



MISSISSIPPI

EXEMPLAR

Units & Lessons

ENGLISH LANGUAGE ARTS

Grade 10

Lesson 2: Solving the Right Problem

Focus Standard(s): RI.10.2

Additional Standard(s): RI.10.3, RI.10.4, RI.10.5, W.10.2, W.10.7, SL.10.1

Estimated Time: 5 days

Text(s): [“Are You Solving the Right Problems?”](#) by Thomas Wedell-Wedellsborg; Ted video [“To Solve Old Problems, Study New Species”](#); Ted video: [“This App Makes It fun to Pick Up Litter”](#)

Resources and Materials:

- Handout 1.2: Learning Targets for the Unit
- Handout 1.4: Research Paper Samples
- Handout 1.5: Problem Identifier/Question Generator
- Handout 2.1: Ideas to Remember About Problem Solving
- Handout 2.2: Formative Assessment Data Sheet
- [Anchor Chart](#)
- [Choosing Details to Support a Provided Central Idea Organizer](#)
- [Fray Model](#)
- “To Solve Old Problems...” [Interactive Transcript](#)
- “This App Makes it Fun to Pick Up Litter” [Interactive Script](#)
- [“Over Fifty Problem Solving Strategies Explained”](#)

Lesson Target(s):

Students will show understanding of the following concepts:

- The central idea is the point the author wants to make.
- The writer develops the central idea(s) through supporting details: examples, anecdotes, statistics, descriptions, cause and effect, quotes, analogies, allusions, and illustrations (and other text features).
- All the details in the text develop and support the central idea(s) by proving it, explaining it, illustrating it, or providing more details.


- Authors have a purpose for writing a text, and this purpose influences the central ideas developed and the way in which the author develops the central idea.
- Authors choose what details/information to include, exclude, and/or emphasize based on their specific purpose.
- Informational texts often follow predictable patterns or outlines. Reverse outlining may be helpful in determining the central idea and identifying the specific details that support it.
- Determining the connections between the details will help determine the central idea.
- An author can include more than one central idea in a text, but typically there is an overall main idea.
- Central ideas are not one-word or simple topic statements (e.g., songbirds; songbirds are dying off) or themes (e.g., Sometimes, man-made objects and creations impact other species negative and unexpected ways.) Instead, they are statements directly related to a topic of the text and how the details connect (e.g., Every year in New York City, hundreds of birds are being killed because they fly into buildings that were built by humans.)

Students will complete the following actions:

- Trace the development of the central idea by identifying specific details from the text.
- Articulate the central idea(s) of a text.
- Compose an accurate summary of a text that includes how the central idea emerges, is shaped, and is refined by specific details.

Guiding Question(s):

- What are the key details that develop the central idea?
- How can I use details to determine the central idea?
- How can I use details to trace the development of the central idea?
- How is central idea different from a topic and a theme?

Vocabulary	
<p>Academic Vocabulary:</p> <ul style="list-style-type: none"> • Central Idea • Key Details • See this section in Lesson 1 for review of other words. 	<p>Instructional Strategies for Academic Vocabulary:</p> <p><input type="checkbox"/> See Activity 1b.</p>
<p>In-ConTEXT Vocabulary:</p> <ul style="list-style-type: none"> • See Activity 3b. <p>Note: Words included as in-context are meant to aid in comprehension of the text through the instruction of context clue strategies. When assessing for student mastery of in-context vocabulary, assess students' ability to use strategies. See RL.4 AND L.4 in your grade level standards.</p>	<p>Strategies for Teaching How to Determine Meaning from Context Clues:</p> <p><input type="checkbox"/> Model the CPR context clue strategy.</p> <p><input type="checkbox"/> Use an Anchor Chart to model how to use context clues to determine the meaning of words.</p>
<p>Direct Instruction Text Vocabulary:</p> <ul style="list-style-type: none"> • See Activity 3a. <p>Note: Words included for direct instruction are meant to aid in comprehension of the text. Decisions about vocabulary assessments and word walls are to be made based on individual needs of students.</p>	<p>Instructional Strategies for Direct Instruction Text Vocabulary:</p> <p><input type="checkbox"/> Introduce words with student-friendly definition and pictures</p> <p><input type="checkbox"/> Model how to use the words in writing/discussion</p> <p><input type="checkbox"/> Read and discuss the meaning of word in multiple contexts</p> <p><input type="checkbox"/> Students create pictures/symbols to represent words</p> <p><input type="checkbox"/> Students write/discuss using the words</p> <p><input type="checkbox"/> Students act out the words or create movements/gestures to represent the meaning of the words</p>
Symbol	Type of Text and Interpretation of Symbol
	Instructional support and/or extension suggestions for students who are EL, have disabilities, or perform/read well below the grade level and/or for students who and/or a more advanced text for students who perform/read well above grade level
✓	Assessment (Pre-assessment, Formative, Self, or Summative)

