

**Disciplinary literacy** is an emphasis on the shared ways of reading, writing, speaking, and thinking within a particular content area or academic field.

#### LEVEL OF DIFFICULTY:

- ☐ Emerging (PreK–K)
- ☐ Emerging (1–2)
- ☒ Expanding (3–6)
- ☐ Bridging (6–8)
- ☐ ELL

#### FOCUS AREA:

- ☐ Career and Technical Education
- ☐ College and Career Readiness
- ☐ ELA
- ☐ Health
- ☐ Math
- ☐ Science
- ☐ Social-Emotional Learning
- ☐ Social Studies
- ☒ STEM



**AVID's  
WICOR®  
Methodology**

This lesson uses the WICOR (Writing, Inquiry, Collaboration, Organization, Reading) methodology and strategies from AVID's curriculum library and is designed for a variety of learning environments.

## AVID Elementary Weekly Resources

Visit the AVID Elementary Weekly matrix for links to lessons, articles, and additional resources.

CREATED IN  
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WITH



## Simple Machines: Wedge It!

By Glen Phelan

Published September 1, 2018

### AVID's Critical Reading Process

#### ACTIVATE



##### Planning for Reading

Establish a purpose for reading. Then, intentionally identify strategies that are needed to successfully read the text. Both content and skill development play a role in planning, as does identifying how a “content expert” would read the text.

##### Selecting the Text

Educators will select texts initially, with the goal being that students will eventually play a role in the selection process. To maximize the effectiveness of texts, use the suggested text-selection criteria to identify the ideal text.

##### Pre-Reading

Determine what work needs to be done prior to the successful reading of a text. Preview the text and connect to or build background knowledge by looking both inside and outside the text.

#### ENGAGE



##### Building Vocabulary

Understand and connect key academic and content-related vocabulary to aid in deeper comprehension of the text.

##### Interacting With the Text

Interact with the text to process information as it is read, including numbering paragraphs or chunking texts, marking texts to isolate key information, writing in the margins, questioning, and visualizing texts. Usually, a deeper processing of a text occurs over multiple reads with varying purposes for each read.

#### EXTEND



##### Extending Beyond the Text

Utilize the text to complete the assigned academic task. “Extend” strategies focus on the development of academic thinking skills such as apply, analyze, evaluate, and synthesize.

## Educator Preparation

### Academic Task:

Analyze “Simple Machines: Wedge It!,” written by Glen Phelan, through Questioning the Text as a Content Expert to engage in a Says, Means, Matters.

### Learning Objectives:

- Students will examine academic and content-area vocabulary prior to reading the text.
- Students will navigate the text by collaboratively asking and answering questions.
- Students will collaborate to further explore how simple machines work.

### Essential Question:

How do the simple machines, wedges, make our daily lives easier?

### Focused Note-Taking:

A variety of note-taking formats may be utilized throughout the stages of the Critical Reading Process, including three-column notes. Consider using a fillable template available in the Teacher Resources section of the AVID Elementary Weekly website.

### Getting Started:

**Estimated Preparation Time:** 20–30 minutes

**Instructional Time:** 100–120 minutes

### Resources Needed:

- This lesson includes blended learning strategies with various tool options. Review the entire lesson to determine tools and materials for your learning environment; some phases may require advance setup. Visit the Blended Learning Toolkit on the AVID Elementary Weekly Teacher Resources webpage for ideas, tools, and tip sheets supporting learning and collaboration within your blended learning environment.
  - **Activate:**
    - Pre-reading: Google Slides/MS PowerPoint, Padlet, or another tool to present terms in random order
  - **Engage:**
    - Vocabulary: Padlet, Jamboard, PowerPoint, or another tool to brainstorm
    - Interacting With the Text: The “Wedge It!” interactive text from National Geographic, linked below and on the AVID Elementary matrix; print or digital copy of *Student Resource: Academic Thinking Skills: Question and Answer Stems – Analyze*; and Padlet, Jamboard, PowerPoint, or another tool for students to brainstorm and record group thinking.
      - [3rd Grade Interactive Text](#)
      - [4th Grade Interactive Text](#)
      - [5th and 6th Grade Interactive Text](#)
  - **Extend:**
    - Extend: Digital or print copy of *Student Resource: Says, Means, Matters Template*
- Please see the AVID Elementary Weekly matrix for links to the Student and Educator Resources mentioned here in a variety of formats.

