LITERACY DESIGN
COLLABORATIVE

Argumentation Across the Disciplines

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Introduction

A principal called me recently to say that her district superintendent is directing schools to ensure that students learn to write argumentative essays, and do so at least every quarter. "How do we fit this into our curriculum?" she asked. This is a question we hear often these days. It seems that the idea of 'argumentation' is in the air. Of course, deciding to teach argumentation is the easy part. How to teach argumentation—even what qualifies as "argumentation"—is the tricky one.

In response to this growing call for teaching argumentation in the classroom, and recognizing this call as a potential "easier said than done" moment for teachers, the Literacy Design Collaborative (LDC) asked the eminent P. David Pearson and his team at U.C. Berkeley to study and synthesize the research around argumentative writing. The goal was to offer guidance and direction to school districts, schools, and teachers with the specifics of argumentative writing and tools that would be useful in teaching argumentative writing more easily and efficiently. Specifically, we sought to answer three questions:

1. What is an academic argument?
2. In what ways does argumentation differ from other genres and across disciplines?
3. How and why should we teach meaningful, discipline-specific argument to our students?

This paper answers these questions through a deep study of the nature of argumentation in three prominent disciplines: Science, History, and English Language Arts. Within this paper you will find commonalities in argumentation across these disciplines, as well as a review of the topics, types of evidence, and rhetorical moves unique to argument writing in each discipline. Additionally, you will find models that lay out the most successful ways of sequencing argumentative assignments, examples of assignments that can be used immediately in classrooms, and explanations as to their use in teaching argumentation. The accompanying LDC resources will offer specific strategies for systems to facilely implement argumentation across multiple classrooms.

One thing is clear in all the research shared within. Academic argument is *not* about "winning" a position. Rather, academic argument means analyzing data, organizing information,

substantiating claims with relevant and demonstrable evidence, and perhaps most importantly, finding out what knowledge and positions exist in a field.

Rather than focusing on "winning," then, Dr. Pearson et al. describe how in science, "the goal of scientific argumentation is to gain consensus for scientific ideas" (p. 23). In history, the goal is "to make inquiries into the past using historical remnants to form reasoned arguments and interpretations," and then to "communicate and critique peer arguments" (p. 17). In literature (ELA), the goal is to "interpret the text in a way that is 'both personally meaningful to our students as human beings and that can be justified through reasoning that draws on connections warranted from the text'" (p. 29).

To that end, argumentation in these three disciplines is also not about "telling." Instead, in all cases, disciplinary argumentation is really about three things: listening, organizing, and communicating. In this light, it makes sense why argumentation is considered "the surest pathway for preparing students to succeed in college and career settings and for participation in a democratic society" (p. 8). Students need and deserve to learn argumentation so that they can learn to listen to others, be respectful of ideas and positions, be critical consumers of information and opinion, and engage in the dialogue and discourse that accompanies such listening. This indeed may be the measure of a true democracy. Not that a person can speak their opinion more loudly, or tell their opinion more fervently. It is that listening engenders empathy, responsiveness, connection, and accelerated construction of communal knowledge.

We hope you will use this paper to explore these ideas and more about argumentative writing. We hope that for you, like for us, this paper raises questions and serves as a catalyst to do some inquiry in your own system. Ask how you are ensuring that *every* student leaves your system with flexible, rigorous experience listening, organizing, and communicating knowledge in the ways the authors describe. In other words, examine how well your system ensures the purposeful development of individuals and citizens who are well positioned to be more than just college and career ready—they are ready "to be active and responsible citizens in a democratic society."

— Suzanne Simons, EdD
Chief Academic Officer, Literacy Design Collaborative

Overview of Academic Argumentation

Why Argumentation?

Helping students learn how to comprehend, critique, and compose arguments has been an explicit goal of schools for centuries or even millennia. Today, argumentation is enjoying renewed emphasis due to its pivotal position in new curriculum reform efforts like the Common Core State Standards (CCSS) (National Governors Association Center for Best Practices and the Council of Chief State School Officers [NGA Center and CCSSO], 2012), the Next Generation Science Standards (NGSS) (National Research Council, 2013), and the College, Career, and Civic Life (C3) Framework for Social Studies State Standards (Swan et al., 2013). While some states have not adopted these specific standards, most state standards are influenced by these three frameworks and share similar values and expectations around analyzing and constructing arguments. The rationale for this heightened emphasis on argumentation is that the ability to make a reasoned case for ideas is the surest pathway for preparing students to succeed in college and career settings and for participation in a democratic society. Good students, colleagues, and citizens all need to be able to understand and convey complex information, judge the credibility of sources, and evaluate arguments for their validity and relevance (American Diploma Project, 2004). In short, they need to be able to comprehend, critique, and construct reasoned arguments.

Deconstructing Argumentation

According to Aristotle, whose breakdown of argumentation still resonates today, effective arguments are conveyed through three appeals: *logos, ethos,* and *pathos* (Wolfe, 2011). *Logos* emphasizes the quality of reasoning, such as pointing out how the evidence supports a claim. *Ethos* emphasizes the credibility and veracity of reasoning, such as appealing to what

experts in the field think about the issue at hand. *Pathos* involves appeals to emotions and affective states (Wolfe, 2011). These three appeals are summarized in Table 1 below.

Table 1

Examples of Aristotle's Three Appeals

Appeal	Emphasis	Example
Logos	The quality of reasoning	The correlation between increased carbon production and the melting of our polar caps is too strong to ignore.
Ethos	The credibility and veracity of reasoning	Scientists who have studied the evidence agree that we must diminish if not completely halt our reliance on fossil fuel consumption if we are to stop global warming.
Pathos	Audience's emotions and affective state	Our very survival as the human race demands that we stop using fossil fuels to power our economies.

Where Aristotle's appeals serve to explain how arguments are *conveyed*, Stephen Toulmin (1958), the father of modern discourse about argumentation, provides a description of an argument's components. An argument is comprised of: (a) a claim, (b) based on relevant evidence, (c) with warrants that explain how the evidence is related to the claim, (d) backing that supports the warrants, and (e) qualifications and rebuttals or counter arguments that refute competing claims (often before someone else makes them) (Toulmin, 1958).

In Toulmin's model, evidence and warrants are dependent on one another because the warrant shows how the evidence relates to the claim. Wolfe (2011) further deconstructs the claim into three key elements or slots: the theme, side, and predicate.

The theme is the topic or subject of the argument, the side is represented as either pro or con, and the predicate is the specific position taken by the author. For example, for the claim 'texting while driving should be a criminal offense,' the theme is *driving and*

> *texting*, the side is *against the practice,* and the specific predicate is that *the practice should be a criminal offense*. (Wolfe, 2011, pp. 195-196)

The deconstruction of what constitutes a claim may help novices get a grasp on how to build their own claims that can then be linked to evidence. A glossary of terms useful for discussing the topic of argumentation is located in Appendix A.

Types of Arguments

While most academic arguments follow these models, they serve a wide variety of purposes or cognitive demands. In order to help students structure purposeful arguments, the Literacy Design Collaborative (LDC) identifies five fundamental rhetorical uses commonly applied to academic arguments. These are summarized in Table 2 below.

Table 2

Five Types of Argumentative Cognitive Demands

Cognitive Demand	Rhetorical Function	Example[1]
Analysis	How or why is it?	Were the achievements and growth of the Industrial Revolution Era worth the cost to society?
Comparison	What are the differences and why do they matter?	Should electrical energy be generated from nuclear power or fossil fuels?
Cause-Effect	Why, how, or did something happen?	What was the primary cause of the Johnstown Flood of 1889 and its subsequent long-term effects to the surrounding area?
Evaluation	What is its merit?	Is this author's use of mathematics as evidence for his argument plausible?
Problem-Solution	What is the problem and what should be done to address it?	How can we most effectively create an ecosystem for mealworms?

[1] All assignment examples referenced here and elsewhere in this paper can be found in the LDC CoreTools Library, Argumentation Across the Disciplines: Example Modules & Mini-Tasks collection.

In LDC, each of these cognitive demands is associated with an LDC Task Template[2] that supports designing assignments aligned to standards. When selecting a template for use with students' argumentative writing, teachers must consider the purpose for students' arguments and the template that best supports the thinking work, or cognitive demand, of that purpose.

Argumentation versus Opinion and Persuasion

In academic contexts, argument is different from opinion and persuasion. While argument, opinion, and persuasion all involve making claims and supporting them with evidence, the type of evidence and rhetorical support often differ. Aristotle's labels of *logos, ethos,* and *pathos* provide a useful lens for understanding these differences. While all academic writing has some combination of these three appeals, in academic writing instruction teachers can emphasize particular qualities to illustrate how they are used for different purposes. For example, argument writing relies heavily on *logos*, where two sides of an argument are established and logic determines the side on which the preponderance of evidence lies. In contrast, opinion writing is more likely to be supported by *ethos*, founded primarily on the credibility of the writer or the evidence. While opinions may be challenged, this type of writing does not necessitate a counter-argument. Lastly, persuasion writing is supported by *pathos*, language that elicits emotional appeal.

Opinion and Argument

In grades K–5, the term opinion is sometimes used in lieu of argument. For example, in the CCSS for English Language Arts (ELA) through grade 5, opinion is used as early elementary students are not ready to produce fully developed logical arguments. However, they can learn to

[2] These and additional resources that a teacher can use for teaching argumentation are located in Appendix B.

express oral and written opinions and to use evidence to support those opinions in preparation for formal argumentation. In the secondary grade levels, argument is fully distinguished from opinion and students are expected to rely on the latter. To understand the difference between opinion and argument on a practical level, consider the three paired example prompts in Table 3.

