oral or graphic evidence (e.g., “__ could/will/may/might/lead to __.”) • summarize and present information from charts or graphs related to change 	<ul style="list-style-type: none"> • predict the effects of future scientific events or discoveries based on oral evidence (e.g., “__ will/may/ might/make it necessary to __.”) • explain patterns of change over time based on evidence from charts or graphs

<p>Reading</p>	<ul style="list-style-type: none"> match pictures of systems or processes with vocabulary (such as photosynthesis or body systems; e.g., “An example of ___ is ___.”) chart time and places of natural disasters (such as hurricanes, tornadoes, floods, typhoons, or earthquakes) based on headlines and pictures 	<ul style="list-style-type: none"> match pictures and phrases descriptive of systems or processes with vocabulary (such as mitosis or the nitrogen cycle; e.g., “___ goes with ___.”) respond to WH-questions regarding natural disasters based on graphic organizers and pictures 	<ul style="list-style-type: none"> sort descriptive sentences by systems or steps in the process (such as by sequencing or classifying; e.g., “before, after; goes with and belongs to; is like, is different from...”) identify characteristics and conditions related to natural disasters based on text and pictures 	<ul style="list-style-type: none"> identify systems or processes from descriptions from science text (e.g., “As a result of ___; ___ is caused by ___.”) compare natural disasters using multiple written sources, including the Internet and graphic organizers 	<ul style="list-style-type: none"> identify functions of systems or processes from grade level science text (e.g., “In order to ____, it is necessary to ____.”) interpret impact of natural disasters on people and places from grade level text
<p>Writing</p>	<ul style="list-style-type: none"> identify forms of energy and everyday examples depicted visually (such as light, sound, heat) make posters or label diagrams related to scientific questions (such as force or motion) 	<ul style="list-style-type: none"> describe and draw examples of forms of energy make posters or label diagrams following the scientific method 	<ul style="list-style-type: none"> compare/contrast two forms of energy (e.g., “___ and ___ are alike/different in these ways.”) create science exhibits with statements for each step of the scientific method 	<ul style="list-style-type: none"> explain uses of different forms of energy (e.g., “___ is used to ___.”) create science exhibits with descriptions of each step of the scientific method 	<ul style="list-style-type: none"> evaluate and defend the most efficient forms of energy (e.g., “The similarities between/among ___ are ___; ___ is ___er than ___.”) create science exhibits with explanations of each step of the scientific method

Course Objectives	Performance Indicators	Classroom Assessments
1. When conducting science investigations, ask and answer questions that will help decide the general areas of science being addressed. (A.4.1.)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. identifies the three domains of science (earth/space, life/environmental, and physical). 2. identifies a question that can be answered through a science investigation. 	<ol style="list-style-type: none"> 1.a. Sort items into appropriate science domains. 1.b. Make a collage for each science domain. 1.c. Complete three separate investigations and/or experiments and identify the domain each experiment represents. 2.a. Using graphics and/or visuals, convey a question that can be answered in a scientific manner. 2.b. Choose a question that can be investigated scientifically.
Above objective aligned with AASD Science standards: Science Connections		
2. When investigating a science-related problem, decide what data can be collected to determine the most useful explanations. (A.4.3.)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. names data sources, e.g., parents, teachers, books, videos, and experiments. 	<ol style="list-style-type: none"> 1.a. Brainstorm all possible data sources.
Above objective aligned with AASD Science standards: Science Connections		
3. When studying a science-related problem, decide what changes over time are occurring or have occurred. (A.4.5.)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. identifies changes that are occurring or have occurred. 	<ol style="list-style-type: none"> 1.a. After observing an example of changes shown on a video, identify the stages of those changes. 1.b. Use pictures to show changes over time. 1.c. Create a timeline to show changes over time.
Above objective aligned with AASD Science standards: Science Connections		

