Appendix III

Louisiana Learning Standards and Grade Level Expectations Matrix for Lesson Plans and Definitions of Louisiana Learning Standards

Lesson Name	Comparing Eggs & Embryos	Snagging Paddlefish Data	My Fish Ride a Nitrogen Cycle	What a Nuisance!	Do You Believe in pH Magic?	Life Cycles of the Wet and Wiggly	Extirpated? Don't You Mean Extinct?	How Fast Do Paddlefish Grow?	How Old is That Fish?	Do Dams Affect the Paddlefish Population?	Critical Conditions for Paddlefish Spawning	Pass the Water Fleas, Please
Science as Inquiry												
SI-M-A1		X		X			X					X
GLE 5,6,7,8/No.		3		3			3					1,2
SI-M-A2				X		X						
GLE 6,7,8/No.				4		4						
SI-M-A3	X				X	X		X	X	X		
GLE 6,7,8/No.	6,7				7	7,8		6–8	7	7		
SI-M-A4						X	X	X			X	X
GLE 6,7,8/No.						10,12,13	11	11–13			12,13	10–13
SI-M-A5					X			X	X	X		
GLE 6,7,8/No.					14–16			16	16	14,16		
SI-M-A7				X							X	
GLE 6,7,8/No.				19							19,22	
SI-M-A8					X							
GLE 6,7,8/No.					23							
SI-M-B1												X
GLE 6,7,8/No.												25,27
SI-M-B2						X						
GLE 6,7,8/No.						28						
SI-M-B3									X			
GLE 6,7,8/No.									31			
SI-H-A2								X				X
GLE HS/No.								4				4
SI-H-A4						X						
GLE HS/No.						7						
Science & Environment												
SE-M-A3							X					
SE-M-A4				X			X			X	X	
GLE 7/No.				39			39			39	39	
SE-M-A5							X					
SE-M-A7			X			X						
GLE 7/No.			41									
SE-H-A6				X								
GLE HS/No.				7								

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Life Science												
LS-M-A3	X					X						
GLE 7/No.	6					5,6						
LS-M-C3				X								
LS-M-C4				X							X	
GLE 7/No.				29								
LS-M-D1				X								X
GLE 7/No.				31								30
LS-M-D2				X						X		
GLE 7/No.				32,33						32		
LS-H-C1	X											
GLE 10/No.	15											
LS-H-C6						X						
LS-H-D3											X	
GLE 10/No.											26	
LS-H-D4											X	
GLE 10/No.											27	
LS-H-F3											X	
GLE 10/No.											35	
Physical Science												
PS-M-A3					X							
PS-H-A1					X			X				
GLE HS/No.					2			2				
PS-H-D2					X							
GLE HS/No.					23,33							
Earth & Space Science												
ESS-H-B1			X									
GLE 10/No.			13									

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Mathematics												
M-1-M								X				
GLE 6/No.								18				
M-6-M								X				
D-1-M								X				
GLE 8/No.								34,35				
D-2-M								X				
GLE 6/No.								30				
GLE 7/No.								33				
GLE 8/No.								41				
D-1-H								X				
GLE 11,12/No.								17				
D-7-H								X				
GLE 9/No.								28				
GLE 10/No.								22				
Social Studies												
G-1D-M1										X		
GLE 8/No.										14		
Language Arts												
ELA-1-M1							X					
GLE 6/No.							1,3					
GLE 7,8/No.							1					
ELA-1-M3				X			X					
GLE 6/No.				6			6					
GLE 7,8/No.				4			4					
ELA-1-M4				X								
GLE 6/No.				7								
GLE 7,8/No.				5								
ELA-1-H3				X			X					
GLE 9-12/No.				4			4					
ELA-1-H4				X								
GLE 9-12/No.				5								
Creative Arts												
VA-CE-M2				X								
VA-CE-M3				X								

From: Louisiana Department of Education. 2004. Grade-Level Expectations Handbook.

Science as Inquiry

SI-M-A1 *Identifying questions that can be used to design a scientific investigation*
GLE 6-8/No.

1. Generate testable questions about objects, organisms and events that can be answered through scientific investigations.
2. Identify problems, factors and questions that must be considered in a scientific investigation.
3. Use a variety of sources to answer questions.

SI-M-A2 *Designing and conducting a scientific investigation*
GLE 6-8/No.

4. Design, predict outcomes and conduct experiments to answer guided questions.

SI-M-A3 *Using mathematics and appropriate tools and techniques to gather, analyze and interpret data*
GLE 6-8/No.

6. Select and use appropriate equipment, technology, tools and metric system units of measurement to make observations.
7. Record observations using methods that complement investigations (e.g. journals, tables, charts).
8. Use consistency and precision in data collection, analysis and reporting.

SI-M-A4 *Developing descriptions, explanations and graphs using data*
GLE 6-8/No.

