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STATE STANDARDS INITIATIVE

PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER



Disciplinary Literacy Part 1



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Objectives

- Review the structure of the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects.
- Define and develop a working knowledge of disciplinary literacy and its effect on content instruction.
- Apply examples of instructional shifts to classroom practice.

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COMMON CORE STATE STANDARDS FOR

English Language Arts
&
Literacy in History/Social Studies,
Science, and Technical Subjects



<http://www.corestandards.org/ELA-Literacy/>



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CCR Anchor Standards

A set of College and Career Readiness standards anchor the document and define general, cross-disciplinary expectations necessary for postsecondary success.

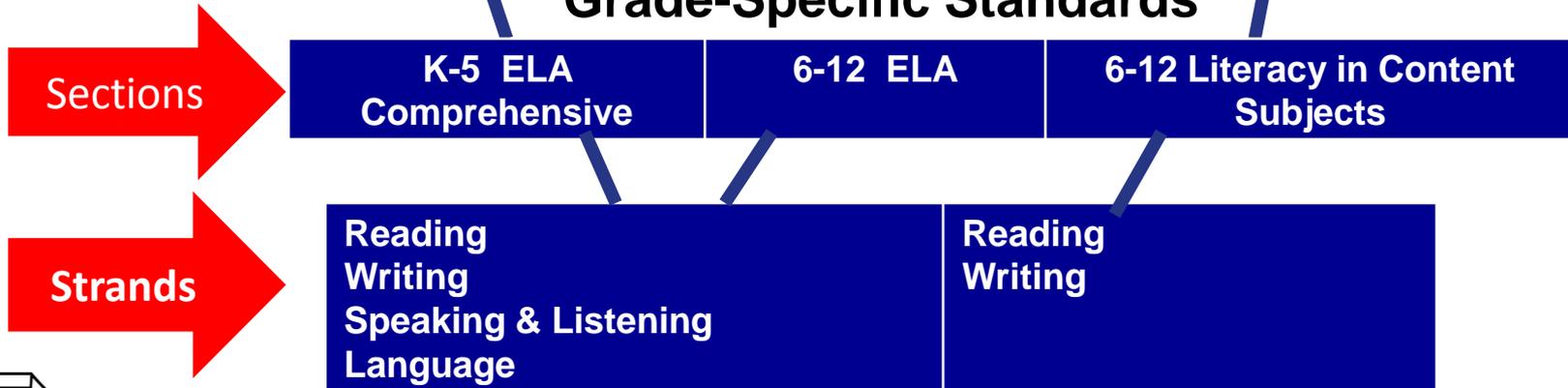


Organization of the Literacy Standards

College and Career Readiness Anchor Standards

translated into age-appropriate benchmarks in the grade-specific standards below

Grade-Specific Standards



Sample Nomenclature

RH.6.7

- Strand: Reading History
- Grade: 6
- Standard 7: Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

Conceptual Organizers: Reading

1. Key Ideas and Details
2. Craft and Structure
3. Integration of Knowledge and Ideas
4. Range of Reading and Level of Text Complexity



Conceptual Organizers: Writing

1. Text Types and Purposes
2. Production and Distribution of Writing
3. Research to Build and Present Knowledge
4. Range of Writing



Grade-Level Standards

Using the Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects (WHST), work with a partner to:

- ✧ Choose a grade band (6-8, 9-10, 11-12).
- ✧ Select a conceptual organizer.
- ✧ Create a list of verbs found in the standards.
- ✧ Discuss the skills a student must have to meet the expectations in the standards.
- ✧ Share.



Arkansas' Big Shifts

- Appropriate Text Complexity
- Increased Reading of Informational Texts
- ✓ **Disciplinary Literacy**
- Close Reading
- Text-Dependent Questions
- General Academic and Domain-Specific Vocabulary
- Argumentative Writing
- Short and Sustained Research Projects

<http://ideas.aetn.org/commoncore/strategic-plan>



“The idea of what it takes to be considered literate today is not the same as it was even ten years ago.

The view of literacy is continually changing because the skills students must develop to thrive in society are constantly expanding and becoming more complex.”

Jennifer Altieri, 2011



Capacities of a Literate Individual

**Demonstrate
Independence**

**Build strong
content knowledge**

**Respond to
varying
demands**

**Understand other
perspectives and
cultures**

**Comprehend
and critique**

Value evidence

**Use technology
and digital
media**



What is Disciplinary Literacy?

Disciplinary literacy is the application of discipline-specific practices as a way to access, comprehend, synthesize, and communicate knowledge.



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What Does Disciplinary Literacy Involve?

- Specialized ways of knowing and communicating in the different disciplines (Shanahan)
- Giving access to the tools of knowledge, production, and critique; and giving students access to how a discipline is written so that they can ask better questions (Moje)



Why is Disciplinary Literacy Important?

Each discipline has specialized

- habits of mind or ways of thinking.
- language and vocabulary.
- text types to comprehend.
- ways of communicating in writing.
- career requirements.

What Does Disciplinary Literacy Require?

- All teachers must be experts in their disciplines.
- All teachers must share responsibility for literacy.



“Asking a teacher to become a reading teacher is distinctly different from asking a teacher to help students master texts within the teacher’s own field. In fact, subject-area teachers are best qualified to help their students master texts in each course. Subject-area teachers should not be expected to teach basic reading skills, but they can help students develop critical strategies and skills for reading texts in each subject.”