Table 3

Comparing Opinion and Argument Prompts on a Given Theme

Theme	**Opinion Prompt**	**Argument Prompt**[3]
Evaluating characters	Does Hester Prynne deserve to be ostracized by her community?	After reading The Scarlet Letter, write an essay in which you discuss the symbolic meaning of Hester's scarlet "A" and evaluate how it changes over the course of the text to reflect the character's development. Support your position with evidence from the text(s).
The use of pesticides	Should schools serve only organic food?	Based on the evidence that was available in 1962, should the U.S. government have banned the use of DDT? After reading excerpts from the book *Silent Spring* by Rachel Carson, write a letter to your senator in which you argue whether Carson's work justifies a federal ban. Support your position with evidence from the text/s. Be sure to acknowledge competing views.
Civil disobedience	Are non-violent protests effective?	After reading King's "Letter from Birmingham Jail" and researching a modern example of civil disobedience, write a research-based editorial in which you discuss varied stakeholders' stances on your chosen example of civil disobedience and evaluate whether or not this act was justified according to King's precedent. Support your position with evidence from the text/s.

[3] All assignment examples referenced here and elsewhere in this paper can be found in the LDC CoreTools Library, Argumentation Across the Disciplines: Example Modules & Mini-Tasks collection.

The first prompt in each pair can be answered based on students' opinions and attitudes. While it permits the use of evidence, it does not require it. The opinions might be supported in a variety of ways, such as broad statements of facts without evidence (e.g., organic food protects you from harmful chemicals), general appeals to moral principles (e.g., it will make for a better, safer world), appeals to authority (e.g., doctors point to the dangers in chemical pesticides), or even bold assertions of individual rights (e.g., "I just know in my heart that this is the right course."). The support that accompanies opinion frequently relies more heavily on *pathos* and *ethos*, rather than *logos*. While statements of opinion do require a rationale, they do not require consideration of counterclaims since they are meant to express only what a particular writer or speaker believes.

The second prompt in each pair calls for the use of data and evidence to establish a reasonable claim, thus distinguishing it as an argument rather than an opinion. To illustrate how LDC emphasizes the principles of argumentation directly in the language of the prompt, each argument prompt uses an LDC Task Template.

Persuasion and Argument

While persuasion may be useful to argumentation, it is not identical. Persuasion and argument share the practice of asserting a claim and trying to convince an audience of its validity by offering relevant support. When exercising the art of persuasion, the speaker or writer is free to strategically ignore opposing perspectives, select the most favorable evidence, or use personal anecdotes with little regard for validity, relevance, or accuracy (Hillocks, 2011). The dominant purpose of persuasion is to convince an audience that they should accept a view, claim, or opinion. Thus, the claim and the evidence offered appeal to the reader or listener's emotions

(*pathos*) rather than logic (*logos*) or authoritative discourse (*ethos*). These contrasts between persuasion and argument are relevant to teachers' planning and instruction, as shown in Table 4 below.

Table 4

Differences Between Persuasive Writing and Argumentative Writing

	Persuasive Writing	**Argumentative Writing**
Starting Point	Identify a topic and make a claim	Identify and research a topic, then decide on a claim
Purpose	Get the reader to agree with a position.	Get the reader to recognize that a position is valid
Techniques	Combines facts with emotions to convince the reader that the author is "right" Appeals to emotion Ignores counterclaims or treats them dismissively as "wrong" Presents only ideas that help establish a position Presents only the author's position May make claims without evidence	Offers facts, reasons, and evidence to show the author has valid points Appeals to logic Acknowledges and addresses opposing claims May compare ideas to establish a position OR present and then dismiss counterclaims Presents multiple sides but is clear on the author's position Always provides evidence with claims
Tone	Emotional; seeking approval	Reasonable; seeking consideration

Note. Adapted from Read, Write, Think. Copyright 2014 by IRA/NCTE. Adapted with permission.

Persuasion does not strive to conform to particular disciplinary conventions such as the preference for empirical evidence present in the sciences or the historian's preference for primary over secondary sources. Argument, on the other hand, is at the heart of critical thinking and academic discourse in that the main purpose of an argument is to advance ideas supported by verifiable information that can inform decision making. At the same time, an argument must be subject to scrutiny by those in a discipline or a community whose lives will be affected by the decision under consideration.

Argumentation Within the Disciplines

In *Everything's an Argument*, Lunsford, Ruszkiewicz, and Walters (1999) explain that language is a tool that allows us to make sense of the world, ourselves, and our lives. Knowing how to use language to effectively argue for oneself is critical. Indeed, real-life arguments are ongoing, and often have more than two sides. Recognizing, categorizing, understanding, crafting, and engaging in arguments should be a critical component of education. This demands that teachers and students:

- Understand language, how it functions, and how to capitalize on its nuances;
- Know how to engage in "close reading" by analyzing texts and understanding genres, text organization, and structures, and recognizing both explicit and implicit authorial goals;
- Understand and use the social conventions of conversation and argumentation;
- Know the elements and structure of oral and written argumentation;
- Work with peers and teachers to learn the processes of argument construction;
- Participate in the comprehension and critique of increasingly complex expert models of oral and written arguments;

- Participate in multiple, scaffolded opportunities to engage in and build competence in the use of oral and written argumentation strategies; and
- Work and learn in a culture that recognizes the importance of honest argumentation and integrates it into individual assignments and social classroom activities and projects.

Evidence-based argumentation is a common and relevant writing mode that is used across topics and disciplines. Similarities, such as using information and rhetorical devices to make claims supported by evidence, exist across disciplines (Toulmin, 1958).

However, there are also substantive differences in the comprehension, critique, and construction of arguments across disciplines. Students are likely to encounter disciplinary differences in the nature of claims, what counts as evidence, the specific ways in which evidence is used to support claims, and the commonly used rhetorical devices. Therefore, it is important in each discipline to examine the discipline-specific facets of argumentation: how each subject fits within the larger domain of argumentation and what is involved in teaching students to craft arguments in the context of state and national standards (e.g., the CCSS). The following sections consider these differences in argumentation in the areas of history, science, and ELA. The findings draw heavily on the model of argumentation proposed by Toulmin (1958), the instructional applications of Toulmin's model developed by Hillocks (2011), and the instructional intervention model for discipline-level argumentation developed by Project READi (Reading, Evidence, and Argumentation in Disciplinary Instruction).

Argumentation in History[4]

History explores arguments about how to understand the past, as well as how the past helps us to understand and interpret the present. In the last two decades, history education has moved in tandem with a broader educational agenda to accelerate student expertise beyond simple mastery of facts to making reasoned judgments using learned information (Van Drie & Van Boxtel, 2008). The judgments of historians are expressed in the form of oral or, more commonly, written arguments. When students take up the practice of historians, they too are expected to make inquiries into the past using historical remnants to form reasoned arguments and interpretations.

Argumentation in history is exemplified in standards such as the ELA CCSS (NGA Center and CCSSO, 2012) and the C3 Framework (Swan et al., 2013), which both use terms such as argument and explanation, claim and counterclaim, information and evidence, and point of view and opinion. Both frameworks ask students to develop questions, apply disciplinary knowledge and concepts, gather and evaluate sources, and then use claims and evidence to support those claims. In addition, the C3 Framework includes a dimension that emphasizes communicating and critiquing peer arguments in public venues (Swan et al., 2013).

Unique aspects of argumentation in history. Looking across the scholarly research about argumentation in history, two themes repeatedly emerge regarding what is unique in crafting historical arguments: asking historical questions and contextualization (Lee & Spratley, 2010; Goldman et al., 2016; Monte-Sano, 2012; Newell, Beach, Smith, & VanDerHeide, 2011; Nussbaum, 2002; Van Drie & Van Boxtel, 2008). Asking relevant questions helps cultivate

[4] We address the domain of history rather than the broader category of social studies in this paper because history comprises the main content of most middle- and high-school courses. Argumentation within the social studies disciplines, such as economics, political science, and sociology, may have unique characteristics not addressed here.

fruitful exploration of historical phenomena and permits entry into the conversation of the field. There are two common types of historical questions: explanatory (e.g., What caused WWI?) and evaluative (e.g., What is the most important cause for the outbreak of WWI?). Worth noting is that evaluative questions are found to elicit richer historical reasoning than explanatory questions (Van Drie & Van Boxtel, 2008). Significant differences have been found between experts and novices in the ability to frame historical questions (Van Drie & Van Boxtel, 2008). Thus, in order to support students in developing from novices into experts, teachers need to frame their assignments carefully with both explanatory and evaluative historical questions and unpack the nature of those questions (and how to answer them) with students. Increased student proficiency in framing relevant historical questions scaffolds their ability to define workable arguments and craft thesis statements, particularly as assignments become more challenging and open-ended in the upper grade levels.

Contextualization is another important prerequisite to crafting historical arguments. In addition to factual accuracy, it is important to understand how social variables function and are interrelated (Monte-Sano, 2012). Understanding social variables lends insight into the interpretation and evaluation of sources, connecting evidence to an argument, and establishing accurate cause-effect relationships and historical chronology. When accessing historical documents, sources must be situated within the broader context to determine their relevance to a topic and to use them in a manner consistent with their original meaning. Situating evidence within historical contexts can be a challenge for history novices, who often have difficulty differentiating what they know in present time versus what a particular historical agent knew in

the past (Van Drie & Van Boxtel, 2008). The following questions produced by the Stanford History Education Group (n.d.) help facilitate contextualization when reading sources:

- When and where was the document created?
- What was different then?
- What was the same?
- How might the circumstances in which the document was created affect its content?

