



Lakeville ~ Session 3 (UE/MS/HS)

Teacher Guide: Lakeville – The Game

INTRODUCTION: This game show-style activity provides students an opportunity to learn about the challenges associated with making natural resource management decisions in a local community by giving them a chance to participate in the process. Six students are asked to serve as decision makers on a Citizen Advisory Panel and their classmates are asked to represent organisms in a Florida freshwater habitat.

Students who take the perspective of an organism are challenged to publicly advocate for their right to exist in the habitat and students serving on the Citizen Advisory Panel are asked to make resource management decisions by casting their vote at the end of each organism's presentation. The fictitious local habitat is populated based on decisions made by the Citizen Advisory Panel. Students match their analytical skills with their new (or existing) knowledge about Florida's freshwater ecosystems and process it in an activity that is engaging and fun.

KEY QUESTIONS:

1. Why do we need to manage plants and animals in our local habitats or ecosystems?
2. Who makes decisions about our own local ecosystem?
3. What can we do to be environmental stewards and responsible citizens?
4. How do political, economic or social concerns affect science or environmental community decisions?

SUBJECT: Science, Social Studies, Language Arts, Mathematics (See list of suggested state standards at the end of this document.)

GRADE LEVEL: UE, MS, HS

CONCEPTS: ecosystem management, civic responsibility, debate (analyzing and communicating), effects of social and economic concerns on society, life cycle reproduction, animal life spans, plant uses and characteristics, nutrient uptake, identification of key-stone species, food web, disturbed areas, alternative energy sources, photosynthesis, oxygen concentrations, sustainability

TIME ESTIMATE: One 45-minute session

LEARNING STYLES: Visual, auditory, kinesthetic

VOCABULARY: [Also see keywords chart and definitions] advocate, angler, aquatic plant, brackish, bulbils, cesspool, civic, citizen, commerce, community, developer, ecological significance, ecosystem, economic importance, emerged, endangered species, floating-leaved, habitat, herbivore, homeowner association, invasive, keystone species, local government, mangrove, native, non-native, noxious weed, poached, priority, pros and cons, public hearing, regulation, rhizome, scavenge, school board, spores, stolon, submersed, suburban, turion, terrestrial, tuberous, weed

SESSION SUMMARY: Students are provided with information cards to prepare them for their role-playing as a citizen (serving on the Citizen Advisory Panel) or as an Organism Advocate. Six students receive Citizen Role Cards, which contain brief statements about their personal priorities for role-playing (e.g., as an angler, farmer, nature lover, etc.). Their classmates are given Organism Role Cards, which provide background information about the plant or animal they will advocate for (i.e., native, non-native, or invasive and its ecological and economic value). Student organisms take turns advocating for their right to remain in the habitat and the Citizen Advisory Panel decides on their fate using a numeric voting/scoring system.

Classification data about the plants and animals and decisions made by the panel are tracked by all students using their Data Score Sheets. As well, the large format Habitat Poster is gradually populated with organisms and is a visual way for the students to keep track of their management decisions.

The activity ends with a discussion about (1) the pros and cons of the various native, non-native and invasive components found in a Florida ecosystem; (2) the necessity to make wise management decisions; and (3) the students' future responsibility as environmental stewards. This game can be played multiple times. The population of the ecosystem will be different each time based on who is voting on the Citizen Advisory Panel and how effective each organism is at advocating for its right to stay in the habitat.





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STUDENT LEARNING OBJECTIVES:

1. Explain the importance of different plants and animals inhabiting a freshwater ecosystem.
2. Identify ecosystem decision makers.
3. Explain how political, economical or social concerns may affect science or environmental community decisions.
4. Identify ways that we can be environmental stewards and responsible citizens.

ESSENTIAL MATERIALS: See list on Page 6 of this Teacher Guide

SUPPLEMENTAL MATERIALS: See list on Page 7 of this Teacher Guide

ADVANCE PREPARATION:

PRE-SESSION RESEARCH Review information found on the Organism Role Cards as well as background information provided on page 5 of this document.

CLASSROOM SET UP

1. Display large format freshwater Habitat Poster.
2. Display Organism Role Cards and Organism Magnets at front of class room.
(For loaner kits with all materials included, contact: caip-education@ufl.edu)
3. Arrange 6 chairs in front of the room for the Citizen Advisory Panel or put 1-2 long tables side-by-side. Place 1 Citizen Role Card, 1 set of Scorecards, 1 set of Organism Card Decks, 1 Data Score Sheet, and appropriate costume at each citizen's seat.
4. Set-up podium for the Organism Advocates (or have them stand at desk).
5. Set out 1 Data Score Sheet per student; arrange desks so students can work in small groups of 2-3.
6. Set up hat or basket with the organism names or photos for students to select an organism for each round, or use the mini Wheel of Focus, or, if you have a prize wheel set it up as the Wheel of Focus.

