

STANDARDS AND BENCHMARKS VOL II

KINDERGARTEN

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment: Connections to Nature of Science

SCIENCE

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

ELA / LITERACY

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

RI.K.2 With prompting and support, identify the main topic and retell key details of a text.

RI.K.8 With prompting and support, identify the reasons an author gives to support points in a text.

W.K.2 Use a combination of drawing, dictating, and writing to compose information/explanatory texts in which they name what they are writing about and supply some information about the topic.

WK.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

WK.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

ART

ART.VA.I.K.3 Explore the elements of art through playful

sensory experiences.

ART.VA.II.K.2 Use a variety of lines, colors, and basic geometric shapes and patterns to creatively express feelings and personal experiences.

ART.VA.III.K.1 Explore and discuss why artists create.

ART.VA.III.K.2 Recognize that art can be created for self-expression or fun.

ART.VA.III.K.3 Describe the sensory qualities in a work of art.

ART.VA.V.K.3 Identify how pattern, shape, rhythm, and movement are used throughout the arts.

ART.VA.V.K.4 Explore connections between the visual arts and other curriculum.

FIRST GRADE

Structure, Function, and Information Processing

SCIENCE

1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

ELA / LITERACY

RI.1.1 Ask and answer questions about key details in a text.

RI.1.2 Identify the main topic and retell key details of a text.

RI.1.8 Identify the reasons an author gives to support points in a text.

W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a

question.

SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

ART

ART.VA.II.1.2 Explore the use of knowledge of the elements of art.

ART.VA.II.1.3 Explore and discuss how artists construct ideas in artworks.

ART.VA.III.1.2 Identify the purpose of community art.

ART.VA.III.1.3 Demonstrate respect for the value of other opinions in discussion.

ART.VA.IV.1.3 Describe how the subject matter of artwork may be connected to the environment in which it was created.

ART.VA.V.1.3 Identify similarities between the visual arts and other arts disciplines.

SECOND GRADE

Interdependent Relationships in Ecosystems

SCIENCE

2-LS2-1 Plan, and conduct, an investigation to determine if plants need sunlight and water to grow.

2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

ELA / LITERACY

RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

RI.2.8 Describe how reasons support specific points the author makes in a text.

W.2.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

ART

ART.VA.III.2.1 Develop a visual vocabulary.

ART.VA.III.2.2 Recognize that art is created to fulfill personal and/or social needs.

ART.VA.III.2.3 Share personal experiences and preferences in response to works of art.

ART.VA.III.2.5 Reflect on how art expresses ideas, feelings, and opinions.

ART.VA.V.2.3 Identify similarities among the arts including vocabulary, elements of art, and principles of design.

THIRD GRADE

Interdependent Relationships in Ecosystems

SCIENCE

3-LS2-1 Construct an argument that some animals form groups that help members survive.

3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

SOCIAL STUDIES

3-G1.0.2 Use thematic maps to identify and describe the physical and human characteristics of Michigan.

3-G2.0.1 Use a variety of visual materials and data sources to describe ways Michigan can be divided into regions.

3-G4.0.2 Describe diverse groups that have come into a region of Michigan and reasons why they came (push/pull factors).

3-G5.0.2 Describe how people adapt to, use, and modify the natural resources of Michigan.

ELA / LITERACY

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.

W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.3.7 Conduct short research projects that build knowledge about a topic.

SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

SL.3.5 Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

ART

ART.VA.II.3.3 Examine how artists turn ideas into visual solutions.

ART.VA.III.3.2 Examine how art expresses cultural traditions.

ART.VA.IV.3.2 Describe the materials and art forms used by particular cultures.

ART.VA.V.3.1 Describe how art can be found in various environments.

FOURTH GRADE

Structure, Function, and Information Processing

SCIENCE

4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.

ELA / LITERACY

RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.4.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.

RI.4.3 Explain events, procedures, ideas, or concepts in an historical, scientific, or technical text, including what happened and why, based on specific information in the text.

RI.4.7 Interpret information presented visually, orally, or quantitatively (i.e. charts, graphs, diagrams, timelines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

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W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.4.7 Conduct short research projects that build knowledge through investigation of differ-

ent aspects of a topic.

SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

SL.4.4 Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

ART

ART.VA.II.4.4 Analyze and reflect on the uses of subject matter, symbols, and ideas to express and communicate meaning in artwork.

ART.VA.III.4.5 Analyze how art can be a reflection of society and a response to real world experiences.

ART.VA.IV.4.1 Describe how artwork communicates facts and/or experiences of various cultures.

ART.VA.V.4.4 Demonstrate cross-curricular connections through a culminating event .

FIFTH GRADE

Matter and Energy in Organisms and Ecosystems

SCIENCE

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and environment.

ELA / LITERACY

RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and

information.

W.5.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

SL.5.4 Report on a topic or text, or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.