Course Objectives	Performance Indicators	Classroom Assessments
4. Use encyclopedias, source books, texts, computers, teachers, parents, other adults, journals, popular press, and various other sources, to help answer science-related questions and plan investigations. (B.4.1.)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. identifies and locates sources to answer science-related questions. 2. uses the parts of a book to locate information (index, table of contents, glossary). 3. uses sources to plan an investigation of a problem. 	<ol style="list-style-type: none"> 1.a. Match science-related questions to given sources. 1.b. Participate in a library search for sources. 2.a. Complete an information gathering and/or parts of the book treasure hunt. 3.a. Draw a picture, write a paragraph, or do a demonstration to summarize the answer to a question.
Above objective aligned with AASD Science standards: Nature of Science		
5. Acquire information about people who have contributed to the development of major ideas in the sciences and learn about the cultures in which these people lived and worked. (B.4.2.)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. identifies and describes contributors to the development of major ideas in the sciences. 2. acquires information about a contributor to the science field. 	<ol style="list-style-type: none"> 1.a. Identify a person from the student's native country or other country of choice who has contributed to the sciences. 2.a. Interview a chosen person. 2.b. Describe a person through a picture, word map, portfolio, demonstration, or skit.
Above objective aligned with AASD Science standards: Nature of Science		

Course Objectives	Performance Indicators	Classroom Assessments
<p>6. Show how the major developments of scientific knowledge in the earth and space, life and environmental, and physical sciences have changed over time. (B.4.3.)</p>	<p>Performance will be satisfactory when the student:</p> <ol style="list-style-type: none"> 1. identifies the major developments of scientific knowledge. 2. sequences the major developments of scientific knowledge. 	<ol style="list-style-type: none"> 1.a. Select the most important developments in scientific knowledge given pictures representing both important and less important developments. 1.b. Discuss changes in technology in the student's own experiences, for example, technology in their native country, changes in this country during the student's life. 2.a. Create a pictorial or key word timeline of the major identified developments of scientific knowledge.
<p>Above objective aligned with AASD Science standards: Nature of Science</p>		
<p>7. Use the vocabulary of the unifying themes to ask questions about objects, organisms, and events being studied. (C.4.1.)</p>	<p>Performance will be satisfactory when the student:</p> <ol style="list-style-type: none"> 1. uses examples to demonstrate the vocabulary of unifying themes. 2. classifies questions related to and uses the vocabulary of unifying themes. 	<ol style="list-style-type: none"> 1.a. Complete experiments related to the unifying themes. 1.b. List examples (in pictures, words, or symbols) from the student's own experience related to the unifying themes. 2.a. Sort given questions according to the unifying themes.
<p>Above objective aligned with AASD Science standards: Science Inquiry</p>		

Course Objectives	Performance Indicators	Classroom Assessments
8. Use the science content being learned to ask questions, plan investigations, make observations, make predictions, and offer explanations. (C.4.2.)	Performance will be satisfactory when the student: 1. identifies and uses prior knowledge related to content to ask questions and plan investigation.	1.a. Complete a KWHL about science content. K = what you know W = what you want to know H = how will you find out L = what you learned
Above objective aligned with AASD Science standards: Science Inquiry		
9. Select multiple sources of information to help answer questions selected for classroom investigations. (C.4.3.)	Performance will be satisfactory when the student: 1. identifies multiple sources. 2. selects sources to answer specific questions.	1.a. Create a source web (concept map) of available information. 2.a. Match questions to given sources. 2.b. In groups, find sources to answer given questions and present the findings.
Above objective aligned with AASD Science standards: Science Inquiry		
10. Use simple science equipment including rulers, balances, graduated cylinders, hand lenses, thermometers, and computers safely and effectively to collect data relevant to questions and investigations. (C.4.4.)	Performance will be satisfactory when the student: 1. identifies the use of simple science equipment. 2. uses simple science equipment to complete an experiment.	1.a. Given a science problem, find the best equipment to solve the problem. 2.a. Measure objects, using a variety of tools (e.g., rulers, string, or paper clips). 2.b. Collect data using simple science equipment safely.
Above objective aligned with AASD Science standards: Science Inquiry		

