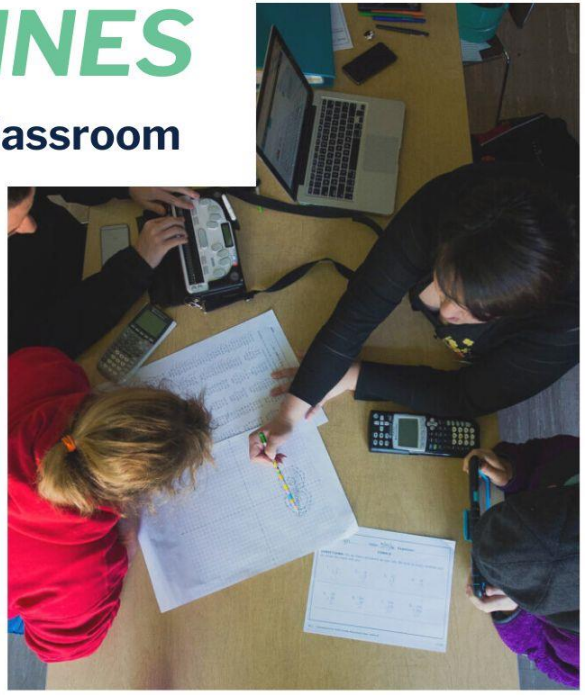


Kentucky Department of EDUCATION

# Text-Based Writing
# *ACROSS DISCIPLINES*

## An Expansion of Composition in the Classroom





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# What is Text-Based Writing Across Disciplines?

## What does "Text-Based Writing Across Disciplines" mean?

Defining "Text-Based Writing Across Disciplines" requires clarity around the terms "Text-Based," "Writing" and "Across Disciplines." "Text-Based" signals that students are engaged with complex, grade level texts throughout their learning. Most simply, writing is communicating. Student writers communicate with themselves, peers, teachers and others. Writing in the classroom can have many purposes and audiences and may be formal or informal. In the academic setting, writing can serve as a tool to promote student learning, to allow students to demonstrate their thinking and understanding of the content and/or concepts taught, and/or to share with others in a real-world setting. These types of writing are called Writing to Learn, Writing to Demonstrate Learning and Writing for Publication. "Across Disciplines" refers to using the types of writing—as defined here—in English/language arts as well as other disciplines, such as social studies, science, math and visual and performing arts.

***Each of the tasks in this resource ground students in complex, grade-level text throughout the writing process.***

## What is Reading and Writing Across Disciplines, and what is its purpose?

*Reading and Writing Across Disciplines* is an expansion of *Composition in the Classroom*, a resource developed by reading and writing teachers to help Kentucky educators provide students with opportunities to develop into confident, independent and proficient writers. *Composition in the Classroom* and its expansions support teachers implementing existing High-Quality Instructional Resources (HQIRs) adopted by school districts as well as educators teaching in districts that have not yet adopted a primary HQIR in reading and writing. The tips, suggestions and tasks in *Composition in the Classroom* and its expansions should not replace adopted HQIRs but rather should serve to supplement instruction towards the full depth and rigor of the *Kentucky Academic Standards*. For more information regarding high-quality literacy curricula, districts and school leaders may access The Reading and Writing Instructional Resources Consumer Guide, a tool for evaluating and selecting instructional resources for alignment to the *Kentucky Academic Standards (KAS) for Reading and Writing*.

*Composition in the Classroom* is organized around three modes of writing in the *Kentucky Academic Standards (KAS) for Reading and Writing,* including information regarding standards-aligned instruction through Writing to Learn, Writing to Demonstrate Learning and Writing for Publication. *Reading and Writing Across Disciplines*, however, contains sample discipline-specific reading and writing tasks, organized by each of the three types of writing mentioned above. This resource is grounded in the *KAS for Reading and Writing,* which includes the Interdisciplinary Literacy Practices as well as each discipline's content specific standards. The ten Interdisciplinary Literacy Practices are part of the *KAS for Reading and Writing*, appearing on every page of the standards document but should not be confused as additional standards. They should guide teachers in providing intentional opportunities for students to engage in deeper learning by practicing the behaviors of a literate citizen. The student practices serve as the overarching goals for literacy instruction for each student across the state. These practices are further clarified by possible teacher and student actions. These actions do not define curriculum, but rather they demonstrate how teachers can provide opportunities for students to experience the literacy practices and how students will apply these practices, so they may become an innate part of life across the disciplines and beyond school. This resource aims to bring more clarity around what these practices look like in action.

While *Composition in the Classroom* primarily serves English/language arts teachers and their students, *Reading and Writing Across Disciplines* attends to the needs of all teachers and their students. Because of its widespread classroom use already, the developers chose to begin the expansion with a focus on Writing to Learn (October 2023), a professional learning space that will hopefully both affirm and stretch educators' practices. The second release added Writing to Demonstrate Learning (March 2023) and the final release will include Writing for Publication (September 2023).

