

Benchmarks for Fifth and Sixth Grade Education in Iowa*

Pella Wildlife Biodiversity Curriculum

*Benchmarks for education in Iowa were taken directly from the Fifth Grade sections of the website: <http://educateiowa.gov/>

Iowa Educational Benchmarks, Essential Concepts and Skills G5	Iowa Educational Benchmarks, Essential Concepts and Skills G6	Pella Wildlife Biodiversity Curriculum
<p>G5 Math Benchmark: Students can understand and apply number properties and operations such as comparing numbers, describing and applying properties of numbers, demonstrate ways of performing operations, using place value, writing numbers in standard, expanded and exponential form and using and interpreting operational and relational symbols.</p>	<p>G6 Math Benchmark: (same as G5) Students can understand and apply number properties and operations such as comparing numbers, describing and applying properties of numbers, demonstrate ways of performing operations, using place value, writing numbers in standard, expanded and exponential form and using and interpreting operational and relational symbols.</p>	
<p>G5 Math Benchmark: Students can understand and apply concepts of algebra like solving equations and inequalities, using variable expressions to model situations, and exploring numerical patterns.</p>	<p>G6 Math Benchmark: (same as G5) Students can understand and apply concepts of algebra like solving equations and inequalities, using variable expressions to model situations, and exploring numerical patterns.</p>	<p>Estimate the height of the eagle nest using geometry and algebraic formulas</p>
<p>G5 Math Benchmark: Students can understand and apply concepts of geometry such as identifying, classifying and comparing geometric figures, describing geometric properties, patterns and relationships, and applying the concepts of perimeter, area and volume.</p>	<p>G6 Math Benchmark: (same as G5) Students can understand and apply concepts of geometry such as identifying, classifying and comparing geometric figures, describing geometric properties, patterns and relationships, and applying the concepts of perimeter, area and volume.</p>	
<p>G5 Math Benchmark: Students can understand and apply concepts of measurement such as measuring length/distance, time, temperature, weight, mass and volume. Estimating measurements with appropriate precision and identifying and using appropriate units of measurement.</p>	<p>G6 Math Benchmark: (same as G5) Students can understand and apply concepts of measurement such as measuring length/distance, time, temperature, weight, mass and volume. Estimating measurements with appropriate precision and identifying and using appropriate units of measurement.</p>	<p>Estimate the height of the eagle nest using geometry and algebraic formulas</p>
<p>G5 Math Benchmark: Students can understand and apply concepts of probability and statistics.</p>	<p>G6 Math Benchmark: (same as G5) Students can understand and apply concepts of probability and statistics.</p>	<p>Children will make an estimate of how many bald eagles are in their area based on probability and statistics and then in their county. From that they will</p>

		create a total and/or graph of bald eagles in each county of Iowa
G5 Math Benchmark: Students can understand and apply concepts of estimation such as standard rounding, order of magnitude and number sense.	G6 Math Benchmark: (same as G5) Students can understand and apply concepts of estimation such as standard rounding, order of magnitude and number sense.	Estimate the height of the eagle nest using geometry and algebraic formulas
G5 Math Benchmark: Students can solve a variety of math problems – single and multiple-step problems as well as identifying extraneous or insufficient information in problems.	G6 Math Benchmark: (same as G5) Students can solve a variety of math problems – single and multiple-step problems as well as identifying extraneous or insufficient information in problems.	Estimate the height of the eagle nest using geometry and algebraic formulas. Involves multiple steps as well as being able to identify a number of pieces of information needed before the process of figuring is started.
G5 Math Benchmark: Students can understand and apply problem-solving approaches and procedures and choose a method for solving a problem.	G6 Math Benchmark: (same as G5) Students can understand and apply problem-solving approaches and procedures and choose a method for solving a problem.	During the “height of nest” task the student must decide which of the two methods to use depending on their situation, location and the tools available.
G5 Math Benchmark: Students can interpret data presented in a variety of ways such as tables, line graphs, and bar graphs. Can use tables or graphs to determine rates or identify trends, and draw conclusions.	G6 Math Benchmark: (same as G5) Students can interpret data presented in a variety of ways such as tables, line graphs, and bar graphs. Can use tables or graphs to determine rates or identify trends, and draw conclusions.	Children will make an estimate of how many bald eagles are in their area and then in their county. From that they will create a graph of bald eagles in each county of Iowa and compare this to a graph of bald eagle pairs in the lower 48 states as well as a chart of eagles in the United States and discuss what these charts mean. The conclusions from this discussion will be used in the civics/science lesson (below).
G5 Science Benchmark: Students can understand and apply skills used in scientific inquiry, investigation. Students can analyze and interpret scientific information. Students can analyze and interpret information from scientific studies.	G6 Science Benchmark: (same as G5) Students can understand and apply skills used in scientific inquiry, investigation. Students can analyze and interpret scientific information. Students can analyze and interpret information from scientific studies.	Participants will be taken to observe established eagle nests. During this observation process they will be directed to observe the habitat, nesting materials, and geographical location and features. They will be asked to answer a number of scientific questions that are specified on the detailed curriculum page.
G5 Science Benchmark: Students can understand concepts and relationships in life science such as the structures of living things, life cycles, and environmental interaction and adaption.	G6 Science Benchmark: (same as G5) Students can understand concepts and relationships in life science such as the structures of living things, life cycles, and environmental interaction and adaption.	Some of the questions students will be answering in their scientific research are related to this benchmark. Examples include (more details can be found in the detailed curriculum): *What habitat are the eagles living in? *What materials are the eagles using for their nests? *What waterways are the eagles near? *Do you observe any risks to the eagles in this area?

