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# English Language Arts Literacy Framework

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## 1. INTRODUCTION

Results of the national reading report card show that too many of the nation’s students are failing to reach reading and writing proficiency by the end of high school, and they are lagging behind in grade-level proficiency along the way (National Center for Educational Statistics [NCES], 2008, 2010, 2011). The K–12 English language arts (ELA) *Common Core State Standards* (Council of Chief State School Officers & National Governors Association, 2010) were designed, in part, to set a trajectory ensuring that all students are college and career ready by no later than the end of high school. The *Standards* also are designed to encourage a comprehensive approach that coordinates reading, writing, speaking, and listening, not only in traditional ELA literature-based coursework, but also in the content areas of history/social studies and science.

In the course of elementary to secondary education and beyond, students must learn the specific skills to read, write, and thoughtfully engage in a wide variety of advanced literacy practices, and master all the precursor skill foci (e.g., learning to read and write, writing a summary or book report, comprehending or telling a narrative story, evaluating or constructing a reasoned argument) that eventually yield career- and college-level proficiency. However, skills cannot be taught all at once. Many skill foci grow in sophistication over time, building on and integrating precursor skill foci. For example, students need to learn the elements or grammar of a narrative story before they can interpret how characters’ goals and conflicts influence the development of the plot of a novel. Students need to be able to distinguish fact vs. opinion, pro vs. con, and claim vs. evidence before they can assemble a sound, reasoned argument.

The *Standards* articulate a general roadmap of goals and sequences for the ELA curriculum. However, the *Standards* were not intended to be the sole source for guiding instruction, learning, and assessment. Rather, we would want to inform, embellish, and elaborate on the *Standards* with sound, empirically based guidance culled from some 40 years of learning sciences research. It is the goal of the *CBAL*<sup>™</sup> (Cognitively Based Assessment *of, for* and *as* Learning) initiative and the ELA competency framework described below to provide that elaboration.

Through the *CBAL* initiative, the conceptual foundation has been laid for an integrated system in which summative assessments, formative assessments, and teacher professional support work together to encourage and enhance effective teaching and learning. According to its theory of action (Bennett, 2010), the *CBAL* system model is conceived as an education intervention. The theory of action guides assessment design and validation, both in the evaluation of what scores mean and in the evaluation of the intended impact of the assessment system on individuals and institutions. The assessment designs themselves are guided by modern theories of learning and cognition (Quellmatt & Pellegrino, 2009). A key element of the model is domain-specific competency models, as described next.

## 2. WHAT IS A COMPETENCY MODEL AND WHY IS IT IMPORTANT?

In *CBAL*, domain-specific competency models are a strategy designed to integrate learning sciences research with content standards. The competency models help not only in the specification of knowledge, processes, strategies, and habits of mind to be assessed, but also in identifying instructional-practice principles for use in assessment design. Each model is derived from reviews of the learning sciences literature in mathematics and in English language arts (ELA) reading and writing. That literature speaks to both student development and effective instructional practice. Recent versions of the models for middle-grade students can be found in Deane (2011), Graf (2009), and O’Reilly and Sheehan (2009). The models

have been linked to the *Standards*. They are continually refined via collaborations with teachers and classroom pilot data as the CBAL project progresses through its multiyear research agenda.

As noted, the *Standards* are important for setting appropriate targets for instruction, but they often remain abstract, too far removed from informing good instructional practice and specific assessment designs. Consequently, assessments that are defined solely with respect to the *Standards* run the risk of having limited instructional relevance, and may fail to account for results from decades of learning sciences research that can serve as a principled guide to implementing sound instruction. In CBAL, an ELA competency model has been developed that integrates reading, writing, and the critical thinking processes that are necessary to reach proficiency in the English language arts. Below we provide a brief outline of the core concepts. A more comprehensive website can be found at <http://elalp.cbalwiki.ets.org>. The website systematically presents the full model, including a series of hypothesized progressions of skill foci that underlay ELA proficiency, along with the foundational research that guided their formulation.