PROCEDURE AND DISCUSSION:

OVERVIEW FOR TEACHER

1. **Six students are selected to serve on the Citizen Advisory Panel.** This can be done on a volunteer basis or assigned by the teacher. Once the Citizen Advisory Panel is selected and assembled at the front of the class, each panel member will read her/his identity aloud and then display the card in front of them. They can start with "Hello, I am a _____" and then say what their priorities are as a local Citizen.
2. **All other students will take the perspective of a plant or animal and are given an Organism Role Card,** which contains images and information about a specific plant or animal commonly found in or near a Florida freshwater habitat. Students will use this information as background knowledge for their role-playing. If selected (i.e., by the Wheel of Focus), she/he will be asked to advocate for their organism in front of the Citizen Advisory Panel. Their job is to analyze the information from their **Organism Role Card** and/or their own knowledge, and use facts they think are important enough to influence decisions of the Citizen Advisory Panel. *Recommended that students work in pairs or teams.*
3. **Data Score Sheets are distributed to the entire class** so everyone can keep track of how the habitat will be populated based on decisions of the Advisory Panel. The Data Score Sheets can be used later for discussion or data analysis.
4. Teacher may choose the order in which student Organism Advocates present or...
 - Draw names from a hat
 - Use the Mini Wheel of Focus
 - See supplemental materials section for details on the full-size Wheel of Focus.



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5. **The Citizen Advisory Panel** listens to the organism advocate for its right to stay in the habitat and may respond with questions. Based on the information provided by the organism, their own knowledge, and the information in the Organism Card Deck, members of the **Citizen Advisory Panel** vote using the Scorecards provided. The score they choose (ranging from 1-10) reflects whether the organism should be removed, managed to keep at a minimum population, protected, or promoted.
6. **Individual scores are added for a total score that is used to determine the chosen Management Plan.** The key below is also located on the large format Habitat Poster. A student organism representative places 1-5 organisms in habitat, based on the total score.

Scoreboard		
<u>VALUE Range</u>	<u>Management Plan</u>	<u>Organism Population</u>
6-16	Seek and destroy/ PROHIBIT	Place 1 organism icon in habitat
17-27	Keep It Under Control!	Place 2 organism icons in habitat
28-38	WATCH IT!	Place 3 organism icons in habitat
39-49	Conservation: Let it Grow	Place 4 organism icons in habitat
50-60	Restoration	Place 5 organism icons in habitat

OVERVIEW FOR CLASS

INTRODUCE ACTIVITY TO THE CLASS ~ why does this matter? [Time estimate: 5-10 minutes]

1. **Start by asking how many students have ever pulled a weed in their yard or a community garden?** Have they ever planted anything? Inform students that these actions make them a land manager—they are making conscious decisions about the management of the land around them. Discuss the types of decisions their parents make about their yard and/or neighborhood.
2. **Discuss the concept of ecosystems.** Are they part of an ecosystem? Talk about the types of decisions made every day about their local ecosystem and/or natural areas such as county, state and federal parks. Discuss the reasons why land is managed. Revisit information learned from the *Silent Invaders* presentation (i.e., impacts of invasive plants).
3. **Explain: The class is about to make decisions about plant and wildlife management in a Florida freshwater ecosystem by role-playing in a Public Hearing.** *Show the large format Habitat Poster.* We are here to decide how a particular natural area we will call Lakeville will be managed; it includes a lake, meadow and a forest that are used and enjoyed by the community. **Be sure to ask:** Why is this important? What about plants, animals, and a local lake might be worth our consideration? Write the answers on the board or large format notepad on easel, if possible. **Discuss:** These types of meetings take place all of the time. How many students have been to a City/County Commission meeting or a Home Owners' Association Meeting?





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Let's Play!

The following steps are suggestions of how to play this game. Class time and teaching styles will result in it being done differently almost every time; do what works best for you and your students.

