Reviewing Using the IMET: ELA

Module 103: Building Knowledge

Essential Questions:

- How does the **Instructional Materials Evaluation Tool (IMET)** reflect the major features of the Standards and the Shifts?
- What understandings support high-quality, accurate application of the IMET metrics?

Goals:

- Understand how aligned materials embody the shifts inherent in the Common Core State Standards
- Understand the precise meaning of each metric
- Recognize examples and non-examples related to each IMET criteria metric
Metric 3A: Materials provide a sequence or series of texts that build knowledge and vocabulary systematically through reading, writing, listening, and speaking. These texts are organized around a variety of topics at each grade level.

Metric 3B: Materials provide instructions, clear design and lightweight student accountability, that guide instructors regarding how students will regularly engage in a volume of independent reading, both assigned, related to the anchor texts, or texts of their own choosing, in or outside of class.
Knowledge Sequence K-5.
Although this Program Guide covers K-2 only, students who study CKLA CA through K-5 will continue to build coherent, sequenced background knowledge in 3rd-5th grade.
Close Reading and Volume of Reading

A volume of reading should be balanced with the close analytic reading.

<table>
<thead>
<tr>
<th>Close Reading</th>
<th>Volume of Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fewer pages</td>
<td>More pages</td>
</tr>
<tr>
<td>Grade-level complex text</td>
<td>Text at different levels of complexity</td>
</tr>
<tr>
<td>All students same text</td>
<td>Student or teacher choice of text</td>
</tr>
<tr>
<td>Teaches students to attend to text and to words</td>
<td>Rapidly builds knowledge &amp; vocab</td>
</tr>
<tr>
<td>Heavy support</td>
<td>Light support</td>
</tr>
<tr>
<td>Solely instructional</td>
<td>Guided or independent</td>
</tr>
<tr>
<td>Exposes students to higher level content</td>
<td>Builds knowledge of words, and the world</td>
</tr>
<tr>
<td>Gives all students access</td>
<td>Builds love of reading</td>
</tr>
</tbody>
</table>
Accountable Independent Reading is an important part of a student’s day. Have students choose one of the suggested texts listed on the opposite page to read independently, or select a different text based on students’ interests or your own observations of your students’ needs.

**ACCOUNTABLE INDEPENDENT READING**

**Literary Text**

- Ask students questions such as the following to check accountability of their independent reading of literary text:
  - **KEY IDEAS AND DETAILS**
    - Which examples of dialogue and description help you understand characters, settings, and events?
    - Which details, examples, and features help you summarize the text or explain a theme about how nature impacts humankind?
  - **CRAT AND STRUCTURE**
    - Which elements of fiction help you explain the text?
    - Which words and phrases does the author use to reveal point of view?
  - **INTEGRATION OF IDEAS**
    - How do the ideas in the text relate to the overall theme?
    - How do the ideas in the text connect to the real world?

**Informational Text**

- Ask students questions such as the following to check accountability of their independent reading of informational text:
  - **KEY IDEAS AND DETAILS**
    - What is the main idea of the text? Which key details support the main idea and help you summarize the text?
    - What specific information in the text helps you explain how researchers help us understand nature?
  - **CRAT AND STRUCTURE**
    - What words and phrases can you use to describe the overall structure of the text?
    - How accurate are the ideas and evidence used to support points in a text?
  - **INTEGRATION OF IDEAS**
    - How does the text connect to real-world experiences?
    - How does the text connect to the real world?

- See the Independent Reading Routine on pp. TR32–TR35.

**Text Club**

Encourage students to form a Text Club and discuss the texts they’ve read in Independent Reading with classmates who have read the same texts. In order to have a successful discussion, have them follow these Text Club tips:

- Choose discussion topics.
- Build on the ideas of other group members and express your own ideas clearly.
- Follow agreed-on rules for discussions.
- Pause and respond to specific questions to clarify or follow up on information.
- Make comments that contribute to the discussion.
- Review key ideas and explain your own ideas and understanding in light of the discussion.
- Identify reasons and evidence a speaker provides to support her points.