Here is a brief summary of the key features of the ELA model:

1. A general framework that classifies literacy skills as reflecting three major *modes of cognitive processing* (integrated processes that produce different end products, such as reading, writing, and thinking) and five major *models of cognitive representation* (distinguished by the kind of concepts and reasoning that they employ).
2. A taxonomy of *skill foci* that, for each mode of cognitive processing and representation, identifies specific groups of skills and related strategies that (a) draw consistently upon a specific type of cognitive skill, and (b) form the basis for particular types of literate activity systems.
3. A series of *provisional developmental levels* that represent hypotheses about how students progress across time towards high levels of skill.<sup>1</sup>

## 2.1 ELA Competency Model

The research basis for CBLA ELA assessments was drawn from a variety of literatures, which emphasize that literacy skills involve complex coordination of cognitive abilities at many levels of representation. The picture that emerges portrays reading and writing as sharing common representations and calling upon a similar general architecture, but differing in detail both in the range of processes invoked and in how those processes are organized in time. Some literatures we reviewed consider writing primarily as text production, and reading as decoding and literal comprehension. Other literatures emphasize the purposeful, social, and institutional nature of reading and writing and highlight the way in which these skills support inquiry and critical thinking. There is broad consensus that literacy skills are most effectively acquired in contexts that make reading and writing meaningful, in relation to both their content and to the social context within which writing takes place (Alverman, 2002; Graham & Perin, 2007; Langer, 2001). These considerations suggest a picture in which reading, writing, and critical thinking differ in purpose and emphasis yet draw on a common pool of literacy skills. This reasoning has led us to construct a literacy framework that applies to all three activities. Such a framework is critical if we hope to achieve the pedagogical goals expressed in the Race to the Top Assessment Program and other educational reform efforts.

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<sup>1</sup> Outside the English language arts, such progressions are often called “learning progressions” (Duncan & Hmelo-Silver, 2009). We use different terminology here primarily to avoid confusion because it is not clear in the current stage of research whether the developmental sequences observed with general literacy skills follow the same kinds of principles that may govern the learning of mathematical or scientific concepts.

## 2.2 Modes of Cognitive Processing

It is useful to distinguish from one another *interpretive* processes that enable fluent reading and text comprehension, *expressive* processes that enable fluent composition and transcription, and *deliberate (reflective)* processes that support evaluation, strategic planning, and critical thinking.

A simple view might equate interpretive processes with reading, expressive processes with writing, and reflective processes with critical thinking, but matters are more complex. Skilled readers write in support of reading (by taking notes) and employ reflective reading strategies. Skilled writers use reflective strategies to improve writing quality and read every time they revise or in response to material from other texts. It is a commonplace that skilled thinkers read and write to acquire information and clarify their thoughts, and there is evidence that higher levels of performance are achieved when reading, writing, and critical thinking are coordinated in instruction (Klein, 1999; Tierney, Soter, O’Flahavan, & McGinley, 1989). Thus, interpretive, expressive, and reflective processes take place, and interact, at many levels.

As a first, rough approximation, *interpretation* corresponds to reading, *expression* to writing, and *deliberation* to critical thinking and inquiry. However, in our view, this characterization seriously oversimplifies the picture. First, it leads to the misconception that cognitive processing is modality specific. One understands and interprets traditional print, visual graphics, video/film, multimedia, acts, events, and episodes. In terms of the *Standards*, listening skills are closely aligned with reading skills in that both are characterized as primarily about understanding and interpreting literacy information. Similarly, one expresses oneself by writing, speaking, acting on the world, creating multimedia, presenting visual graphics, etc. Essentially, for every interpretive form, there is a parallel expressive form, because we are both the consumers and authors of literacy products. Also, cognitive processes that enter into interpretation or expression typically require elements of deliberative/reflective thought to be performed proficiently. Some routine operations (e.g., reading or typing words) may require less effortful deliberation or reflection, but at every representation level (discussed next) of the ELA model there are deliberative and reflective operations. Clearly, at the high end of sophistication and performance, the deliberative, reflective, critical thinking skills, as well as their strategic coordination, are essential to effective performance.