Topics for argumentation in history. Argumentation is a common practice for historians. Beyond simply describing historical events, historians ask probing questions about the cause and effect of salient phenomena and events. For example, rather than simply describing the Civil War, historians may argue about causal explanations for the outbreak of hostilities. They may also argue about the desirability of social and political practices (e.g., democracy or imperialism) or current social issues (e.g., capital punishment or immigration). Historians are driven by compelling, unresolved questions such as "Was the Civil Rights Movement of the 1960s a success?" (Swan et al., 2013, p. 18). Specific lessons on U.S. and World History that can be used to generate topics for argumentation are available via the Stanford History Education Group and Facing History and Ourselves.

Types of evidence in history argumentation. Sources, oftentimes confused with evidence, are the raw materials that yield evidence through interrogation and analysis. History is a field open to informed interpretation and highly dependent on the careful review of historical sources. Yet sources are often incomplete records representing particular points of view or perspectives (Goldman et al., 2016; Lee & Spratley, 2010), and evidence is only as good as the source from which it originated. To identify evidence within a source, historians often

interrogate sources through careful reading and asking critical questions. This focus, common within (if not unique to) history, reflects how sources are at the core of historical reading and thinking (Litman, Greenleaf, Charney-Sirott, Marple, & Sexton, 2012). This concept will be revisited in the section entitled Argumentation Pedagogy and LDC below.

As the basis of evidence, the types and quality of sources are important factors in historical arguments. Sources in history are distinctly classified into three categories: primary, secondary, and tertiary. Primary sources include first-hand accounts, photographs, cartoons, maps, art, music, physical artifacts, newspaper articles from the time of the event, and video or audio recordings. Secondary sources include biographies by historians, journal articles, and editorials. Finally, tertiary sources include compendiums, summaries, and textbooks that draw from both primary and secondary sources. While textbooks have become a common source of information in the history classroom, these are tertiary sources that serve as an amalgamation of information and are not the most valued kind of source in history argumentation. Historical understanding is intertextual, and historians base their interpretations on multiple primary and secondary sources.

The high value that is correctly assigned to primary sources in the history/social studies disciplines sometimes has unintended consequences for teachers with respect to task design. Despite the fact that the CCSS (NGA Center and CCSSO, 2012) and the C3 Framework (Swan et al., 2013) explicitly call for students to use evidence from both primary and secondary sources in their writing, teachers sometimes overlook the value of secondary sources in their discipline and create argumentation assignments that use solely primary sources. Not only do secondary sources provide context to support understanding of primary sources, but they also provide

opportunities for students to critique the historical arguments and interpretations of others, which is a valued practice in the study of history (Swan et al., 2013). Most assignments achieve better balance by including both primary and secondary sources, and by providing explicit instruction that helps students understand the relationship between these source types and utilize the two in conjunction.

Major rhetorical moves of a history argument. History arguments follow the prototypical Toulmin (1958) model and include a precise claim(s), evidence, reasoning to link claims and evidence, rebuttal, and acknowledgement of counterclaims and counterevidence. Van Drie and Van Boxtel (2008) define argumentation in history as putting forward a claim about the past, supporting it with sound evidence through weighing different possible interpretations, and taking into account counterarguments. Arguments are put forth using the best available information, while historians continually seek new evidence to sharpen and refine their interpretations. Historical arguments are seldom deemed closed as new evidence is constantly being added to the available data and claims are continually revised.

To support their interpretations of the past, historians also generate arguments about the trustworthiness of a source based on evaluation of the source author's claim(s) and evidence. They must rigorously evaluate the persuasiveness of evidence by evaluating its reliability, specificity, applicability, credibility, and historical significance. Central to historical argumentation is establishing corroboration among multiple pieces of evidence (Monte-Sano, 2012; Stanford History Education Group, n.d.; Van Drie & Van Boxtel, 2008) and acknowledging and explaining discrepancies across sources and evidence (Lee & Spratley, 2010). History is open to multiple interpretations, and the same source, even the same piece of

evidence, can often support competing or conflicting claims. Thus, when using a piece of evidence, it is important to anticipate alternate interpretations or conflicting and counter evidence (Monte-Sano, 2012). Even better is to offer reasons why the evidence in question cannot support the counterclaims. Triangulation of plentiful and diverse evidentiary sources leads to a stronger and more credible argument.

Completion of this evaluation process requires historians to situate the historical record(s) in the time, place, and societal and physical conditions in which the records were produced. As noted above, the ability to contextualize information is critical. This aspect of historical argumentation is highly dependent on extensive background knowledge, and can be a particular challenge for students with limited knowledge of the times about which they are crafting arguments. Thus, argumentation in history must be aided by deep study of historical content. As students become more knowledgeable on a topic, their arguments will reciprocally grow in sophistication.

To aid students in developing this skill, the following questions were designed by the Stanford History Education Group (n.d.) to drive consideration of who wrote a document and the circumstances of its creation:

- Who wrote this?
- What is the author's perspective?
- Why was it written?
- When was it written?
- Where was it written?
- Is this source reliable? Why? Why not?

Argumentation in Science

Argument in science is a process of accruing evidence to support a causal model and communicating a position about that evidence to the scientific community (Goldman et al., 2016). The goal of scientific argumentation is to gain consensus for scientific ideas (Llewellyn, 2013; Duschl & Osborne, 2002; Deane & Song, 2015). As in history, the focus of science education has evolved from simple mastery of facts to more complex thinking skills, including the use of evidence from both investigations and texts to warrant claims. Students are now expected to understand and analyze scientific claims and to adopt scientific practices. To facilitate development of these skills, there is a growing belief in education that scientific argumentation should be developed in a cross-disciplinary approach that includes reading and writing skills. This approach is reflected in the complementary relationship between the CCSS for ELA (NGA Center and CCSSO, 2012) and the NGSS (National Research Council, 2013). Both documents support using the text as a starting point to make claims, reading across multiple texts to make conceptual connections, and gradually increasing the complexity of content, discourse, and argument structures. However, the two documents differ in when these foundational concepts are introduced. The CCSS permits the use of personal opinion rather than argumentation until grade 6 (NGA Center and CCSSO, 2012). Comparatively, the NGSS provides a progression for learning argumentation starting at Kindergarten (National Research Council, 2013).

Unique aspects of argumentation in science. The consequence of a scientific claim rests on its durability and objectivity through continual peer review (Osborne, 2010). Scientific consensus is reached when multiple sources converge on the same conclusion, with the

assumption that emerging evidence will push the dialogue in new directions. Accordingly, scientists view argumentation as a collaborative, rather than oppositional, exchange. There is a shared interest in advancing knowledge in the field—rather than arguing to win, scientists argue to learn. Scientists carefully evaluate how data are collected and analyzed to allow for replication or the use of existing data to design new experiments. New evidence that corroborates or contradicts existing information is also taken into account.

Topics for argumentation in science. Science arguments are typically developed in response to a question about some natural phenomenon (e.g., causes of dinosaur extinction). Many empirical arguments involve causal relationships (Wolfe, 2011). When developing these questions, in addition to grade level content standards, educators should consider topics related to students' interest, experience, and grade-level skill development goals. In order to provide a more authentic experience, students should engage with topics that retain an element of uncertainty where an explanation is not yet well-established and widely accepted (Manz, 2015).

When developing argumentative assignments in science, *A Framework for K-12 Science Education* (National Research Council, 2012) is a useful resource. This framework features a set of disciplinary core ideas across the various branches of science. The ideas are framed as questions that students themselves might ask. For example, in the physical sciences, the core questions are "'What is everything made of?' and 'Why do things happen?'" (National Research Council, 2012, p. 104). Students use answers to these questions in order to argue for a particular explanation and/or predict a wide variety of natural phenomena (e.g., how water evaporates, how sound travels). The framework also challenges students to use science and engineering practices to evaluate, design, and/or defend solutions to real-world problems. Other examples of

assignments in science argumentation, developed in collaboration with Battelle STEM Education, are available in the LDC CoreTools collections, Battelle Exemplary Science Modules and Battelle Mini-Tasks.

Types of evidence in science argumentation. Scientific arguments are characterized by their reliance on empirical evidence of natural phenomena (Goldman et al., 2016). Scientists will identify evidence relevant to their claim and useful for addressing rebuttals that they anticipate from other experts in their field. Scientists hope to find quantifiable, scalable evidence in the phenomena they are investigating. Interpretations of the data are often supported by graphs, charts, and other visual depictions to accompany the verbal argument in the text. Observable evidence gathered in first-hand investigations is preferred to secondary data sources, although secondary sources may be used to corroborate the claims of the investigator. This is similar to the practice of supporting one's own text-based argument in literature by pointing out that a literary critic shares your interpretation of a key literary element.

Scientific argumentation depends on the reciprocal use of theory and evidence. Theory informs the search for explanations and sources of evidence, and evidence is used to evaluate which of potentially multiple competing theories provides the best explanation of a phenomenon. For example, evidence from earthquake monitoring devices can be used to determine whether the strong shaking or the elastic rebound theory of earthquake causation is more valid.