See the Text Club Routine on pp. TR36–TR39.

**SUGGESTED TEXTS**

- *Fly Guy vs. the Fly Swatter*
  by Tedd Arnold
  Literary Text
  Leslie 2/2L

- *Bunny of a Spider*
  by Donovan Ganim
  Literary Text
  Leslie 1/1L

- *A Walk in the Deciduous Forest*
  by Rebecca L. Johnson
  Informational Text
  Leslie 8/8L

- *A Bitty’s Life*
  by Ellen Lawrence
  Informational Text
  Leslie 7/8L

- *Near Animals Protect Themselves*
  By Michelle Barnes
  Informational Text
  Leslie 9/9L

- *Spiders*
  by Seymour Simon
  Informational Text
  Leslie 9/9L
Reviewing Using the IMET: ELA

Module 103

**AC Metric 3A:** Materials regularly ask students to complete culminating tasks in which they demonstrate their knowledge of a topic.

**AC Metric 3B:** Materials require students to engage in many short, focused research projects annually to develop students' knowledge in a range of areas and to enable students to develop the expertise needed to conduct research independently.

**AC Metric 3C:** Materials include a cohesive, year-long plan for students to interact with and build academic vocabulary.
Building Knowledge: Example or Non-example?

WRITE ABOUT READING

Response: Do you think Sarah stays? Write a paragraph that tells what you think happens. Use text evidence from the story to support your answer. Include a conclusion to sum up your opinion.

Writing Tip:
As you write, pay close attention to verb tenses. You will be writing mostly about what you think happens to Anna and her family in the future.
End of Unit 2 Assessment:
Writing an Informative Text about Pufferfish Defense Mechanisms

**Part 1 directions:**
1.) Read the prompt below.
2.) Using the texts and your research notes from the Mid-Unit 2 Assessment, plan an informative written piece for the prompt. *(RI.4.9, W.4.2, W.4.4, W.4.7)*

**Prompt:**
Review your research from the Mid-Unit 2 Assessment about the pufferfish’s defense mechanisms. Then, use the evidence you have gathered to write an informative piece that describes two defense mechanisms of the pufferfish. Be sure to do the following in your piece:

- Introduce the pufferfish, including a focus statement that states the main idea of the piece. *(W.4.2a)*
- Use paragraphs to group related facts and evidence. *(W.4.2a)*
- Use facts and details to describe two of the pufferfish’s defense mechanisms. *(W.4.2b, W.4.8)*
- Use precise vocabulary to inform about the pufferfish. *(W.4.2d)*
- Provide a concluding statement that restates the focus statement. *(W.4.2e)*
- Synthesize information from at least two research sources. *(RI.4.9, W.4.7, W.4.8)*
- Use vocabulary from your research on animal defense mechanisms to accurate descriptions throughout the piece. *(W.4.2d, L.4.3a, L.4.6)*
- Use correct capitalization and spell fourth-grade words correctly.

Use the following planning graphic organizer to plan your informative piece before writing your draft.
# Informative Page Planning Graphic Organizer

**Focus Question:** How does the pufferfish use its body and behaviors to help it survive?

**Focus Statement:**

**Name:**

**Date:**

<table>
<thead>
<tr>
<th>Introduction Paragraph</th>
<th>Detail Paragraph 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the pufferfish.</td>
<td>Describe one defense mechanism the pufferfish uses.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detail Paragraph 2</th>
<th>Concluding Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe one defense mechanism the pufferfish uses.</td>
<td>Restate your focus statement.</td>
</tr>
</tbody>
</table>

**My Sources:** List any sources you used in planning your informative piece.

**Vocabulary from my research to be used:**
Informative Page Planning Graphic Organizer

**Part 2 directions:** Write your informative piece on a separate sheet of lined paper.

**Part 3 directions:** Reread your informative piece and make any needed revisions or edits based on the directions in Part 1.
Research: Example or Non-example?

**Career Chart**

**Social Studies: Career Choices**
Bebe is interested in engineering. John Leguizamo became a comedian. What kind of career is right for you? Gather information about jobs that match your talents and interests.

