Integrating the CA ELD Standards into K–12 Mathematics and Science Teaching and Learning

A Supplementary Resource for Educators Implementing in Tandem the California English Language Development Standards, the California Common Core State Standards for Mathematics, and the Next Generation Science Standards for California Public Schools

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I. Introduction

Assembly Bill 899 (October 2013) required that the California English Language Development Standards (CA ELD Standards) be comparable in rigor and specificity to the California Common Core State Standards for Mathematics (CA CCSSM) and the Next Generation Science Standards for California Public Schools, Kindergarten through Grade Twelve (CA NGSS). To meet the requirements of this legislation and to ensure clarity and support for educators, the California Department of Education (CDE) collaborated with WestEd and a state-appointed panel of experts to undertake two objectives. First, WestEd worked closely with the CDE and the panel to conduct a study examining the correspondence between the CA ELD Standards and the CA CCSSM and the CA NGSS. The study found strong evidence of correspondence, although this correspondence was often implicit. Second, the CDE and WestEd, with input and feedback from the panel, developed materials that "augment" the CA ELD Standards in ways that support their use by teachers in the content areas of mathematics and science.[1] This resource, *Integrating the CA ELD Standards into K–12 Mathematics and Science Teaching and Learning,* specifies these correspondences explicitly and provides illustrative examples of the implementation of the CA ELD Standards in tandem with the CA CCSSM and the CA NGSS. It is designed as a **supplementary resource** to the California curriculum frameworks for English language arts/English language development (ELA/ELD), mathematics, and science, as well as to the CA ELD Standards, CA CCSSM, and CA NGSS documents themselves (see figure 1 on the next page for hyperlinks to these documents).

Students who are learning English as an additional language come to California schools with a range of cultural and linguistic backgrounds, proficiencies in English, and experiences with schooling and content learning (both formal and informal). Many English learners (ELs) in California were born in the U.S. and have experienced schooling only in English. Other ELs enter the U.S. in late elementary school through high school and may have strong academic backgrounds, may be on par with their native-English-speaking peers in content knowledge, and may have studied English in their home countries before emigrating. Some ELs have had disrupted educational experiences due to circumstances such as war, persistent violence, or famine in their home countries. Severe poverty, varying cultural norms, or political factors may also have prevented some ELs from attending school. However, no matter what linguistic and educational backgrounds they have, ELs come to the classroom with rich ideas and experiences of the natural world. They use their ideas and experiences to create personal explanations about how the natural world operates. All students have a wealth of ideas and explanations related to mathematics, science, and engineering, and—though they may not be able to express their ideas flawlessly in English—all students have the ability to contribute to class discussions and engage in deep learning, as long as they are appropriately supported instructionally to do so.

[1] The term "augment" is used because no reason was found to alter the CA ELD Standards as they are currently written; it was determined to be valuable to augment them with materials that more explicitly illustrate the connection of the CA ELD Standards to the language demands found in mathematics and science content standards.

All teachers are responsible for ensuring that their EL students have full access to intellectually rich and comprehensive mathematics and science curricula and that each EL student makes steady progress in both his or her academic content learning and his or her English language development. With appropriate instructional support from their teachers (provided within appropriately designed school programs), ELs at all levels of English language proficiency are able to engage in intellectually challenging, content- and language-rich instruction so that they can develop the advanced levels of English that are necessary for college and career readiness and meaningful engagement with civic life. To achieve these goals and to fully include ELs in mathematics and science instruction, all teachers of ELs need to implement the CA ELD Standards in tandem with the California Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (CA CCSS for ELA/Literacy); the CA CCSSM; and the CA NGSS.

Figure 1. Hyperlinks to California Standards and Framework Documents

CA ELD Standards
http://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf

CA CCSS for ELA/Literacy
http://www.cde.ca.gov/be/st/ss/documents/finalelaccssstandards.pdf

CA CCSSM
http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf

CA NGSS
http://www.cde.ca.gov/pd/ca/sc/ngssstandards.asp

English Language Arts/English Language Development Framework for California Public Schools: Kindergarten Through Twelfth Grade
http://www.cde.ca.gov/ci/rl/cf/elaeldfrmwrksbeadopted.asp

Mathematics Framework for California Public Schools: Kindergarten Through Twelfth Grade
http://www.cde.ca.gov/ci/ma/cf/draft2mathfwchapters.asp

Science Framework for California Public Schools: Kindergarten Through Twelfth Grade