Simplifying the modes as reading, writing, and thinking, thus, runs the risk that teachers and learners may fail to make the connections between listening, reading, and composing a story; between forming a coherent argument (a deliberative act) and expressing that argument in print (as in a persuasive essay), or evaluating the quality of a piece of persuasive writing (interpretive act). That is, we observe that in many contexts reading and thinking skills are used by expert writers. Similarly, we observe that in many contexts, writing (e.g., note taking) and thinking skills are used by skilled readers. And finally, in many contexts, reading and writing skills serve to support effective thinking. In fact, we would contend that the literature paints a picture in which different configurations of literacy skills are marshaled and deployed, depending on social context and purpose.<sup>2</sup> Thus, our integrated model serves as a reminder that the artificial segregation of reading, writing, and thinking as modality-specific skill foci could introduce partitions in students’ literacy skill development that undercut the development of broader proficiency.

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<sup>2</sup> An effective illustration of this concept, as it applies to the task of creating argumentative writing, can be found in Coirier, Andriessen, & Chanquoy (1999).

### 2.3 Models of Cognitive Representation

We distinguish five models of cognitive representation, each of which participates in interpretive, expressive, and reflective cognitive processes and involves distinct kinds of perception and reasoning:

- **Social Model:** Representation of and reasoning about people as social agents, focusing on such concepts as perspective, motivation, and purpose.
- **Conceptual Model:** Representation of and reasoning about abstract mental models, focusing on such concepts as categories, definitions, generalizations, and logical arguments.
- **Discourse Model:** Representation of and reasoning about texts, viewed as structured sequences of rhetorical units.
- **Verbal Model:** Representation of and reasoning about linguistic form and content, viewed as meanings encoded by specific word choices and by the selection of specific syntactic structures.
- **Print Model:** Representation of and reasoning about the relationship between linguistic form and its orthographic expression (e.g., spelling, decoding, typographical symbols, and related skills).

In the remainder of this section, we will examine the basis for each and then discuss how these distinctions can be leveraged to map out categories of literacy skill.

The *social model* represents minds and social interactions among agents and supports comprehension of social situations, interpretation of narrative, and formulation of communicative goals. It brings to bear elements of emotional intelligence (Mayer, Salovey, Caruso, & Sitarenios, 2001) and reflects the principles of linguistic pragmatics (Mey, 2001; Ostman & Verschuren, 2005), which focus on how people read between the lines to infer intended and implicit, as opposed to explicitly stated, meanings. This skill thus focuses on making inferences about intentionality, perspective, and affect (Zwaan, 1999, 2004). Some text features indicate social elements, including voice, bias, point of view, tone, and stance. Inferences about communicative intent depend on an underlying theory of mind (Wellman, 1990; Wellman & Gelman, 1992), which is implicated in ordinary social situations, in fictional narrative situations (Mar, 2004; Mar, Djikic, & Oatley, 2008; Mar, Oatley, Hirsh, de la Paz, & Peterson, 2005), and when writers deal with audience and purpose.

The *conceptual model* supports the kinds of abstract reasoning processes that come under the headings of categorization, logical inference, argumentation and causal reasoning. Because it involves recall and not just concept formation, conceptual reasoning presupposes processes to access prior knowledge, which is associated in turn with fluency of comprehension (Ericsson & Kintsch, 1995; McNamara & O'Reilly, 2003) and text production (Cain, Oakhill, & Bryant, 2004; DeGross, 1987; McCutchen, 2000). Effort put into conceptual reasoning connects ideas, which improves comprehension (Brem & Rips, 2000), rewards effort in processing hard-to-read texts (McDaniel, Hines, & Guynn, 2002; McNamara, Kintsch, Songer, & Kintsch, 1996), and improves writing quality (Hillocks, 1987). Recall and knowledge-based inference are, of course, relatively straightforward, falling low on scales of cognitive complexity of the sort noted by Bloom (1956).