Major rhetorical moves of a science argument. Science rhetoric is both social (contextualized by political timing or social authority) and cognitive (following scientific standards of evidence and methodologies) (Ceccarelli, 2001). As in history and ELA, social rhetoric in science argumentation focuses on motivating social change (Goldman et al., 2016).

Science differs from other disciplines in the rhetoric of the *cognitive* content. For example, scientists often set context by discussing the theoretical framework(s) of their study at the outset of an argument. Setting this context early by outlining existing alternative claims in the field, as well as the evidence for or against those claims, aids in convincing the reader(s) of the thoroughness of the research and thus the credibility of the author's claim(s).

Science arguments align to the prototypical Toulmin model of claim, evidence, and warrants to justify the claim (Erduran, Simon, & Osborne, 2004). However, the structure of a science argument often differs from other disciplines. Whereas ELA and history typically feature a thesis-first structure that introduces the writer's claim early in the paper (i.e., the introduction), scientific argumentation often follows a structure referred to as IMRaD (Introduction, Methods, Results, and Discussion), in which the claim typically appears in the final Discussion section. The Introduction is used to present a central research question and the context surrounding that question. Next, the Methodology section explains the research methods used for collecting or selecting data. This affirms the data's credibility and relevance to the central question and allows for replication of the data by others. The Results section summarizes findings, often in numerical form, to provide readers with a frame (e.g., a scale reflecting size, magnitude, or quantity) to understand the data. Supporting information (e.g., units of measurement, sample size, variability) allows readers use their own judgment to gauge the relevance of the data and the credibility of the claim made by the research. The Discussion section presents and evaluates the resulting claim(s) and often provides comparisons with everyday concepts to help readers make sense of the findings. Redundancy across sections is a feature of the IMRaD format. It reminds the reader(s) of research questions, the study context, and/or the core ideas of the argument. This is a

service to readers who are likely to scan the document rather than read it as a linear narrative (as in thesis-first arguments).

The rhetorical strategies used in scientific argument emphasize various aspects of an argument's persuasiveness, ranging from methodological soundness (this study is more scientific than another), to reputation (one group of scientists has a stronger reputation in the field and is, therefore, more believable), to rhetoric (this argument is better crafted and/or more transparent). Even non-verbal tools, such as photos, figures and graphs, serve as rhetorical devices (Bricker & Bell, 2008).

The tone of scientific argument maintains a tentative character, "tolerating ambiguity and seeking 'best understandings given the evidence,' considering significance, relevance, magnitude and feasibility of inquiry" (Goldman et al., 2016, p. 21). Science arguments are characterized by an inquiry disposition that is driven by an interest in how concepts change in light of new evidence. Therefore, students should be taught skills for productive argumentation (Andriessen, 2010), particularly how to persist with or adapt their argument in the face of competing counter-arguments offered by peers (Andriessen, 2010).

Argumentation in ELA

The study of literature invites readers to explore the human condition through the perspective of others and consider how those vicarious experiences relate to their own real and imagined worlds (Langer, 2011). For example, the novel *Uncle Tom's Cabin* invites readers to witness the inhumanity of slavery by demonstrating its harsh and barbaric reality. This is an authorial perspective that readers are free to accept, feel empathy for, or even reject. While literature may be read for personal insight and/or enjoyment, unraveling the deeper meaning of a

text requires a reader to move beyond the literal words on the page. He or she must consider the meaning and intent behind a writer's choice in language and structure as well as unintended effects of those choices. This literary analysis can be expressed in the form of an argument that asserts and defends the reader's interpretation supported by evidence justifying how and why the analysis is reasonable and valid.

Argumentation in ELA plays a prominent role in the CCSS and other state standards. While narrative, informational/explanatory, and argumentative writing are all represented and valued in the standards, argumentation is singled out as having "a special place" and is acknowledged as a critical element for preparedness for college and post-secondary success (NGA Center and CCSSO, 2012). Although the foundations for argument begin as early as kindergarten with students composing opinion pieces (e.g., My favorite book is…), standards for ELA arguments in the CCSS begin formally in 6th grade. Students are expected to construct formal arguments in which they support claims with relevant evidence and clear reasoning (what Toulmin [1958] would call warranting). Though the CCSS do not always make an explicit link between writing arguments and the standards for reading literature, many of the skills outlined in CCSS Reading: Literature are used in literary arguments (e.g., analyze how complex characters advance the plot or develop the theme; analyze the impact of an author's choice of words; analyze how the structure of a text contributes to meaning). These skills are used when students examine a text to prepare for essay writing, classroom presentations, debates, or discussions. The CCSS-ELA standards that contribute most directly to students' abilities to engage in literary argumentation, oral and written, are presented in Appendix C.

Unique aspects of argumentation in ELA. The deep connection between the analytical reading of literature and the writing of arguments is unique to ELA. Through literary argumentation students interpret the text in a way that is "both personally meaningful to our students as human beings and that can be justified through reasoning that draws on connections warranted from the text" (Lee, 2016, p. 3). While all disciplines require students to build a coherent representation of the ideas found in a text and to consider the structure, or overall organization, of the text (Pearson & Cervetti, 2017), literary argumentation is unique in the salient role of structural elements, such as the setting, character, and plot. Readers use their knowledge of rhetorical strategies (e.g., symbolism, irony, use of description) to attribute significance and meaning to the text. Readers are able to access deeper textual meaning in literature when they can identify symbols and use their cultural knowledge of those symbols to interpret story characters, their textual worlds, and general themes about human nature (Lee, 2007). In literary analysis, readers must be able to recognize iconic representations of people (e.g., courage, persistence, villainy, recklessness) and archetypal themes (e.g., coming of age, battling nature, or the fall of the tragic hero). Readers must also attend to the author's use of language by considering what words were chosen or manipulated in order to frame a mood, a perspective, or a character.

Topics for argumentation in ELA. Arguments in ELA fall into one of three broad categories: content, purpose, and craft. In arguments of content, students address issues such as whether the text reveals a different understanding of the world in which they live. In arguments of purpose, students debate ideas such as what the author's purpose was in writing a piece and/or how well he or she achieved that purpose. In arguments of craft, students analyze the inner

workings of a text, such as how the plot of a story develops, what the setting may reveal about the author's intentions and biases, or the import of a theme and how it connects to personal understanding. Even the subtle impact of an author's word choice can be argued as an element of craft.

In literary argumentation, the claim typically appears in a thesis statement. To develop the claims made in literary thesis statements and to develop a coherent interpretation of and precise argument about the content, purpose, or craft of a literary text, students must apply analytical reading skills such as those found in the CCSS Reading: Literature standards.

For literary arguments to be compelling and convincing, they must present a topic and claim of interest and debate to the literary community. Within literary communities, some claims lend themselves to debate while others do not, and this concept may be initially evasive to students. The contrast between statements 1 and 2 below illustrates the distinction between a debatable and a non-debatable claim in ELA.

1. Linda Loman is Willy Loman's long-suffering wife in Arthur Miller's play *Death of a Salesman*.
2. More than a stereotype of the long-suffering wife, Linda Loman in Arthur Miller's play *Death of a Salesman* is a multidimensional character who plays an important role in the play's meaning.

The claim in statement 1 is too obvious and requires very little debate. Statement 2 requires evidence to support its claim and refute counterclaims. It also offers students an opportunity to engage in the thinking work of ELA Standard RL.3, which asks students to "Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course

of a text, interact with others, and advance the plot or develop the theme" (NGA Center and CCSSO, 2018b, para. 4).

Types of evidence in ELA argumentation. ELA argumentation differs from other disciplines in both the source of evidence and the focus of the analysis readers engage in when they make interpretations. As the main unit of analysis, the text is the primary source of evidence in literary argumentation. Common evidential data include: direct quotations, specific details, paraphrasing, and/or summaries of key ideas. Evidence can be explicitly stated or inferred from the text. It is subject to personal interpretation filtered by belief systems and background knowledge (Goldman et al., 2016). Secondary evidence from outside the text may also be used to provide insight and analysis into the social, cultural, historical, and even economic perspectives of the text (e.g., considering the period in which the piece was written, considering the life experience of the author).

Major rhetorical moves of a literary argument. Literary arguments follow the Toulmin (1958) model discussed earlier. They typically follow a thesis-first structure wherein the writer offers his or her claim early in the argument. Claims often center on the text, are debatable in nature, and focus on the content, purpose, and/or craft of the text. Arguments in ELA often call for students to assert text-centered arguments that depend on defending a reading of a text (Wolfe, 2011). For example, in *Lord of the Flies*, William Golding reveals the tension between civilization and savagery through characterization of a group of boys. The reader may choose to make arguments about why Golding gave the boys nicknames he did, and how the flawed characteristics of the boys resonate with the reader and bring to life the tenuous nature of humanity. A novice student may depend on their personal interpretation of a primary text to

support a claim. As students grow in sophistication, the validity of their arguments is strengthened through reading, evaluating, and appropriating the arguments of others in secondary texts. More advanced students strengthen the credibility of their arguments by comparing them to what others, for example literary critics, have already argued**.**

Implications for task design and pedagogy in ELA. When choosing an LDC Task Template for ELA assignments, attention needs to be paid to the kinds of thinking expected of the students to determine whether the task is argumentative or informational/explanatory in nature. For example, the thesis statement "In *Death of a Salesman*, Arthur Miller uses the character Willy Loman to illustrate self-delusion and loss of identity," could be crafted in response to either an Argumentation task or an Informational / Explanatory task. An argumentation task would require students to first analyze a text and then make arguable claims based on that analysis. For example, an appropriate Argumentation task would be "After reading *Death of a Salesman*, write an essay in which you argue how Miller uses the character of Willy Loman to convey and develop two central themes in a play."[5] Students have to make arguable claims about the central themes in the play, as well as how Miller, through Loman's words and deeds, conveys and develops them. By comparison, an Information/Explanatory task would be "After reading *Death of a Salesman*, write an essay in which you analyze how Miller uses the character of Willy Loman to convey and develop themes of self-delusion and loss of identity." This task may produce the same thesis statement as the argumentation task, and students would still engage with some of the rhetorical moves of argumentation, but, as the theme topics have already been declared for them, their task is more explanatory in nature.