<p>G5 Science Benchmark: Students can understand concepts and relationships in earth/space sciences – Earth's composition and structure, changes in and around the earth, & concepts relating to the universe.</p>	<p>G6 Science Benchmark: (same as G5) Students can understand concepts and relationships in earth/space sciences – Earth's composition and structure, changes in and around the earth, & concepts relating to the universe.</p>	
<p>G5 Science Benchmark: Students can understand concepts and relationships in physical science such as in mechanics, forces, motion, energy in its various forms and properties and changes in matter.</p>	<p>G6 Science Benchmark: (same as G5) Students can understand concepts and relationships in physical science such as in mechanics, forces, motion, energy in its various forms and properties and changes in matter.</p>	<p>Students will study how eagles fly including concepts of thermal drafts, direction, currents and gravity.</p>
<p>G3 - G5 Science Essential Concepts or Skills: General Science: Students can identify and generate questions that can be answered through scientific investigation, recognize that scientists perform different types of investigations, plan and conduct scientific investigations, use appropriate tools and techniques to gather, process and analyze data, and incorporate mathematics in science inquiries, use evidence to develop reasonable explanations, communicate scientific procedures and explanations, and following appropriate safety procedures when conducting investigations.</p>	<p>G6 - G8 Science Essential Concepts or Skills: General Science: (same as G3-G5): Students can identify and generate questions that can be answered through scientific investigation, recognize that scientists perform different types of investigations, plan and conduct scientific investigations, use appropriate tools and techniques to gather, process and analyze data, and incorporate mathematics in science inquiries, use evidence to develop reasonable explanations, communicate scientific procedures and explanations, and following appropriate safety procedures when conducting investigations.</p>	<p>Students will participate in a number of outdoor observations of eagles and their habitat. During these observations they will answer a number of specific scientific questions (see detailed lesson plans). They will use different tools to gather and record data and follow safety procedures for the eagles and themselves during these field trips.</p>
	<p>G6 - G8 Science Essential Concepts or Skills: General Science: Use evidence to develop descriptions, explanations, predictions and models. Think critically and logically to make the relationships between evidence and explanations. Recognize and analyze alternative explanations and predictions. Communicate and defend procedures and explanations.</p>	<p>Students will be asked to take their observed scientific data and create reports from this data. Reports will be written, verbal and visual.</p>
<p>G3 - G5 Science Essential Concepts or Skills: Earth Science: (This includes biosphere) Students can understand and apply knowledge and use of earth materials, can apply knowledge of processes and changes on or in the earth's land, oceans and atmosphere, understand and apply knowledge of fossils and the evidence they provide of past life on earth, understand and apply knowledge of weather</p>	<p>G3 - G5 Science Essential Concepts or Skills: Earth Science: (same as G3-G5) (This includes biosphere) Students can understand and apply knowledge and use of earth materials, can apply knowledge of processes and changes on or in the earth's land, oceans and atmosphere, understand and apply knowledge of properties, movements and locations of objects in the solar system.</p>	

