

National Science Education Standards		Lake Erie Literacy Concepts by Letter					
UNIFYING CONCEPTS AND PROCESSES		8a	8b	8c	8d	8d	8f
All Grades	1. Systems, Order and Organization						
	2. Evidence, Models and Explanation						x
	3. Change, Constancy and Measurement			x	x		x
	4. Evolution and Equilibrium						
	5. Form and Function						

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EARTH AND SPACE		8a	8b	8c	8d	8d	8f
Grades K-4	6. Properties of Earth Materials						
	7. Objects in the Sky						
	8. Changes in Earth and Sky			x			x
Grades 5-8	9. Structure of the Earth System						
	10. Earth's History						
	11. Earth in the Solar System						
Grades 9-12	12. Energy in the Earth System						
	13. Origin and Evolution of the Earth System						
	14. Origin and Evolution of the Universe						
	15. Geochemical Cycles						

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LIFE SCIENCE		8a	8b	8c	8d	8d	8f
Grades K-4	16. Characteristics of Organisms						
	17. Life Cycles of Organisms						
	18. Organisms and Environments			x	x		x
Grades 5-8	19. Structure and Function in Living Systems						
	20. Reproduction and Heredity						
	21. Regulation and Behavior						
	22. Populations and Ecosystems				x		x
Grades 9-12	23. Diversity and Adaptations of Organisms				x		
	24. Interdependence of Organisms			x	x		x
	25. Behavior of Organisms						
	26. Matter, Energy and Organization in Living Systems						
	27. Biological Evolution						

	28. Molecular Basis of Heredity						
	29. The Cell						

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<b>PHYSICAL SCIENCE</b>		<b>8a</b>	<b>8b</b>	<b>8c</b>	<b>8d</b>	<b>8d</b>	<b>8f</b>
<i>Grades K-4</i>	30. Properties of Objects and Materials						
	31. Position and Motion of Objects						
	32. Light, Heat, Electricity and Magnetism			x			
<i>Grades 5-8</i>	33. Properties and Changes of Properties in Matter						
	34. Motions and Forces						
	35. Transfer of Energy						
<i>Grades 9-12</i>	36. Structure of Atoms						
	37. Structure and Properties of Matter						
	38. Chemical Reactions						
	39. Motions and Forces						
	40. Conservation in Energy and Increase in Disorder						
	41. Interactions of Energy and Matter						

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<b>HISTORY AND NATURE OF SCIENCE</b>		<b>8a</b>	<b>8b</b>	<b>8c</b>	<b>8d</b>	<b>8d</b>	<b>8f</b>
<i>All Grades</i>	42. Science as Human Endeavor K-12	x		x		x	x
	43. Nature of Scientific Knowledge 5-12			x			x
<i>Grades 5-8</i>	44. History of Science				x		
<i>Grades 9-12</i>	45. Historical Perspectives	x	x	x	x	x	x

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<b>PERSONAL AND SOCIAL PERSPECTIVES</b>		<b>8a</b>	<b>8b</b>	<b>8c</b>	<b>8d</b>	<b>8d</b>	<b>8f</b>
<i>All Grades</i>	46. Personal Health K-8			x			x
<i>Grades K-4</i>	47. Characteristics and Changes in Populations		x	x	x		x
	48. Types of Resources						
	49. Changes in Environments			x	x		x
	50. Science and Technology in Local Challenges				x	x	x
	51. Populations, Resources and Environments		x	x	x	x	x
	52. Natural Hazards						

Grades 5-8							
	53. Risks and Benefits				x		x
	54. Science and Technology in Society	x			x		x
Grades 9-12	55. Personal and Community Health	x		x	x	x	x
	56. Population Growth		x	x	x	x	x
	57. Natural Resources				x		
	58. Environmental Quality				x		x
	59. Natural and Human-Induced Hazards				x		x
	60. Science and Technology in Local, National & Global Challenges			x	x	x	x

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SCIENCE AND TECHNOLOGY		8a	8b	8c	8d	8d	8f
Grades K-4	61. Abilities to Distinguish Between Natural Objects & Objects Made by Humans						
	62. Abilities of Technological Design K-4				x		
	63. Understanding About Science & Technology K-4				x		
Grades 5-8	64. Abilities of Technological Design 5-8				x	x	x
	65. Understanding About Science & Technology 5-8			x	x	x	x
Grades 9-12	66. Abilities of Technological Design 9-12				x	x	x
	67. Understanding About Science & Technology 9-12			x	x	x	x

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SCIENCE AS INQUIRY		8a	8b	8c	8d	8d	8f
All Grades	68. Abilities Necessary to Do Scientific Inquiry K-12						x
	69. Understanding About Scientific Inquiry K-12						x