[5] All assignment examples referenced here and elsewhere in this paper can be found in the LDC CoreTools Library, Argumentation Across the Disciplines: Example Modules & Mini-Tasks collection.

Developing argumentation skills in ELA also presents a unique pedagogical challenge. There is an inherent tension, even a contradiction, between the types of reading and the types of writing in which students engage in an ELA classroom. Literary texts commonly found in ELA courses rarely require students to read and respond to arguments in the same way as other disciplines. Not until their adolescent years do students encounter examples of literary criticism, which demonstrate how to construct arguments about literary works. Thus, it is likely that students are asked to produce arguments about literary texts prior to exposure to examples in the argumentation genre. Reading literary genres such as poetry, drama or prose is not sufficient to prepare a student to write in the genre of argumentation. This tension can be resolved by providing opportunities for students to read and unpack examples of literary argumentation that are appropriate in complexity for their grade level. Students can study exemplars written by students in previous years or written by the teacher in response to a grade-level-appropriate prompt. This will assist them with learning how to evaluate arguments and write their own literary arguments as called for by the ELA Standard RI.8, "Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence" (NGA Center and CCSSO, 2018a, para. 9).

Argumentation Across the Disciplines: A Side-by-Side Comparison

Just as it is helpful to think about each discipline individually, it is also helpful to see how each discipline operates in relation to the others. Table 5 provides a comparative summary of the information we have presented for each discipline; it encourages comparisons across the three disciplines.

Table 5

Comparison of Argumentation Across History, Science, and ELA

	History	Science	ELA
Appearance of Claim	Thesis statement in the introduction Delayed thesis in the conclusion	Claims are presented in the discussion section in the form of conclusions / implications of the results	Thesis statement in the introduction
Nature of Claims	Explaining the causes or consequences of events, phenomena, or movements	Explaining a phenomenon or evaluating the best explanation for a phenomenon Defining a problem and arguing for a specific solution	Determining central themes Evaluating how themes, characters, or events develop Asserting literary merit or the text's relationship to external contextual forces Analyzing how author choices affect meaning
Preferred Sources of Evidence	Primary sources: first-hand accounts, photographs, audio or video recordings, newspapers from the time of the event, maps, etc. Secondary sources: biographies, journal articles, etc. Tertiary sources: textbooks, summaries, etc.	Empirical evidence: evidence gathered in direct inquiry activities but extending to reports of direct inquiry in textbooks and journals	Primary texts: poems, books, stories, essays, art, etc. To a lesser extent, secondary texts: literary analyses; social, cultural or historical evidence

(table continues)

Table 5 (continued)

	History	Science	ELA
How Sources are Used to Support a Claim	Sources must be situated within the broader context to determine their relevance to a topic and to use them in a manner consistent with their original, historical meaning	Quantitative representations Visual depictions to accompany the verbal argument Adding to an ongoing debate	Direct quotations Specific details and paraphrase Summaries of key ideas
Unique Rhetorical Moves or Devices	Generating arguments about the trustworthiness of a source based on evaluation of the source author's claim(s) and evidence	Presenting the theories that put the study into context Outlining the plausible claims within the field, as well as the evidence and reasoning for or against existing claims, as a means to convince others that your model or explanation of some phenomenon is the most logical claim Tentative tone of ongoing discovery and debate	Salient role of the structural and linguistic elements of a text as a means for analysis

By considering argumentation across the disciplines, teachers can identify common aspects of argumentation that can be reinforced and supported across grade levels and courses. They can also note the unique aspects of argumentation in each discipline that will be grade- or course-specific. Approaching argumentation at a system level with this cross-disciplinary focus enriches the learning and enhances the effectiveness of educators and students alike. School

teams can use this information to collaborate in ways that bring clarity to the disciplinary expectations of each subject area while creating and continually reinforcing a common foundation of expectations, language, and school culture around student thinking. It directs the energy of a school system into building flexible thinkers—students who understand and apply universal principles and skills to academic inquiry while also developing command of the expectations and conventions of specific disciplines.

Argumentation Pedagogy and LDC

Having considered the theoretical and rhetorical nature of arguments within and across disciplines, it is useful to consider practical guidelines for teaching students how to comprehend, critique, and construct arguments. These strategies are dependent on an ever-growing body of research about how to organize and scaffold argumentation learning tasks. The ideas presented in this section can be used not only to inform the design of individual LDC modules, but also to map sequences of modules within and across school years.

Learning Progressions

Berland and McNeill (2010) illustrate how the instructional context can be scaffolded from simpler to more complex tasks through a learning progression (LP). While the LP was designed for science, it can be applied more widely to other disciplines. Berland and McNeill (2010) divide instructional context into two components: complexity of the question and complexity of the data set. Their LP suggests that a simplified learning task would involve:

(a) presenting a prompt that focuses on a closed question limited to two or three defined claims/sides (e.g., yes or no; a, b, or c),

(b) a small and manageable data set that is limited to only the applicable data, and

(c) support in the form of detailed scaffolds (e.g., a graphic organizer that prompts students to provide reasoning for each piece of evidence).

As students advance in grade level and proficiency, the instructional context can become more complex by:

(a) asking questions where the claims are open-ended and students have to decide what kinds of claims can be made,

(b) using larger data sets where students need to manage a lot of data and filter inappropriate data, as well as,

(c) no longer providing scaffolds.

This progression represents considerations that teachers and curriculum designers would make in planning tasks based on student experience and proficiency with comprehending, critiquing, and composing arguments. Beyond the individual classroom, the progression can support curriculum mapping both within and across grade levels. In tandem with grade-level standards, as broken down in Appendix C, the progression illustrates features of assignments and appropriate scaffolding that should be considered in vertical planning for a sequenced curriculum that supports students in building increasingly complex argumentation skills from assignment to assignment, year to year. This information is summarized in Figure 1 below.

Dimension	Simple → Complex		
Instructional context	Question is closely defined with two-three potential answers		Question is open with multiple potential answers
	Data set is small	Data set is large	Students define data set
	Data set is limited to appropriate data		Data set includes both appropriate and inappropriate data
	Detailed scaffolds	Moderate scaffolds	No scaffolds
Argumentative product	Claims are defended	Claims are defended with evidence	Claims are defended with evidence, and reasoning.
	Counterclaims are NOT rebutted		Counterclaims ARE rebutted
	Claim addresses question asked		Claim addresses question asked with a causal account
	Component (i.e. evidence, reasoning, rebuttal) is appropriate.		Component (i.e. evidence, reasoning, rebuttal) is appropriate and sufficient.
Argumentative process	Claims are articulated, defended, questioned OR evaluated	Claims are articulated, defended, questioned, AND evaluated	Claims are articulated, defended, questioned, evaluated, and revised
	Student participation in argumentative discourse is prompted by their teacher	Teacher and students share responsibility for prompting the argument	Students spontaneously engage in argumentative discourse.

Figure 1. Argumentation Learning Progression. Reprinted from "A Learning Progression for Scientific Argumentation: Understanding Student Work and Designing Supportive Instructional Contexts," by L. K. Berland and K. L. McNeill, 2010, *Science Education*, *94*(5), p. 770. Copyright 2016 by Wiley Periodicals, Inc. Reprinted with permission.

What to teach about argumentation. Research has illuminated several aspects of argumentation where students sometimes struggle, as well as pedagogical supports for these tasks (Newell et al., 2011). These supports can be broken into five main categories: reading and interpreting sources, corroborating information, organizing and evaluating evidence, reasoning, and collaborative argumentation. Each of these categories is described below.

Reading and interpreting sources. In his book, *Teaching Argument Writing*, Hillocks (2011) suggests that argumentation should not begin with the identification of a claim or thesis followed by a search through the text for supporting evidence. Instead, he recommends students begin with the collection of data while reading. The gradual accumulation of data will guide the reader to a defensible claim (Hillocks, 2011). Thus, a key part of preparing for an argument is the close reading and interpretation of sources as intertextual analysis yields evidence to defend or refute a particular stance. Numerous studies such as Biancarosa and Snow (2006) illustrate that students have difficulty mastering advanced reading comprehension and critical literacy skills associated with engaging in and critiquing effective arguments (Newell et al., 2011). Students need to engage in close reading - a process of multiple, careful reads that involves analysis and synthesis of the text in all disciplines (Litman et al., 2012). The LDC CoreTools Library has a number of mini-tasks to help with this skill, including:

- Close Reading with Metacognitive Markers
- Close Reading of Scientific Texts Using the GIST Method
- SOAR Note-Taking and Annotations
- Read-Think-Talk-Look Through a Text

Each of these mini-tasks includes common instructional practices that assist students in the comprehending of complex information such as utilizing graphic organizers, writing annotations, and experimenting with different ways to mark up text. When focusing on close reading, it is important to remember that students greatly benefit from engaging in peer discussion with partners or in small groups to digest and dissect information. An additional activity to assist students with this concept can be found in Facing History's Socratic Seminar.

