



Spotlight on: Using the MRH Essay Contest in the context of NGSS and CCSS

The Maurice R. Hilleman Essay Contest offers numerous learning opportunities for students, including developing skills in research, writing, scientific inquiry and presentation. The contest supports a variety of skills highlighted in the Next Generation Science Standards (NGSS) and Common Core State Standards (CCSS). Some standards will apply to any student who creates an essay for the contest (see “General alignment” tables), and others will be applicable in more limited situations based on whether and how the contest is implemented as an assignment (see “Assignment-based alignment” sections).

This document offers examples of how the contest may be connected to curriculum goals for students in middle school (grades 6-8) and high school (grades 9-12).

NGSS: General alignment

The tables below offer some examples of how the contest connects to NGSS in a general capacity.

Understandings about the Nature of Science

<i>PRACTICES</i>		
CATEGORY	MIDDLE SCHOOL	HIGH SCHOOL
Scientific Investigations Use a Variety of Methods	<ul style="list-style-type: none"> Science investigations are guided by a set of values to ensure accuracy of measurements, observations, and objectivity of findings. Scientific values function as criteria in distinguishing between science and non-science. 	<ul style="list-style-type: none"> Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings. The discourse practices of science are organized around disciplinary domains that share exemplars for making decisions regarding the values, instruments, methods, models, and evidence to adopt and use.
<i>CROSSCUTTING CONCEPTS</i>		
CATEGORY	MIDDLE SCHOOL	HIGH SCHOOL
Science is a Human Endeavor	<ul style="list-style-type: none"> Scientists and engineers rely on human qualities such as persistence, precision, reasoning, logic, imagination and creativity. Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism and openness to new ideas. 	<ul style="list-style-type: none"> Scientific knowledge is a result of human endeavor, imagination, and creativity. Scientists’ backgrounds, theoretical commitments, and fields of endeavor influence the nature of their findings.
Science Addresses Questions About the Natural and Material World	<ul style="list-style-type: none"> Science knowledge can describe consequences of actions but is not responsible for society’s decisions. 	<ul style="list-style-type: none"> Science and technology may raise ethical issues for which science, by itself, does not provide answers and solutions. Science knowledge indicates what can happen in natural systems—not what should happen. The latter involves ethics, values, and human decisions about the use of knowledge.

Using the MRH Essay Contest in the context of NGSS and CCSS

Science and Engineering Practices

PRACTICE	MIDDLE SCHOOL	HIGH SCHOOL
Asking Questions and Defining Problems	<ul style="list-style-type: none"> Ask questions to identify and/or clarify evidence and/or the premise(s) of an argument. 	<ul style="list-style-type: none"> Ask questions that arise from examining models or a theory, to clarify and/or seek additional information and relationships.
Constructing Explanations and Designing Solutions	<ul style="list-style-type: none"> Apply scientific ideas, principles, and/or evidence to construct, revise and/or use an explanation for real-world phenomena, examples, or events. 	<ul style="list-style-type: none"> Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion. Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.
Engaging in Argument from Evidence	<ul style="list-style-type: none"> Construct, use, and/or present an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. 	<ul style="list-style-type: none"> Construct, use, and/or present an oral and written argument or counter-arguments based on data and evidence.
Obtaining, Evaluating, and Communicating Information	<ul style="list-style-type: none"> Integrate qualitative and/or quantitative scientific and/or technical information in written text with that contained in media and visual displays to clarify claims and findings. Gather, read, synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. Communicate scientific and/or technical information (e.g., about a proposed object, tool, process, system) in writing and/or through oral presentations. 	<ul style="list-style-type: none"> Compare, integrate and evaluate sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a scientific question or solve a problem. Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source. Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible.

NGSS: Assignment-based alignment

The tables below offer some examples of how the contest connects to NGSS in an assignment-dependent manner.