Ensuring equitable learning and success for ELs requires careful lesson and unit planning (using both the CA ELD Standards and relevant content standards); observation of what students are doing and saying during mathematics and science instruction; reflection on how ELs engage with particular approaches to instruction; and necessary refining and adjusting of instruction, based on observation, evidence of learning, and reflection. It is critical that schools and districts ensure that EL students are not deprived of mathematics and science learning opportunities by placement in an English language development (ELD) class during the time that mathematics and science are taught.[2] For secondary students in particular, it is important that they are placed in the appropriate mathematics and science courses, based on their existing

[2] For newcomer ELs in secondary school (for example, ELs in their first year in U.S. schools), specially designed mathematics and science classes that integrate ELD with mathematics and science learning may offer equally rich mathematics and science learning experiences.

content knowledge and their goals for college and career readiness—and not based on their English language proficiency level. Mathematics and science classes are ideal learning environments for integrating ELD, given their focus on real-world materials and activities, as well as on high-interest topics, and their potential for disciplinary language–rich discussions. Mathematics and science teachers need to work closely with site and district ELD specialists to ensure that their classrooms provide EL students with opportunities to learn and use grade-level mathematical and scientific language, in concert with opportunities to learn mathematics and science concepts and practices. By the same token, ELD specialists must work closely with mathematics and science teachers to understand how to design and provide language instruction that is *in the service of* mathematics and science learning.

Integrated and Designated ELD

ELs face the unique challenge of learning English as an additional language at the same time as they are also learning grade-level content through English. This challenge creates dual responsibilities for all teachers who teach ELs. The first responsibility is to ensure that all ELs have full access to the grade-level curriculum in all content areas, and the second is to ensure that ELs simultaneously develop the advanced levels of English that are necessary for success with academic tasks and texts in those content areas. California's approach to ELD for all ELs is comprehensive. This comprehensive model, summarized in figure 2, includes both integrated and designated ELD, which means that all EL students should receive CA ELD Standards–based instruction that is integrated into mathematics and science instruction (integrated ELD) as well as designated CA ELD Standards–based instruction during a protected time and in such a way as to meet their particular language learning needs (designated ELD).

Figure 2. Integrated and Designated ELD

Mathematics and science instruction with integrated ELD *throughout the day*		Specialized instruction for ELs based on English language proficiency levels and English language learning needs *at a targeted time*
Integrated ELD		**Designated ELD**
All mathematics and science teachers with ELs in their classrooms use the CA ELD Standards *in tandem with* the CA CCSSM, the CA NGSS, and related CA CCSS for ELA/Literacy.		Teachers use the CA ELD Standards, during a protected time in the regular school day, as focal standards in ways that *build into and from* mathematics and science content instruction in order to develop the critical language that ELs need for mathematics and science learning in English.

Implementation of both integrated and designated ELD does not require mathematics and science teachers to become linguists or ELD specialists. Rather, content teachers need to know enough about the language uses and practices of their discipline, and about how to support their EL students with disciplinary language and literacy development, so that ELs maintain a steady trajectory toward full proficiency in English. ELD specialists need to collaborate closely with content teachers in order to provide specialized ELD support and instruction that builds into and from disciplinary learning. Three examples of what this collaboration might look like in practice are provided below.

- A high school science teacher asks the school's ELD teacher to help her identify some of the language that will be challenging to her EL students in the science articles that the students will be reading for a research project. She wants to call attention to some of these language uses during instruction, and she asks the ELD teacher for ideas in how to approach this. The ELD teacher asks the science teacher to help her understand the science content better so that she can address it with the two newcomer EL students in the science class when she meets with them during designated ELD time. The teachers agree to meet regularly to plan scaffolding approaches and to monitor the students' progress as the unit unfolds.
- A middle school interdisciplinary team works together to focus on general academic and domain-specific vocabulary across the disciplines, with varying degrees of emphasis in each content area. The science teacher introduces the

domain-specific words in a class reading of a complex informational text, and the English teacher teaches the general academic words in a rereading of the text. The social studies/history teacher conducts a debate, using the content of the reading, and prompts her students to use the words as they debate. The mathematics teacher uses the words in a word problem. At the end of the week, the English teacher asks her students to write a response to a debatable question, using the words and evidence from the text read that week in their arguments.

- During their grade-level collaboration time, elementary school teachers work together to plan mathematics and science lessons, using the CA ELD Standards as a guide to provide strategic language support to their EL students at different English language proficiency levels. Together, they plan integrated mathematics, science, and ELA lessons with integrated ELD and designated ELD lessons that specifically focus on the language of the mathematics and science content, for students at each English language proficiency level.