*Reading and Writing Across* Disciplines provides what *Composition in the Classroom*, alone, does not. While *Composition in the Classroom* provides general characteristics of each type of writing (Writing to Learn, Writing to Demonstrate Learning and Writing for Publication) and examples of strategies teachers can implement to engage students in each of the types of writing, this expansion includes a more disciplinary, or specialized, look at writing. *Reading and Writing Across Disciplines* intends to show more precisely how to ensure opportunities for students to engage in discipline-specific literacies or learning that uses reading and writing skills specific to each field to teach or demonstrate content knowledge and for publication purposes as well. The sample tasks in *Reading and Writing Across Disciplines* represent some of the types of reading and writing experts in each field (e.g., economists, biologists, literary scholars, mathematicians, etc.) might authentically engage in to deepen their own expertise.

## Reading and Writing TO LEARN Across Disciplines

Writing to Learn, as previously described, is an instructional strategy used to promote student learning. Teachers utilize this instructional strategy to help deepen students' understanding of the subjects they are studying, to engage students in thinking, to provide opportunities for applying, extending and developing skills, and to help students reflect on their learning. Typically, Writing to Learn is informal writing with the student as the primary audience. Rather than emphasizing formal composition skills, Writing to Learn helps students obtain content knowledge and build capacity to analyze, synthesize, comprehend and express their thinking in writing. Most simply stated, Writing to Learn is any writing students engage in that promotes learning. Therefore, Writing to Learn Across Disciplines refers to using Writing to Learn in English/language arts as well as other disciplines, such as math, science, social studies and visual and performing Arts. The first section of this expansion, Writing to Learn Across Disciplines, provides samples of Writing to Learn tasks for each discipline. Explicit reading-writing connections are intentionally present throughout the sample tasks, requiring students to read and think deeply about text, or “anything that communicates a message,” as defined by the *KAS for Reading and Writing*. Throughout the sample tasks, readers engage in passages, videos, graphs, data sets, experiments or other forms of communication while processing and documenting their learning through writing.

# Writing to Learn in Science Instruction

## Implementing Writing to Learn in Science Instruction

Writing to Learn in the science classroom should be a regular occurrence as this type of writing allows students to formulate ideas, organize thoughts and share information with others for feedback and discussion, continuously revising as they gain deeper understanding of the phenomenon and/or problem. While there are many more Writing to Learn strategies that fit well in science classrooms, some **examples include**, but are not limited to, the following:

- Organizing information into a table
- Representing data on a chart
- Developing models
    - Images
    - Flowcharts
    - Analogies
    - Mathematical Equations
- Designing Solutions
- Critiquing Arguments

Science teachers implement Writing to Learn strategies when their students engage in the science and engineering practice (SEP), a dimension of the Kentucky Academic Standards for Science. These practices define the "doing" of science; that is, how students come to understand the natural and designed world. Writing to Learn supports students as they engage in the "doing" and can help advance their understanding of the disciplinary core ideas. These eight practices are the science literacy skills students use that will lead them to being scientifically literate citizens. To generate more ideas for how to utilize Writing to Learn in a science classroom, review the components of the practices found in the tables at the end of each practice description in **Appendix F: Science and Engineering Practices**. Through the regular use of these practices, students gain a deeper understanding of the core ideas of science.

The SEPs interact with one another and are not used in a linear way. This provides numerous opportunities for writing to learn to occur in the science classroom. The task descriptions for these samples incorporate writing to learn opportunities that support the sample writing to learn tasks.

## About the Writing to Learn in Science Tasks in this Resource

The Grade 2 unit on plant growth begins with students exploring the mystery of their harvest corn, something they initially saw as decoration, beginning to sprout what appears to be leaves and roots. As students made observations of the dried corn, this led to the question, "Why is our corn changing?" Leading up to this task, the students were actively engaged in collaborative planning and carrying out investigations and making independent observations in order to see patterns. From the previous investigation the students have questioned the needs of plants and noticed that the plant structures are bending toward the window to get light. They design another investigation to answer, "Does corn need light to keep growing?" The students place some of their plants in the dark and some in the light.

The Grade 6 task is part of a unit exploring the phenomenon of a change in height of Mt. Everest after an earthquake has occurred. As students begin to investigate this phenomenon, they relate this change to mountain ranges around the world, leading to the question, "Why do some mountains grow higher while other mountains are losing height?"

## Grade 2 Writing to Learn Sample for Science

| Disciplinary Core Idea Alignment | Science and Engineering Practices Alignment | Crosscutting Concepts Alignment | Reading and Writing Standards Alignment | Interdisciplinary Literacy Practices Connections |
|---|---|---|---|---|
| ***Supports learning towards LS2.A Interdependent Relationships in Ecosystems:***<br><br>**Plants depend on light** and water to grow. | ***Planning and Carrying Out Investigations***<br><br>**Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.**<br><br>***Engaging in Argument from Evidence***<br><br>**Construct an argument with evidence to support a claim.** | ***Patterns:* Patterns in the natural world can be observed.**<br><br>***Cause and Effect:* Events have causes that generate observable patterns.** | **RI.2.3** Describe the connection between individuals, historical events, scientific ideas or concepts or steps in technical procedures over the course of a text.<br><br>**C.2.6** Collect information from real-world experiences or provided sources to answer or generate questions<br><br>**C.2.2** Compose informative and/or explanatory text, using writing and digital resources, to establish a topic and provide information about the topic. | **ILP 1:** Recognize that text is anything that communicates a message.<br><br>**ILP 8:** Engage in specialized, discipline-specific literacy practices. |