<p>and patterns, understand and apply knowledge of properties, movements and locations of objects in the solar system.</p>		
	<p>G6 - G8 Science Essential Concepts or Skills: Earth Science: Understand and apply knowledge of the water cycle, including consideration of events that impact water quality. Understand and apply knowledge of earth history based on physical evidence. Understand and apply knowledge of the earth's atmospheric properties and how they influence weather and climate.</p>	<p>Students will discuss the excerpts from Silent Spring and talk about water quality.</p>
<p>G3 - G5 Science Essential Concepts or Skills: Physical Science: Students can understand and apply knowledge of how to describe and identify substances based on characteristic properties. Students can understand and apply knowledge of states of matter and changes in states of matter, sound, light, electricity, magnetism and heat and how forces are related to an object's motion.</p>		
	<p>G6 - G8 Science Essential Concepts or Skills: Physical Science: Understand and apply knowledge of elements, compounds, mixtures, and solutions based on the nature of their physical and chemical properties, physical and chemical changes and their relationship to the conservation of matter and energy. Understand and apply knowledge of forms of energy and energy transfer. Understand and apply knowledge of motions and forces.</p>	
<p>G3 - G5 Science Essential Concepts or Skills: Life Science: Students can understand and apply knowledge of organisms and their environments, environmental stewardship, human body system and how it works together, & knowledge of personal health and wellness issues.</p>		<p>Students will explore the environment, organisms and environmental stewardship through participating in the bald eagle monitoring program through the DNR.</p>
	<p>G6 – G8 Science Essential Concepts or Skills: Life Science: Understand and apply knowledge of basic components and functions of cells, tissues, organs and organ systems. Understand and apply knowledge of</p>	<p>Students will discuss and explore issues such as lead poisoning in bald eagles, water quality and bald eagles and other factors effecting the bald eagle populations.</p>

	<p>how different organisms pass on traits (heredity). Understand and apply knowledge of the complementary nature of structure and function and the commonalities among organisms. Understand and apply knowledge of interdependency of organisms, changes in environmental conditions, and survival of individuals and species, the cycling on matter and energy in ecosystems. Understand and demonstrate knowledge of the social and personal implications of environmental issues. Understand and apply knowledge of the functions and interconnections of the major human body systems.</p>	
<p>G3 - G5 Social Studies Essential Concepts or Skills: Behavioral Sciences: Students can understand the changing nature of society, understand the influences on individual and group behavior and group decision-making. Understand how personality and socialization impact the individual, understand the process of how humans develop, learn, adapt to the environment, and internalize their culture. Understand the current social issues to determine how the individual formulates opinions and responds to issues, understand how to evaluate social research and information.</p>	<p>G6 - G8 Social Studies Essential Concepts or Skills: Behavioral Sciences: (same as G3-G5) Students can understand the changing nature of society, understand the influences on individual and group behavior and group decision-making. Understand how personality and socialization impact the individual, understand the process of how humans develop, learn, adapt to the environment, and internalize their culture. Understand the current social issues to determine how the individual formulates opinions and responds to issues, understand how to evaluate social research and information.</p>	<p>Students will explore the human impact on the environment of the eagles, what the current issues effecting eagles are and how and what decisions have been made about them stemming from out cultural concepts of eagles and the Native American view of the eagle.</p>
<p>G5 Literature Benchmark: Students can comprehend what they read in a variety of literary and informational texts. They can determine the meaning of new words in context. They can draw conclusions and make inferences. They can infer traits, feelings and motives of characters.</p>	<p>G6 Literature Benchmark: (Same as G5) Students can comprehend what they read in a variety of literary and informational texts. They can determine the meaning of new words in context. They can draw conclusions and make inferences. They can infer traits, feelings and motives of characters.</p>	<p>Students will read excerpts from the book “Silent Spring” by Rachel Carson and will learn new vocabulary, draw conclusions from the writing and discuss why this book was called the “book that saved the bald eagles in America”</p>
	<p>G6 Literature Benchmark: Students can interpret information in new contexts, interpret nonliteral language used in text, can determine the main idea of a text, can identify the writer's views and purpose, and can analyze style and structure.</p>	<p>Students will read excerpts from the book “Silent Spring” by Rachel Carson and will learn new vocabulary, draw conclusions from the writing and discuss why this book was called the “book that saved the bald eagles in America”</p>
<p>G3 - G5 Social Studies Essential Concepts or Skills: Economics: Students can understand the role of scarcity and economic trade-offs and how economic</p>	<p>G6 - G8 Social Studies Essential Concepts or Skills: Economics: (same as G3-G5 except italics): Students can understand the role of scarcity and economic</p>	<p>Students will read excerpts from the book “Silent Spring” by Rachel Carson which highlights, among other issues, how economic conditions and economic</p>