Instructional Plan

Anticipatory Set/Introduction to the Lesson

Provide students with **Handout 1.5: Problem Identification/Question Generator** and ask them to solve the following question: If you were a building manager and many of your tenants were complaining because of the slow speed of the elevator, how would you solve this problem?

Have students share out, but explain that they will discuss further when they read the anchor text in the lesson.

Understanding Lesson Purpose and Student Outcomes

Explain to students that they must know more about problem solving, as well as how to develop a central idea, before they can effectively complete their performance task, so they will analyze the central idea of several texts to gain some insight into the topic of problem-solving.

Have students view the central idea section of **Handout 1.2: Learning Targets for the Unit**. Explain to them that they will learn all about central ideas and should use this sheet to monitor their comprehension of central ideas and the completion of the lesson targets as they progress throughout the unit. Direct them to check off as they accomplish each target and to highlight the ones they do not think that they mastered.

Activity 1: The Teacher Model

Activity 1a: Modeling How to Summarize the Central Idea

Tell students that they need to first comprehend the text before they can determine the central idea. To do this, explain that you will model summary skills of small sections of the Ted Ed video [“To Solve Old Problems, Study New Species”](#) with the following chart:

Paragraph/Section Number/Time of Video	Summarize – Put it into your OWN words! Use the Win Strategy

Direct students to draw and complete the chart with you. Play the video. Find suitable stopping points (typically around 2 minutes for each section). Display the “To Solve Old Problems...” [Interactive Transcript](#) and model how to summarize the section at each stopping point. Be sure to record the time of each stop for reference later.

Activity 1b: Modeling How to Determine the Central Idea

Note: As you provide instruction below, complete the [Frayer Model](#) of the following concepts in an anchor chart or on the board. Consider recording yourself modeling for students who are absent.

Provide students with a copy of the [Frayer Model](#) and direct them to record their ideas as you record.

T: Let’s create a Frayer model together to understand central idea, facts about it, and examples and non-examples. We will use this video as examples for our notes. The first thing to know about a central idea is that the central idea is the point the author wants to make.

S: (Write definition of central idea.)

T: Central ideas are not one-word or simple topic statements (e.g., problem solving; new species are helpful). These words represent just the subject or the topic and do not represent specifically what about *problem solving* or *new species being helpful* that the author is trying to convey.

S: (Record what central ideas are not, including examples, on student copy of Frayer model.)

T: Central ideas are not themes (e.g., Often, people try or solve problems without looking at new ideas, concepts, and information; If you can't solve a problem, look for new information, ideas, and concept to help you. Do not keep doing everything the same way; Diverse perspectives/different viewpoints can help to solve problems better and faster.) Themes are not specific to a text. Notice these sentences provide a general idea about life.

S: (Record what central ideas are not, including examples, on student copy of Frayer model.)

T: Instead, they are statements directly related to a topic of the text and how the details connect. We will determine that central idea now.

S: (Record what central ideas is on student copy of Frayer model.)

T: Let's discuss some facts about a central idea.

T: It is very important to understand that the writer develops the central idea(s) through supporting details: examples, anecdotes, statistics, descriptions, cause and effect, quotes, analogies, allusions, and illustrations (and other text features). These details in the text develop and support the central idea(s) by proving it, explaining it, illustrating it, or providing more details. (Provide students with specific examples from the video.)

