

Iowa Department of Natural Resources



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**Basic Alignment of Projects WILD, WILD Aquatic, Learning Tree activities to the Core Middle School (6-8) Science Essential Concepts and Skills**

Core Essential Concepts & Skills Sets										"Project" Activity					Source	Activity Skill Development																																													
Inquiry 1	Inquiry 2	Inquiry 3	Inquiry 4	Inquiry 5	Inquiry 6	Inquiry 7	Inquiry 8	Inquiry 9	Inquiry 10	Life 1	Life 2	Life 3	Life 4	Life 5	Life 6	Life 7	Earth 1	Earth 2	Earth 3	Earth 4	Earth 5	Physical 1	Physical 2	Physical 3	Physical 4			analysis	application	cause & effect	classification	comparison	composition	construction	description	discussion	evaluation	generalization	identification	inference	interpretation	observation	organization	prediction	problem solving	reasoning	representation	research	summarization	synthesis	verification	Notes									
								X				X		X										X		400 Acre Wood	PLT	X										X									X														
															X									X	A Few Of My Favorite Things	PLT	X							X		X												X													
															X								X	X	A Look At Aluminum	PLT	X				X				X								X																		
														x	x										A Look at Lifestyles	PLT	X				X				X									X					X												
														x	X									x	A Peek At Packaging	PLT	X			X					X												X														
										x	X		X												Adaptation Artistry	PW	X	X					X	X												X							X								
														x	x								x		Air Plants	PLT	X																			X										X					
														x	X		x					X	x		Air We Breathe	PLT	X		X		X													X	X																
													X	X											Aquatic Roots	PWA	X	X		X	X			X	X															X		X									
														X											Bearly Growing	PW	X				X																														
														x	x										By the Rivers of Babylon	PLT	X																																		
												x	X	X											Can It Be Real	PLT	X										X	X																							
													X	X	X										Career Critters	PW	X	X			X			X		X																									
	X	X											X	X			X								Changing the Land	PW	X	X			X			X		X	X															X		X							
											x	x	X		x										Charting Diversity	PLT	X									X																									
													X		X										Checks and Balances	PW	X									X																									
												X	X												Designing A Habitat	PWA	X	X		X	X			X	X																	X		X							
													X	X			X	X							Dragonfly Pond	PWA	X	X		X	X			X	X																										
																									Dynamic Duos	PLT	X																																		
												x	X												Eat And Glow	PWA	X			X			X	X			X	X														X		X							
X					X	X								X	X			X							Eco-Enrichers	PW	X	X		X	X			X																											
													X	X											Ecosystem Facelift	PW	X	X		X			X				X																								
													X	X											Edge Of Home, The	PWA	X			X			X						X																						
				X									x	x	X		x	X						Every Drop Counts	PLT	X																			X	X	X														
												X	X	X											Fishy Who's Who	PWA	X	X		X	X		X																												
													X	X											Forest Consequences	PLT	X							X																											
														X											Global Climate	PLT	X		X																																
												X	X												Good Buddies	PW		X		X																															
													X												Habitat Rummy	PW	X	X		X	X			X			X	X																							
													X		X										Hazardous Links, Possible Solutions	PW	X			X	X			X				X	X																						
													X	X											Here Today, Gone Tomorrow	PW	X			X																															
													X	X	X										Hooks and Ladders	PWA	X							X				X	X																						
													X												How Many Bears Can Live In This Forest	PW	X										X	X																							
													X		X								X		In The Drivers Seat	PLT	X										X			X																					
													X		X										Invasive Species	PLT	X						X																												
															X										Let's Talk Turkey	PW	X				X		X	X					X																						
															X										Living With Fire	PLT	X			X																															
															X										Lobster In Your Lunchbox	PW	X			X			X																												
													X		X										Loving It Too Much	PLT	X		X																																
												X	X												Mermaids and Manatees	PWA	X	X		X			X					X																							
												X	X	X											Micro Odyssey	PWA	X			X	X		X																												
													X	X											Microtrek Treasure Hunt	PW	X	X		X			X																												
														X			X								Migration Barriers	PW	X	X			X		X				X	X																							
														X											Migration Headache	PWA	X			X				X				X	X																						
													X		X										Mermaids and Manatees	PWA	X	X		X			X					X																							
														X											On The Move	PLT	X				X																														
														X	X										Our Changing World	PLT	X																																		