Corroborating information. Corroboration makes an argument stronger because it demonstrates convergence of evidence. Students consider and address points of agreement and disagreement of information across multiple sources and ask hard questions about important details/evidence. A common oversight for students is to choose evidence that supports a claim, while disregarding counterevidence. Students can be taught to look for corroboration of information through a variety of LDC mini-tasks in the LDC CoreTools Library, including:

- Comparing and Contrasting Informational Texts
- Roundtable Discussion
- Gathering Information from Multiple Sources
- Reading like a Historian: Corroboration

While each of these mini-tasks approaches corroboration differently, they all require students to analyze multiple sources and look for patterns and divergences among them. Additionally, each mini-task offers strategies on how to work within and across sources.

Organizing and evaluating evidence. Argumentation begins well before the actual writing or presentation of an argument. Learning to organize and evaluate evidence while reading and observing are essential skills. The stronger the evidence gathered, the more credible

and persuasive the argument. The process of keeping track of evidence can be overwhelming and confusing for students. The LDC CoreTools Library offers a number of mini-tasks to help students acquire this skill:

- Evidence Logs and Index Cards
- Evaluating Evidence
- Opinion Formation Cards
- Evidence Analysis of Character Perspectives (Chart)

These mini-tasks help students in evidence sorting, which enables them to decide which claim, among a set of competing claims, has the strongest support. A common weakness of student argument is demonstrating bias for evidence that suits a particular claim while disregarding counterevidence (Wolfe, 2011). These mini-tasks offer students the opportunity to learn the utility of counterevidence as a way of preparing for a rebuttal.

Reasoning. Reasoning is a key factor in creating an effective argument as it makes clear how each piece of evidence supports a claim(s). Students often neglect reasoning in their argument by failing to specify why the selected evidence matters (Nussbaum, 2002). Displaying side-by-side arguments (e.g., one with reasoning and one without) can be illustrative of the effect of reasoning in making an argument more persuasive. The LDC CoreTools Library features many mini-tasks that emphasize reasoning, including:

- Elaborate on Reasons to Support an Opinion
- Twisting Arms: Developing Persuasive Reasons to Support an Argument
- Justifying and Explaining Evidence
- Linking Claims and Evidence with Analysis

Using mini-tasks such as these teaches students to be more deliberate about including reasoning in their arguments. It is insufficient for students to make a claim and offer evidence. They must also show how the evidence supports their claim.

Collaborative argumentation. Argumentation is both a sociocultural (i.e. group) and cognitive (i.e. individual) process. According to Vygotsky (1978), most of what happens on the individual plane is aided by what happens on the social plane. Students and educators tend to overlook the social processes of argumentation when evaluating the individual product.

Key practices in learning argumentation stemming from a sociocultural approach are peer discussion and review. Lee (2016) notes that the engagement required for group discussion puts the responsibility for thinking and reasoning on the group members (i.e. the students) rather than on the teacher. Student-led discussions provide a space where students can think out loud, refine their interpretations of what they have read, consider different perspectives, defend their own perspectives, and challenge others. Peer, teacher, and/or small-group review of arguments give students valuable opportunities to revise their arguments. This reinforces their new knowledge and improves their skills in editing, proofing, and refining their document for an external audience. LDC mini-tasks such as the following encourage this kind of learning:

- Debate Opinions
- Hot Table Debate
- Give One, Get One
- Socratic Seminar - Application of Close Reading

These mini-tasks allow students to engage in discussion through collaborative argumentation, where they learn through modeling and practice how to adopt effectively a

non-combative argumentation stance. Andriessen (2010) argues that when students engage in the necessary elaboration, reasoning, and reflection embedded in collaborative argumentation, they engage in deeper conceptual learning about the topic on which they are focused. Collaborative argumentation is a means to learn the structures and reasoning of argumentation, as well as to gain content knowledge.

Conclusion

Bartholomae (1986) argues that every time students write in an academic discipline, they have to "learn to speak our language, to speak as we do, to try on the peculiar ways of knowing, selecting, evaluating, reporting, concluding, and arguing that define the discourse of our community" (p. 4). When students learn argumentation, particularly discipline-specific argumentation, they are learning specific ways of knowing. Further, they are actually advancing the respective academic discipline. They are, quite literally, making new knowledge. When argumentation is framed in this way, students become less interested in winning arguments and begin to see argumentation as a complex means to create new understandings of the world.

This can be a major shift in worldview, not only for our students but also for teachers, schools, and school systems. LDC understands the scaffolding required for such a shift. The examples in this paper provide adaptable task templates, modules, and instructional supports to help teachers create and scaffold relevant argument assignments that engage students with grade level-appropriate content and skills. Through partnerships with leading organizations in the field, such as Facing History and Ourselves and Battelle Education, teachers in the LDC community can offer students immersive learning experiences with professionals in that discipline. At the system level, these approaches to planning and teaching help schools guarantee consistent

opportunities for every student in every classroom to engage in the valued thinking practices not only of the academic disciplines but also of civic life.

Providing students with the ability to participate in and generate argumentative discourse does more than creating good students, colleagues, and citizens. We are setting the foundation for the next generation of scientists, historians, cultural critics, entrepreneurs, researchers, and discoverers. Argumentation empowers students to believe in their thoughts and ideas and to act on them in meaningful and productive ways. When we teach students how to comprehend, critique, and construct sound arguments, we prepare them, above all, to be active and responsible citizens in a democratic society.

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Appendix A: Glossary of Argumentation Terminology

We searched key resources to determine the most commonly used terminology for discussing how argumentation processes and practices are developed, learned, taught, and assessed.

Appropriate evidence—an assessment of the quality of each piece of evidence in terms of its suitability in justifying the claim

Appropriate reasoning—an assessment of the quality of the body of reasoning in terms of the depth and breadth necessary to justify the claim

Argumentation—the process of constructing an argument

Claim—a statement that answers a question; a conclusion for which its merits are to be established

Counterargument—an argument that is constructed in response to a previously presented argument

Data—facts that those involved in the argument appeal to in support of their claim

Evidence—appropriate and sufficient data—either primary or secondary—that is selected as support of a claim

Justification—a support for claim, which can be evidence and/or reasoning

Reasoning—uses appropriate and sufficient scientific theories and laws to describe how or why each piece of evidence supports the claim

Rebuttal—justifies with evidence and reasoning why an alternate claim is unacceptable

Sufficient evidence—an assessment of the quantity of the body of evidence in terms of its adequacy in justifying the claim

Sufficient reasoning— an assessment of the quantity of the body of reasoning in terms of its depth and breadth necessary to justify the claim

Warrants – reasons (rules, principles, etc.) that are proposed to justify the connections between the data and the claim or conclusion

Appendix B: Resources for Teaching Argumentation in the Disciplines

Generally Useful Resources

Argumentation Across the Disciplines: Example Modules and Mini-Tasks

This collection contains all assignment (module) and mini-task examples used throughout this paper.

LDC Task Templates

This document provides a cross list of cognitive demands with corresponding tasks in the overarching categories of argumentative and informational/explanatory. It provides examples for grades kindergarten through 12. It also provides examples of additional demands that can be added to a teaching task to increase the academic rigor of the task.

Phi Delta Kappan: "Less arguing, more listening: Improving civility in classrooms"

A February 2018 study of classroom deliberations in four high schools shows what can go wrong when teachers neglect to prepare students to argue in a civil manner — and it suggests ways to do better.

Project READi

Reading, Evidence, and Argumentation in Disciplinary Instruction. This is a Reading for Understanding Grant Project focused on evidence-based argumentation for disciplinary learning for students in grades 6 – 12. This work is the result of a collaboration among the nation's leading learning scientists. It features instructional interventions that support adolescent learners in developing reading for understanding in literary analysis, history, and science. The site includes a complete list of publications from the project, instructional resources and model teaching units.

History/Social Studies Resources

APPARTS

The College Board's Advanced Placement Program provides the acronym strategy "APPARTS" as a strategy for students to use while they read and analyze primary sources.

American Memory

Within the Library of Congress. This site provides free and open access through the Internet to written and spoken words, sound recordings, still and moving images, prints, maps, and sheet music that document the American experience. It is a digital record of American history and creativity. These materials, from the collections of the Library of Congress and other institutions,

chronicle historical events, people, places, and ideas that continue to shape America, serving the public as a resource for education and lifelong learning.

C3Teachers.org

This website includes lesson ideas, some links to blogs, and news and info about the C3.

Center for History and New Media

CHNM at George Mason University has used digital media and computer technology to democratize history—to incorporate multiple voices, reach diverse audiences, and encourage popular participation in presenting and preserving the past.

DBQ Project

This project was designed to help all students to read smart, think straight and write clearly. The DBQ Project has curriculum materials for both middle school and high school students, but could be adapted for other levels as well.

Facing History and Ourselves

Facing History and Ourselves has a long track record of engaging students in critical analyses of issues surrounding racism and social justice as these matters are portrayed, however fairly or unfairly, in historical writing and reasoning. This link goes directly to a collection of classroom resources to support historical argumentation.

Facing History Mini-Task Collection in LDC CoreTools

A collection of mini-tasks adapted from the writing strategies in "Common Core Writing Prompts and Strategies" created by Facing History and Ourselves.