## Grade 2 Science Task

Students will engage in Writing to Learn experiences throughout the investigation to build knowledge and answer the question, "Does corn need light to keep growing?" During the plant observation period, students will collect data through drawings and descriptions or measurement data (height of the plants in light and dark environments). They will look for patterns across all the data samples, focusing on the purpose of the investigation. Students will write a claim, with evidence, in response to the question, "Does light cause plants to grow and remain healthy?"

Provide students with this language to begin the investigation: **Use your science notebook to collect observational data (drawings or descriptions) or measurement data (height) of the plants in the light and the plants in the dark for two weeks.** During the observation period, facilitate thinking/learning by asking students what they notice about the data they are collecting. Ask how the data for plants in the dark are different from data collected for plants in the light. After two weeks, prompt students to process their thinking/learning through Writing to Learn using language such as: **Now that we have collected data for two weeks, what patterns do you notice across all the samples?** Using Writing to Learn at this stage of the learning process engages students in data analysis and interpretation. Think: What do these patterns help me discover about what plants need to grow and remain healthy? Students will draft a written response to the investigation question after orally describing the patterns/connections between sunlight and plant growth and health, using their observation data as evidence to support their thinking. Provide students with this language to initiate another opportunity for Writing to Learn: **Does light cause plants to grow and remain healthy? Write a claim supported by evidence from the data you collected. You may use the following sentence starter to begin your claim.**

**Light (does not cause/causes) plants to grow and remain healthy. I know this because…**

## Grade 2 Science Teacher Notes

Writing to Learn is illustrated in this through the collection of data, a component of carrying out the investigation (SEP: Planning and Carrying Out an Investigation) in order to identify trends (CCC: Patterns) across all the samples that can help answer the question being investigated. As they begin to think about the relationship (CCC: Cause and Effect) between light and plant growth (DCI: LS2.A Interdependent Relationships in Ecosystems), the students use their data as evidence to support their thinking (SEP: Engaging in Argument from Evidence).

For guidance on where this fits into the sequence and specific lesson details, access Lesson 6b: Does corn need light to keep growing? of the NextGen Storylines 2nd grade unit: "Why is our corn changing?"

## Grade 6 Writing to Learn Sample for Science

| Disciplinary Core Idea Alignment | Science and Engineering Practices Alignment | Crosscutting Concepts Alignment | Reading and Writing Standards Alignment | Interdisciplinary Literacy Practices Connections |
|---|---|---|---|---|
| ***Supports learning towards MS-ESS2.A Earth's materials and Systems***<br><br>**The planet's systems interact over scales that range from microscopic to global in size and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.** | ***Analyzing and Interpreting Data***<br><br>**Use graphical displays** (e.g., maps, charts, graphs and/or **tables**) **of large data sets to identify temporal** and spatial **relationships**. | ***Patterns***<br><br>**Patterns can be used to identify cause and effect relationships.**<br><br>Graphs, **charts** and images **can be used to identify patterns in data.** | **RI.6.1** Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.<br><br>**C.6.2** Compose informative and/or explanatory texts to examine a topic and convey ideas, concepts and information through the selection, organization, and analysis of relevant content. | **ILP 1:** Recognize that text is anything that communicates a message.<br><br>**ILP 8:** Engage in specialized, discipline-specific literacy practices |

## Grade 6 Science Task

As a class, students are asked to identify the types of data that would be needed to help determine how mountains change over time. Once the class comes to an agreement on a type of datum, the teacher will write it on the board. Students will use the agreed upon information to develop their data table. Students are then provided a set of six data cards describing the characteristics of six different mountains including maps of their locations.

The teacher will initiate students' first opportunity to Write to Learn using oral or written directions such as, "**Using your science journal, design a table, individually or collaboratively, to organize the data determined by the class that will help us in answering our question."** Once the data tables have been designed, the data cards will be distributed, and the teacher will set students up for another Writing to Learn opportunity. The teacher will explain, "The data cards contain information about the various mountains and may include more information than we identified as a class. **Record the appropriate information in your table. You may add the information to your data table if it is relevant to the question being answered. You may also wish to annotate the cards as you read through them.**"

## Grade 6 Science Teacher Notes

Writing to Learn is illustrated in this through the organization of the information from the data cards (SEP: Analyze and Interpret Data) into a form that will allow them to identify trends (CCC: Patterns) that can help answer the question being investigated, as they begin to think about potential causal (CCC: Cause and Effect) mechanisms for changes in mountain height (DCI: ESS2.A Earth materials and systems).

For guidance in assisting students in determining appropriate data and organization of their table, access Lesson 1: What is causing Mt. Everest and other mountains to move, grow or shrink? of the OpenSciEd 6th grade unit: What causes Earth's surface to change?