**Basic Alignment of Projects WILD, WILD Aquatic, Learning Tree activities to the Core Middle School (6-8) Science Essential Concepts and Skills**

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Middle School (6-8) Science Essential Skills and Concepts

Science as Inquiry (Inquiry) (pg 8)	Life Science (Life) (pg 65)
# Description	# Description
1 Identify & generate questions that can be answered through scientific investigations	1 Understand and apply knowledge of the basic components and functions of cells, tissues, organs, and organ systems
2 Design and conduct different kinds of scientific investigations	2 Understand and apply knowledge of how different organisms pass on traits (heredity)
3 Understand that different kinds of questions suggest different kinds of scientific investigations	3 Understand and apply knowledge of the complementary nature of structure and function and the commonalities among organisms
4 Select and use appropriate tools and techniques to gather, analyze, and interpret data.	4 Understand and apply knowledge of interdependency of organisms, changes in environmental conditions, survival of individuals and species
5 Incorporate mathematics in scientific inquiry	5 Understand and apply knowledge of the cycling of matter and energy in ecosystems
6 Use evidence to develop descriptions, explanations, predictions, and models	6 Understand and demonstrate knowledge of the social and personal implications of environmental issues
7 Think critically and logically to make the relationships between evidence and explanations	7 Understand and apply knowledge of the functions and interconnections of the major human body systems including the breakdown in structure or function that disease causes
8 Recognize and analyze alternative explanations and predictions	
9 Communicate and defend procedures and explanations	
10 Use appropriate safety procedures when conducting investigations	
Earth & Space (Earth) (pg 18)	Physical Science (Physical) (pg 40)
# Description	# Description
1 Understand and apply knowledge of the structure and processes of the earth system and the processes that change the Earth and its surface	1 Understand and apply knowledge of elements, compounds, mixtures, and solutions based on the nature of their physical and chemical properties
2 Understand and apply knowledge of the water cycle, including consideration of events that impact groundwater quality	2 Understand and apply knowledge of physical and chemical changes and their relationship to the conservation of matter and energy
3 Understand and apply knowledge of earth history based on physical evidence	3 Understand and apply knowledge of forms of energy and energy transfer
4 Understand and apply knowledge of the earth's atmospheric properties and how they influence weather and climate	4 Understand and apply knowledge of motions and forces
5 Understand and apply knowledge of the components of our solar system	

**Basic Alignment of Projects WILD, WILD Aquatic, Learning Tree activities to the Core Middle School Social Studies Essential Concepts and Skills**

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### Basic Alignment of Projects WILD, WILD Aquatic, Learning Tree activities to the Core Middle School Social Studies Essential Concepts and Skills

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Middle School (6-8) Social Studies Essential Skills and Concepts		
Behavioral Sciences (Behavior) (pg 6)		Economics (pg 16)
# Description		# Description
1 Understand the changing nature of society.		1 Understand the role of scarcity and economic trade-offs and how economic conditions impact people's lives.
2 Understand how personality and socialization impact the individual.		2 Understand the functions of economic institutions.
3 Understand the influences on individual and group behavior and group decision making.		3 Understand how governments throughout the world influence economic behavior.
4 Understand the process of how humans develop, learn, adapt to their environment, and internalize their culture.		4 Understand factors that create patterns of interdependence in the world economy.
5 Understand current social issues to determine how the individual is able to formulate opinions and respond to those issues		5 Understand that advancing technologies impact the global economy.
6 Understand how to evaluate social research and information.		6 Understand how universal economic concepts present themselves in various types of economics throughout the world
		7 Understand the function of common financial instruments
e		History (pg 34)
# Description		# Description
1 Understand the use of geographic tools to locate and analyze information about people, places, and environments.		1 Understand historical patterns, periods of time and the relationships among these elements.
2 Understand how geographic and human characteristics create culture and define regions.		2 Understand how and why people create, maintain, or change systems of power, authority, and governance.
3 Understand how human factors and the distribution of resources affect the development of society and the movement of populations.		3 Understand the role of culture and cultural diffusion on the development and maintenance of societies.
4 Understand how physical processes and human actions modify the environment and how the environment affects humans		4 Understand the role of individuals and groups within a society as promoters of change or the status quo.
		5 Understand the effect of economic needs and wants on individual and group decisions.
		6 Understand the effects of geographic factors on historical events
		7 Understand the role of innovation on the development and interactions of societies.
		8 Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.
Political Science/Civic Literacy (Poli Sci)** (pg 46)		
# Description		
1 Understand the rights and responsibilites of each citizen and demonstrate the value of lifelong civic action.		
2 Understand how the government established by the Constitution embosides values and principles of democracy.		
3 Understand the purpose and function of each of the three branches of government established by the US Constitution.		
4 Understand the similarities and differences among the complex levels of local, state and national government.		
5 Understand strategies for effective political action that impacts local, state and national governance.		
6 Understand how laws are established at the local, state and national levels.		
7 Understand how various political systems throughout the world define the rights and responsibilites of the individual.		
8 Understand the role of the United States in current world affairs		
**The essentials concepts and skills listed in social studies - Political Science/Civic Literacy are the same as the essential concepts and skills listed in 21st Century Skills - Civic Literacy.		