- Discover what you would be good at.
- Learn about the jobs you are interested in.

Organize your information in a chart. Share it with a classmate who has similar career interests.

Language and Learning Handbook, page 616

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**Research the Job Outlook**

When you choose a career, consider what jobs will be available in the future. Analyze the job outlook for a position in the construction industry.

1. Prepare a four-column chart with the following headings: Job, Number of Employees in Industry, Earnings, and Job Outlook.
3. Fill in the information about your chosen job in the chart. Work with a partner to determine if there is a positive or negative job outlook for your chosen careers. Save the information in a professional career portfolio.
Example

With prompting, scaffolding, and support, the students will review the series of pictures and text to determine how water was important to early Asian civilizations. After reviewing the documents, students will write to the prompt independently.

Helpful Vocabulary:

- fertile
- cultivate
- source
- irrigation canals
- sacred
- Hinduism
- Indus River
- Yangtze River
- trade
- transport
- Yellow River
- Himalayan Mountains

Writing Task: Using evidence found the in the following documents, your knowledge of our readings, and at least four of the vocabulary words above, please describe how water was important to early Asian civilizations.
Example

UNIT 1 • MODULE A

Vocabulary to Unlock Text

<table>
<thead>
<tr>
<th>ANCHOR TEXT The Tarantula Scientist</th>
<th>SUPPORTING TEXT “Fragile Frogs”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benchmark Vocabulary</strong></td>
<td><strong>Possible Morphological Links</strong></td>
</tr>
<tr>
<td>aggressive</td>
<td>aggression, aggressive</td>
</tr>
<tr>
<td>documented</td>
<td>document</td>
</tr>
<tr>
<td>adapted</td>
<td>adjusted, accommodated, conformed</td>
</tr>
<tr>
<td>integral</td>
<td>important, critical, necessary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benchmarks Vocabulary</th>
<th>Possible Morphological Links</th>
<th>Possible Semantic Links</th>
<th>Informational Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>international</td>
<td>national</td>
<td></td>
<td>Topic</td>
</tr>
<tr>
<td>surveyed</td>
<td>researched, studied</td>
<td></td>
<td>Topic</td>
</tr>
<tr>
<td>extinction</td>
<td>extinct</td>
<td>depletion</td>
<td>Big Ideas</td>
</tr>
<tr>
<td>juvenile</td>
<td>young, adolescent</td>
<td></td>
<td>Topic</td>
</tr>
<tr>
<td>fungus</td>
<td>fungi</td>
<td>mushrooms</td>
<td>Topic</td>
</tr>
<tr>
<td>altitudes</td>
<td>heights</td>
<td></td>
<td>Topic</td>
</tr>
<tr>
<td>native</td>
<td>nativity</td>
<td>domestic</td>
<td>Topic</td>
</tr>
<tr>
<td>vulnerable</td>
<td>vulnerability</td>
<td>fragile</td>
<td>Big Ideas</td>
</tr>
<tr>
<td>exposed</td>
<td>exposure</td>
<td>vulnerable, uncovered</td>
<td>Topic</td>
</tr>
<tr>
<td>complex</td>
<td>complexity</td>
<td>difficult, complicated</td>
<td>Topic</td>
</tr>
<tr>
<td>theory</td>
<td>theoretical</td>
<td>idea, concept</td>
<td>Big Ideas</td>
</tr>
</tbody>
</table>
Reviewing Using the IMET: ELA

Module 103

**AC Metric 4A**: Teachers and students can reasonably complete the core content within a regular school year to maximize students’ learning.

**AC Metric 4B**: Materials regularly provide all students, including those who read, write, speak, or listen below grade level, or whose first language is other than English, with extensive opportunities to work with and meet grade-level standards.

**AC Metric 4C**: Materials regularly include extensions and/or more advanced opportunities for students who read, write, speak, or listen above grade level.

**AC Metric 4D**: Materials regularly and systematically build in the time, resources, and suggestions required for adapting instruction to allow teachers to guide all students to meet grade-level standards (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties, remediation strategies).