S: (Record this fact in their own words.)

T: Informational texts often follow predictable patterns or outlines. Reverse outlining may be helpful in determining the central idea and identifying the specific details that support it. An organizer can help you keep up with the main details that make up the sub and main central ideas. Watch me as I record the type of details on my [Choosing Details to Support a Provided Central Idea Organizer](#). (Record the details, being sure to emphasize the sub-central ideas in the third column and that there is more than one sub-central idea, but they lead to an overall central idea. See the model below for some specific details and ideas to include in the organizer.)

S: (Record this fact in their own words on student copy of Frayer model.)

T: Determining the connections between the details will help determine the central idea by helping us refine the topic. It seems like the connections between the details are about all the new species, how the new species are like us, etc.

S: (Record this fact in their own words on student copy of Frayer model.)

T: This makes me wonder what the author's purpose is for writing this. Authors have a purpose for writing a text, and this purpose influences the central ideas developed. For example, if an author wants to convince us to start looking at new species to solve existing problems, the author would explain how new species can help us solve problems and make sure that every detail supports this purpose.

S: (Record this fact in their own words on student copy of Frayer model.)

T: Authors choose what details/information to include, exclude, and emphasize based on their specific purpose. For example, if the author wants to explain how new species can help us solve old problems they are going to make sure to emphasize

these types of details through anecdotes, examples, and data. They may also decide to include examples and data that shows how ineffective we have been in using old species to solve the problems. (Provide students with specific examples from the video.)

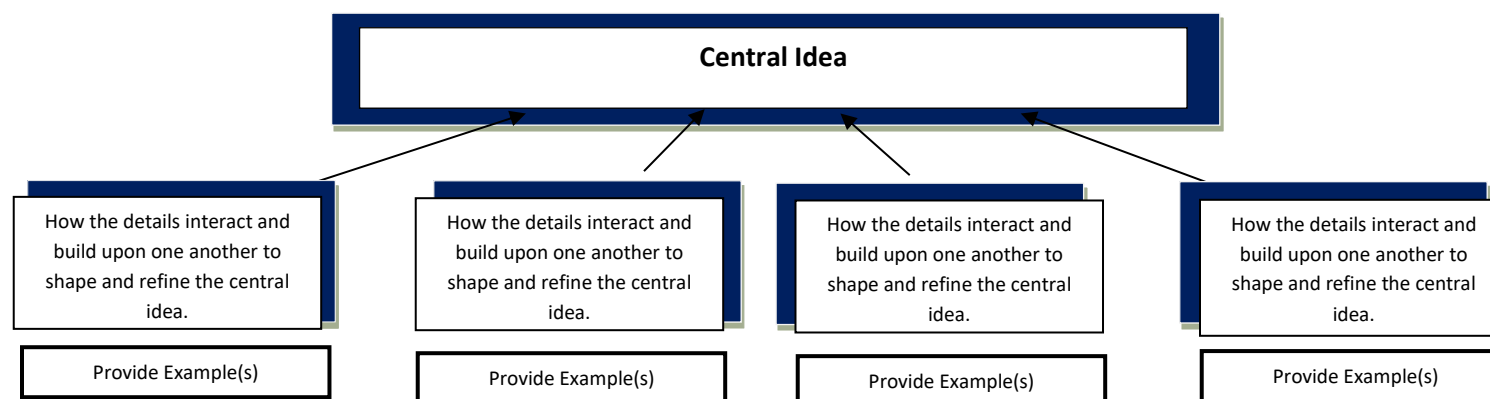
S: (Record this fact in their own words on student copy of Frayer model.)

T: Based on all this information, I know that the central idea of this passage is the following: Focusing all biological research on the same life forms over and over again is ineffective, so we need to look at new species to solve the problems in science, like cancer.

T: When I'm finished, I write an analysis that includes the central idea and how it was developed.