Course Objectives	Performance Indicators	Classroom Assessments
11. Communicate the results of their investigations in ways their audiences will understand by using charts, graphs, drawings, written descriptions, and various other means. (C.4.6.)	Performance will be satisfactory when the student: 1. summarizes the results of investigation.	1.a. Create a picture, chart, physical model or other visual to show results of the student's investigation.
Above objective aligned with AASD Science standards: Science Inquiry		
12. Understand that objects are made of more than one substance, by observing, describing, and measuring the properties of earth materials, including properties of size, weight, shape, color, temperature, and the ability to react with other substances. (D.4.1.)	Performance will be satisfactory when the student: 1. identifies properties of matter. 2. observes and describes matter. 3. measures properties of matter.	1.a. Collect a variety of matter. 1.b. List the properties that make them different from one another. 2.a. Observe an object and describe it through words, pictures, or semantic maps. 3.a. Measure an object's size, weight, shape, temperature, color, and its ability to react with other substances.
Above objective aligned with AASD Science standards: Physical Science		
13. Group and/or classify objects and substances based on the properties of matter. (D.4.2.)	Performance will be satisfactory when the student: 1. groups objects according to similar properties. 2. groups pictures of objects according to similar properties. 3. identifies the category or name of an object or substance.	1.a. Group objects by size, weight, shape, color. 2.a. Group pictures of objects by size, weight, shape, color. 3.a. After sorting, select the name of the group from a list, and respond yes/no to the name of the group.
Above objective aligned with AASD Science standards: Physical Science		

Course Objectives	Performance Indicators	Classroom Assessments
14. Understand that substances can exist in different states—solid, liquid, gas. (D.4.3)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. describes the states of solid, liquid, and gas. 2. sorts and labels items as solid, liquid, and gas. 	<ol style="list-style-type: none"> 1.a. Experiment with solid, liquid, and gas using real world examples. 2.a. Given substances, group them as solid, liquid, and gas.
Above objective aligned with AASD Science standards: Physical Science		
15. Construct simple models of what is happening to materials and substances undergoing change, using simple instruments or tools to aid observations and collect data. (D.4.5)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. observes and collects data about change using simple instruments or tools. 2. constructs simple models of what happens to materials and substances undergoing change . 	<ol style="list-style-type: none"> 1.a. Use simple tools (e.g., thermometer, scale, rulers, hand lenses, and fan) to observe and measure changes in water as it freezes, melts, and evaporates. 2.a. Use simple models or other visuals to display the changes that occur in water.
Above objective aligned with AASD Science standards: Physical Science		
16. Investigate that earth materials are composed of rocks and soils and correctly use the vocabulary for rocks, minerals, and soils during these investigations. (E.4.1.)	Performance will be satisfactory when the student: <ol style="list-style-type: none"> 1. develops simple vocabulary for rocks, minerals, and soils. 2. investigates that earth materials are composed of rocks, minerals, and soils. 	<ol style="list-style-type: none"> 1.a. Inspect and label examples of rocks, minerals, and soils. 1.b. Classify examples of rocks, minerals, and soils. 2.a. Complete a treasure hunt for earth materials.
Above objective aligned with AASD Science standards: Earth and Space Science		