Fordham University Internet History Sourcebooks Project

One of the best websites for primary sources. The Internet History Sourcebooks Project at Fordham University in New York is a collection of public domain and copy-permitted historical texts presented cleanly (without advertising or excessive layout) for educational use. Topics include: Ancient, Medieval, Modern, African, Eastern Asian, Global, Indian, Jewish, Islam, Lesbian/Gay, Science, Woman and more.

Historical Thinking Project

The historical thinking project provides tools for analyzing primary sources and discusses six historical thinking concepts: historical significance, cause and consequence, historical perspective-taking, continuity and change, use of primary source evidence, and the ethical dimension of history.

Ibiblio

Home to one of the largest "collections of collections" on the Internet, ibiblio.org is an online public library with freely available software and information, for topics such as music, literature, art, history, science, politics, and cultural studies.

The Library of Congress

Provides teacher and student tools both for general analysis and the analysis of specific types of sources (e.g., photographs and prints, maps, sound recordings). Also provides guidance for teachers on how to use primary sources in the classroom.

National Archives

Similar to the Library of Congress, provides suggestions for integrating primary sources into the classroom along with tools to help students analyze specific types of sources.

National Geographic Education

Maps, graphics and lesson plans. The main National Geographic website, nationalgeographic.com, provides access to photographs useful in geography/world cultures classes.

The National Jukebox

The National Jukebox presented by The Library of makes historical sound recordings available to the public. The Jukebox includes recordings from the extraordinary collections of the Library of Congress Packard Campus for Audio Visual Conservation and other contributing libraries and archives.

New York City School Library System

Graphic organizers to help approach the texts. The skills link to the writable PDF versions of the IFC Assessments. Please print and/or download the Assessment in order to use. To modify an assessment, see Word versions available here

Reading Like a Historian Mini-Tasks

This collection contains mini-tasks that feature Reading Like a Historian content from the Stanford History Education Group (SHEG).

Russian Archives Online

A collections of Russian archival collections of photographs and films, audio, clips and transcripts from the 15 republics of the former Soviet Union.

SCIM-C

Provides a structure for interpreting historical sources that asks students to Summarize, Contextualize, Infer, Monitor, and Corroborate and demonstrates the SCIM-C process with three example sources.

Stanford History Education Group (SHEG)

The Stanford History Education Group is an award-winning research and development group that comprises Stanford faculty, staff, graduate students, post-docs, and visiting scholars. SHEG seeks to improve education by conducting research, working with school districts, and reaching directly into classrooms with free materials for teachers and students. SHEG's Reading Like a Historian curriculum and Beyond the Bubble assessments have been downloaded more than 5 million times. SHEG 's current work focuses on how young people evaluate online content. In addition to our new assessments of Civic Online Reasoning, SHEG will soon be releasing materials to help students develop the skills needed to navigate our current digital landscape.

Stanford Library: Collections

This catalog includes collections of resources relating specific regions and cultures of the world, such as Africa, Islamic Middle East, Mexican-American, etc.

Unesco Institute for Statistics

UIS at United Nations Educational, Scientific and Cultural Organization. Good for a world cultures/geography course. The primary source for cross-nationally comparable statistics on education, science and technology, culture, and communication for more than 200 countries and territories.

The United States Census Bureau

An excellent resource for U.S. population data, both historic and current.

"What Does it Mean to Think Historically?"

Andrews and Burke (2007) outline what they call the Five C's of Historical Thinking: Change over Time, Context, Causality, Contingency, and Complexity. The goal of the Five C's is to give students and teachers a glimpse into how historians think. Furthermore, Andrews and Burke (2007) provide examples of how these Five C's might be implemented in authentic and meaningful ways in modern classrooms.

Women in World History

Biographies of famous women and lots of links to other sites

Yale Law School: Avalon Project

Another equally excellent resource for primary sources. The Avalon Project will mount digital documents relevant to the fields of Law, History, Economics, Politics, Diplomacy and Government.

Science Resources

Adaptive Curriculum

This interactive visualization and simulation software for middle and high school science features many different activities and simulations linked to national science standards. It also features virtual labs, simulations, quizzes, built-in glossaries, lesson plans and other classroom materials.

Ask a Scientist

Browse previously answered questions, or submit a question of your own in the areas of human biology, animals, medicine, biochemistry, microbiology, genetics or evolution. Students can build questioning and inquiry skills by submitting their own questions.

Battelle Science Modules

This collection features exemplary science modules designed by Battelle STEM Education. The modules engage students in constructing scientific arguments based on data analysis, design, and controlled experimentation.

Battelle Mini-Tasks

This collection features mini-tasks created in partnership by LDC and Battelle STEM Education to support science argumentation skills such as representing data, comparing and contrasting informational texts, creating a hypothesis, and developing an experimental design.

JASON Mission Center

The JASON Mission Center is the online repository of related educational content associated with the JASON Project (curriculum built around real-world phenomenon and guided by practicing scientists). Students can make use of online games, simulations, virtual labs, and other multimedia resources; teachers can access curriculum materials, and purchase curriculum units for 5th through 8th grade students.

Lawrence Hall of Science: The Argumentation Toolkit

The site contains tools for assessing and teaching argumentation skills and processes for students, mainly middle school and above. Developed with NSF funding to enhance science teaching and learning.

Summer 2013 issue of *The Science Teacher*, , v80, n5 (can be accessed by creating a free NSTA account)

This issue includes lessons and articles on science argumentation, including

- On the importance of argumentation. *The Gummy Bear Lab Meeting* (pp 14-15) Chowning, J.
- What counts as argumentation in science? *Argumentation in Science Education* (pp 30-33) Sampson, V. et al.
- What is scientific argumentation? *Making and defending Scientific Arguments* (pp 34-38) Llewellyn, D.
- Using debate to spark interest and learning about science. *The Language of Argumentation* (pp 44-49) Laurie Taylor
- Usings MEL diagrams to weigh alternative models in argumentation. *What's The Alternative? (*pp. 50-55) Lombardi, D.

English Language Arts Resources

Project READi is a federally funded Reading for Understanding Center, READi, centered at the University of Illinois-Chicago, has produced a veritable treasure-chest of argumentation resources, mostly for middle and high school curriculum—in literature, science, and history. Here are several links on argumentation in literature:

- Literary Reading – Introduction to Argument – Middle School, 8th Grade
- Literary Reading – Introduction to Argument – High School, 9th Grade
- Literary Reading – Symbolism/Coming of Age – Middle School, 8th Grade
- Literary Reading – Symbolism/Coming of Age – High School, 9th Grade
- Literary Reading – Symbolism/Coming of Age – High School, 11th Grade

Dartmouth's Writing Lab

The website defines the elements of an argument and identifies what most late-high school students do and do not know about arguments. It includes examples of instruction from 5 different teachers. Their reflections and insights on their instructional methods, what worked, and why are very helpful.

Utah Education Network – Argumentative Writing

The site includes resources, lesson plans and student activities. Content is aligned to the Common Core and includes links to resources that focus on Toulmin and Hillocks.

National Writing Project's College-Ready Writers Program (CRWP)

This website frames an inquiry into the teaching of source-based argument writing by organizing materials from the National Writing Project's College-Ready Writers Program (CRWP). The purpose of this website is to provide teachers with tools and resources for teaching argument.

"Convince Me"!: An Introduction to Argumentative Writing Common Core Writing Standard 1

This work is from Southern Nevada Regional Professional Development Program. This lesson is aligned to the Common Core. It includes four multi-day activities and stimulus texts. It is designed to introduce students to argumentative writing. It introduces the elements of argument and allows students to explore and practice establishing relationships between claims, reasons, evidence and analyzing an author's use of argument, it text.

National Council of Teachers of English (NCTE)

This site includes a Strategy Guide to support teachers' instruction. The Strategy Guide focuses on developing evidence-based arguments from texts and describes teaching strategies and model lesson plans.

The Vermont Writing Collaborative, with Student Achievement Partners, and CCSSO
In Common: Effective Writing for All Students, Collection of All Argument/Opinion Samples, K-12

The first Common Core State Writing Standard calls for students to "write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and sufficient evidence." This collection of student work presents a series of samples illustrating what effective arguments and opinions might look like at each grade level. The first section of the document focuses on "on demand writing". It contains examples written in response to a uniform, text based prompt. The second section includes a broader range of samples. Students write for a range of disciplines, tasks, purposes and audiences in a range of time frames. Each piece in this collection is annotated, using the language of the Common Core State Standards, by grade level and writing type.

Appendix C: CCSS Literacy Standards Related to Argumentation

In this Appendix, we provide two tailored lists for teachers and designers:

Part 1: A list of the CCSS Reading, Writing, and Speaking and Listening **Anchor** Standards that are especially relevant in creating curriculum and pedagogy for developing students' ability to comprehend, critique, and construct arguments.

Part 2: A breakout of the grade-level versions of Standard 8 for reading and Standard 1 for writing. These are the standards that focus directly on argumentation. In the charts provided, we highlight what expectations are new or increased at each grade-level version of the standard.

Part 1: ANCHOR STANDARDS

This table lists the CCSS Reading, Writing, and Speaking and Listening Anchor Standards that are especially relevant and creating curriculum and planning instruction for developing students' ability to comprehend, critique, and construct arguments. These standards can be used in planning and instruction to guide how students interact with text while collecting data and establishing claims about a topic and/or text, as well as how students convey their spoken and written arguments.