Southern Regional Education Board, 2009 Policy Statement, page 5

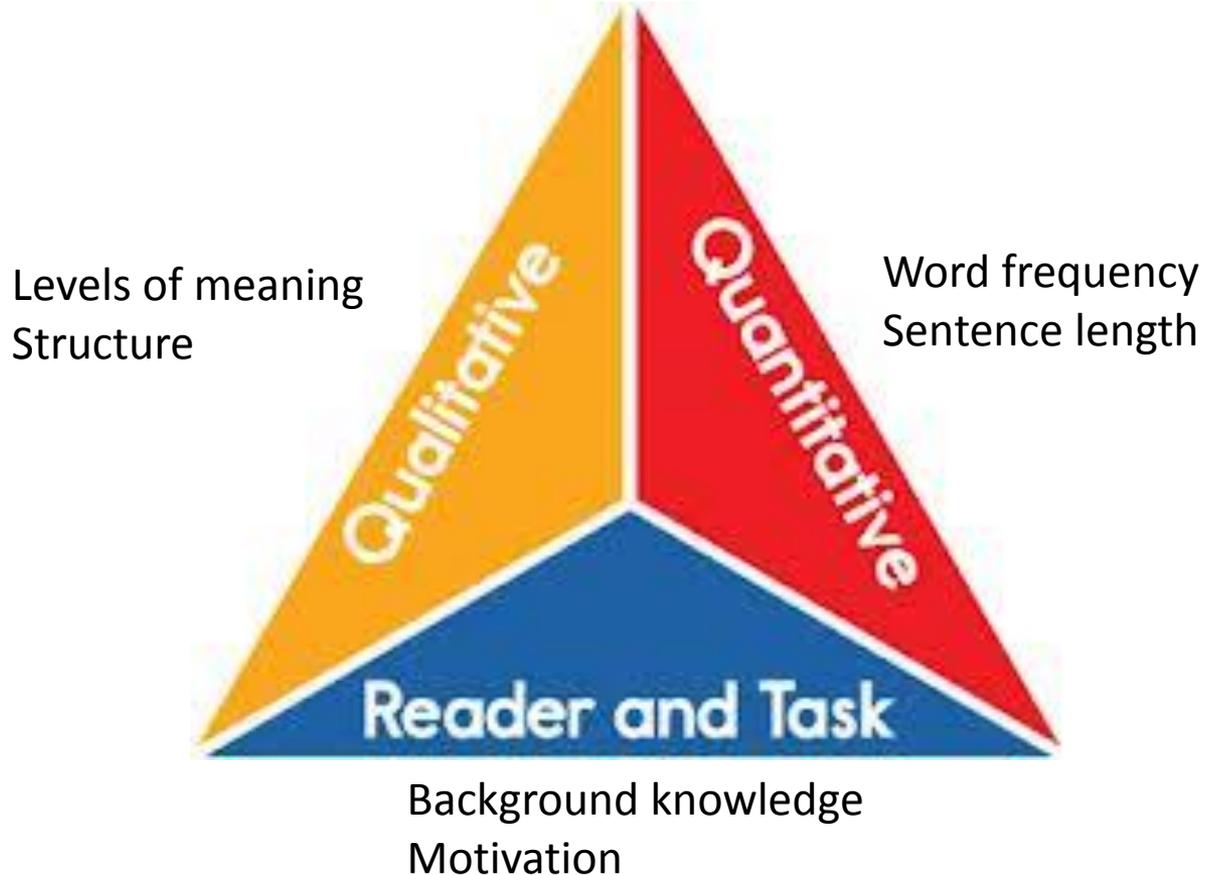
What Does Disciplinary Reading Involve?

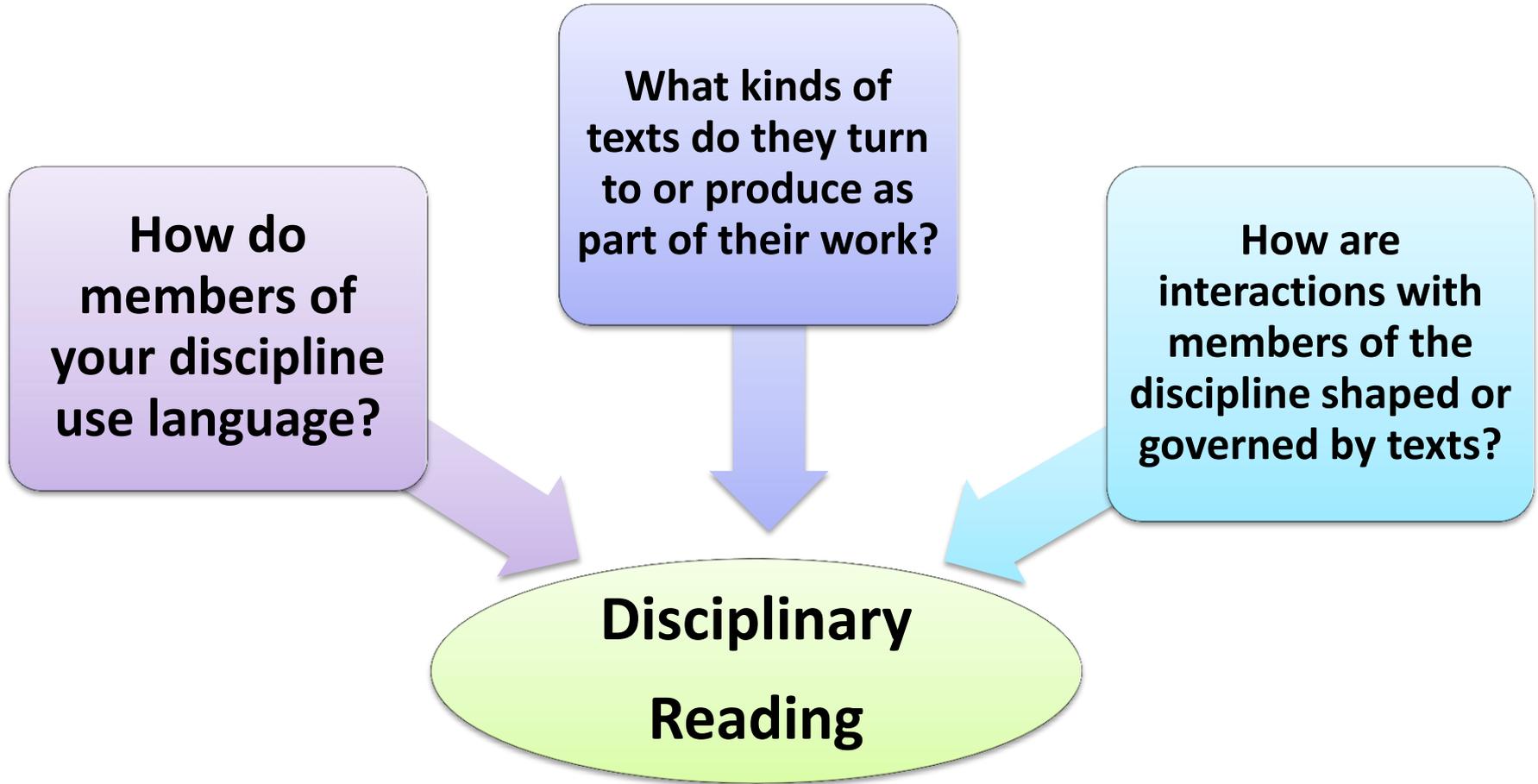


- strategic examination of information presented in various ways
- awareness of discipline-specific nuances
- reading both text and context