Overview of the Standards

The CA ELD Standards describe the key knowledge, skills, and abilities that students who are learning English as a new language need in order to access, engage with, and achieve in grade-level academic content. The CA ELD Standards are designed to provide challenging content in ELD in order for ELs to gain proficiency in a range of rigorous academic English language skills. The CA ELD Standards are not intended to replace the CA CCSS for ELA/Literacy. Instead, they amplify the language knowledge, skills, and abilities of these standards, which are essential in order for ELs to succeed in school while they are developing English. The CA ELD Standards correspond with the CA CCSS for ELA/Literacy and are designed to apply to English language and literacy skills across all academic content areas, in addition to classes specifically designed for ELD. They are also designed to be used in tandem with all academic content standards—including the CA CCSSM and the CA NGSS—so that teachers can recognize and provide opportunities to develop EL students' discipline-specific uses of language while these students engage in the practices of different academic content areas. As previously described, use of the CA ELD Standards throughout the day, in all content areas, to support ELs' academic and linguistic development is termed "integrated ELD," while use of the CA ELD Standards at a specific time during the day to attend to ELs' particular ELD needs is termed "designated ELD." Designated ELD instruction should support ELs in developing the English language knowledge, skills, and abilities that they need in order to be successful in content instruction. In short, mathematics and science content instruction should support ELs to develop the language uses called for in the CA CCSSM, the CA NGSS, and the CA CCSS for ELA/Literacy, while designated ELD should use the CA ELD Standards to build *into* and *from* content instruction.

California English Language Development Standards

The CA ELD Standards are organized into two main sections that are common across all grade levels: Section 1: Overview, including a Goal and Critical Principles for Developing Language and Cognition in Academic Contexts (see figure 3); and Section 2: Elaboration on Critical Principles for Developing Language and Cognition in Academic Contexts (see figure 4). Section 1 includes a Goal statement for all ELs in California, followed by broader Critical Principles for Developing Language and Cognition in Academic Contexts.

> **Goal:** An overarching goal statement that crystallizes what all educators in California want for ELs' development of academic English language proficiency, success with grade-level disciplinary content, and awareness about language.
>
> **Critical Principles for Developing Language and Cognition in Academic Contexts:** Further detail of the goal statement that defines the critical and meaningful experiences and knowledge that ELs need in order to ultimately achieve the goal.

Figure 3. CA ELD Standards Goal and Critical Principles

Section 1: Overview
Goal: English learners read, analyze, interpret, and create a variety of literary and informational text types. They develop an understanding of how language is a complex, dynamic, and social resource for making meaning, as well as how content is organized in different text types and across disciplines using text structure, language features, and vocabulary depending on purpose and audience. They are aware that different languages and variations of English exist, and they recognize their home languages and cultures as resources to value in their own right and also to draw upon in order to build proficiency in English. English learners contribute actively to class and group discussions, asking questions, responding appropriately, and providing useful feedback. They demonstrate knowledge of content through oral presentations, writing tasks, collaborative conversations, and multimedia. They develop proficiency in shifting language use based on task, purpose, audience, and text type.
Critical Principles for Developing Language and Cognition in Academic Contexts: While advancing along the continuum of English language development levels, English learners at all levels engage in intellectually challenging literacy, disciplinary, and disciplinary literacy tasks. They use language in meaningful and relevant ways appropriate to grade level, content area, topic, purpose, audience, and text type in English language arts, mathematics, science, social studies, and the arts. Specifically, they use language to gain and exchange information and ideas in three communicative modes (collaborative, interpretive, and productive), and they apply knowledge of language to academic tasks via three cross-mode language processes (structuring cohesive texts, expanding and enriching ideas, and connecting and condensing ideas) using various linguistic resources.

Section 2 of the CA ELD Standards is organized into two parts, with strands that are consistent across grade levels, yet developmentally appropriate for each grade level[3] (see figure 4). At each grade level, the strands are detailed in standards that include descriptors for what students know and can do at each proficiency level.

[3] For purposes of display, slightly different wordings between grades K–5 and grades 6–12, representing varying cognitive and linguistic capacities at the elementary and secondary levels, have been combined in figure 4. Refer to the CA ELD Standards to see the complete descriptions for standards at each grade level.