Basic Alignment of Projects WILD, WILD Aquatic, Learning Tree activities to the Core Middle School Grade Levels Mathematics Essential Concepts and Skills																																																							
Core Essential Concepts & Skills Sets															"Project" Activity		Source	Activity Skill Development																																					
Numbers & Operations 1	Numbers & Operations 2	Numbers & Operations 3	Numbers & Operations 4	Numbers & Operations 5	Algebra 1	Algebra 2	Algebra 3	Algebra 4	Algebra 5	Geometry 1	Geometry 2	Geometry 3	Geometry 4	Geometry 5	Data Analysis & Probability 1	Data Analysis & Probability 2	Data Analysis & Probability 3	Data Analysis & Probability 4	Data Analysis & Probability 5			analysis	application	cause & effect	classification	comparison	composition	construction	description	discussion	evaluation	generalization	identification	inference	interpretation	observation	organization	prediction	problem solving	reasoning	representation	research	summarization	synthesis	verification	Notes									
		x	x												x	x			x	Air Plants	PLT																																		
																				Bearly Growing	PW																																		
																				Checks & Balances	PW																																		
																				Eat and Glow	PWA																																		
																				Energy Pipeline	PW																																		
															x	x	x	x		Every Drop Counts	PLT																																		
																				How Many Bears Can Live in This Forest	PW																																		
																				How Wet is Our Planet	PWA																																		
																				I'm Thirsty	PW																																		
																				Lobster in Your Lunch Box	PW																																		
																x				Net Gain, Net Effect	PWA																																		
																				No Water Off a Duck's Back	PW																																		
				x										x	x	x				Puddle Wonders	PWA																																		
																				Rainfall in the Forest	PW																																		
															x					Spider Web Geometry	PW																																		
																				Water's Going On	PWA																																		
			x																	Whale of a Tale	PWA																																		
																				What's in the Air	PWA																																		
																				What's in the Water	PWA																																		
																				Where does Water Run	PWA																																		
															x	x	x			Where have All the Salmon Gone	PWA																																		
																				World Travelors	PW																																		

Middle School (6-8) Math Essential Skills and Concepts	
Numbers and Operations (pg 31)	Algebra (pg 33)
# Description	# Description
1 Understand, apply and be computationally fluent with multiplication and division of fractions and decimals.	1 Write, interpret, and use mathematical expressions and equations, find equivalent forms, and relate such symbolic representations to verbal, graphical and tabular representations.
2 Understand, apply and be computationally fluent with rational numbers, including negative numbers.	2 Understand and apply proportionality.
3 Understand, estimate, and represent real numbers, including common irrational numbers and with scientific notation.	3 Understand , solve, and apply linear equations and inequalities
4 Understand and apply ratio and rate, including percents, and connect ratio and rate to fractions and decimals.	4 Understand and apply linear functions
5 Understand and apply proportional reasoning.	5 Use tables and graphs to analyze systems of linear equations.
Geometry (pg 35)	Data Analysis and Probability (pg 37)
# Description	# Description
1 Understand, determine, and apply area of polygons.	1 Understand, interpret, determine, and apply measures of center and graphical representations of data.
2 Understand and apply similarity, with connections to proportion	2 Analyze and summarize data sets, including initial analysis of variability.
3 Understand, determine, and apply surface area and volume of prisms and cylinders and circumference and area of circles.	3 Use proportions and percentages to analyze data and chance.
4 Analyze two-dimensional space and figures by using distance, angle, coordinates, and transformations.	4 Understand and represent simple probabilistic situations.
5 Visualize, represent, and describe three-dimensional shapes	5 Understand, compute, and estimate simple probabilities using counting strategies and simulation.