Measuring Text Complexity

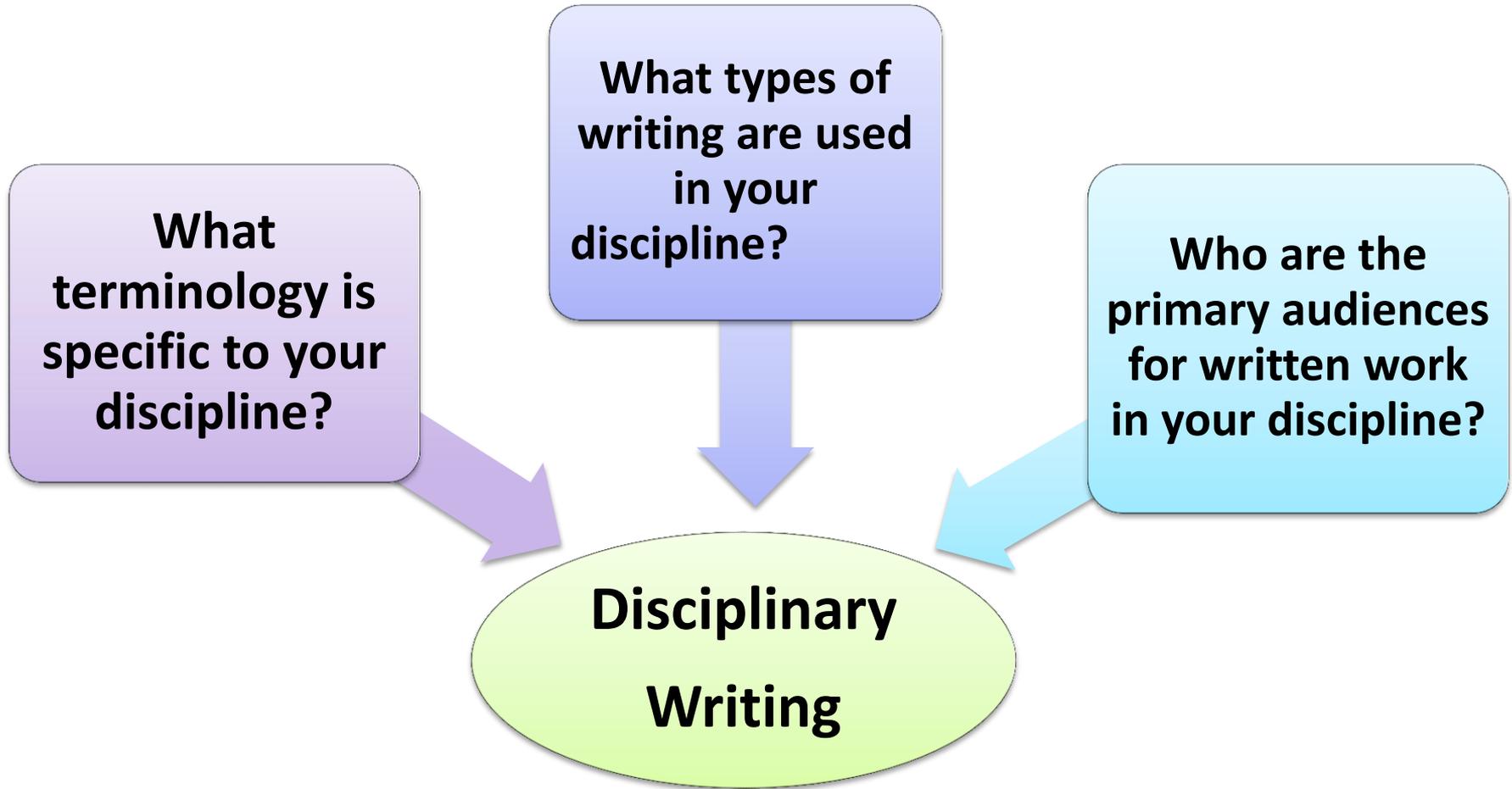




What does Disciplinary Writing involve?

- choosing words, information, formats, and structures deliberately
- using technology strategically to create, refine, and collaborate on writing
- gathering information, evaluating sources, and citing material accurately





Literacy Design Collaborative



- An instructional system for developing students' literacy skills
- Recommended by ADE as a tool for implementing CCSS in Arkansas
- Information available at local educational cooperatives
- www.litearcydesigncollaborative.org

Questions for Discussion

- What does it mean to read, write, and think through a disciplinary lens?
- How do students navigate texts in a variety of distinct disciplines?



Research and Resources

- Common Core State Standards <http://www.corestandards.org/ELA-Literacy/>
- Jennifer L. Altieri, 2011
- Teaching Disciplinary Literacy to Adolescents: Rethinking Content-Area Literacy Shanahan, Timothy; Shanahan, Cynthia, Harvard Educational Review, v78 n1 p40-59
2008<http://www.shanahanonliteracy.com/2008/01/vita-timothy-shanahan-personal.html>
- “Disciplinary Literacy” and Reading Across the Content Areas. Elizabeth Moje
<http://www.nwp.org/cs/public/print/resource/3041>
- *Classroom Strategies for Interactive Learning*, Buehl, Doug
- CCSS Appendix A http://www.corestandards.org/assets/Appendix_A.pdf
- Achieve the Core- Literacy Instructional Guides www.achievethecore.org
- Arkansas IDEAS- Disciplinary Literacy Modules
- <http://www.shanahanonliteracy.com/2008/01/vita-timothy-shanahan-personal.html>
- <http://www.ascd.org/professional-development/webinars/common-core-webinars.aspx#archived>
- <http://www.parcconline.org/parcc-content-frameworks>
- <http://dpi.wi.gov/standards/disciplinaryliteracy.html>