**AC Metric 4E**: Materials regularly and systematically offer assessment opportunities that genuinely measure progress on reading comprehension and writing proficiency as well as on mastery of grade level standards. This progress includes gradual release of supporting scaffolds for students to measure their independent abilities.
Alignment Criterion Metric 4A

Teachers and students can reasonably complete the core content within a regular school year to maximize students’ learning.

Moving from...

- A wide range of components without time allotments or scheduling guidance...
- Common Core “inserts” or add-ons...
- More tasks than can reasonably be completed with students...

Moving to...

- Clear instructions on when to use specified materials...
- Built in tasks that are aligned and part of the core lesson...
- Reasonable time allotments that allow for discussion and task completion...
Long-Term Targets Addressed (Based on ELA CCSS)

I can effectively participate in a conversation with my peers and adults. (SL.3.1)
I can ask questions to deepen my understanding of informational text. (RI.3.1)
I can answer questions using specific details from informational text. (RI.3.1)

Supporting Learning Targets

<table>
<thead>
<tr>
<th>Supporting Learning Targets</th>
<th>Ongoing Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I can talk with my partner in order to record what I notice and I wonder about pictures.</td>
<td>• Observation of partner discussions</td>
</tr>
<tr>
<td>• I can ask and answer questions about a text.</td>
<td>• Contributions to conversation norms</td>
</tr>
<tr>
<td></td>
<td>• Asking and Answering Questions about Mystery Texts sheet</td>
</tr>
</tbody>
</table>

Agenda

1. Opening
   A. Unpacking the Learning Targets (5 minutes)
   B. Practicing Observing Closely: I Notice/I Wonder (5 minutes)

2. Work Time
   A. Carousel Protocol: Frog Mystery Pictures (15 minutes)
   B. Predicting from Text: “Frog” Poem and Excerpts from Bullfrog at Magnolia Circle (25 minutes)

3. Closing and Assessment
   A. Debrief (5 minutes)
   B. Choral Reading of “Frog” Poem (5 minutes)

4. Homework

Teaching Notes

• This module opens in a similar way to Module 1, with a “mystery” carousel.
• The Carousel Brainstorm protocol is a simple way to engage students with new content by getting them moving, thinking, talking, and writing. In this lesson, students look at some “mystery” images to pique their curiosity. Do not reveal what the pictures are about, or tell students the guiding question for the module until the end of the lesson. Technically, this carousel is not a “brainstorm”, but the steps of the protocol still apply.
• Review Think-Pair-Share and Carousel Brainstorm protocols (Appendix).
• In advance: Post charts around the room with images (photos or illustrations) from the various texts in this module (see Work Time, Part A). These images should be “mystery” images that don’t totally give away the topic of the module.
• Students need other basic vocabulary words clarified: question, conversation, excerpt, mystery, expert.
• Begin to gather texts from the Recommended Texts lists for this unit. Students will use these for independent reading.
Alignment Criterion Metric 4B

Materials regularly provide all students, including those who read, write, speak, or listen below grade level, or whose first language is other than English, with extensive opportunities to work with and meet grade-level standards.

- Providing a simpler text
- Changing the content to speaking tasks
- Excusing students from the assignment...

Moving from...

Supporting access to grade level texts
- Providing models or frames to help students practice higher level writing...
- Provide practice opportunities for speaking and listening with peers...

Moving to...
Example 1:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Language Function/ Skill</th>
<th>Language Frames</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acknowledge Multiple Perspectives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td></td>
<td>say(s)</td>
</tr>
<tr>
<td>1. You He She [Name]</td>
<td>think(s)</td>
<td>___</td>
</tr>
<tr>
<td>2. I have a different idea thought feeling about that.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I think you said/meant ____. Did I get that right?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I understand that you think ____ but I think ____ because ____.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. While some people think ____ other people think ____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I agree with what you he she [name] says about ____ but and I also think ____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of us thought ____ Others thought ____ We finally agreed on/ that ____ I hadn’t thought of that. It makes me think of ____</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. While you he she [name] think(s) feel(s) ____ about ____ you he she [name] seem(s) to think/feel ____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I can appreciate that you he she [name] think(s) feel(s) ____, but there are others who think feel ____</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### Example or Non-example?