**Basic Alignment of Projects WILD, WILD Aquatic, Learning Tree activities to the Core Middle School Grade Levels Literacy Skills Essential Concepts and Skills**

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Middle School (6-8) Literacy Essential Skills and Concepts		
Reading (pg 17)		Writing (pg 55)
#	Description	# Description
1	Independently read a significant number of books and texts each year. This includes reading both fiction and nonfiction in a variety of genres.	1 Use an effective writing process.
2	Read for a variety of purposes and across content areas.	2 Use knowledge of purpose, audience, format, and medium in developing written communication.
3	Use a variety of skills and strategies to comprehend nonfiction and informational text.	3 Apply writing strategies to communicate in a variety of genres with various audiences.
4	Use a variety of strategies and skills to comprehend and interpret fiction.	4 Use writing as a tool for learning.
5	Read with fluency silently and aloud to support comprehension.	5 Engage in the information literacy process: access, evaluate, and communicate information and ideas.
6	Use a variety of strategies to develop and expand reading vocabulary.	6 Write on demand.
		7 Adhere to conventions generally established in spelling, punctuation, grammar, usage, syntax and style appropriate to genre and writing situation.
		8 Incorporate technology as a tool to enhance writing.
Speaking (pg 87)		Listening (pg 104)
#	Description	# Description
1	Consider audience and variables in the speaking situation.	1 Listen for information and understanding.
2	Produce a coherent message.	2 Listen for interpretation, analysis, and evaluation.
3	Participate in a variety of communication situations.	3 Listen to establish, maintain, and enhance relationships.
4	Use appropriate content and conventions for purpose, audience, occasion and context.	
5	Demonstrate control of delivery skills.	
6	Participate appropriately in one-on-one situations and group settings	
7	Recognize the role of evaluation in oral communication.	
8	Recognize the role of response in oral communication.	
Viewing (pg 123)		
#	Description	
1	Analyze the effects of visual media on society and culture.	
2	Use a range of strategies to interpret visual media.	
3	Apply a variety of criteria to evaluate informational media.	
4	Understand how literacy forms can be represented in visual narratives.	



Middle School (6-8) 21st Century Skills Essential Skills and Concepts		
Civic Literacy (Poli Sci) (pg 6)		Employability (pg 20)
#	Description	# Description
1	Understand the rights and responsibilites of each citizen and demonstrate the value of lifelong civic action.	1 Communicate and work productively with others, considering different perspectives, and cultural views to increase the quality of works.
2	Understand how the government established by the Constitution <u>embosides values and principles of democracy.</u>	2 Adapt and adjust to various roles and responsibilities in an <u>environment of change.</u>
3	Understand the purpose and function of each of the three branches of government established by the US Constitution.	3 Demonstrate leadership, integrity, ethical behavior, and social responsibility in all environments.
4	Understand the similarities and differences among the complex levels of local, state and national government.	4 Demonstrate initiative, self-direction, creativity, and entrepreneurial thinking while exploring individual talents and skills necessary to be <u>successful.</u>
5	Understand strategies for effective political action that impacts local, <u>state and national governance.</u>	5 Demonstrate productivity and accountability while aspiring to meet <u>high expectations.</u>
6	Understand how laws are established at the local, state and national levels.	6 Understand how universal economic concepts present themselves in <u>various types of economics throughout the world</u>
7	Understand how various political systems throughout the world define <u>the rights and responsibilities of the individual</u>	
8	Understand the role of the United States in current world affairs.	
	<i>The essential concepts and skills listed in 21st Century Skills- Civic Literacy are the same as the Essential Concepts and Skills listed in Social Studies - Political Science/Civic Literacy.</i>	
Financial (pg 43)		Health (pg 56)
#	Description	# Description
1	Model the process of financial planning based on personal prioritization of wants and needs.	1 Demonstrate functional health literacy skills to obtain, interpret, understand and use basic health concepts to enhance persoanal, <u>family and community health.</u>
2	Create an effective spending plan using informed decision-making <u>skills.</u>	2 Utilize interactive literacy and social skills to establish personal, family, <u>and community health goals.</u>
3	Recognize appropriate uses of credit and its impact on an individual's <u>financial security.</u>	3 Apply critical literacy/thinking skills related to personal, family and <u>community wellness.</u>
4	Evaluate various risks to personal identity and create a plan for ongoing protection.	4 Integrate media literacy skills to analyze media and other influences to effectively manage personal, family and community health situations.
5	Evaluate possible options for investing as a means to attain one's <u>goals.</u>	5 Demonstrate behaviors that foster healthy, active lifestyles for <u>individuals and the benefit of society.</u>
6	Demonstrate ethical financial decision making skills and assess how these decisions might impact the broader community.	
Technology (pg 74)		
#	Description	
1	Demonstrate creative thinking in the design and development of <u>innovative technology products and problem solving</u>	
2	Collaborate with peers, experts, and others using interactive <u>technology.</u>	
3	Plan strategies utilizing digital tools to gather, evaluate, and use <u>information.</u>	
4	Use critical thinking skills to conduct research, solve problems, and make informed decisions using appropriate technological tools and <u>resources.</u>	
5	Understand the legal and ethical issues of technology as related to individuals, cultures, and societies.	
6	Understand the underlying structure and application of technology systems.	