## ACTIVATE

*Establish a purpose for reading, build background knowledge, and set students up for success.*

### PLANNING FOR READING

Restate the academic task and identify the strategies that will be needed to successfully engage with the text. Recognize where students are in the gradual release of responsibility; decide whether this activity will be modeled with the entire class, in small groups, or with students working individually; and identify opportunities for blended learning. *See the Teacher Resources page for more information about AVID instructional methodologies and blended learning.*

Think through the following questions and identify how the chosen text fits within the broader context of your instructional unit so students are making connections to their prior knowledge.

- What previously taught content and/or prior knowledge is connected to the new text?
- What key content-related or general academic vocabulary do students need to know prior to reading the text?

### SELECTING THE TEXT

This text meets the following features of an ideal text:

- ☐ Rigorous
  - ☒ Develops key content or academic thinking skills
  - ☐ Length is appropriate for the purpose
  - ☐ Format allows for interaction
  - ☒ Balanced perspective or multiple viewpoints
  - ☐ Culturally relevant
- Students practice disciplinary literacy as they engage with this text like a content expert.
  - Engagement with this text fosters inquiry and curiosity.

## Instructional Steps

### PRE-READING

#### Focused Note-Taking

Allow students an opportunity to set up their notes and record the Essential Question before engaging in the learning.

#### Making Connections Through Language

1. Use Google Slides/MS PowerPoint, Padlet, or another tool to present the identified academic and content key terms to students in random order. For additional scaffolding, use teacher modeling with the whole group.
2. Ask students to individually or collaboratively create one coherent sentence using as many key terms as possible by making connections among the key terms, using the chosen tool or adding to their own notes.
3. Have students share some examples of their sentences, either orally or through the chat window on your digital platform, and lead a discussion on the possible connection between the key terms and the text that students are about to read.
4. Invite students to add their sentences to the slides or Padlet as a reference for when they encounter these key terms in the text.

*Build vocabulary and engage in purposeful rereads.*

## BUILDING VOCABULARY

*Vocabulary development can happen at any stage in the reading process.*

### Academic Words:

- equipment (p. 12)
- complex (p. 12)
- designed (p. 14)
- specific (p. 15)

### Content-Area Words:

- simple machine (p. 12)
- wedge (p. 12)
- force (p. 12)
- teeth (p. 15)

### List-Group-Label

#### List

1. Have students use Padlet, Jamboard, PowerPoint, or another tool to brainstorm all the words they think relate to simple machines. For additional scaffolding, model the appropriate spelling and pronunciation as a whole group.
2. Allow for productive struggle and the opportunity for students to make mistakes.
3. Add words to the list to deepen students' thinking.

#### Group

4. Divide the class into small groups to sort the words into categories based on important relationships, or have the groups work together to sort the words into categories, color-coding the words by highlighting, circling, or underlining each word. For scaffolding, students can create drawings to accompany their words.
5. Ask students to explain their reasoning for placing words together.
6. Groups may ask each other questions and change their groupings based on new learning.

#### Label

7. Invite students to suggest a category label for their groups of words. They should be able to justify the thinking behind the labels they have chosen. Prompt students to share their slide or whiteboard as a visual aide during the class discussion. To adapt this lesson, provide pre-established categories and have students categorize words, then gradually release students to categorize independently.
8. Facilitate a discussion with the whole class around the categories they have identified, including their justification for each category. Possible sentence stems are:
  - I placed these words together because...
  - These words are similar because...
  - The best label for this group of words is... because...
9. After students have collaborated and discussed their list, give them an opportunity to add their new learning to their notes.

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## INTERACTING WITH THE TEXT

*Students process information during this stage. Purposeful rereads are essential for learning.*

### **First Read: Read for the Gist**

Have students read and view the text “Simple Machines: Wedge It!” on pages 11–15 one time through to identify the main idea, or for scaffolding teachers may conduct a read aloud or have students use the audio function in the interactive text. This is a “pencil-down, digital-ink-free” read.