The **discourse model** comprises the ability to model the propositional content of a text within a rhetorical frame — in other words, to choose the right organizational structure and methods of development for the purpose at hand, and to interpret a text in the light of the author’s choice of specific textual structures and devices. There is a close connection between discourse modeling skills and genre. Genres are socially defined tools within an activity system, conventionalized methods that define characteristic rhetorical moves for achieving standard communicative purposes (Swales 1990). Genres display characteristic organizational patterns (Donovan & Smolkin, 2002; Kamberelis & Bovino, 1999; Martin & Rose, 2006; Rose, 2006), conform to characteristic styles, and fall within conventional registers and patterns of word choice (Biber, 1988, 1995; Biber & Conrad, 2001; Biber et al., 2004; Biber & Finegan, 1994). Not all discourse structure is explicitly cued. Much is inferred while building up a situation model, or representation of text content (Kintsch, 1988; van Dijk & Kintsch, 1983). Inference types include predictive inferences about what will come next in a text, elaborative inferences connecting what is said to what one already knows, and bridging inferences that clarify why one statement should follow another (Clark & Haviland, 1974; Singer, 1994) that establish textual coherence (Kintsch, 1998). Inferences may be founded on social modeling or conceptual reasoning, but not all such inferences belong to the discourse model, only those that occur automatically for most readers (Long & Golding, 1993; Magliano, 1999; McKoon & Ratcliffe, 1992; Trabasso, 2005).

The **verbal model** is based upon the mapping of form to meaning established by the grammar and lexicon of a language. Verbal control in written texts initially derives from oral language (Shanahan, 2006), which displays gradual increases in syntactic and lexical complexity. Strong oral language skills usually co-occur with strong reading and writing skills (Loban, 1976), though see Shanahan (2006). But control of written discourse requires greater awareness of form and meaning than is usual in conversational contexts, and develops gradually across the school years (Berman, 2007). Written language also influences oral language development, particularly vocabulary (Anderson & Freebody, 1981; Beck & McKeown, 1991; Nagy et al., 2000).

The **print model** represents skills in processing text in formal, phonological, or orthographic terms. These skills require phonological awareness, knowledge of orthography, mastery of prescriptive grammar rules, and control of typographical conventions. Mastery of print processing presupposes code-switching abilities (since most written genres require standard English). For reading, print processing skills include decoding (knowledge of sight-to-sound correspondences), orthographic conventions and word recognition (Berninger, Abbott, Billingsley, & Nagy, 2001; Perfetti, 1985), along with knowledge of how printed text (along with print cues like punctuation and italics) are parsed to approximate speech equivalents (Kuhn, Schwanenflugel, & Meisinger, 2010). For writing, print processing skills include spelling and word recall, knowledge of grammatical and mechanical conventions, and the like, along with the motor skills supporting handwriting and typing — roughly equivalent to what Graham and Harris (2000) refer to as transcription skills.

These five models correspond to key concepts in a variety of reading and writing theories. For instance, if we think in terms of Bereiter and Scardamalia (1987), the social model corresponds to their “rhetorical problem space” focused on solving problems involving communicative goals, and the conceptual model corresponds to their “conceptual problem space” focused on solving problems involving the conceptualization of content to be communicated. Similarly, viewed in terms of classic reading theory, the verbal and print models correspond to the two components of the simple view of reading (Hoover & Gough, 1990), while the discourse model goes beyond the simple view to account for the necessity of constructing situation models that include text macrostructure (Graesser, Singer, & Trabasso, 1994; Kintsch, 1998). We believe that these five models provide reasonably complete coverage of the classes of skills that play a role

in literacy processes. We postulate that these models are implicated equally in reading, writing and thinking processes, accounting for much of the commonality across various forms of literacy.

## 2.4. The Matrix

The most important thing to understand about our conception is that it describes an array of potential skills that may be engaged differentially (in different combinations, and in different sequences) for specific purposes. The exact configuration of skills employed may vary both by task and by individual. Thus, in our conception, the ELA construct includes both a broad base of competencies, which draw in turn upon well-developed arrays of *skill foci* (discussed in next section) that govern specific purposeful applications of these skills. Next we provide broad definitions of the five models and how they vary depending on cognitive process (interpretive, expressive, and deliberative). (See Table 1.)