Disciplinary Literacy Part II

Linking the Common Core State Standards to Science Instruction



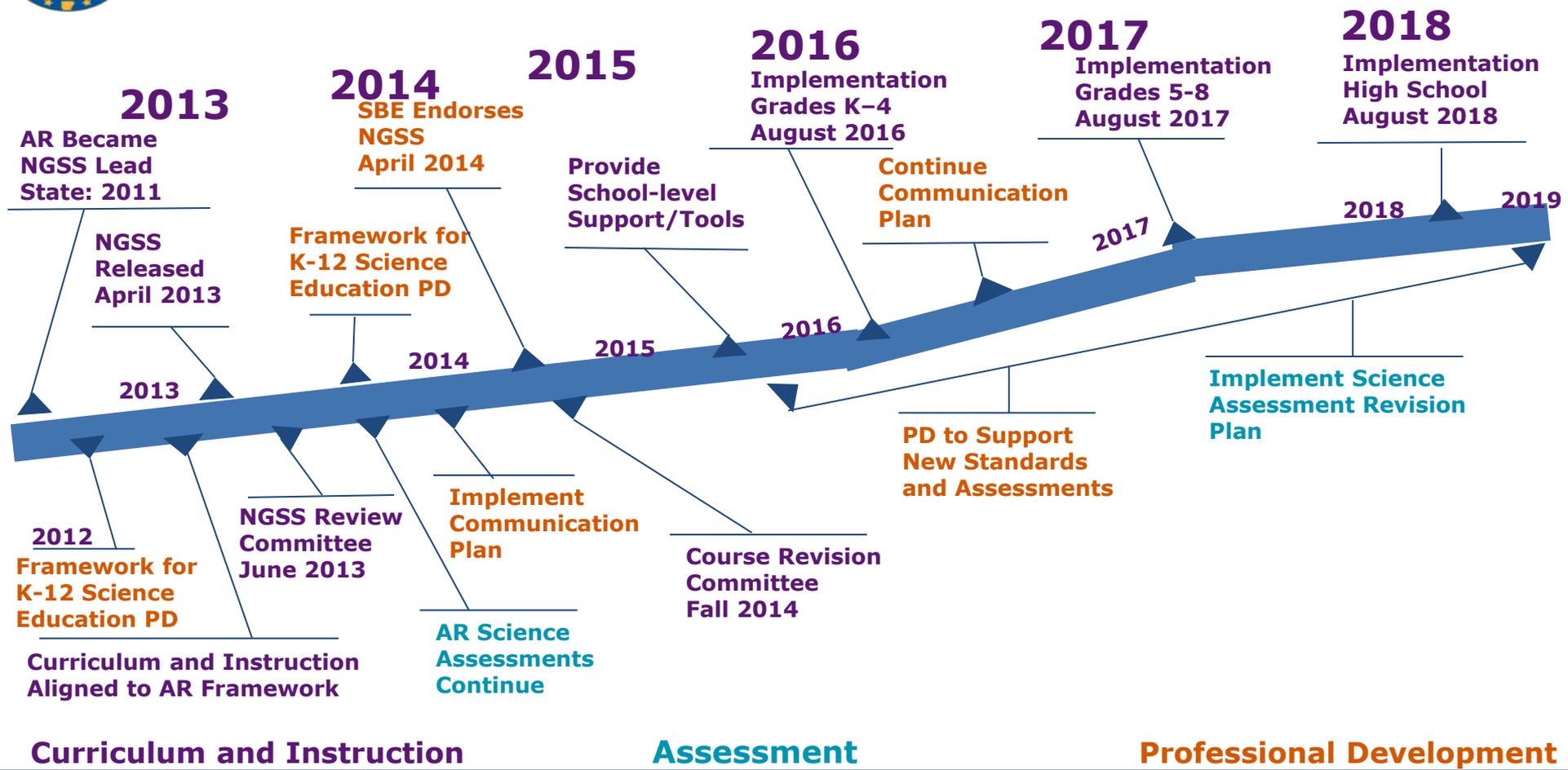
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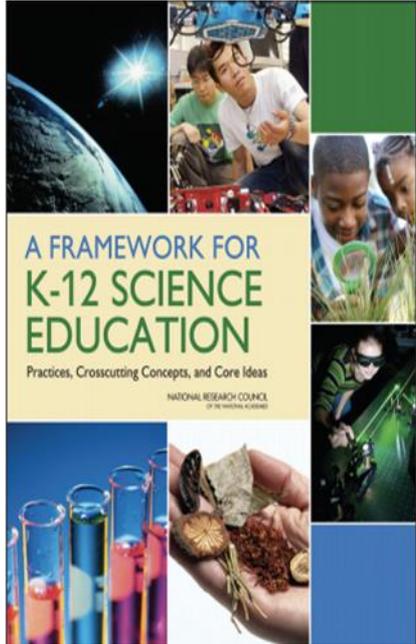
We will

- Identify the links between the CCSS ELA Literacy in Science, and the NGSS Science and Engineering Practices
- Consider the deepening of student understanding when CCSS (Capacities) and NGSS (Practices) are linked
- Use instructional planning tools, rubrics, and resources
- Identify artifacts for TESS