- 1. Set up the Citizen Advisory Panel and Organism Advocate teams:** Begin by identifying six students who will role-play as citizens on the Citizen Advisory Panel. Then organize the rest of the class into teams of 2-3 students (each team will represent a different organism—plant or animal). Ideally, the Citizen Advisory Panel will be asked to sit at a table at the front of the classroom and organism teams will sit together in the classroom, so they can collaborate on strategy and discuss their presentation.
- 2. Distribute print materials to the Citizen Advisory Panel and Organism teams as follows:**
 - ALL STUDENTS should receive:
 - Data Score Sheet to keep track of votes/decisions made by the Citizen Advisory Panel
 - Citizens should receive a complete set of scorecards (8.5" x 11" sheets with numbers, ranging from 1-10), their respective Citizen Role Card, and an Organism Role Card Deck.
 - Organism teams should receive an Organism Role Card. Each card contains important information about the organism: is it aquatic or terrestrial? Native, non-native or invasive, life history, economic and ecological value, etc.
- 3. Give students time to read their respective Citizen and/or an Organism Role Cards and make notes about the role they will play (3-5 mins).** Each student should be able to analyze the information they are provided and identify their own priorities (what is important to their survival and quality of life in that environment); based on the role they are playing as a citizen or an organism. Have them take notes on the back of their data score sheets or use dry erase markers to take notes on the Organism Role Cards.
 - The Citizen Panel should also use this time to look over their Organism Role Card Deck to familiarize themselves with the organisms that will present.
- 4. Continue with this discussion:** "This community meeting is scheduled to last for ____ minutes (length of time remaining in class), so we may not have time to hear from every organism today. But don't worry – there may be other meetings, and other chances to advocate. In reality, these meetings sometimes last for hours and the public hearing process can last weeks, months—even years! Our classroom version is condensed."
- 5. Model an Organism Role Card presentation for the class:** The teacher presents one of the organisms the students are familiar with. After the teacher presents, the Citizen Advisory Panel asks questions and votes. Have students fill out their Data Score Sheets, total the score to find the management plant, and populate Lakeville with the number of organism magnets indicated.
- 6. Ready to Go!** It's time for a student to draw an organism name from a hat or spin the Wheel of Focus. Once an organism is selected, that student (or team) is asked to stand at their desk or come to the podium and make their case.
- 7. Organism Presentation:** [REMEMBER] before a student shares her/his presentation, she/he MUST clarify the following (1) is the organism aquatic or terrestrial? (2) Native, non-native or invasive? When the Organism Advocate is finished presenting, each panel member is invited to ask questions. Be sure to limit it to a few questions and watch the time. [IMPORTANT] Questions should be relevant to their priorities as a Citizen (and not silly questions).
- 8. Time to Vote!** Based on the presentation, Citizen Advisory Panel members vote with their Scorecards. A total score is calculated and a management plan is determined based on the total score. The class records these scores and other relevant data on the Data Score Sheets at their desk. The organism then comes to the front of the room to place the appropriate number of organism icons (image or magnet) in the large format Habitat Poster. The number of organisms placed in the habitat corresponds to the management level attained, shown in the key on the poster. They should be placed in the appropriate place within the habitat; for example, a gopher tortoise should not be placed in the water.

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9. **Repeat until every organism has had a chance to present or until the class session is about to end.** When class time is nearly up, the teacher announces the final round.
10. **Wrap it up!** While looking at the Habitat Poster in the front of the class...
 - Count how many organisms are native; how many are non-native; how many invasive?
 - Notice how the different priorities of the Citizen Advisory Panel influenced the decisions about which organisms are found in the habitat. Ask the students: “*How did this activity help you understand the complexities of making management decisions about our natural resources?*” Ask for specific examples.
 - Finally, discuss what students can do to become environmental stewards as adults.

BACKGROUND INFORMATION:

1. **Teaching Points** about native, non-native and invasive plants, available in the Resource section of our website: <http://www.plants.ufl.edu/education>
2. The National Invasive Species Council published an official “White Paper” with clear and concise definitions of the terms “non-native” and “invasive” species, along with many examples of the damage being done by invasive species. See “ISAC Definitions White Paper” at <http://www.invasivespecies.gov/>
3. Additional information about invasive plants in aquatic ecosystems: <http://plants.ifas.ufl.edu/manage>

ASSESSMENT SUGGESTIONS:

1. For Objective #1, #2, #3 — Discuss results of Citizen and Organism Analysis Worksheets and Data Score Sheets.
2. For Objectives # 3 and #4 — Ask students to answer the following questions either in discussion form or written form to be collected with the Data Score Sheets.
 - Identify people in your school or community that make decisions about the environment and explain the processes they use to make decisions.
 - Identify opportunities you have to make your opinion heard about local environmental issues.
3. Evaluate presentations/role-playing exhibited by students.

EXTENSION ACTIVITIES:

- Students read “Weed Alert” and create a five-line jingle or Public Service Announcement http://www.myfwc.com/WILDLIFEHABITATS/InvasivePlants_WeedAlerts.htm

Example:

In your pond, if you grew
Flowers of lavender blue,
They double in size in two weeks.
If you're not careful,
They will clog the creeks.