Course Objectives	Performance Indicators	Classroom Assessments
17. Show that earth materials are composed of rocks and soils and correctly use the vocabulary for rocks, minerals, and soils during these investigations. (E.4.2.)	Performance will be satisfactory when the student: 1. shows that earth materials have different physical and chemical properties.	1.a. Through observations and hands-on experience, list properties of earth materials. 1.b. Create a demonstration to show physical or chemical properties (e.g., mix water and dirt).
Above objective aligned with AASD Science standards: Earth and Space Science		
18. Develop descriptions of the land and water masses of the earth and of Wisconsin's rocks and minerals, using the common vocabulary of earth and space science. (E.4.3.)	Performance will be satisfactory when the student: 1. describes the land and water masses of the earth and Wisconsin's rocks and minerals.	1.a. Draw pictures of land masses, water masses, rocks, and minerals. 1.b. Categorize pictures of land masses, water masses, rocks, and minerals. 1.c. Label pictures of land masses, water masses, rocks, and minerals.
Above objective aligned with AASD Science standards: Earth and Space Science		
19. Illustrate resources humans use in mining, forestry, farming, and manufacturing in Wisconsin and elsewhere in the world. (E.4.8.)	Performance will be satisfactory when the student: 1. demonstrates an understanding of mining, forestry, farming, and manufacturing. 2. illustrates resources humans use in these areas.	1.a. Demonstrate an understanding of mining, forestry, farming, and manufacturing. 2.a. Illustrate resources humans use in these areas.
Above objective aligned with AASD Science standards: Earth and Space Science		

Course Objectives	Performance Indicators	Classroom Assessments
20. Illustrate the different ways that organisms grow through life stages and survive to produce new members of their type. (F.4.3.)	Performance will be satisfactory when the student: 1. identifies prior knowledge of the life stages. 2. illustrates an organism's life cycle.	1.a. Identify different life stages based on an experience with a pet or siblings. 2.a. Raise a classroom pet and record its growth through life stages.
Above objective aligned with AASD Science standards: Life and Environmental Science		
21. Using the science themes, develop explanations for the connections among living and non-living things in various environments. (F.4.4.)	Performance will be satisfactory when the student: 1. identifies living and non-living things. 2. shows connections between living and non-living things.	1.a. Label things that are living or non-living. 1.b. Describe the differences between living and non-living things. 2.a. Create a poster or other visual to show how living things depend on non-living things.
Above objective aligned with AASD Science standards: Life and Environmental Science		
22. Discover what changes in technology have occurred in a career chosen by a parent, grandparent, or an adult friend over a long period of time. (G.4.2.)	Performance will be satisfactory when the student: 1. discovers changes in technology over time.	1.a. Interview a person of the student's choice concerning career-related technology changes over time and visually represent information discovered.
Above objective aligned with AASD Science standards: Science Applications		

Course Objectives	Performance Indicators	Classroom Assessments
23. Determine what science discoveries have led to changes in technologies that are being used in the workplace by someone employed locally. (G.4.3.)	Performance will be satisfactory when the student: 1. identifies scientific discoveries. 2. determines the science discoveries that led to changes in technologies.	1.a. List scientific discoveries using a graphic organizer. 2.a. Match scientific discoveries to changes in technology using a Venn diagram or comparison/contrast chart.
Above objective aligned with AASD Science standards: Science Applications		
24. Describe how science and technology have helped, and in some cases hindered, progress in providing better food, more rapid information, quicker and safer transportation, and more effective health care. (H.4.1.)	Performance will be satisfactory when the student: 1. describes how science and technology have helped progress. 2. describes how science and technology have hindered progress.	1.a. Draw a picture to show how science and technology have helped progress. 2.a. Draw a picture to show how technology hindered progress in a chosen area.
Above objective aligned with AASD Science standards: Science in Social and Personal Perspectives		
25. Show how science has contributed to meeting personal needs, including hygiene, nutrition, exercise, safety, and health care. (H.4.3.)	Performance will be satisfactory when the student: 1. identifies personal needs. 2. shows how science can contribute to personal needs. 3. shows how science has contributed to daily life.	1.a. List personal needs. 2.a. Brainstorm and record how science can contribute to personal needs. 3.a. Draw pictures or bring examples of science or technology the students use in daily life.
Above objective aligned with AASD Science standards: Science in Social and Personal Perspectives		