Activity 1c: Modeling How to Write an Analysis of the Central Idea Development

Provide students with a sample model of how to write an analysis using key details from a [Choosing Details to Support a Provided Central Idea Organizer](#) and the central idea. Begin by showing students a visual to help them conceptually understand the information that belongs in an analysis:



Then, provide a model in paragraph form, being sure to have students help you determine how they can imitate the example:

In the TED video "To Solve Old Problems, Study New Species," Alejandro Sánchez Alvarado develops the central idea that we need to look at new species to solve the problems in science, like cancer, because focusing all biological research on the same life forms over and over again is ineffective.

To begin, Alvarado develops his first point by asking the audience to visualize while he provides a description of a trip to a place in the ocean, to which he refers to as “the greatest marine biology lab in the world”, that houses unknown species. This description allows him to lead into another description about a recent discovery of a jellyfish species, *Thalia democratica*, who, as he explains, scientists now know is possibly the closest invertebrate species to humans. Then, Alvarado uses a metaphor to compare biologists to explorers, stating that some biologists want to study deeper already-discovered continents, while others want to discover new continents. He breaks from the metaphor to provide multiple examples of the new species that have been discovered during these expeditions and how these species have advanced understandings in areas such as genetics, vaccines, cloning, and the structure of DNA. Ultimately, the description of the expedition, the metaphor, and the examples of newly-discovered species are used to support two points: 1) this type of research is important because it has led to additional discoveries and 2) this knowledge can be used to solve old problems (e.g., cancer, aging, degenerative diseases) that have not been solved.

To refine his central idea, Alvarado uses three types of details to further develop the idea that research has focused too narrowly on certain species. First, he illustrates how many species share the same source of life with humans with a visual, which is a circular cladogram (also referred to as the tree of life), which displays all the relationships of all organisms, and zooms in to focus on the small area that scientists tend to concentrate for research. Subsequently, Alvarado provides a statistic from NOAA to show how much of the ocean, 95%, has been unexplored and, therefore, unstudied. To provide more emphasis on the limitations of studies about species, the speaker shows images of the seven species on which most research focuses and provides a statistic (0.00009%) to show how little the correspondence is with these seven species and all of the species that inhabit the planet.

All of these details emphasize his point that studying the same species has been ineffective and that advancements cannot be made without studying newer species.

Have discussions about how this analysis is different than an evaluation. This analysis discusses how the author develops the central idea, not how *well* the author develops it. If they were evaluating the speaker’s argument, they would add conditional language that refers to the effectiveness, reliability, and validity of the argument.

Activity 1d: Reflecting on the Model

Have students view the central idea section of **Handout 1.2: Learning Targets for the unit**. Direct them to check off each target they feel that they have mastered and highlight the ones they do not think they mastered. Explain to students that they need to determine their next steps for improving if necessary.

Activity 2: Guided Practice

Have students complete the summary chart in Activity 1a while watching the Ted Ed video [“This App Makes It fun to Pick Up Litter”](#). Consider providing students with or access to the “This App Makes it Fun to Pick Up Litter” [Interactive Script](#). Have students partner up and complete the [Choosing Details to Support a Provided Central Idea Organizer](#) with your support. Upon completion, have students write an analysis that traces the development of the central idea.

- ✓ Use **Handout 2.2: Formative Assessment Data Sheet** to collect data about student understanding. Use this data to make decisions about the type of support to provide to students during their independent practice. Vary and individualize remediation activities based on their performance.

Activity 3: Independent Practice**Activity 3a: Fluency and Vocabulary Practice**

Explain to students that fluency and vocabulary are very important to the comprehension of a text, and to read effectively, they must attend to those needs.

Before the lesson, determine the sentence(s) or section(s) that your students may struggle to read fluently. Provide a model read of just that sentence or section and have students echo it back right after you read it. Have students discuss why you are reading it in that way (e.g., the dash means the character was interrupted). Repeat the echo read one more time.

Have students search through the text for words that are unfamiliar to them. If it is a word that has clear context clues, teach students a strategy to determine the meaning of the word from the context clues. See the strategies listed in the “Strategies for Teaching How to Determine Meaning from Context Clues” section above the instructional plan. If it is a word that contains no context clues, use one of the strategies from the “Instructional Strategies for Direct Instruction Text Vocabulary” listed in the vocabulary section above the instructional plan.