**ELL ENGLISH LANGUAGE LEARNERS**

**SCAFFOLD**

<table>
<thead>
<tr>
<th>Level</th>
<th>Activity</th>
</tr>
</thead>
</table>
| **Beginning** | Respond Orally  
Point to the heading on page 66. Look at the heading. It says “Forces at Work.” The heading tells us that we will learn about forces. Headings tell us what we will read. Ask students to fill in the sentence frames: The heading is ____. We will read about _____. |
| **Intermediate** | Demonstrate Understanding  
Have students point to the heading. Ask: What does the heading tell us? (that we will read about forces) Turn to a partner and explain why the heading fits this section. |
| **Advanced**   | Discuss  
Ask students to work in pairs to describe how the illustrations and text on page 66 relate to the heading “Forces at Work.” Have them share the main points from their discussion with the class. |
Alignment Criteria 4B and 4C

**FOR ENGLISH LEARNERS**

Key Academic Vocabulary: Use Word Questioning to teach these words: **crucial** (line 104), **assembly** (line 149), **relax** (line 189), **appropriate** (line 210), **draft** (line 216), **required** (line 230).

**BEST PRACTICES TOOLKIT—Transparency**

Word Questioning p. 59

**FOR ADVANCED LEARNERS/PRE-AP**

Research Activity: Have students research the adjustment process of recent immigrants to the United States, especially those from repressive dictatorships. Ask students to compare the experiences of these families with the experience of the family described in “Daughter of Invention,” especially with regard to recent immigration policies, educational opportunities, and how families grapple with redefining traditional roles of authority.

**FOR LESS PROFICIENT READERS**

9. **Targeted Passage [Lines 144-171]**

This passage provides the reader with background information that is important to the upcoming climax of the story. It also hints at future events between the daughter and her mother.

- What kind of student was the narrator in the Dominican Republic? What kind of student is she now!
Example

SCAFFOLDING FOR ELL STUDENTS

Explain Point of View Project lines 211-224 of the story on a whiteboard. Highlight as follows:
- Highlight colloquial expressions or multiple-meaning words in yellow.
- Highlight context clues that will help determine what each word or phrase means in green.
- Work with students to rewrite sentences to clarify their meaning. Use reference materials as needed.

ASK STUDENTS to use complete sentences to summarize what the Shy Man says.

“I’ll tell you what’s wrong” said the man. “To start with, you can’t get at the dog to fix him except by day, when they let him out. At night he’s shut up inside the house. And suppose you do fix him during the day, what happens then? Either the bloke gets another before night, or else he sits up all night with a gun. It isn’t like as if these blokes was ordinary blokes. They’re down here to look after the house. That’s their job, and they don’t take any chances.”
Access for All Students

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Individual Code Chart ................................... xxi
Summary of Progress Monitoring Assessments Provided in the Grade 1 Assessment and Remediation Guide ........ iv
Example or Non-example?

Meeting Students’ Needs

- For ELLs, consider providing extended
time for tasks and answering questions
in class discussions.
- Defining key verbs for learning actions
(e.g., introduction and skim) helps
ELLs and other struggling learners
understand and engage more fully in
the task.
- Physically demonstrating key verbs
(e.g., showing how to skim by running
your finger across a page of text)
reinforces definitions.
- Some vocabulary is not academic or
domain-specific, and students may
benefit from instruction or review:
original, simple, without, everyone, no
one.
- When possible, provide text or
materials in students’ home language.
- Provide ELLs bilingual word-for-word
translation dictionaries or online
translation sources such as Google
Translate to assist with comprehension.
You have been learning about the all-important habits of mind that scientists agree are necessary in the world of honest, clear scientific inquiry and thought. (Actually, as you may have realized, these habits of mind are necessary in thinking carefully about any field of inquiry, but we’ll save that for another day!)