Figure 4. CA ELD Standards—Parts and Strands

Part I: Interacting in Meaningful Ways
A. Collaborative (engagement in dialogue with others)
1. Exchanging information and ideas via oral communication and conversations
2. Interacting via written English (print and multimedia)
3. Offering opinions and negotiating with or persuading others
4. Adapting language choices to various contexts
B. Interpretive (comprehension and analysis of written and spoken texts)
5. Listening actively and asking/answering questions about what was heard
6. Reading closely and explaining interpretations and ideas from reading
7. Evaluating how well writers and speakers use language to present or support ideas
8. Analyzing how writers use vocabulary and other language resources
C. Productive (creation of oral presentations and written texts)
9. Expressing information and ideas in oral presentations
10. Writing literary and informational texts
11. Supporting opinions or justifying arguments and evaluating others' opinions or arguments
12. Selecting and applying varied and precise vocabulary and other language resources
Part II: Learning About How English Works
A. Structuring Cohesive Texts
1. Understanding text structure and organization based on purpose, text type, and discipline
2. Understanding cohesion and how language resources across a text contribute to the way a text unfolds and flows
B. Expanding and Enriching Ideas
3. Using verbs and verb phrases to create precision and clarity in different text types
4. Using nouns and noun phrases to expand ideas and provide more detail
5. Modifying to add details to provide more information and create precision
C. Connecting and Condensing Ideas
6. Connecting ideas within sentences by combining clauses
7. Condensing ideas within sentences using a variety of language resources

Each grade-level ELD standard has descriptors for each of three proficiency levels: Emerging, Expanding, and Bridging. While correspondence to the mathematics and science standards' language demands applies across all three proficiency levels, it is focused on the Bridging level.[4] At the Bridging level, EL students continue to learn and apply a range of high-level English language skills in a wide variety of contexts, including comprehension and production of highly technical texts. The correspondence study confirmed the CA ELD Standards' correspondence at the Bridging level, ensuring that these standards adequately address the relevant grade-level language demands of mathematics and science content standards. Teachers support EL students at the Emerging and Expanding levels to move into and through the Bridging level in two key ways. First, they use carefully scaffolded academic content instruction that integrates language learning opportunities. Second, they provide designated ELD instruction that develops students' linguistic resources to engage in language-intensive subject-matter practices.

Part I of the CA ELD Standards, "Interacting in Meaningful Ways," addresses collaborative, interpretive, and productive language uses and purposes (explaining, presenting, arguing, etc.), for which there are direct correspondences to the mathematics and science and engineering practices; these language uses and purposes are often explicitly described and identifiable in the content standards.

Part II of the CA ELD Standards, "Learning About How English Works," is not designed or intended to be implemented in isolation from Part I. As the CA ELD Standards publication explains:

> It is critical to understand that, although Part II is presented separately in order to draw educators' attention to it, the focus in Part II on understanding how English works is integral to and inseparable from EL students' development of meaning-making and purposeful interaction as delineated in Part I, "Interacting in Meaningful Ways." (p. 161)

Part II specifies particular *elements of language structures* that apply to using language in a variety of contexts and for a variety of purposes described in Part I. These elements (understanding cohesion, using verbs and verb phrases, etc.) do not have any explicit equivalents in the mathematics and science content standards or practices. However, knowledge of how English works and use of specific language structures do apply to communicating about mathematics and science learning and content.

Since Part II of the CA ELD Standards is intended to apply across Part I of the CA ELD Standards, any correspondence of Part II CA ELD Standards to mathematics and science standards necessarily involves application of Part I CA ELD Standards *at the same time*. For example, when students are using a variety of appropriate verb tenses (Part II, Standard 3), they do so in the context of collaborative, interpretive, and/or productive uses of language (Part I, Standards 1–12) to communicate with others—in this case, about mathematics or science content and practices.

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[4] The "bridge" alluded to in this level title is the transition to full engagement in grade‐level academic tasks and activities in a variety of content areas without the need for specialized ELD instructional support.

California Common Core State Standards for Mathematics

The CA CCSSM (CDE, 2014) include two types of standards: eight Standards for Mathematical Practice (identical for each grade level) and Mathematical Content Standards (different at each grade level). The mathematical content standards at each grade level are organized by domain (e.g., Number and Operations in Base Ten) for grades K–8 and by conceptual category (e.g., Functions) for courses in higher mathematics. The standards typically describe cognitive understanding (e.g., 4.NF.4a: Understand a fraction *a/b* as a multiple of 1/*b*) or mathematical processes (e.g., N-RN.2: Rewrite expressions involving radicals and rational exponents using the properties of exponents) without any explicit description of language use. A smaller number of standards include descriptors that explicitly involve discipline-specific language uses and purposes (e.g., 7.G.3: Describe the two-dimensional figures that result from slicing three-dimensional figures...).