LITERATURE / RESOURCES / REFERENCES:

1. Images and information about plants in Florida: <http://plants.ifas.ufl.edu>
2. **Understanding Invasive Aquatic Plants (Florida Edition) Activity Book** (PDF): Available in the Resource section of our website: <http://plants.ifas.ufl.edu/education>
3. **Aquatic Plants: Underwater Forests of Lakes and Rivers** (PDF) Available in the Resource section of our website: <http://plants.ifas.ufl.edu/education>





Essential Materials

available from UF/IFAS CAIP via DVD or the web
<http://plants.ifas.ufl.edu/education>

12 Citizen Role cards – Cards provide brief descriptions and priority statements for role-playing on the Citizen Advisory Panel. [Printed on both sides; image on front/text on back, 8.5” x 11”]

Citizen Roles: angler, boater, developer, farmer, lake resource manager, politician, nature lover, manufacturer, ski club president, restaurant owner, retiree, wild card (student decides)

30 Organism Role Cards – Info & attributes for 30 different plants and animals; teachers and/or students choose a number of organisms to work with depending on time available. [Printed on both sides; image on front/text on back, 8.5” x 11”]

Native plants: pickerelweed, duck potato, eel grass, fragrant waterlily, duckweed, poison ivy, cat-tails

Non-Native Plants: coconut palm, hibiscus, Canadian water weed, orange tree, peanut plant

Invasive Plants: air potato, hydrilla, water hyacinth, Old World climbing fern, tuberous sword fern, wild taro

Native animals: American alligator, gopher tortoise, manatee, snail kite, largemouth bass

Invasive animals: Gambian pouch rat, iguana, monk parakeet, island apple snail, Burmese python, sailfin catfish, red imported fire ant

30 Organism icons to be used in a habitat scene

Three options:

- For magnetic dry-erase boards, borrow “Organism Magnets” from CAIP. **Note:** A complete set has 5 each of 30 different organisms (150 magnets); 3” x 5”
- For document camera (ELMO), see PDF file of organism; print and cut-out game set (5 each of 30 organisms)
- For Smart Boards, use graphic files (individual jpegs) to drag and drop into scene

Scorecard sets – To be used by Citizen Advisory Panel members. Each set contains 10 cards (8.5”x11”), numbered 1-10. Total classroom set = 60 printed scorecards (6 x 10 cards per set)

Data Score Sheet

Organism Role Card Decks – To be used by Citizen Advisory Panel members. Each deck contains half page versions of the Organism Role Cards to provide panel with background information on organisms. [Printed on both sides, arranged in alphabetical order, half page]

Large Format Freshwater Habitat Scene – Display poster (44” x 26”) or project via ELMO

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Supplemental Materials For assistance with these items, contact caip-education@ufl.edu	Do It Yourself Ideas See DIY Resources on DVD.
<p>Large writing tablet on easel Or access to chalkboard or smart board</p>	
<p>Wheel of Focus (Prize Wheel) Available on loan or with school demonstration provided by UF/IFAS CAIP.</p> 	<p>Table-top prize wheels available: http://prizewheel.com/products/tabletop-prize-wheels/</p>
<p>Costumes/Props for the Citizen Advisory Panel Suggestions: straw hat for farmer, sunglasses for angler, luau flowers for retirees, etc.</p>	<p>Affordable sets of hats, sunglasses, bandanas, and other costume/prop ideas at www.orientaltrading.com OR have students bring in props</p>
<p>Prizes 1) Magnifying glasses (provided by UF/IFAS CAIP) 2) Pencils (provided by UF/IFAS CAIP)</p>	<p>Smarties candy --Thank you for being a smarty & learning something about natural resource management LifeSavers candy -Thank you for being a lifesaver for the environment!</p>

Next Generation Sunshine State Standards

Grade 4

- SC.4.N.1.2: Compare observations made by different groups using multiple tools; seek reasons to explain difference across groups.
- SC.4.N.2.1: Explain that science focuses solely on the natural world.
- SC.4.N.3.1: Explain models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.
- SC.4.E.6.3: Recognize that humans need resources found on Earth and that these are either renewable or non-renewable.
- SC.4.E.6.6: Identify resources available in Florida (i.e. water, phosphate, oil, limestone, silicon, wind, and solar energy)
- SC.4.P.9.1: Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.
- SC.4.L.16.1: Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.
- SC.4.L.16.2: Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.
- SC.4.L.16.4: Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.
- SC.4.L.17.1: Compare the seasonal changes in Florida plants and animals to those in other regions of the country.
- SC.4.L.17.4: Recognize ways plants and animals, including humans, can impact the environment.
- SS.4.C.2.1: Discuss public issues in Florida that impact the daily lives of its citizens.
- SS.4.C.2.2: Identify ways citizens work together to influence government and help solve community and state problems.
- SS.4.C.2.3: Explain the importance of public service, voting, and volunteerism.
- SS.4.A.8.2: Describe how and why immigration impacts Florida today.

Grade 5

- SC.5.N.1.6: Recognize and explain the difference between personal opinion/interpretation and verified observation.
- SC.5.E.7.5: Recognize that some of the weather-related differences, such as temperature and humidity, among different environments, such as swamps, deserts, and mountains.





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SC.5.L.14.2: compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support-- some with internal skeletons others with exoskeletons—while some plants have stems for support.

SC.5.L.15.1: Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while other die or move to new locations.

SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycle variations, animal behavior, and physical characteristics.

SS.5.C.2.4: Evaluate the importance of civic responsibilities in American democracy.