10. Identify the difference between description and explanation.
11. Construct, use and interpret appropriate graphical representations to collect, record and report data (e.g., tables, charts, circle graphs, bar and line graphs, diagrams, scatter plots, symbols).
12. Use data and information gathered to develop an explanation of experimental results.
13. Identify patterns in data to explain natural events.

SI-M-A5 *Developing models and predictions using the relationships between data and explanation*
GLE 6-8/No.

14. Develop models to illustrate or explain conclusions reached through investigation.
15. Identify and explain the limitations of models used to represent the natural world.
16. Use evidence to make inferences and predict trends.

SI-M-A7 *Communicating scientific procedures, information and explanations*
GLE 6-8/No.

19. Communicate ideas in a variety of ways (e.g., symbols, illustrations, graphs, charts, spreadsheets, concept maps, oral and written reports, equations).
22. Use evidence and observations to explain and communicate the results of investigations.

SI-M-A8 *Utilizing safety procedures during scientific investigations*
GLE 6-8/No.

23. Use relevant safety procedures and equipment to conduct scientific investigations.

SI-M-B1 *Recognizing that different kinds of questions guide different kinds of scientific investigations*
GLE 6-8/No.

25. Compare and critique scientific investigations.
27. Recognize that science uses processes that involve a logical and empirical, but flexible, approach to problem solving.

SI-M-B2 *Communicating that current scientific knowledge guides scientific investigations*
GLE 6-8/No.
28. Recognize that investigations generally begin with a review of the works of others.

SI-M-B3 *Understanding that mathematics, technology and scientific techniques used in an experiment can limit or enhance the accuracy of scientific knowledge*
GLE 6-8/No.
31. Recognize that there is an acceptable range of variation in collected data.

SI-H-A2 *Designing and conducting scientific investigations*
GLE HS/No.
4. Conduct an investigation that includes multiple trials and record, organize and display data appropriately.

SI-H-A4 *Formulating and revising scientific explanations and models using logic and evidence*
GLE HS/No.
7. Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations).

Science and the Environment
SE-M-A3 *Defining the concept of pollutant and describing the effects of various pollutants on the ecosystem*

SE-M-A4 *Understanding that human actions can create risks and consequences in the environment*
GLE 7/No.
39. Analyze the consequences of human activities on ecosystems.

SE-M-A5 *Tracing the flow of energy through an ecosystem and demonstrating knowledge of the roles of producers, consumers and decomposers in the ecosystem*

SE-M-A7 *Demonstrating knowledge of the natural cycles, such as the carbon cycle, nitrogen cycle, water cycle and oxygen cycle*
GLE 7/No.
41. Describe the nitrogen cycle and explain why it is important for the survival of organisms.

SE-H-A6 *Describing and explaining the Earth's biochemical and geochemical cycles and their relationship to ecosystem stability*
GLE HS/No.
7. Illustrate the flow of carbon, water, oxygen, nitrogen and phosphorus through an ecosystem.

Life Science
LS-M-A3 *Observing and analyzing the growth and development of selected organisms, including a seed plant, an insect with complete metamorphosis and an amphibian*
GLE 7/No.
5. Compare complete and incomplete metamorphosis in insects (e.g., butterflies, mealworms, grasshoppers).
6. Compare the life cycles of a variety of organisms, including non-flowering and flowering plants, reptiles, birds, amphibians and mammals.

LS-M-C4 *Explaining the interaction and interdependence of nonliving and living components within ecosystems*

GLE 7/No.

29. Predict the impact changes in a species' population have on an ecosystem.

LS-M-D1 *Describing the importance of plant and animal adaptation, including local examples*
GLE 7/No.

30. Differentiate between structural and behavioral adaptations in a variety of organisms.
31. Describe and evaluate the impact of introducing non-native species into an ecosystem.

LS-M-D2 *Explaining how some members of a species survive under changed environmental conditions*
GLE 7/No.

32. Describe changes that can occur in various ecosystems and relate the changes to the ability of an organism to survive.
33. Illustrate how variations in individual organisms within a population determine the success of the population.

LS-H-C1 *Exploring experimental evidence that supports the theory of the origin of life*
GLE HS/No.

15. Compare the embryological development of animals in different phyla.

LS-H-C6 *Comparing and contrasting lifecycles of organisms*

LS-H-D3 *Investigating population dynamics*
GLE 10/No.

26. Analyze the dynamics of a population with and without limiting factors.

LS-H-D4 *Exploring how humans have impacted ecosystems and the need for societies to plan for the future*
GLE 10/No.

27. Analyze positive and negative effects of human actions on ecosystems.

LS-H-F3 *Recognizing that behavior is the response of an organism to internal changes and/or external stimuli*
GLE 10/No.

35. Explain how selected organisms respond to a variety of stimuli.

Physical Science

PS-M-A3 *Grouping substances according to similar properties and/or behaviors.*

PS-H-A1 *Manipulating and analyzing quantitative data using the SI system*
GLE HS/No.