Science Standards Timeline





Practices



Crosscutting
Concepts



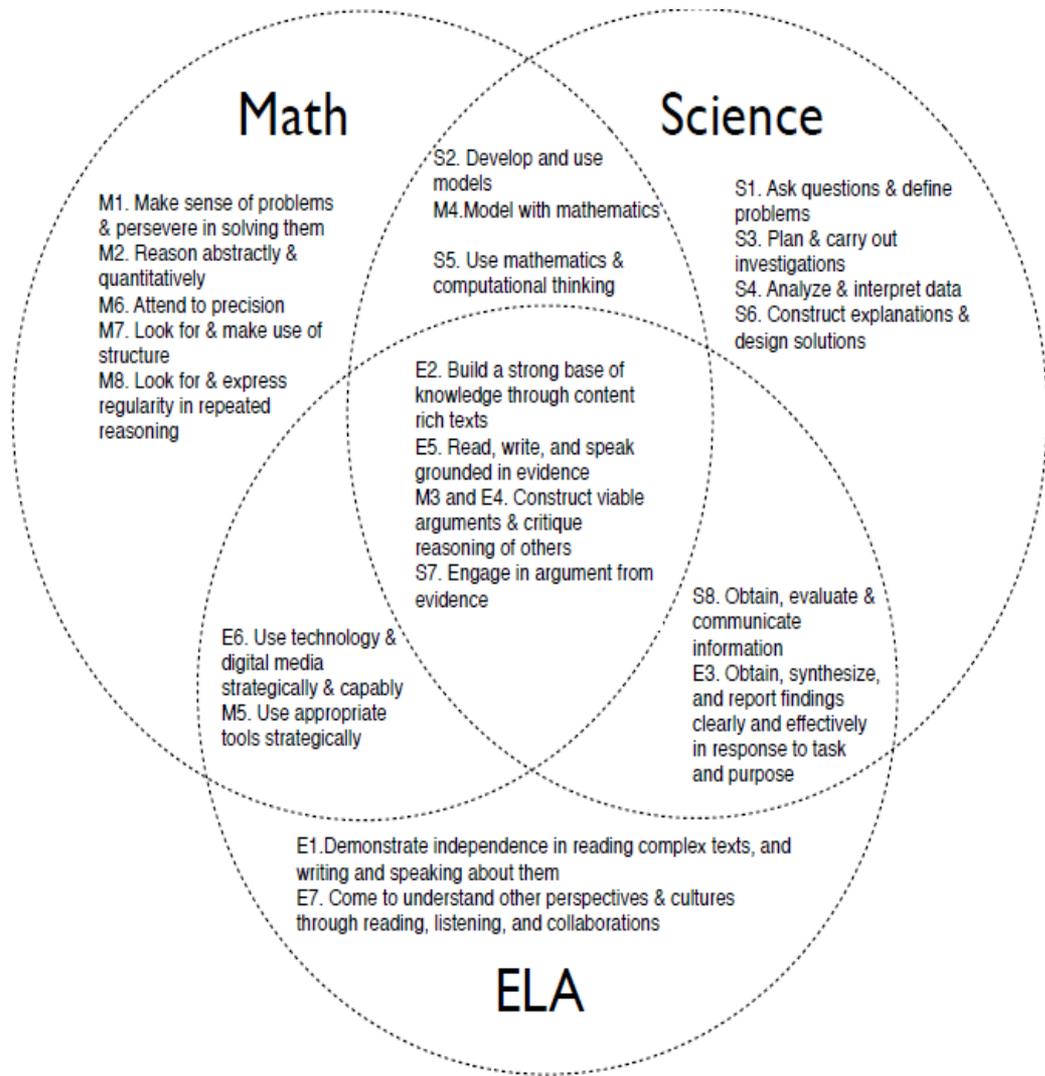
Core
Ideas

www.nextgenscience.org

Science and Engineering Practices for K-12 Classrooms

1. Asking questions (science) and defining problems (engineering)
2. Design and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Developing explanations (science) and designing solutions (engineering)
7. Engaging in argument
8. Obtaining, evaluating, and communicating information

Relationships found in the CCSS in Math (practices) ELA/Literacy (capacities) and Science (practices)



**Science teachers can
incorporate and make use of
literacy techniques to increase
student understanding and
achievement in middle and high
school science instruction.**

Beauchamp et al



Science teachers teach literacy too.

- ELA CCSS: read, write, and research across the curriculum, including science and technical subjects
- <http://www.corestandards.org/ELA-Literacy/>

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ELA Text Type and Purposes: Middle School

- Fold the CCSS Example A (7th Grade) in half so that the left side is facing up
- Review the ELA standards for text types and purposes
 - #1 Argument
 - #2 Informative
 - #3 Narrative

Content Literacy in Science Grades 6-12

- Unfold the paper
- Review the Content Literacy in Science Standards in right column
- What do you notice?

ELA	Literacy in Science
<p>Text Type and Purposes</p> <p>1. Write arguments to support claims with clear reasons and relevant evidence.</p> <ol style="list-style-type: none"> Introduce claim(s), acknowledge and address alternative or opposing claims, and organize the reasons and evidence logically. Support claim(s) or counterarguments with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. Establish and maintain a formal style. Provide a concluding statement or section that follows from and supports the argument presented. <p>2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <ol style="list-style-type: none"> Introduce a topic or thesis statement; clearly previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. Use precise language and domain specific vocabulary to inform about or explain the topic. Establish and maintain a formal style. Provide a concluding statement or section that follows from the information or explanation presented. <p>3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequence.</p> <ol style="list-style-type: none"> Engage and orient the reader by establishing a context and point of view and introducing a narrator and /or characters; organize an event sequence that unfolds naturally and logically. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. Provide a conclusion that follows from the narrated experiences or events. 	<p>Text Type and Purposes</p> <p>1. Write arguments focused on <i>discipline-specific content</i>.</p> <ol style="list-style-type: none"> Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternative or opposing claims, and organize the reasons and evidence logically. Support claim(s) with logical reasoning and relevant, accurate data and evidence, that demonstrate an understanding of the topic or text, using credible sources. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. Establish and maintain a formal style. Provide a concluding statement or section that follows from and supports the argument presented. <p>2. Write informative/explanatory texts including the narration of historical event, scientific procedures/experiments, or technical processes.</p> <ol style="list-style-type: none"> Introduce a topic clearly; previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. Develop the topic with relevant facts, well-chosen facts, concrete details, quotations, or other information and examples. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. Use precise language and domain specific vocabulary to inform about or explain the topic. Establish and maintain a formal style and objective tone. Provide a concluding statement or section that follows from and supports the information or explanation presented. <p>3. (See note; not applicable as a separate requirement) Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively in arguments and informative/explanatory texts. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in investigations or technical work so that others can replicate them and (possibly) reach the same results.</p>

ELA Text Type and Purposes: What about elementary school?