1. Pair students up with elbow partners or small groups to discuss what they got from the first reading and viewing.
2. Ask students to capture the main idea that sums up the gist of the text in their notes.
3. If students are struggling to identify the main idea, ask that they identify the 5 W’s (who, what, where, when, why) and the H (how). This can be modeled, done with a partner, or done individually.

### **Purposeful Reread: Get Organized**

Review pages 11–15 in the interactive text. As you review each page, ask students to identify key information by adding thoughts, questions, drawings, or new learning to their notes, identifying the page it came from. This can be completed individually or as a whole class with teacher modeling.

#### *Additional Scaffold*

For the embedded video, identify moments where the video will be paused so students can add thoughts, questions, or new learning to their notes. This can be done individually or as a whole class with teacher modeling.

Recommended pause points: 0:16 and 0:21

### **Questioning the Text as a Content Expert**

1. Provide students with *Student Resource: Academic Thinking Skills: Question and Answer Stems – Analyze*.
2. Before having students read in small groups, model the thought process of developing a question by thinking aloud as you write the following question out for students: “Can you explain how the development of wedges affected your daily life?”
3. Place students into small groups or breakout rooms to brainstorm their own question. Ask one student to act as a recorder. Have each group write another question that would be appropriate for the content. Then have the groups rejoin the rest of the class to share their questions in a Zip-Around. This will determine whether they are ready to write more questions within their groups or are in need of additional modeling or scaffolding. For differentiation, an alternative is to have students share questions orally as the teacher scribes.
4. Instruct student groups to write a question for each chunk of the text. All students need to record the questions to be able to partner-share in the next step.
5. Have students partner with an individual from another group. Each student will share the questions that they wrote, and together they will answer those questions, writing short responses next to their questions on the text.
6. Provide students with time to revisit their notes to add questions and connections using Costa’s Levels of Thinking and connecting to previous learning.

## EXTEND

Reading tasks should be directly connected to what students will do with the text after they have read and understand it.

### EXTENDING BEYOND THE TEXT

This stage uses the text to develop academic thinking skills.

#### ACADEMIC THINKING SKILLS:

- ☒ Analyze
- ☐ Evaluate
- ☐ Synthesize
- ☐ Apply

#### Says, Means, Matters

1. Model the thinking behind what goes into each of the columns by filling out the example row of *Student Resource: Says, Means, Matters Template*. Some Think-Aloud talking points include the following:
  - **Says:** What does the text say? What are the key ideas or phrases that connect back to simple machines/wedges?
  - **Means:** What does the author mean? How can this information be interpreted or used?
  - **Matters:** Why does this information matter? What are the implications of this information in connection with simple machines/wedges?
2. Model filling in the first row of the template with the following examples:
  - **3rd Grade Text Sample:** “The axe head that you used to split the wood is a simple machine called a wedge. It is shaped like a triangle. The head starts out wide and narrows to a thin edge. The thinner the edge, the sharper the wedge. How does it work? It starts with effort from you. It takes effort to swing the axe. This effort provides the force to drive the axe into the wood. Swing the axe. The force is downward. As the axe pushes into the wood, the wedge directs that force sideways. Swing again and CRACK, the wood splits” (p. 12).
    - **Says:** A wedge makes work easier to do.
    - **Means:** The author explains how the shape of a wedge, specifically the blade, helps it to redirect force.
    - **Matters:** It is important for the reader to understand that the author discusses the wedge and how it impacts common tasks.
3. If the text has not already been chunked during prior activities, work with students to create three to four chunks. Depending on where students are with the gradual release of responsibility model, work through the next row of the template together before having students work in small groups or independently to analyze the rest of the text.
4. Ask groups to present their Says, Means, Matters statements to the class to provide a variety of models for how to approach the text.
5. Debrief the process with students so that they understand how this analysis helps the reader understand the various moves that an author makes when writing and why the author makes those choices. Encourage students to process their Says, Means, Matters notes by marking at least three points of significance to include in a summary and reflection.
6. Students should reflect on their learning and summarize their notes by answering the Essential Question.