



9th–10th Guidance for Literacy Task Design in the Science/Technical Subjects' Classroom

(Literacy tasks allow students to read and write about science/technical subjects and are designed to be at the core of all multi day lessons/units).



9th – 10th Grade Literacy Task Design

The purpose of providing guidance for designing literacy tasks is to provide classroom teachers with crucial steps in designing high quality student learning tasks that integrate reading and writing aligned with the standards that can be easily integrated with the Illinois Science/Technical Subjects Standards. This document provides guidance into the necessary steps of task design. Literacy Tasks should be a part of multi-day lessons and units in order to integrate and implement the standards.

Steps for Designing Literacy Tasks

Step 1

Determine the focus of the task. Standards can be clustered to help drive a number of key components of multi-day lessons/units. (For example, essential questions, assessments, writing to reading prompts, etc.) Examples of ways standards can be clustered for a task are as follows:

Possible Combined Standards for a Literacy Task Prompt

- When reading texts, analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment, defining the question the author seeks to address.
Clustered Standards: (RST.1 & 6)
- Translate quantitative or technical information expressed in words in a text into visual form (e.g., table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
Clustered Standards: (RST.1 & 7)
- Compare and contrast findings presented in a text to those from other sources (including their on experiments), analyzing the text to contradict previous explanations or accounts.
Clustered Standards: (RST.1 & 9)
- Assess the extent to which the reasoning and evidence in a text support the author’s claim or a recommendation for solving a scientific or technical problem.
Clustered Standards: (RST.1 & 8)
- Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.
Clustered Standards: (RST. 1 & 3)

RST: Reading for Science & Technical Subjects

Step 2

Determine anchor text (focus text) and coordinating texts/multimedia to accompany the anchor text.

Literacy Task Texts	Anchor Text		Coordinating Text		Coordinating Text
	 Textbook Segment	+	 Article	+	 Video
	Anchor Text		Coordinating Text		Coordinating Text
	 Article	+	 Primary Source	+	 Textbook Segment

Online Resources for Texts

There are a number of online resources available to coordinate with current classroom materials. The following are a few:

- **Illinois Classrooms in Action Science Resources** – This site provides teachers with a one-stop shop of all resources for Illinois Science Teachers: <http://www.ilclassroomsinaction.org/ngss.html>
- **Newsela** – www.newsela.com: Newsela is a free resource that presents articles on a range of topics such as: War and Peace, **Science**, Kids, Money, Law, Health, Arts, and Sports. The system enables you to convert the articles into higher or lower Lexiles so you can use them with any grade from 3-12
- **Bozeman Science** - <http://www.bozemanscience.com/> Paul Anderson has compiled a series of explanatory NGSS videos. This link will take you directly to the page where he has posted an 8 to 20-minute video for every Scientific and Engineering Practice, Crosscutting Concept, and Disciplinary Core Idea including a description of the progression of each element from Kindergarten through Grade 12.
- **Science News for Kids** - <https://www.sciencenewsforstudents.org/how-to-use>
Science News for Students is an award-winning online publication dedicated to providing age-appropriate, topical science news to learners, parents and educators. In addition, many additional resources accompany stories to boost their impact in classrooms and on overall science literacy.

Step #3

Develop questions for each text using the Reading for Science/Technical Subjects Standards for 9th – 10th grades. Question Guidance:

<http://achievethecore.org/page/46/complete-guide-to-creating-text-dependent-questions>

Question Consideration: Transform the following *Reading Standards for Science/Technical Subject Standards* into questions/tasks/activities throughout the unit.

RST.1	<input type="checkbox"/> Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
RST.2	<input type="checkbox"/> Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
RST.3	<input type="checkbox"/> Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
RST.4	<input type="checkbox"/> Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
RST.5	<input type="checkbox"/> Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
RST.6	<input type="checkbox"/> Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
RST.7	<input type="checkbox"/> Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
RST.8	<input type="checkbox"/> Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
RST.9	<input type="checkbox"/> Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently. (RST.10)

Step 4

Determine what type of writing will be required of students to record information and show understanding of the content.

Writing in the Science/Technical Subject Classroom should happen routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences (WHST.10).

When creating culminating task/writing prompts, teachers can return to step 1 to view clustered standards for ideas. The standards require students to be able to write arguments (WHST.1) and informational/explanatory (WHST.2) writings. Writing can appear in many forms – from note taking, to short summaries, to learning logs, to essays, a simple quick write or a formal report.

See the following link for the 9th-10th Grade Science/Technical Subject Writing Standards:

<http://www.corestandards.org/ELA-Literacy/WHST/9-10/>

Task Template for Culminating Tasks

The following task frame is **one way** to design a prompt where students can show their learning after reading/researching a variety of sources.

Today you will research _____ by reading _____ and watching a video clip about _____. As you review these resources think about the following question:

“ _____?”

Gather evidence from each source to answer the question.

Classroom Example

Today you will research electricity and consider some of the methods used in science texts and videos to support different purposes. First you will read an article that explains some general principles of electricity. Next you will watch a video about fun ways to learn about electricity circuits. Finally you will read an article that explains how different materials conduct electricity. As you read/review these sources, think about the purpose of each and the role that explanations, demonstrations, and/or descriptions play in communicating that purpose. Write an essay that informs the reader about what you learned. Use evidence from each source.