Understandings about the Nature of Science

CROSSCUTTING CONCEPTS	
CATEGORY	HIGH SCHOOL
Science is a Human Endeavor	<ul style="list-style-type: none"> Science and engineering are influenced by society and society is influenced by science and engineering.
Science Addresses Questions About the Natural and Material World	<ul style="list-style-type: none"> Many decisions are not made using science alone but rely on social and cultural contexts to resolve issues.

Science and Engineering Practices

PRACTICE	MIDDLE SCHOOL	HIGH SCHOOL
Constructing Explanations and Designing Solutions	<ul style="list-style-type: none"> Apply scientific reasoning to show why the data or evidence is adequate for the explanation or conclusion. 	
Engaging in Argument from Evidence	<ul style="list-style-type: none"> Respectfully provide and receive critiques about one's explanations, procedures, models and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail. 	<ul style="list-style-type: none"> Respectfully provide and/or receive critiques on scientific arguments by probing reasoning and evidence and challenging ideas and conclusions, responding thoughtfully to diverse perspectives, and determining what additional information is required to resolve contradictions.

Science, Technology, Society, and the Environment

PRACTICE	MIDDLE SCHOOL	HIGH SCHOOL
Influence of Engineering, Technology, and Science on Society and the Natural World	<ul style="list-style-type: none"> All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Technology use varies over time and from region to region. 	<ul style="list-style-type: none"> Modern civilization depends on major technological systems, such as agriculture, health, water, energy, transportation, manufacturing, construction, and communications. Engineers continuously modify these systems to increase benefits while decreasing costs and risks. New technologies can have deep impacts on society and the environment, including some that were not anticipated. Analysis of costs and benefits is a critical aspect of decisions about technology.

CCSS: General alignment

The tables below offer some examples of how the contest connects to CCSS in a general capacity.

CATEGORY	MIDDLE SCHOOL	HIGH SCHOOL
Writing - Text Types and Purposes	<ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.6-8.1 Write arguments focused on discipline-specific content. <ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.6-8.1.a Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. CCSS.ELA-Literacy.WHST.6-8.1.b Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. CCSS.ELA-Literacy.WHST.6-8.1.c Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. CCSS.ELA-Literacy.WHST.6-8.1.d Establish and maintain a formal style. CCSS.ELA-Literacy.WHST.6-8.1.e Provide a concluding statement or section that follows from and supports the argument presented. CCSS.ELA-Literacy.WHST.6-8.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. <ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.6-8.2.a Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. CCSS.ELA-Literacy.WHST.6-8.2.b Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. CCSS.ELA-Literacy.WHST.6-8.2.c Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. CCSS.ELA-Literacy.WHST.6-8.2.d Use precise language and domain-specific vocabulary to inform about or explain the topic. CCSS.ELA-Literacy.WHST.6-8.2.f Provide a concluding statement or section that follows from and supports the information or explanation presented. 	<ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.9-10.1 (WHST.11-12.1) Write arguments focused on discipline-specific content. <ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.9-10.1.a (WHST.11-12.1.a) Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. CCSS.ELA-Literacy.WHST.9-10.1.c (WHST.11-12.1.c) Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. CCSS.ELA-Literacy.WHST.9-10.1.e (WHST.11-12.1.e) Provide a concluding statement or section that follows from or supports the argument presented. CCSS.ELA-Literacy.WHST.9-10.2 (WHST.11-12.2) Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. <ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.9-10.2.b (WHST.11-12.2.b) Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. CCSS.ELA-Literacy.WHST.9-10.2.c (WHST.11-12.2.c) Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. CCSS.ELA-Literacy.WHST.9-10.2.d Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. CCSS.ELA-Literacy.WHST.9-10.2.f (WHST.11-12.2.e) Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
Writing - Production and Distribution of Writing	<ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.6-8.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. CCSS.ELA-Literacy.WHST.6-8.5 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. CCSS.ELA-Literacy.WHST.6-8.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently. 	<ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.9-10.4 (WHST.11-12.4) Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. CCSS.ELA-Literacy.WHST.9-10.5 (WHST.11-12.5) Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. CCSS.ELA-Literacy.WHST.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Writing - Research to Build and Present Knowledge	<ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. CCSS.ELA-Literacy.WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research. 	<ul style="list-style-type: none"> CCSS.ELA-Literacy.WHST.9-10.8 (WHST.11-12.8) Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. CCSS.ELA-Literacy.WHST.9-10.9 (WHST.11-12.9) Draw evidence from informational texts to support analysis, reflection, and research.
Language Arts - Conventions of Standard English	<ul style="list-style-type: none"> CCSS.ELA-LITERACY.L.6.1 (L.7.1, L.8.1) Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. 	<ul style="list-style-type: none"> CCSS.ELA-LITERACY.L.9-10.1 (L.11-12.1) Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
Language Arts - Conventions of Standard English	<ul style="list-style-type: none"> CCSS.ELA-LITERACY.L.6.3 (L.7.3, L.8.3) Use knowledge of language and its conventions when writing, speaking, reading, or listening. 	<ul style="list-style-type: none"> CCSS.ELA-LITERACY.L.9-10.3 (L.11-12.3) Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
Speaking & Listening - Comprehension and Collaboration		<ul style="list-style-type: none"> CCSS.ELA-LITERACY.SL.9-10.2 (SL.11-12.2) Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
Science - Key Ideas and Details		<ul style="list-style-type: none"> CCSS.ELA-Literacy.RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
Science - Integration of Knowledge and Ideas		<ul style="list-style-type: none"> CCSS.ELA-Literacy.RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
History & Social Studies - Key Ideas and Details		<ul style="list-style-type: none"> CCSS.ELA-Literacy.RH.11-12.1 Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
History & Social Studies - Integration of Knowledge and Ideas		<ul style="list-style-type: none"> CCSS.ELA-Literacy.RH.11-12.9 Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