- K-5 Literacy in Science Standards are embedded in the K-5 ELA Standards
- CCSS Anchor Standards are the same K-12
- Read the CCSS Anchor Standards for Reading
- How are these learning expectations different at elementary, middle, and high school?



Words can be confusing

ELA Literacy

- Argumentative Writing
- Informative/ Explanatory Text

Science and Engineering Practices

- Engaging in Argument from Evidence
- Constructing Explanations
- Obtaining, Evaluating, and Communicating Information

Text Type 1-Argumentation

Science and Engineering Practices

CCSS

- Argumentative Writing
- Argumentative Writing
- Engaging in Argument from Evidence
- Constructing Explanations
+
Engaging in Argument from Evidence

Communication

CCSS Text Type 1- Argumentation

- Introduction
- Claim
- Evidence
- Counter Claim
- Conclusion

Science Practice #6- Constructing Explanations

- Claim
- Evidence
- Reasoning
- Counter Claim

Text Type 2-Explanation

CCSS

- Informative/ Explanatory Text
- Informative/ Explanatory Text
+
Research

Science and Engineering Practices

- Constructing Explanations
- Obtaining, Evaluating and Communicating Information

Communication

CCSS Text type 2- Information/Explanatory

- Scientific procedures/experiments
- Technical processes

CCSS Research

Conduct research projects to answer a question or solve a problem.

Science Practice #8-Obtaining, Evaluating, and Communicating

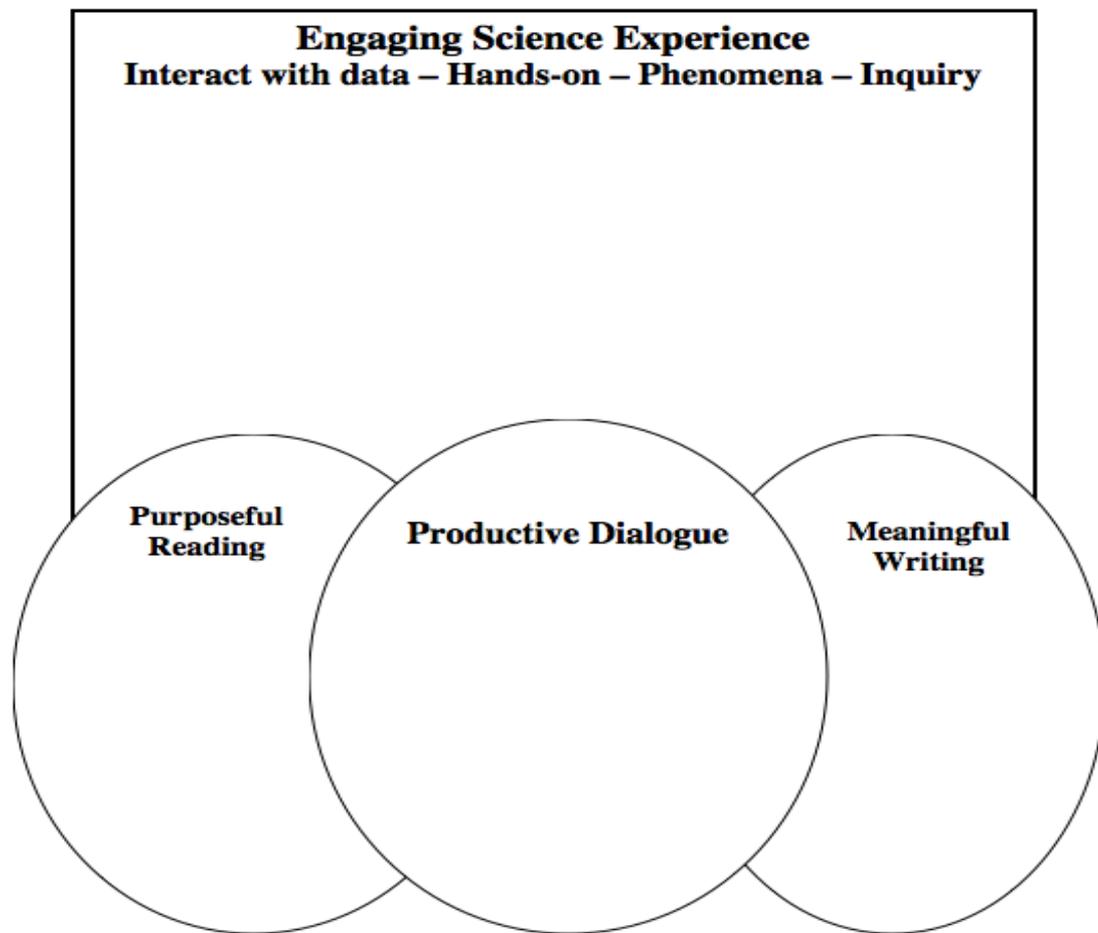
Produce scientific and technical text, tables, graphs, diagrams, interactive displays, and equations.

Science instruction that includes dialogue, reading, and writing helps students to be better communicators.

A Science Literacy Framework provides teachers with..

- tools for including dialogue in the classroom,
- techniques for designing engaging instruction,
- and methods for students to use in extracting information from text.

Science Literacy Framework



Why do teachers need a science literacy

framework?

In many classrooms, teachers are doing most of the intellectual work while students are passive observers.

Backward Design for Quality Student Work

1. What will students learn?
Science and literacy skills.
2. How will students demonstrate their learning?
3. How will I facilitate their learning?



Two Minute Meeting

- Identify a partner, decide who is partner A and who is partner B
- Stand up
- You have 60 seconds to tell your partner about a writing task or technique you use with your students.
- Switch roles, partner B has 60 seconds
- Thank your partner
- Sit down

Anticipatory Set

- DNA and RNA
- Agree or Disagree to the statements on your handout
- “A” if you Agree
- “D” if you Disagree

Think Pair Share

- With your previous partner, discuss your responses to the Agree/Disagree statements.

Conducting an Investigation-DNA Combinations

- How many possible combinations were you able to make?
- Is there a mathematical way to calculate the different combinations of colors? How would you do this?
- Analyze the data.
- Write a summary statement of the data.
- What trends do you see?