Table 1. Range of Literacy Skills

		INTERPRETATION	DELIBERATION	EXPRESSION	
SOCIAL MODEL	↑	Situate	Reflect	Engage	↓
CONCEPTUAL MODEL		Enrich	Rethink	Conceptualize	
DISCOURSE MODEL		Integrate	Plan/Organize	Structure	
VERBAL MODEL		Parse	Edit	Phase	
PRINT MODEL		Decode	Monitor/Correct	Transcribe	
←→					

## 3. SKILL FOCI

An account of literacy skill cannot stop by postulating a cognitive framework; instead, it needs to identify specific literacy activities and the constellations of skills that recur over and over again in proficient performance, because those activities and constellations help to meet the demands of particular social institutions and correspond to recurrent communicative purposes and contexts. These recurrent constellations define what we refer to as *skill foci*. The specific skill foci that we have identified are intended to map to common *literacy activities* in which college- and career-ready citizens commonly are called upon to engage — reading and understanding documents, books, websites; composing a communication, explanation, essay, or report — as well as the precursor forms that are developed across the K–12 curriculum. As such, they largely correspond to skills typically targeted by educational standards such as the *Standards*, and to the range of self-regulated strategies that have been identified as supporting effective reading comprehension, writing, and critical thinking. They typically also correspond to specific genres of reading and writing or to specific types of writing processes. (See Table 2.)

Table 2. Skill Foci

MODEL	SKILL FOCI
<b>Social</b>	Social modeling, storytelling, close reading, stance-taking, code-switching, reconciliation of multiple perspectives, rhetorical analysis, standard-setting, appeal-building
<b>Conceptual</b>	Self-explanation, exposition, clarification, inquiry, appropriation of ideas, research synthesis, hypothesis-testing, argument-building
<b>Discourse</b>	Outlining/summarization, structured expression, prediction, planning, comparison, incorporation, (p)review, revision
<b>Verbal</b>	Verbal inference, verbal expression, vocabulary development, glossing and paraphrase, grammatical analysis, sentence-combining, editorial mark-up, line-editing
<b>Print</b>	Sound-out (phonics), memorization (sight-reading), analogy (word-families), look-up, print cues, prescription, self-correction, proofing

In our analysis, these skill foci enable us to map literacy skills onto what is known about cognitive and skills development. The sets that we have identified include print-level skills such as proofreading, discourse-level skills such as paraphrase, conceptual skills such as argumentation, and social reasoning skills such as those involved in the management of stance and perspective. These skill foci typically crosscut reading, writing, and critical thinking, especially at the more sophisticated levels of performance. Table 2 lists and briefly defines skill foci that we have identified or hypothesized based on examination of school curricula and learning sciences research literatures.

As illustration, we provide the following example of well-established literacy activities that are ubiquitous in curriculum, instruction, and assessment: writing persuasive essays.

Applying the cognitive framework, we first note that a persuasive essay can be conceived as an admixture of forming (deliberative) and composing (expressive) a sound argument (conceptual model) and building appeal in an audience (social model). In addition, a persuasive essay typically requires command and understanding of a particular rhetorical text structure (discourse model), which entails the appropriate use (verbal model) of academic argumentation terms (e.g., *therefore*, *ergo*, *contends*, *claims*). One can envision a writing task that is focused solely on appeal building (e.g., an advertisement), absent argumentation. Analogously, one can formulate and express an argument soundly without the side condition of building appeal. In fact, the two conditions can be in direct conflict. Insulting or belittling one’s adversary often is used as a technique to build appeal, but it also may be viewed as an *ad hominem* attack, weakening the argument. Analogously, one can compose a sound argument, but write in a style that is condescending or pompous, alienating versus persuading one’s audience to agree with one’s position. Finally, one can evaluate student essays using a rubric that awards points primarily for the accuracy of the spelling, grammar, and vocabulary usage and adherence to the expected rhetorical structure and organization, all but ignoring the quality of the argument or the effectiveness of the appeal.

In analyzing a range of existing persuasive essay assessment prompts, we contend that these prompts fall arbitrarily and unevenly into different categories, depending on whether students are evaluated on

the quality and soundness of their argument, the effectiveness by which they build appeal, or simply the accuracy with which they deploy the appropriate rhetorical structure or form (i.e., a five-paragraph essay in which the opening paragraph states a position, and three claims are backed up by factual statements).