2. Gather and organize data in charts, tables and graphs.

PS-H-D2 *Comparing, contrasting and measuring the pH of acids and bases using a variety of indicators*
GLE HS/No.

23. Classify unknowns as acidic, basic and neutral using indicators.
33. Calculate pH of acids, bases and salt solutions based on the concentration of hydronium and hydroxide ions.

Earth and Space Science

ESS-H-B1 Illustrating how stable chemical atoms or elements are recycled through the solid earth, oceans, atmosphere and organisms
GLE HS/No.

13. Explain how stable elements and atoms are recycled during natural geologic processes.

Language Arts

ELA-1-M1 *Using knowledge of word meaning and developing basic and technical vocabulary using various strategies (e.g., context clues, idioms, affixes, etymology, multiple-meaning words*)

GLE 6/No.

1. Identify word meanings using a variety of strategies, including: using context clues, using structural analysis, determining word origins, using knowledge of idioms, explaining word analogies.
3. Develop specific vocabulary (e.g., scientific, context-specific, current events) for various purposes.

GLE 7&8/No.

1. Develop vocabulary using a variety of strategies, including: use of connotative and denotative meanings, use of Greek, Latin and Anglo-Saxon base words, roots, affixes and word parts.

ELA-1-M3 *Reading, comprehending and responding to written, spoken and visual texts in extended passages (e.g., ranging from 500 to 1,000 words)*

GLE 6/No.

6. Answer literal and inferential questions in oral and written responses about ideas and information on grade-appropriate text, including: comic strips, editorial cartoons, speeches.

GLE 7&8/No.

4. Draw conclusions and make inferences in oral and written responses about ideas and information in grade-appropriate texts, including: instructional materials, essays, dramas.

ELA-1-M4 *Interpreting (e.g., paraphrasing, comparing, contrasting) texts with supportive explanations to generate connections to real-life situations and other texts (e.g., business, technical, scientific)*

GLE 6/No.

7. Explain the connections between ideas and information in a variety of texts (e.g., journals, technical specifications, advertisements) and real-life situations and other texts.

GLE 7&8/No.

5. Interpret ideas and information in a variety of texts, including periodical articles, editorials and lyrics, and make connections to real-life situations and other texts.

ELA-1-H3 *Reading, critiquing and responding to extended, complex written, spoken and visual texts*

GLE HS/No.

4. Draw conclusions and make inferences in oral and written responses about ideas and information in texts, including: nonfiction works, short stories/novels, five-act plays, poetry/epics, film/visual texts, consumer/instructional materials, public documents.

ELA-1-H4 *Interpreting complex texts with supported explanations to generate connections to real-life situations and other texts (e.g., business, technical, scientific)*

GLE HS/No.

5. Explain ways in which ideas and information in a variety of texts (e.g., scientific reports, technical guidelines, business memos, literary texts) connect to real-life situations and other texts.

Mathematics

M-1-M *Applying concepts of length, surface area, volume, capacity, weight, mass, money, time, temperature and rate to real-world experiences*

GLE 6/No.

18. Measure length and read linear measurements to the nearest sixteenth-inch and mm.

M-6-M *Demonstrate connection of measurement to the other strands and real-life situations.*

D-1-M *Systematically collecting, organizing, describing and displaying data in charts, tables, plots, graphs and /or spreadsheets*

GLE 8/No.

34. Determine what kind of data display is appropriate for a given situation.
35. Match a data set or graph to a described situation and vice versa.

D-2-M *Analyzing, interpreting, evaluating, drawing inference and making estimations, predictions, decisions and convincing arguments based on organized data (e.g., analyze data using concepts of mean, median, mode, range, random samples, sample size, bias and data extremes)*

GLE 6/No.

30. Describe and analyze trends and patterns observed in graphic displays.

GLE 7/No.

33. Analyze discrete and continuous data in real-life applications.

GLE 8/No.

41. Select random samples that are representative of the population, including sampling with and without replacement and explain the effect of sampling on bias.

D-1-H Designing and conducting statistical experiments that involve the collection, representation and analysis of data in various forms (Analysis should reflect an understanding of factors such as: sampling, bias, accuracy and reasonableness of data.)

GLE 11 & 12/No.

17. Discuss the differences between samples and populations.

D-7-H *Making inferences from data that are organized in charts, tables and graphs (e.g., pictograph; bar, line or circle graph; stem-and-leaf plot or scatter plot)*

GLE 9/No.

28. Identify trends in data and support conclusions by using distribution characteristics such as patterns, clusters and outliers.

GLE 10/No.

22. Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, scatter plot, matrix or circle graph.

Creative Arts

VA-CE-M2 Selecting and applying media, techniques and technologies to visually express and communicate

VA-CE-M3 Using the elements and principles of design and art vocabulary to visually express and describe individual ideas