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ART

ART.VA.III.5.2 Identify and defend various purposes for creating works for visual art.

ART.VA.III.5.3 Understand and respect that there are different responses to specific art works in a global community.

ART.VA.IV.5.3 Demonstrate how history, culture, and the visual arts interrelate in making and studying works of art.

ART.VA.V.5.3 Understand and use comparative characteristics of the visual arts and other arts disciplines.

ART.VA.V.5.4 Synthesize connections between the visual arts and other disciplines in the curriculum.

MIDDLE SCHOOL (GRADES 6 – 8)

Matter and Energy in Organisms and Ecosystems

SCIENCE

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an

ecosystem.

MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

ELA / LITERACY

RI.6-8.8 Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

WHST.6-8.1 Write arguments focused on discipline-specific content to support claims with clear reasons and relevant evidence.

WHST.6-8.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes, to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.

SL.6-8.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade level (6, 7, 8) topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.6-8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

ART

ART.VA.III.6.2 Develop the skill of interpreting artwork, searching for embedded meaning, function, and personal connections at a developing level.

ART.VA.III.6.3 Develop the ability to describe how the artist's choice of materials, techniques, media technology, and processes influence the viewer.

ART.VA.III.6.4 Develop critical thinking strategies, observing, comparing, and contrasting artworks.

ART.VA.III.6.5 Develop and defend informed aesthetic opinions about works of art using artistic vocabulary at a developing level.

ART.VA.IV.6.1 Recognize and describe how art contributes to and reflects all societies and cultures.

ART.VA.IV.6.2 Develop an understanding of the historical, social, and cultural contexts of artwork with aesthetic sophistication.

ART.VA.III.7.2 Interpret artwork searching for embedded meaning, function, and personal connections at an emerging level.

ART.VA.III.7.3 Improve descriptions of how the artist's choice of materials, techniques, media technology, and processes influence the viewer.

ART.VA.III.7.4 Use critical thinking strategies to observe, compare, and contrast artworks at an emerging level.

ART.VA.III.7.5 Develop and defend informed aesthetic opinions about works of art using artistic vocabulary at an emerging level.

ART.VA.IV.7.1 Recognize, describe and analyze, and evaluate how art contributes to and reflects all societies and cultures at an emerging level.

ART.VA.IV.7.2 Articulate an understanding of the historical, social, and cultural contexts of artwork with an emerging level of aesthetic sophistication.

ART.VA.III.8.2 Effectively inter-

pret artwork, searching for embedded meaning, function, and personal connections.

ART.VA.III.8.3 Effectively describe how the artist's choice of materials, techniques, media technology, and processes influence the viewer.

ART.VA.III.8.4 Effectively use critical thinking strategies to observe, compare, and contrast artworks.

ART.VA.III.8.5 Develop and defend informed aesthetic opinions about works of art using effective artistic vocabulary.

ART.VA.IV.8.1 Recognize, describe and analyze, and evaluate how art contributes to and reflects all societies and cultures.

ART.VA.IV.8.2 Articulate an understanding of the historical, social, and cultural contexts of artwork with aesthetic sophistication.

HIGH SCHOOL (GRADES 9 – 12)

Interdependent Relationships in Ecosystems

SCIENCE

HS-LS2-1 Use mathematical and / or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS2-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-6 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions; but changing conditions may result in a new ecosystem.

HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

ELA / LITERACY

RL.9-10-1 Cite strong and thor-

ough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

RI.9-10.6 Determine an author's point-of-view or purpose in a text and analyze how an author uses rhetoric to advance that point-of-view or purpose.

W.9-10.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

W.9-10.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.9-10.7 Conduct short, as well as more sustained, research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

SL.9-10.4 Present information, findings, and supporting evidence clearly, concisely, and logically, such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

RL.11-12-1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

RI.11-12.6 Determine an author's point-of-view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.

W.11-12.1 Write arguments to support claims in an analysis of substantive topics or texts, us-

ing valid reasoning and relevant and sufficient evidence.

W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.11-12.7 Conduct short, as well as more sustained, research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden

the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization,

development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

ART

ART.VA.I.HS.2 Intentionally use art materials and tools when applying techniques and skills to communicate ideas.

ART.VA.III.HS.1 Analyze and describe the formal characteristics of a work of art or design.

ART.VA.III.HS.2 Describe how organizational principles are used to elicit emotional responses.

ART.VA.III.HS.3 Critically observe a work of art to evaluate and respond to the artist's intent using art vocabulary and terminology.

ART.VA.III.HS.5 Recognize and understand the relationships between personal experiences and the development of artwork.

ART.VA.IV.HS.1 Observe and describe artwork with respect to history and culture.

ART.VA.IV.HS.2 Describe the functions and explore the meaning of specific art objects within varied cultures, times, and places.