Assessing Our Current Thinking

- Refer back to your agree/disagree statements.
- Are there any statements that you would like to modify your answer for?

Obtaining Information From Text

Use the Summary Protocol, where—

One person is chosen to keep the group on task.

Read one paragraph silently (leader makes sure all group members know where paragraph starts and ends).

After everyone in the group is finished reading the paragraph, the group discussed the main idea(s).

The group comes to consensus about one (or two) main idea(s).

Each group member writes down the main idea(s).

Repeat steps 2-6 for each paragraph.

Use your small group voice. 😊



Think Pair Share

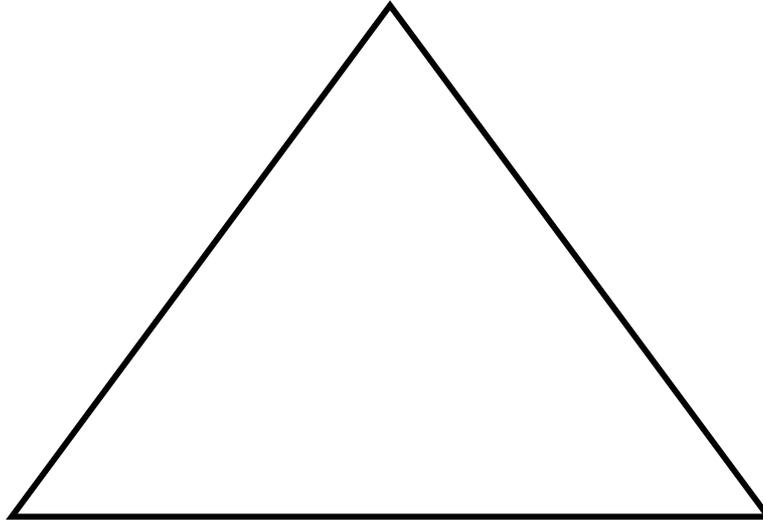
- If your group finishes before others, take some time to discuss how you might use Summary Protocol in your classrooms.
- Be prepared to share your ideas with the whole group.

Scientific Explanation

- “Compose an email to a classmate who is absent today, explaining the structure of DNA and how DNA bases pair with one another.”
- Use evidence from your lab investigation, reading, and additional research to support your claim.

The Communication Triangle

Text/Format: essay, news
article, letter



Writer/Perspective:

Who is speaking?

Reader/Audience:

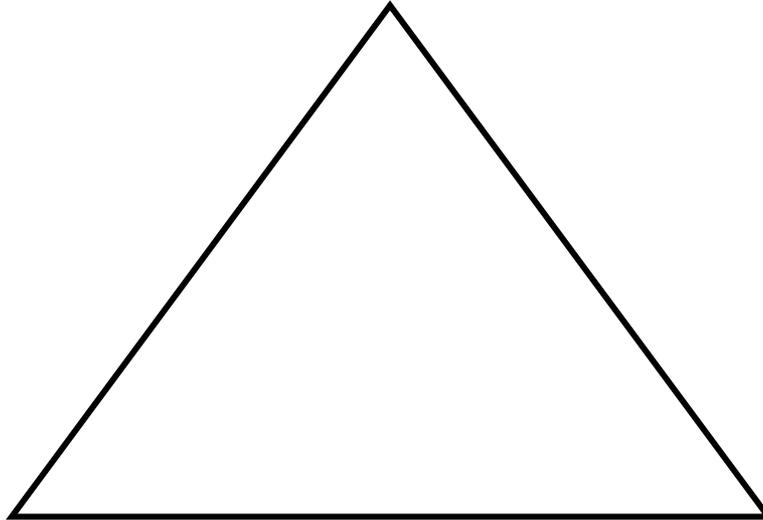
Who are you
speaking to?

Novice to Expert response

1. Effort and motivation to persist is weak.
2. Careless in reasoning.
3. Does not break tasks into component parts and go step-by-step.
4. Focuses on individual details, and not on how details relate to concepts.
5. Formula-memorizing is a main strategy.
6. Often gets behind in learning, and then sequential learning is hampered.
7. Loss of confidence in ability to achieve due to lack of success.

The Communication Triangle

Text/Format: essay,
news article, letter



Writer/Perspective:
Who is speaking?

Reader/Audience:
Who are you
speaking to?

Applying the Communication Triangle Examples of Writing Prompts

- You are a geologist studying rocks to determine the direction of flow of an ancient glacier. What clues might help you determine the glacier's direction of flow? Put your answer in the form of a "Do-It-Yourself" guide to determining glacial flow direction.
- You are an earthquake safety expert and on a radio program. A caller asks the question, "if you are in a car out in the open during an earthquake would you be safest staying in the car?" Write what you would say to the caller.

Generating Writing Prompts

Characteristics of a successful writing prompt require:

- students to reveal their thinking
- take a stance
- make use of evidence or generate a complex explanation/detailed description.

Communication elements

- **Writer**-role of the student writer
- **Form**-form of writing
- **Audience**-who the writer is writing to

Common Core

Speaking and Listening:

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on topics and texts, building on others' ideas and expressing their own clearly.

Reading:

- Determine the central ideas or conclusions of text; summarize complex concepts, processes, or information from text by paraphrasing in simpler but still accurate terms.
- Quote accurately from a text when explaining what the text says.

Writing:

- Write opinion pieces on topics or texts, supporting a point of view with reasons.
- Write arguments to support claims using valid reasoning and relevant and sufficient evidence.