Activity 3b: Read the Text and Practice Independently

Have students complete the summary chart in Activity 1a while they read [“Are You Solving the Right Problems?”](#) by Thomas Wedell-Wedellsborg. During their multiple reads, have students individually complete the [Choosing Details to Support a Provided Central Idea Organizer](#) with your support. Upon completion, have students write an analysis that traces the development of the central idea.

For students who are EL, have disabilities, or perform/read well below the grade level:

- Provide small-group instruction for those students who you noticed in the guided practice were still struggling with the skills and concepts. Remodel for students with a few examples from the text. Show them how to chunk the text. Provide students with a list of steps to follow. Provide sentence starters/stems for both conversations and writing.
- For EL students, provide the translated words for those they do not know.

Extensions and/or a more advanced text for students who perform/read well above grade level:

- Have students look through [“Over Fifty Problem Solving Strategies Explained”](#) article and make a suggestion list of the resources that would benefit other students on their performance task.

Optional Activity: Parallel Structure Mini-Lesson

Consider conducting the mini-lesson explain in **Activity 1: Parallel Structure Mini-Lesson** of Lesson 6. See the note located directly under the Activity 1 heading in Lesson 6.

Activity 4: Application to Performance Task

T: How can we apply what we learned about from all three texts we viewed and/or read about problem solving?

Direct students to place ideas to their **Handout 2.1: Ideas to Remember About Problem Solving**. Model one or two examples for students.

Direct students back to their **Handout 1.4: Research Paper Samples** and have them complete Step 2 (which is a revision of Step 1) now that they have learned more about problem solving. Guide students by prompting them to think through whether they have

gotten to the root of the problem and additional questions they may need to consider. Explain that they may need to have research to get to the root of the problem. If this is determined, they should start discussing what sources they should use to gather information. For students who struggle, use the examples in the research sample, **Handout 1.4: Research Paper Samples**, as a reference.

In their research groups, have students start to consider the following: what data and research are needed, how they would collect that data, how long it may take to solve the problem, and whether their solutions would actually help the problem or cause more problems. For students who struggle, use the examples in the research sample, **Handout 1.4: Research Paper Samples**, as a reference.

Direct students again to place ideas to their **Handout 2.1: Ideas to Remember About Problem Solving**. Model one or two examples for students.

Reflection and Closing

- ✓ Have students reflect on the following:
 - How well they accomplished targets.
 - How well they think they can complete the performance task.
 - Which documents they can compile from this lesson for a study guide to help them on the cold-read assessment focused on central ideas.

Homework

Students will begin collecting information or developing instruments to collect information about their problem statement.

Handout 2.1: Ideas to Remember about Problem Solving

Ideas to Remember	Example/Explanation	How will I apply this idea to my performance task?

Handout 2.2: Formative Assessment Data Sheet

Focus Standard(s): RI.10.2

Additional Details: Write an analysis of the development of the central idea

Evidence of Understanding Scale

- 5-Performing Above Standard: Compares the development of this central idea to the development of a previously-read text with a similar topic
- 4- Met Standard: Identifies sub-central ideas and overarching central idea and provides multiple and varied details to explain how the central idea emerges and is refined
- 3- Approaching Standard: Identifies the central idea and provides multiple examples of the same type of detail that contributed to the development of the central idea; OR Cannot identify the central idea but recognizes the topic/subject and several details that seem important to the plot development
- 2- Minimal Understanding: Cannot identify the central idea but recognizes the topic/subject and one or two details that seem important to the plot development
- 1- No Understanding: Attempts but can neither identify a central idea nor provide examples of details that contribute to the development; OR Provides only a summary of the text
- 0- Did Not Attempt: Does not attempt/No response

Student Name	Scale	Comment
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For training or questions regarding this unit,
please contact one of the following:

Wendy Clemons
Professional Development Director
Wclemons@mdek12.org

Dana R. Danis, ELA Content Specialist,
English Language Arts
ddanis@mdek12.org

Kristina Livingston
Professional Development Coordinator, Lead
klivingston@mdek12.org