You have also been reading about a particular period in the world’s history, the early 20th century in Germany, at the dawn of the second world war and what has come to be known as the Holocaust - and about the way many of the German scientists were thinking during that pivotal time.

Now your job – of course – is to do some good thinking about that yourself, and to write about it!

Your Focusing Question is:

*How well did the German scientists in the early 20th century adhere to the key habits of mind that need to guide scientific thinking?*

You have already gathered evidence about the connection between the scientific habits of mind and the German scientists, and are ready to craft an answer to this question. As you know, the answer to this question will be the Focus Statement / thesis for your essay.

With a partner, discuss and then write what you think a thoughtful, clear, accurate Focus Statement might look like.

Having a good Focus Statement / thesis / claim is so important that we’re going to share what we wrote, then together come to consensus on a useful way to express our thinking here.

THINK! *Why is it so important to decide carefully on a thoughtful Focus Statement / thesis / claim before beginning the essay itself?*

Now that you’ve decided on your Focus Statement / thesis / claim, let’s think about the introduction to your essay. Remember, a good introduction needs to give the readers some background, or context, that they will need to be able to understand your essay and to follow your
thinking. You don’t want to say too much (it’s the introduction, not the essay!), but you do need to think about what’s essential.

In this case, what do you, as the writer, need to make sure your readers understand before they get to your Focus Statement?

1) they need to understand about
___________________________________________________________________________________________
_________________________________________________________________

2) they need to understand about
___________________________________________________________________________________________
_________________________________________________________________

Go ahead now and write your introduction. Remember what it needs to include, then write what you think is a short, clear introduction that contains what your readers need to know before proceeding with reading the essay itself.

After you’ve written the introduction, we’ll share these to make sure we’re all on a track that makes sense.
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Make sure your introduction ends with that all important Focus Statement / thesis / claim!!!!

Now it’s time – as you know – to develop the body of the essay. Read the model below of the first body paragraph.

One habit of mind that the German scientists did embrace is openness to new ideas. An “openness to new ideas” means being willing to consider something that one has not thought much or known much about before. In the early 20th century, the idea of natural selection was new. It had first appeared on the scene in 1859 when Charles Darwin published his study *On the Origin of Species*. In it, he noted that organisms are always undergoing changes. When the change is helpful – like a bigger beak for a bird – the organism grows
to reproduce, and the birds without the big beak die off. “Natural selection” has occurred, and the birds with the beaks best adapted to eating during that time are the ones that survive. The German scientists were definitely open to this new idea. According to the text, they embraced the idea of natural selection as a view that showed “natural law” in action. Unlike some other thinkers at the time, the German scientific leaders were open-minded enough to explore this new understanding of the world and accept it.

What do you notice about what kinds of evidence this body paragraph includes?

What do you notice about how it has been built?

Now, you’re ready to write the next body paragraph. With a partner, discuss what kinds of evidence you will use for this paragraph, and how you will build the paragraph. (HINT: use your notes!)

___________________________________________________________________________________________
___________________________________________________________________________________________

And now, the third body paragraph……...

___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Then the last body paragraph……...

___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

And finally, a short but thoughtful conclusion!
Remember, a conclusion has to address both the “what” (what’s your point) and the so what (why does this matter).

___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
**Focusing Question:** How well did the German scientists in the early 20th century adhere to the key habits of mind that need to guide scientific thinking?

<table>
<thead>
<tr>
<th>Habit of Mind</th>
<th>What It Means</th>
<th>Evidence of its presence or absence for the scientists</th>
<th>Elaboration: why this is important</th>
</tr>
</thead>
<tbody>
<tr>
<td>intellectual honesty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tolerance of ambiguity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>skepticism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>openness to new ideas</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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Science Is a Human Endeavor
Scientists and engineers are guided by habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Focusing Question

*How well did the German scientists in the early 20th century adhere to the key habits of mind that need to guide scientific thinking?*

Test Drive / Sample Essay

*Students do NOT see this!*

Scientists are actively engaged in trying to understand the world, in all its complexity. To do this well, scientists are guided by certain key habits of mind. These include intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Unfortunately, scientists do not always hold themselves to these important habits of mind. The article “Science Becomes Ideology: Germany and the ‘Master Race’” is about a crucial period in history, during the early 20th century. German scientists took the idea of natural selection, developed by Charles Darwin in 1859 as the basis for his ideas about evolution, and used it to validate their own beliefs about the necessary supremacy of Germans as the “master race.” The text makes it clear that these scientists held to some of the key “habits of mind” for science but not others, with disastrous results for the world.