AR Science Framework & NGSS

Arkansas Science Curriculum Frameworks

- Collect and interpret measurable empirical evidence in teams and as individuals
- Formulate inferences based on scientific data
- Communicate results and conclusions from scientific inquiry following peer review
- Describe the Watson and Crick double helix model of DNA using the base pairing rule

NGSS

- Ask questions about data
- Analyze and Interpret data
- Construct an argument using evidence

Reasoning	Readability	Structure
<p>Clearly states a position</p> <p>Scientific approach with logical inferences and conclusions</p> <p>Argument based on evidence from multiple sources</p> <p>Demonstrates understanding</p> <p>Applies scientific practices and principles</p> <p>Scientifically accurate</p>	<p>Proper grammar</p> <p>Correct spelling and word usage</p> <p>Legibility</p> <p>Flow: information is presented coherently and has smooth transitions</p> <p>Engages the reader</p>	<p>Written in proper format including:</p> <ul style="list-style-type: none"> • Appropriate title • Takes a clear stance • Stance is presented in thesis statement • Includes an introduction and conclusion • Proper paragraphs

Rubric For Student Work

Choose the content standards

1. Choose a grade band (6-8, 9-10, 11-12).
2. Select a science strand and a few content standards.
3. Create a list of the verbs found in the standards.
4. Discuss the skills (practices) a student must have to meet the expectations in these standards.
5. Create a guiding question students will answer.

Choose the literacy standards

Using the Reading and Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects (WHST), work with a partner to

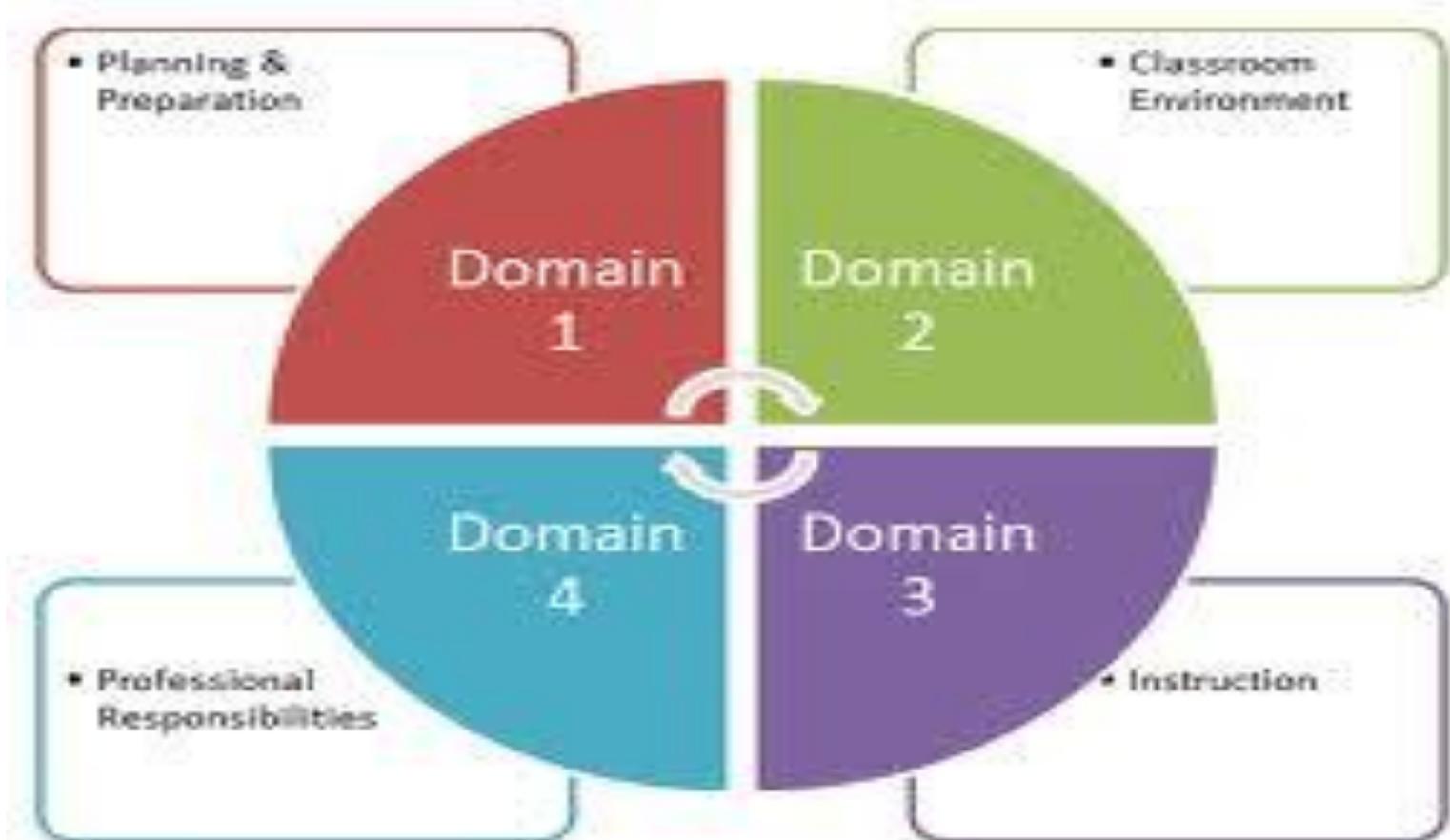
1. Choose a grade band (6-8, 9-10, 11-12).
2. Select a conceptual organizer for reading and writing standards.
3. Create a list of the verbs found in the standards.
4. Discuss the skills a student must have to meet the expectations in these standards.
5. Share.

Plan a lesson using the literacy

framework planning tools

- Based on the standards, create a science lesson that engages students in the science and engineering practices.
- Complete the planning pages to include reading, dialogue, and writing.
- Choose your text (NEWSELA.com), guiding question, dialogue strategies, and elements of communication.

Danielson's Framework for Teaching



Artifacts for TESS

- Literacy Framework documents
- Rubrics
- Lesson plans
- Practice guides
- Formative assessments



Research and Resources

- Arkansas Department of Education. <http://www.arkansased.org/>
- Beauchamp, Arthur, Judi Kusmick, and Rick Mc Callum 2011. *Success in Science through Dialogue, Reading, and Writing. The Regent of the University of California, Davis Campus.*
- Common Core State Standards. <http://www.corestandards.org/>
- K-12 Alliance/WestEd 2014. *NGSS Going Deeper.* PowerPoint Presentation created by Karen Cerwin and Jodi Sherriff.
- Next Generation Science Standards. <http://www.nextgenscience.org/>
- The Danielson Group. The Framework for Teaching. <http://danielsongroup.org/framework/>

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