Reading Anchors	
Key Ideas and Details	CCSS.ELA-LITERACY.CCRA.R.2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
Craft and Structure	CCSS.ELA-LITERACY.CCRA.R.5 Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

Integration of Knowledge and Ideas	CCSS.ELA-LITERACY.CCRA.R.8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCSS.ELA-LITERACY.CCRA.R.9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.
Writing Anchors	
Text Types and Purposes	CCSS.ELA-LITERACY.CCRA.W.1 Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
Speaking & Listening Anchors	
Comprehension and Collaboration	CCSS.ELA-LITERACY.CCRA.SL.1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. CCSS.ELA-LITERACY.CCRA.SL.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.
Presentation of Knowledge and Ideas	CCSS.ELA-LITERACY.CCRA.SL.4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

Part 2: GRADE LEVEL STANDARDS

This table details the grade level progressions for the CCSS that are directly related to argumentation: CCSS.ELA-LITERACY.CCRA.R.8 and CCSS.ELA-LITERACY.CCRA.W.1. The "key characteristics" column highlights evolving or changing demands that come into play at each grade level. This resource can be used to determine appropriate expectations and instructional support for argumentation tasks at each grade level, and it can facilitate vertical planning that ensures students experience a steady progression of increasing complexity as they develop the reading and writing skills that support effective argumentation.

For the writing standard CCSS.ELA-LITERACY.CCRA.W.1, the "key characteristics" column further breaks down the expectations of the standards into "argument components" and "writing conventions" to articulate the distinction between the substance of a student's argument (e.g., claim, evidence, reasoning) and the conventions that allow a student to convey their argument clearly and convincingly (e.g., grouping ideas, transitions).

Reading Anchor

Integration of Knowledge and Ideas: CCSS.ELA-LITERACY.CCRA.R.8
Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

Grade level standard		Key characteristics
K	CCSS.ELA-LITERACY.RI.K.8 With prompting and support, identify the reasons an author gives to support points in a text.	**With prompting and support**, identify **reasons that support author's point(s)**
1	CCSS.ELA-LITERACY.RI.1.8 Identify the reasons an author gives to support points in a text.	Identify reasons that support author's point(s)

2	CCSS.ELA-LITERACY.RI.2.8 Describe how reasons support specific points the author makes in a text.	Describe **how** reasons support points
3	CCSS.ELA-LITERACY.RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	Describe **logical connections** between sentences & paragraphs
4	CCSS.ELA-LITERACY.RI.4.8 Explain how an author uses reasons and evidence to support particular points in a text.	Explain how **reasons & evidence** support points
5	CCSS.ELA-LITERACY.RI.5.8 Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).	Identify **which reasons & evidence** support **which points**
6	CCSS.ELA-LITERACY.RI.6.8 Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	Distinguish **claims that are supported** by reasons from **claims that are not supported**
7	CCSS.ELA-LITERACY.RI.7.8 Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	Determine **if reasoning is sound**, **evidence relevant and sufficient**
8	CCSS.ELA-LITERACY.RI.8.8 Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.	Identify **irrelevant evidence**
9-10	CCSS.ELA-LITERACY.RI.9-10.8 Delineate and evaluate the argument and specific claims in a text, assessing	Identify **false statements and fallacious reasoning**

	whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.	
11-12	CCSS.ELA-LITERACY.RI.11-12.8 Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses).	Evaluate **reasoning in seminal U.S. texts**

Writing Anchor

Text Types and Purposes: CCSS.ELA-LITERACY.CCRA.W.1
Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

Grade level standard		Key characteristics
K	CCSS.ELA-LITERACY.W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., *My favorite book is...*).	Argument components ● state an **opinion or preference** about a topic.
1	CCSS.ELA-LITERACY.W.1.1 Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.	Argument components ● state an opinion ● **give a reason** Writing conventions ● **give sense of closure**
2	CCSS.ELA-LITERACY.W.2.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., *because*, *and*, *also*) to connect opinion and reasons, and provide a concluding statement or section.	Argument components ● give reason(s) **that support the opinion** Writing conventions ● **use linking words**, and ● use **concluding statement**.
3	CCSS.ELA-LITERACY.W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. CCSS.ELA-LITERACY.W.3.1.A Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons. CCSS.ELA-LITERACY.W.3.1.B Provide reasons that support the opinion.	Argument components ● **support a point of view with reasons** Writing conventions ● **organize ideas** ● use concluding statement **or section**

	CCSS.ELA-LITERACY.W.3.1.C Use linking words and phrases (e.g., *because*, *therefore*, *since*, *for example*) to connect opinion and reasons. CCSS.ELA-LITERACY.W.3.1.D Provide a concluding statement or section.	
4	CCSS.ELA-LITERACY.W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. CCSS.ELA-LITERACY.W.4.1.A Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. CCSS.ELA-LITERACY.W.4.1.B Provide reasons that are supported by facts and details. CCSS.ELA-LITERACY.W.4.1.C Link opinion and reasons using words and phrases (e.g., *for instance*, *in order to*, *in addition*). CCSS.ELA-LITERACY.W.4.1.D Provide a concluding statement or section related to the opinion presented.	Argument components ● give reason(s) **with supporting facts & details** Writing conventions ● **group related ideas** ● use linking words **& phrases**
5	CCSS.ELA-LITERACY.W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. CCSS.ELA-LITERACY.W.5.1.A Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose.	Argument components ● state an opinion, ● give reason(s) w/ supporting facts & details, Writing conventions ● **logically** group ideas ● use linking words, phrases, & clauses, and ● use concluding statement or section.

	CCSS.ELA-LITERACY.W.5.1.B Provide logically ordered reasons that are supported by facts and details. CCSS.ELA-LITERACY.W.5.1.C Link opinion and reasons using words, phrases, and clauses (e.g., *consequently*, *specifically*). CCSS.ELA-LITERACY.W.5.1.D Provide a concluding statement or section related to the opinion presented.	
6	CCSS.ELA-LITERACY.W.6.1 Write arguments to support claims with clear reasons and relevant evidence. CCSS.ELA-LITERACY.W.6.1.A Introduce claim(s) and organize the reasons and evidence clearly. CCSS.ELA-LITERACY.W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. CCSS.ELA-LITERACY.W.6.1.C Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. CCSS.ELA-LITERACY.W.6.1.D Establish and maintain a formal style. CCSS.ELA-LITERACY.W.6.1.E Provide a concluding statement or section that follows from the argument presented.	Argument components ● state **claim(s)** ● give **clear** reason(s) and **relevant evidence** ● **clarify relationship b/t claim & reason** ● **use credible sources** ● **demonstrate understanding of topic** Writing conventions ● **use formal style**
7	CCSS.ELA-LITERACY.W.7.1 Write arguments to support claims with clear reasons and relevant evidence. CCSS.ELA-LITERACY.W.7.1.A Introduce claim(s), acknowledge alternate or	Argument components ● **acknowledge counterclaim** ● clarify the relationship between claim, reasons **& evidence**

	opposing claims, and organize the reasons and evidence logically. CCSS.ELA-LITERACY.W.7.1.B Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. CCSS.ELA-LITERACY.W.7.1.C Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. CCSS.ELA-LITERACY.W.7.1.D Establish and maintain a formal style. CCSS.ELA-LITERACY.W.7.1.E Provide a concluding statement or section that follows from and supports the argument presented.	Writing conventions ● **logically** organize reasons & evidence ● use concluding statement or section **that supports the argument** presented
8	***Text Types and Purposes:*** CCSS.ELA-LITERACY.W.8.1 Write arguments to support claims with clear reasons and relevant evidence CCSS.ELA-LITERACY.W.8.1.A Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. CCSS.ELA-LITERACY.W.8.1.B Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. CCSS.ELA-LITERACY.W.8.1.C Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.	Argument components ● **acknowledge & distinguish** counterclaim ● clarify relationships among claim, **counterclaim(s),** reasons & evidence Writing conventions ● **clearly** and logically organize reasons & evidence ● **create cohesion & draw relationships** w/ linking words, phrases, & clauses

	CCSS.ELA-LITERACY.W.8.1.D Establish and maintain a formal style. CCSS.ELA-LITERACY.W.8.1.E Provide a concluding statement or section that follows from and supports the argument presented.	
9-10	CCSS.ELA-LITERACY.W.9-10.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. CCSS.ELA-LITERACY.W.9-10.1.A Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. CCSS.ELA-LITERACY.W.9-10.1.B Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. CCSS.ELA-LITERACY.W.9-10.1.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.W.9-10.1.D Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. CCSS.ELA-LITERACY.W.9-10.1.E Provide a concluding statement or section	Argument components ● state **precise** claim(s), ● **distinguish** counter claim ● give logical reason(s) and relevant evidence for claim **& counterclaim(s)** ● **give strengths & weaknesses of each claim/counterclaim** ● **clarify relationships among claim(s), reasons, evidence & counterclaim(s)** Writing conventions ● use formal style and **objective tone** and **attend to discipline norms & conventions**

	that follows from and supports the argument presented.	
11-1	CCSS.ELA-LITERACY.W.11-12.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. CCSS.ELA-LITERACY.W.11-12.1.A Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence. CCSS.ELA-LITERACY.W.11-12.1.B Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases. CCSS.ELA-LITERACY.W.11-12.1.C Use words, phrases, and clauses as well as varied syntax 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.W.11-12.1.D Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. CCSS.ELA-LITERACY.W.11-12.1.E Provide a concluding statement or section that follows from and supports the argument presented.	Argument components ● state a precise, **knowledgeable** claim(s), ● **establish significance of claim** Writing conventions ● create cohesion & draw relationships w/ linking words, phrases, & clauses, **and varied syntax**