<p>conditions impact people's lives. Understand the functions of economic institutions, understand how governments throughout the world influence economic behavior, understand factors that create patterns of interdependence in the world economy and understand that advancing technologies impact the global economy.</p>	<p>trade-offs and how economic conditions impact people's lives. Understand the functions of economic institutions, understand how governments throughout the world influence economic behavior, understand factors that create patterns of interdependence in the world economy and understand that advancing technologies impact the global economy. <i>Understand the function of different financial instruments.</i></p>	<p>factors and institutions effected water quality in America during the 1960s and how this, in turn effected the bald eagles.</p>
<p>G3 - G5 Social Studies Essential Concepts or Skills: Geography: Students can understand the use of geographic tools to locate and analyze information about people, places and environments. Understand how geographic and human characteristics create culture and define regions. Understand how human factors and the distribution of resources affects the development of society and the movement of populations, understand how physical processes and human actions modify the environment and how environment affects humans.</p>	<p>G6 - G8 Social Studies Essential Concepts or Skills: Geography: (same as G3-G5): Students can understand the use of geographic tools to locate and analyze information about people, places and environments. Understand how geographic and human characteristics create culture and define regions. Understand how human factors and the distribution of resources affects the development of society and the movement of populations, understand how physical processes and human actions modify the environment and how environment affects humans.</p>	<p>Students will draw maps of the areas they observe with eagle nests. These maps will include the location of the waterway, locations of some trees and other flora, locations of other wildlife and location of the eagle nest. Other factors will also be mapped and discussed – are there roadways nearby? Homes? Other forms of human encroachment? How does this/will this effect the environment – the eagles and other wildlife.</p>
<p>G3 - G5 Social Studies Essential Concepts or Skills: History: Students can understand historical patterns, periods of time and the relationships among these elements. Understand how and why people create, maintain, or change systems of power, authority and governance. Understand the role of culture and cultural diffusion on the development and maintenance of societies, understand the role of individuals and groups within a society as promoters of change or the status quo, understand the effect of economic needs and wants on individual and group decisions, understand the effects of geographic factors on historical events, understand the role of innovation on the development and interaction of societies. Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.</p>	<p>G6 - G8 Social Studies Essential Concepts or Skills: History: (same as G3-G5): Students can understand historical patterns, periods of time and the relationships among these elements. Understand how and why people create, maintain, or change systems of power, authority and governance. Understand the role of culture and cultural diffusion on the development and maintenance of societies, understand the role of individuals and groups within a society as promoters of change or the status quo, understand the effect of economic needs and wants on individual and group decisions, understand the effects of geographic factors on historical events, understand the role of innovation on the development and interaction of societies. Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.</p>	<p>Students will read excerpts from the book “Silent Spring” by Rachel Carson which highlights, among other issues, how political conditions and political and cultural factors and various institutions effected water quality in America during the 1960s and how this, in turn effected the bald eagles. They will learn how and why this changed and how the bald eagles made a come-back.</p>

<p>G3 - G5 Social Studies Essential Concepts or Skills: Political Science/Civic Literacy: Students can understand the rights and responsibilities of each citizen and demonstrate the value of lifelong civic action. Understand how the government established by the Constitution embodies the enduring values and principles of democracy and republicanism. Understand the purpose and function of each of the three branches of government established by the Constitution. Understand the differences among local, state and national government. Understand the role of the United States in current world affairs.</p>	<p>G6 - G8 Social Studies Essential Concepts or Skills: Political Science/Civic Literacy: (same as G3-G5): Students can understand the rights and responsibilities of each citizen and demonstrate the value of lifelong civic action. Understand how the government established by the Constitution embodies the enduring values and principles of democracy and republicanism. Understand the purpose and function of each of the three branches of government established by the Constitution. Understand the differences among local, state and national government. Understand the role of the United States in current world affairs.</p>	<p>Students will learn how they can continue to protect the bald eagle by supporting legislature that protects water quality and biodiversity. The role of the local, state and national government in these issues will be discussed. Students will become familiar with the role of the DNR and the office of the US Fish and Wildlife Services. Students will also discuss what they can do as individuals and explore the role of non-governmental organizations in the management of wildlife.</p>
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