SS.5.C.2.5: Identify ways good citizens go beyond basic civic and political responsibilities to improve government and society.

SS.5.G.4.1: Use geographic knowledge and skills when discussing current events.

SS.5.G.4.2: Use geography concepts and skills such as recognizing patterns, mapping, graphing to find solutions for local, state, or national problems.

Grade 6

SC.6.N.1.4: Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.

SC.6.N.2.1: Distinguish science from other activities involving thought.

SC.6.N.2.2: Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.

SC.6.N.2.3: Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.

SC.6.N.3.4: Identify the role of models in the context of the 6th Grade Science benchmarks.

SC.6.E.6.2: Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.

SC.6.E.7.7: Investigate how natural disasters have affected human life in Florida.

SC.6.L.15.1: Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.

SS.6.G.3: Understand the relationships between the Earth's ecosystems and the populations that dwell within them.

SS.6.G.5: Understand how human actions can impact the environment.

SS.6.C.2: Evaluate the roles, rights, and responsibilities of United States citizens, and determine methods of active participation in society, government, and the political system.

Grade 7

SC.7.N.3.2: Identify the benefits and limitations of the use of scientific models.

SC.7.E.6.6: Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.

SC.7.L.15.2: Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.

SC.7.I.15.3: Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.

SC.7.L.17.1: Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web

SC.7.L.17.2: Compare and contrast relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.

SC.7.L.17.3: Describe and investigate various limiting factors in a local ecosystem and their impact on native populations including food, shelter, water, space, disease, parasitism, and nesting sites.

SS.7.C.2.13: Examine multiple perspectives on public and current issues.

SS.7.C.2.3: Experience the responsibilities of citizens at the local, state, or federal levels.

SS.7.C.2.10: Examine the impact of media, individuals, and interest groups on monitoring and influencing government.

SS.7.C.2.11: Analyze media and political communications (bias, symbolism, propaganda).

SS.7.C.2.13: Examine multiple perspectives on public and current issues. (SS.7.C.2.13)

Grade 8

SC.8.N.1.6: Understand scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.

SC.8.N.3.1: Select models useful in relating the results of their own investigations.

SC.8.N.4.1: Explain that science is one of the processes that can be used to inform decision making at the community, state, national and international levels.

SC.8.N.4.2: Explain how political, social and economic concerns can affect science and vice versa.

SS.8.G.5.2: Describe impact of human modifications on physical environment and ecosystems of the US throughout history.

SS.8.G.3: Understand the relationships between the Earth's ecosystems and the populations that dwell within them.





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SS.8.G.3.2: Use geographic terms and tools to explain differing perspectives on the use of renewable and non-renewable resources in the United States and Florida over time.

SS.8.G.5: Understand how human actions can impact the environment.

SS.8.G.5.1: Describe human dependence on the physical environment and natural resources to satisfy basic needs in local environments in the United States.

SS.8.G.5.2: Describe the impact of human modifications on the physical environment and ecosystems of the United States throughout history.

Grade 9-12

SC.912.N.1.1: Define a problem based on a specific body of knowledge (i.e. biology) and do the following (pose questions, conduct systematic observations, examine books and other sources to see what is known, plan investigations, use tools to gather, analyze and interpret data, pose answers and explanations, use evidence, communicate results.

SC.912.N.1.6: Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.

SC.912.N.3.5: Describe the function of models in science and identify the wide range of models used in science.

SC.912.N.4.1: Explain how the scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making

SC.912.N.4.2: Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic and environmental.

SC.912.E.7.8: Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.

SC.912.L.14.6: Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspective of both individual and public health.

SC.912.L.14.10: Discuss the relationship between the evolution of land plants and their anatomy.

SC.912.L.14.53: Discuss basic classification and characteristics of plants, Identify bryophytes, pteridophytes, gymnosperms, angiosperms.

SC.912.L.15.3: Describe how biological diversity is increased by the origin of a new species and how it is decreased by the natural process of extinction.

SC.912.L.17.1: Discuss characteristics of populations, such as number of individuals, age structure, density, pattern of distribution.

SC.912.L.17.2: Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.

SC.912.L.17.3: Discuss how various oceanic and freshwater processes, such as currents tides, and waves, affect the abundance of aquatic organisms.

SC.912.L.17.4: Describe changes in ecosystems resulting from seasonal variations, climate change and succession.

SC.912.L.17.5: Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.

SC.912.L.17.6: Compare and contrast the relationships among organisms including predation, parasitism, competition, commensalism and mutualism.

SC.912.L.17.7: Characterize biotic and abiotic components that define freshwater systems, marine systems, and terrestrial systems.

SC.912.L.17.8: Recognize the consequence of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.

SC.912.L.17.10: Diagram and explain bio-geochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.

SC.912.L.17.11: Evaluate the costs and benefits of renewable and non-renewable resources, such as water, energy, fossil fuels, wildlife, forests.