With respect to instruction, we observe that there are several constellations of skill foci nested in skillful persuasive essay writing. For instance, students need to develop an understanding of argumentation (though this is not the only skill required, as our discussion already indicates). The development of argumentation skills may include a purely deliberative instructional approach (e.g., group discussions in which everyone builds a verbal argument for or against a position, debating facts and claims). One also can imagine asking students to identify and evaluate arguments in editorials or essays, before asking them to compose their own. In CBAL, we have developed a formative sequence of concepts and skills that support the building of students' argumentation skills (Deane, Fowles, Baldwin, & Persky, 2011). Appeal building also can be developed, though not necessarily simultaneously with argumentation skills. In our analysis of advanced persuasive academic essay writing, we have observed the value and utility of students being able to draw upon such precursor skills as summarization and thesis writing. Summarization skills, for example, help students to evaluate supporting documents or opposing arguments, then use the results in composing their own positions.

This exercise of analyzing literacy activities and accompanying skill foci in terms of the conceptual framework enables us to integrate empirical learning theory into assessment designs and to connect them explicitly with instructional goals at a specific grade or skill level. It also has led us to hypothesize developmental sequences as we identify the dependences among skill foci in performing increasingly complex and sophisticated literacy activities across the elementary, middle, and secondary school years. We discuss these provisional sequences next.

#### 4. HYPOTHESIZED DEVELOPMENTAL SEQUENCES

The final element in the ELA literacy model is the specification of hypothesized developmental sequences. These reflect known developmental information where available; thus, our account of narrative reflects the work of Nicolopolou and colleagues (Nicolopoulou, 1997, 2002) and McKeough (2007). Similarly, our accounts of the development of argumentative writing partially reflect the research of Kuhn and colleagues (Felton & Kuhn, 2001; Kuhn, 1999; Kuhn & Udell, 2003). In other cases, the research literature is less clear, and we have had to glean information from various sources, including curricula and standards, in order to build a provisional model. Thus, we characterize the developmental sequences as hypotheses to be verified and revised as research proceeds.

An illustrative sequence can be drawn from our hypothesized developmental sequence for argumentation. At relatively simple skill levels, arguers must generate plausible reasons to support a claim or infer when an argument supports or opposes a claim. At higher levels of performance, they must be able to differentiate arguments according to their soundness and assess whether specific evidence helps to strengthen or weaken an argument. The highest levels of performance require students to perform such critical reasoning tasks as identifying and questioning warrants or building and assessing counterarguments. We can think of the transition between levels in the progression conceptually, as involving a sequence like the following:

1. **Conflict.** The minimum prerequisite for rational argument is the recognition of incompatible and conflicting viewpoints. Argument begins with disagreement, even if it is disagreement about unsubstantiated opinions. The process fundamentally involves dialog: one person making a claim,

another person disagreeing, and the first person providing some kind of justification. At this stage, there may be little understanding of logic, or of anyone else’s point of view; but the arguer is at least aware of a need to respond.

2. **Justification.** Having learned that challenges must be answered, the arguer can begin to anticipate challenges and accumulate justification strategies that have worked in the past. It becomes possible to pursue a strategy of piling up multiple reasons, based on a variety of justification strategies, on the grounds that if one justification fails to convince, another may succeed.
3. **Evaluation and Follow-up.** Having tried out a variety of justification strategies, the arguer will begin to see that some justifications are more convincing than others — and that there are ways to follow up on an argument that make it more convincing (or to produce objections that make it less convincing) — and will begin to strategically select justifications and elaborate on arguments where supporting evidence will help bolster the case. Thus, the arguer begins to develop plans for argumentation that involve more than simple lists of reasons or examples.
4. **Validation and Counterargument.** With experience constructing more elaborate arguments also comes the experience of having one’s arguments refuted. Thus, the arguer develops a richer understanding of patterns of argument when multiple perspectives are represented, including the ability to recognize fallacies, develop rebuttals, and reason more generally about the validity of arguments.
5. **Knowledge-building.** As expertise in handling argumentation increases, students begin to use their knowledge of argument to absorb information from participants in an ongoing discourse or debate and use it as an intellectual tool that helps determine which ideas should be accepted and which should be rejected.