CCSS: Assignment-based alignment

The table below offers some examples of how the contest connects to CCSS in an assignment-dependent manner.

CATEGORY	MIDDLE SCHOOL	HIGH SCHOOL
Science - Key Ideas and Details	<ul style="list-style-type: none"> • CCSS.ELA-Literacy.RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. • CCSS.ELA-Literacy.RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. 	<ul style="list-style-type: none"> • CCSS.ELA-Literacy.RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. • CCSS.ELA-Literacy.RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. • CCSS.ELA-Literacy.RST.9-10.2 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.
Science - Integration of Knowledge and Ideas	<ul style="list-style-type: none"> • CCSS.ELA-Literacy.RST.6-8.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. 	<ul style="list-style-type: none"> • CCSS.ELA-Literacy.RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
Speaking & Listening - Comprehension and Collaboration	<ul style="list-style-type: none"> • CSS.ELA-LITERACY.SL.6.1 (SL.7.1, SL.8.1) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6/7/8 topics, texts, and issues, building on others' ideas and expressing their own clearly. 	<ul style="list-style-type: none"> • CCSS.ELA-LITERACY.SL.9-10.1 (SL.11-12.1) Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
History & Social Studies - Key Ideas and Details	<ul style="list-style-type: none"> • CCSS.ELA-Literacy.RH.6-8.1 Cite specific textual evidence to support analysis of primary and secondary sources. 	
History & Social Studies - Integration of Knowledge and Ideas	<ul style="list-style-type: none"> • CCSS.ELA-Literacy.RH.6-8.8 Distinguish among fact, opinion, and reasoned judgment in a text. 	

Additional resources for educators

Visit the “Annual Essay Contest” section of the Hilleman Film website (hillemanfilm.com) to:

- Read an article about using special projects (such as the essay contest) in the classroom: “Spotlight on: Special projects as teaching tools, an interview with Lily Crist.”
- Download the MRH Essay Contest marketing flyer to display in your classroom.
- Sign up for our newsletters to get contest updates.

GET CONTEST INFORMATION

Bookmark the MRH Essay Contest landing page for easy access!

hillemanfilm.com/contest