SC.912.L.17.12: Discuss the political, social, environment consequences of sustainable use of land.

SC.912.L.17.15: Discuss the effects of technology on environmental quality

SC.912.L.17.16: Discuss the large scale environmental impacts resulting from human activity including, waste spills, oil spills, run-off, greenhouse gases, ozone depletion, and surface and groundwater pollution.

SC.912.L.17.17: Assess the effectiveness of innovative methods of protecting the environment

SC.912.L.17.18: Describe how human population size and resource use relate to environmental quality.

SC.912.L.17.19: Describe how different natural resources are produced and how rates of use and renewal limit availability.

SC.912.L.17.20: Predict impact of individuals on environmental systems and exam how human lifestyles affect sustainability.

SC.912.L.18.9: Explain the interrelated nature of photosynthesis and cellular respiration.

SS.912.C.2.4: Evaluate, take, and defend positions on issues that cause the government to balance the interests of individuals with the public good.

SS.912.C.2.11: Analyze public policy solutions or courses of action to resolve a local, state, or federal issue.

SS.912.G.5.4: Analyze case studies of how humans impact the diversity and productivity of ecosystems.

SS.912.G.5.6: Analyze case studies to predict how a change to an environmental factor can affect an ecosystem.

SS.912.G.2.4: Use geographic terms and tools to analyze case studies of how selected regions change over time.





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SS.912.G.2.5: Use geographic terms and tools to analyze case studies of debates over how human actions modify a selected region.
 SS.912.G.3: Understand the relationships between the Earth's ecosystems and the populations that dwell within them.
 SS.912.G.3.2: Use geographic terms and tools to explain how weather and climate influence natural character of a place.
 SS.912.G.3.3: Use geographic terms and tools to explain differing perspectives on the use of renewable and non-renewable resources in Florida, the United States, and the world.

Common Core State Standards

4th Grade

Common Core Code	FL Common Core Code	Common Core Standard
RI.4.1	LAFS.4.RI.1.1	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	LAFS.4.RI.1.2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.
RI.4.3	LAFS.4.RI.1.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
RI.4.4	LAFS.4.RI.2.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topics or subject area.
RI.4.5	LAFS.4.RI.2.5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
RI.4.9	LAFS.4.RI.3.9	Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
RF.4.3	LAFS.4.RF.3.3	Know and apply grade-level phonics and word analysis skills in decoding words.
RF.4.3a	LAFS.4.RF.3.3a	Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.
RF.4.4	LAFS.4.RF.4.4	Read with sufficient accuracy and fluency to support comprehension.
RF.4.4a	LAFS.4.RF.4.4a	Read grade-level text with purpose and understanding.
RF.4.4c	LAFS.4.RF.4.4c	Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
W.4.1	LAFS.4.W.1.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
W.4.1b	LAFS.4.W.1.1b	Provide reasons that are supported by facts and details.
W.4.2	LAFS.4.W.1.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
W.4.2b	LAFS.4.W.1.2b	Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
W.4.2d	LAFS.4.W.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
W.4.4	LAFS.4.W.2.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.
SL.4.1	LAFS.4.SL.1.1	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.4.1a	LAFS.4.SL.1.1a	Come to discussions prepared having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
SL.4.1b	LAFS.4.SL.1.1b	Follow agreed-upon rules for discussions and carry out assigned roles.
SL.4.1c	LAFS.4.SL.1.1c	Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
SL.4.1d	LAFS.4.SL.1.1d	Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
SL.4.2	LAFS.4.SL.1.2	Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
SL.4.3	LAFS.4.SL.1.3	Identify the reasons and evidence a speaker provides to support particular points.
SL.4.4	LAFS.4.SL.2.4	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.
L.4.3	LAFS.4.L.2.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
L.4.3a	LAFS.4.L.2.3a	Choose words and phrases to convey ideas precisely.
L.4.4a	LAFS.4.L.3.4a	Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
L.4.4b	LAFS.4.L.3.4b	Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).
L.4.6	LAFS.4.L.3.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation).