One habit of mind that the German scientists did embrace is openness to new ideas. An “openness to new ideas” means being willing to consider something that one has not thought much or known much about before. In the early 20th century, the idea of natural selection was new. It had first appeared on the scene in 1859 when Charles Darwin published his study *On the Origin of Species*. In it, he noted that organisms are always undergoing changes. When the change is helpful – like a bigger beak for a bird – the organism grows to reproduce, and the birds without the big beak die off. “Natural selection” has occurred, and the birds with the beaks best adapted to eating during that
time are the ones that survive. The German scientists were definitely open to this new idea. According to the text, they embraced the idea of natural selection as a view that showed “natural law” in action. Unlike some other thinkers at the time, the German scientific leaders were open-minded enough to explore this new understanding of the world and accept it.

However, a habit of mind of science that the German scientists ignored was intellectual honesty. Intellectual honesty means to look at an idea carefully. An intellectually honest response does not overstate an idea, and does not assume it is the only correct one. An intellectually honest scientist does not think that he now understands everything. Rather, he continues to be open to new ideas and recognizes his own limited understanding. This is just the opposite of what the German scientists did. According to the text, they believed that they completely understood how the world worked, that “all else was illusion and anathema.” Far from recognizing any limited understanding, they believed that their own ideas were a “gospel” of truth. Intellectually, this belief showed deep dishonesty.

Another habit of the scientific mind ignored by the German scientists in the early 20th century was tolerance of ambiguity. Tolerance of ambiguity means recognizing that the truth is rarely simple, and that one must be very, very careful not to oversimplify an idea. In addition, one who is being tolerant of ambiguity is not going to leap to conclusions. According to the text, the German scientists of the early 20th century had little or no respect for this crucial habit of mind. They took the idea of natural selection and oversimplified it into a “fierce competition in which only the strongest would survive” – and the strongest were the Germans. They jumped to the conclusion that “the Germans are the chosen race” and that therefore anything the country did to bring that about was the right thing to do. They had so little tolerance for ambiguity that they chose to oversimplify Darwin’s idea and turn it into a reason to impose their culture on the whole world.

Finally, the German scientists described in the text ignored the habit of mind of skepticism. Skepticism, in science, is the premise that any belief must come from accurate evidence. The German scientists did not adhere to skepticism. They did not seek evidence for their belief that the Germans were the “chosen race.” Rather, they
began with that assumption, and used an oversimplified understanding of Darwin’s theory of evolution to justify their willingness to force German culture on the rest of humanity. In other words, they began with a view of German nationalism and power and used natural selection to confirm what they already believed – which is the opposite of scientific skepticism.

According to the text, the German scientists’ view of the “natural order” was a disaster for the world. It is a sobering reminder that scientific habits of mind are more than helpful; they are essential if science is to be a help to the world, and not a destroyer of it.
Students should demonstrate “mastery” of the Standards through tasks that require deep understanding of the text under consideration.

**PERFORMANCE TASK**

**Writing Activity: Essay** In “The Mixer,” Blackie is mistaken about why the Shy Man seems so quiet. Write a one-page essay that explains the Shy Man’s motivation for not speaking.

- Review the story. Make notes about events and situations that help you understand the man’s character.
- Describe the man’s character, using evidence from the text.
- Tell how the man responds to Blackie and to other characters in the story.
- Give concrete examples that illustrate why the man does not speak.
- Use appropriate transitions such as furthermore, one reason, and in addition to clarify relationships among your ideas.
- Provide a concluding statement that supports your explanation.