	Alignment to Middle School Grade Levels Core Concepts and Essential Skills Content Area													
		Science				Social Studies				Social Studies & 21st Century Skills	21st Century Skills			
	AFWA Core Concept	Science as Inquiry	Life Science	Earth & Space	Physical Science	Behavioral Sciences	Economics	Geography	History	Civic Literacy	Employability Skills	Financial Literacy	Health Literacy	Technology Literacy
I	<b>Understands the value of our natural resources as a public trust.</b>								3,4,8					
A	In North America many natural resources including fish and wildlife are public trust resources managed by governmental agencies.		6				3			1	1,2,3,4,5			
B	Sustainable natural resources depend on the support of an informed and responsible citizenry.		6,7					4		1				1,2,3,4,5,6
C	Regulations are necessary for natural resources conservation.		6,7							1				
II	<b>Appreciates that conservation and management of terrestrial and water resources are essential to sustaining fish and wildlife, the outdoor landscape, and the quality of our lives.</b>							1	8					
A	The health and well-being of fish, wildlife, and humans depend on the quality of their environment.	1,2,3,4,5,6,7,8,9	4,6,7					2,3,4	4,7	4,8			1,2,3,5	1,2,3,4,5,6
B	Fish, wildlife, and plant communities can be conserved and restored through science-based management which considers the needs of humans as well as those of other species.	1,2,3,4,5,6,7,8,9	4,6,7			6		4			1,2,3,4,5		1,2,3,5	1,2,3,4,5,6
III	<b>Understands and actively participates in the stewardship and support of our natural resources.</b>						6			4,8				
A	A person's culture affects his or her view and use of fish, wildlife, and other natural resources.		7			1,2,3,4,5	5				1,2,3,4,5		1,2,3,5	
B	The distribution and abundance of natural resources including fish and wildlife provide significant economic benefits.						1,4	4	7					
C	Everyone impacts natural resources including fish and wildlife and their habitats. As human populations grow, impacts on natural resouces increase.	1,2,3,4,5,6,7,8,9	4,6,7	2			3,4,5	4	6,7,8				1,2,3,5	
D	Unlike other organisms, only humans have the capacity and responsibility to consider the effects of their actions on their environment.	1,2,3,4,5,6,7,8,9	6,7				3,4,5	4	8	1	1,2,3,4,5			
IV	<b>Understands and accepts and/or lawfully participates in natural resources based outdoor recreation.</b>													
A	Regulated hunting, fishing, and trapping are important tools for managing some fish and wildlife populations and habitats.													
B	Natural resources including fish and wildlife provide recreational benefits directly to participants and increase advocacy for conservation								5				1,2,3,5	
C	Responsible users of natural resource and the outdoors respect the rights and property of others					2,3,4,5								
V	<b>Understands and actively supports funding for natural resources conservation including fish and wildlife</b>													
A	Within the US, state fish and wildlife management is funded primarily through hunting, fishing and trapping licenses and through federal excise taxes collected from the sale of hunting, target shooting, and fishing equipment and motor boat fuels.									1				
B	Natural resource based activities, such as hunting, fishing, viewing, and photography provide people with millions of days of outdoor recreation each year and generate billions of dollars for the economy.													
C	The future of natural resources conservation requires additional funding from a broad-based constituency.									1				