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5th Grade

RI.5.1	LAFS.5.RI.1.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
RI.5.3	LAFS.5.RI.1.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
RI.5.4	LAFS.5.RI.2.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topics or subject area.
RF.5.3	LAFS.5.RF.3.3	Know and apply grade-level phonics and word analysis skills in decoding words.
RF.5.3a	LAFS.5.RF.3.3a	Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.
RF.5.4	LAFS.5.RF.4.4	Read with sufficient accuracy and fluency to support comprehension.
RF.5.4a	LAFS.5.RF.4.4a	Read grade-level text with purpose and understanding.
RF.5.4c	LAFS.5.RF.4.4c	Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
W.5.1	LAFS.5.W.1.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
W.5.1b	LAFS.5.W.1.1b	Provide logically ordered reasons that are supported by facts and details.
W.5.2	LAFS.5.W.1.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
W.5.2b	LAFS.5.W.1.2b	Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
W.5.2d	LAFS.5.W.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
W.5.4	LAFS.5.W.2.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.
SL.5.1	LAFS.5.SL.1.1	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.5.1a	LAFS.5.SL.1.1a	Come to discussions prepared having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
SL.5.1b	LAFS.5.SL.1.1b	Follow agreed-upon rules for discussions and carry out assigned roles.
SL.5.1c	LAFS.5.SL.1.1c	Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
SL.5.1d	LAFS.5.SL.1.1d	Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
SL.5.2	LAFS.5.SL.1.2	Summarize written a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
SL.5.3	LAFS.5.SL.1.3	Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.
SL.5.4	LAFS.5.SL.2.4	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.
L.5.3	LAFS.5.L.2.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
L.5.3a	LAFS.5.L.2.3a	Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.
L.5.4a	LAFS.5.L.3.4a	Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.
L.5.4b	LAFS.5.L.3.4b	Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis).
L.5.6	LAFS.5.L.3.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).

6th Grade

RI.6.1	LAFS.6.RI.1.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RI.6.4	LAFS.6.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
RI.6.6	LAFS.6.RI.2.6	Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.
RI.6.8	LAFS.6.RI.3.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
W.6.1	LAFS.6.W.1.1	Write arguments to support claims with clear reasons and relevant evidence.
W.6.1a	LAFS.6.W.1.1a	Introduce claim(s) and organize the reasons and evidence clearly.
W.6.1b	LAFS.6.W.1.1b	Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.



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W.6.2d	LAFS.6.W.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
W.6.4	LAFS.6.W.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.6.1	LAFS.6.SL.1.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
SL.6.1a	LAFS.6.SL.1.1a	Come to discussions prepared having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
SL.6.1b	LAFS.6.SL.1.1b	Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
SL.6.1c	LAFS.6.SL.1.1c	Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
SL.6.1d	LAFS.6.SL.1.1d	Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
SL.6.2	LAFS.6.SL.1.2	Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
SL.6.3	LAFS.6.SL.1.3	Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.
SL.6.4	LAFS.6.SL.2.4	Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
L.6.3	LAFS.6.L.2.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
L.6.4	LAFS.6.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.
L.6.4a	LAFS.6.L.3.4a	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
L.6.4b	LAFS.6.L.3.4b	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).
L.6.6	LAFS.6.L.3.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
RST.6-8.1	LAFS.68.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts.
RST.6-8.4	LAFS.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
RST.6-8.8	LAFS.68.RST.3.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
WHST.6-8.1	LAFS.68.WHST.1.1	Write arguments focused on discipline-specific content.
WHST.6-8.1b	LAFS.68.WHST.1.1b	Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
WHST.6-8.2b	LAFS.68.WHST.1.2b	Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
WHST.6-8.2d	LAFS.68.WHST.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
WHST.6-8.4	LAFS.68.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
WHST.6-8.9	LAFS.68.WHST.3.9	Draw evidence from informational texts to support analysis reflection, and research.

7th Grade

RI.7.1	LAFS.7.RI.1.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RI.7.4	LAFS.7.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.
RI.7.8	LAFS.7.RI.3.8	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.
W.7.1	LAFS.7.W.1.1	Write arguments to support claims with clear reasons and relevant evidence.
W.7.1a	LAFS.7.W.1.1a	Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.
W.7.1b	LAFS.7.W.1.1b	Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
W.7.2d	LAFS.7.W.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.



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W.7.4	LAFS.7.W.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.7.1	LAFS.7.SL.1.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.
SL.7.1a	LAFS.7.SL.1.1a	Come to discussions prepared having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
SL.7.1c	LAFS.7.SL.1.1c	Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
SL.7.1d	LAFS.7.SL.1.1d	Acknowledge new information expressed by others and, when warranted, modify their own views.
SL.7.3	LAFS.7.SL.1.3	Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.
SL.7.4	LAFS.7.SL.2.4	Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.
L.7.3	LAFS.7.L.2.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
L.7.4	LAFS.7.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies.
L.7.4a	LAFS.7.L.3.4a	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
L.7.4b	LAFS.7.L.3.4b	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., belligerent, bellicose, rebel).
L.7.6	LAFS.7.L.3.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
RST.6-8.1	LAFS.68.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts.
RST.6-8.4	LAFS.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
RST.6-8.8	LAFS.68.RST.3.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
WHST.6-8.1	LAFS.68.WHST.1.1	Write arguments focused on discipline-specific content.
WHST.6-8.1b	LAFS.68.WHST.1.1b	Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
WHST.6-8.2b	LAFS.68.WHST.1.2b	Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
WHST.6-8.2d	LAFS.68.WHST.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
WHST.6-8.4	LAFS.68.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
WHST.6-8.9	LAFS.68.WHST.3.9	Draw evidence from informational texts to support analysis reflection, and research.