These stages are not uniquely associated with particular ages, as they depend upon some combination of experience, instruction, and maturation, nor should they be viewed as pure Piagetian stages, since we assume that progress can be incremental and can occur first for some types of argument or in specific areas of expertise. But they provide us a way to describe qualitative increases in skill that suggest appropriate instructional strategies while allowing us to map out specific kinds of test questions that will help tell us where students are in their development of this skill. Table 3 illustrates what such a mapping looks like for argumentation. While it bears a close resemblance to specifics of the *Standards*, it links reading, writing, and critical thinking into a single parallel series and maps them onto expected stages in a hypothesized developmental sequence.

If we examine the table, the rows correspond to the stages of our hypothesized developmental sequence, and the columns identify specific tasks involving expression (writing), interpretation (reading) or deliberation (critical thinking). Each cell describes a set of tasks that we believe will provide evidence that students are performing at the level identified. Roughly speaking, we intend the complexity of tasks to increase left to right and top to bottom. This expected increase is only an approximation, subject to many other influences, including the extent to which practice has built up fluency separately in reading and writing, the complexity of the task, and other factors.

**Table 3. Hypotheses about Development of Argument-Building Skills (Claims and Evidence)**

<b>LEVEL</b>	<b>INTERPRETATION</b>	<b>DELIBERATION</b>	<b>EXPRESSION</b>
<b>Preliminary</b> (oral to sentence)	Can orally restate or identify the reasons someone else has given to support an opinion.	Can distinguish reasons from non-reasons and infer whether reasons would be used to support or oppose a position.	Can give plausible reasons to support an opinion when asked or spontaneously in conversation.
<b>Foundational</b> (sentence to paragraph)	Can restate (list in one's own words) the supporting reasons provided in a paragraph-length text.	Can self-generate multiple reasons to support an opinion.	Can express lists of reasons in declarative sentence form and embed them in a paragraph-length position statement.
<b>Basic</b> (paragraph to text)	Can recognize and explain the relationship between main and supporting points and keep track of which evidence supports which point.	Can rank and select reasons by how convincing they seem.  Can distinguish between reasoning that seems convincing because one agrees with it and reasoning that seems convincing because of the content of the argument.	Can select and arrange reasons and include specific supporting details.  Can group reasons with evidence to form (implicit or explicit) paragraph structure.
<b>Intermediate</b> (text to context)	Can track and distinguish multiple positions when they are discussed in the same text.  Can evaluate the accuracy of a summary and the credibility of a source text based on strength of arguments and evidence.	Can recognize counterexamples and distinguish facts and details that strengthen a point from those that weaken.  Can distinguish valid from invalid arguments and recognize unsupported claims and obvious fallacies.	Can organize reasons/evidence contrastively to compare opposing positions.  Can summarize and embed sources as supporting evidence.  Can write simple critiques or rebuttals.
<b>Advanced</b> (text and context to discourse)	Can evaluate arguments in light of existing knowledge and discussions, actively verifying, challenging, and corroborating the case presented in terms of other sources of knowledge.	Can identify and question the warrants of arguments, distinguish necessary and sufficient evidence, and synthesize a position from many sources of evidence, using that to identify key evidence and propose new lines of argument.	Can write extended discussions that place arguments in the context of a larger literature or discourse.  Can embed critiques and rebuttals effectively into a longer argument.

## 5. CONCLUSION

The work described here is a work in process. It represents the current state of our effort to develop a general framework that helps us to link instruction, assessment, standards, and the learning sciences. We are actively engaged in research focused on developing and elaborating this model, and in field studies intended to validate it. To advance these activities, we are interested in developing partnerships with other groups as our work proceeds. We are also interested in comments on the hypothesized sequences and in suggestions for their revision.

We hope that the model elaborated here, and presented in greater detail at <http://elalp.cbalwiki.ets.org>, will help to stimulate discussion and debate about how the learning sciences might assist educational reform efforts. One of the most important implications of our research, and one that bears repeating, is that it emphasizes the ways in which reading, writing, and critical thinking skills draw upon a common conceptual base, and mutually support one another in practice. To the extent that education prepares students to do all three together, it will do students a great service, and encourage higher levels of performance in each skill separately.

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