8th Grade

RI.8.1	LAFS.8.RI.1.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
RI.8.4	LAFS.8.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
RI.8.8	LAFS.8.RI.3.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
W.8.1	LAFS.8.W.1.1	Write arguments to support claims with clear reasons and relevant evidence.
W.8.1a	LAFS.8.W.1.1a	Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
W.8.1b	LAFS.8.W.1.1b	Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
W.8.2d	LAFS.8.W.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
W.8.4	LAFS.8.W.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.8.1	LAFS.8.SL.1.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.



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SL.8.1a	LAFS.8.SL.1.1a	Come to discussions prepared having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
SL.8.1c	LAFS.8.SL.1.1c	Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
SL.8.1d	LAFS.8.SL.1.1d	Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
SL.8.3	LAFS.8.SL.1.3	Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.
SL.8.4	LAFS.8.SL.2.4	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.
L.8.3	LAFS.8.L.2.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
L.8.4	LAFS.8.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.
L.8.4a	LAFS.8.L.3.4a	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
L.8.4b	LAFS.8.L.3.4b	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede).
L.8.6	LAFS.8.L.3.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
RST.6-8.1	LAFS.68.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts.
RST.6-8.4	LAFS.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
RST.6-8.8	LAFS.68.RST.3.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
WHST.6-8.1	LAFS.68.WHST.1.1	Write arguments focused on discipline-specific content.
WHST.6-8.1b	LAFS.68.WHST.1.1b	Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
WHST.6-8.2b	LAFS.68.WHST.1.2b	Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
WHST.6-8.2d	LAFS.68.WHST.1.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
WHST.6-8.4	LAFS.68.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
WHST.6-8.9	LAFS.68.WHST.3.9	Draw evidence from informational texts to support analysis reflection, and research.

9th – 10th Grade

RI.9-10.1	LAFS.910.RI.1.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RI.9-10.4	LAFS.910.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
RI.9-10.8	LAFS.910.RI.3.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
W.9-10.1	LAFS.910.W.1.1	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	LAFS.910.W.1.2	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.9-10.2b	LAFS.910.W.1.2b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
W.9-10.2d	LAFS.910.W.1.2d	Use precise language and domain-specific vocabulary to manage the complexity of the topic.
W.9-10.4	LAFS.910.W.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.9-10.1	LAFS.910.SL.1.1	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.



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SL.9-10.1a	LAFS.910.SL.1.1a	Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
SL.9-10.1c	LAFS.910.SL.1.1c	Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
SL.9-10.1d	LAFS.910.SL.1.1d	Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
SL.9-10.3	LAFS.910.SL.1.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
SL.9-10.4	LAFS.910.SL.2.4	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.
L.9-10.4	LAFS.910.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies.
L.9-10.4a	LAFS.910.L.3.4a	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
L.9-10.6	LAFS.910.L.3.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression
RST.9-10.1	LAFS.910.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
RST.9-10.4	LAFS.910.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
RST.9-10.7	LAFS.910.RST.3.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
WHST.9-10.1	LAFS.910.WHST.1.1	Write arguments focused on discipline-specific content.
WHST.9-10.2b	LAFS.910.WHST.1.2b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
WHST.9-10.2d	LAFS.910.WHST.1.2d	Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.
WHST.9-10.4	LAFS.910.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
WHST.9-10.9	LAFS.910.WHST.3.9	Draw evidence from informational texts to support analysis, reflection, and research.

11th – 12th Grade

RI.11-12.1	LAFS.1112.RI.1.1	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.11-12.4	LAFS.1112.RI.2.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
W.11-12.1	LAFS.1112.W.1.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
W.11-12.2	LAFS.1112.W.1.2	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.11-12.2b	LAFS.1112.W.1.2b	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
W.11-12.4	LAFS.1112.W.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.11-12.1	LAFS.1112.SL.1.1	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.



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SL.11-12.1a	LAFS.1112.SL.1.1a	Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
SL.11-12.1b	LAFS.1112.SL.1.1b	Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.
SL.11-12.1c	LAFS.1112.SL.1.1c	Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
SL.11-12.1d	LAFS.1112.SL.1.1d	Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
SL.11-12.3	LAFS.1112.SL.1.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
SL.11-12.4	LAFS.1112.SL.2.4	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.
L.11-12.4	LAFS.1112.L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.
L.11-12.4a	LAFS.1112.L.3.4a	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
L.11-12.6	LAFS.1112.L.3.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
RST.11-12.1	LAFS.1112.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
RST.11-12.4	LAFS.1112.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
WHST.11-12.1	LAFS.1112.WHST.1.1	Write arguments focused on discipline-specific content.
WHST.11-12.2b	LAFS.1112.WHST.1.2b	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
WHST.11-12.2d	LAFS.1112.WHST.1.2d	Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
WHST.11-12.4	LAFS.1112.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
WHST.11-12.9	LAFS.1112.WHST.3.9	Draw evidence from informational texts to support analysis, reflection, and research.