The mathematical content standards are designed and intended to connect to the standards for mathematical practice (MPs) that apply across all standards at all grade levels. As noted in the introduction to the CA CCSSM, “Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction” (p. 8). The standards for mathematical practice rest on “processes and proficiencies” that include explicit wording specific to language uses and purposes, such as “explain” (MP.1 and MP.2) and “communicate” (MP.3 and MP.6).

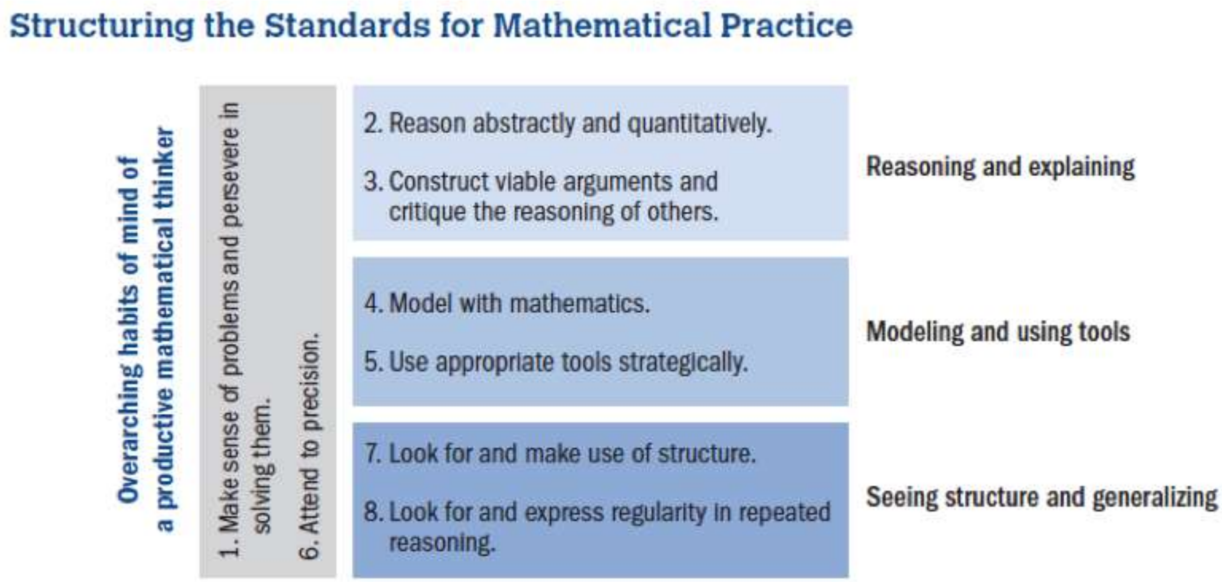
Standards for Mathematical Practice

Standards for Mathematical Practice. California Department of Education. (2014). *California Common Core State Standards: Mathematics.* Sacramento, CA. pp. 6-8.
http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Figure 5, drawn from the CA CCSSM, shows the relationship of the mathematical practices to one another. It is worth noting that MP.1 and MP.6, which are considered “overarching habits of mind” that connect to all the other practices, are described in ways that are particularly language-intensive. MP.3, which focuses on constructing and explaining viable arguments and critiquing the reasoning of others, is also language-intensive.

Figure 5. Conceptual Display of CCSS Mathematical Practices



(CDE, 2014, p. 3)

This supplementary resource lists the key MPs related to each ELD standard, and, for each ELD standard, provides a sample classroom content description for a standard that exemplifies the language demands that are entailed in the CA CCSSM and explicit in the CA ELD Standards.

Next Generation Science Standards for California Public Schools, Kindergarten through Grade Twelve

The CA NGSS (CDE, 2013) are designed around three interrelated dimensions: Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs). Performance Expectations (PEs) embody these three dimensions and are at the equivalent level of granularity to the grade-level standards in the CA CCSS for ELA/Literacy and in the CA CCSSM, and to the grade-level standards across proficiency levels in the CA ELD Standards. The CA NGSS include Connection Boxes that show how the PEs connect to prerequisite or connected standards in the CA CCSS for ELA/Literacy and the CA CCSSM.

Since each PE is associated with a SEP, the SEPs can be leveraged to examine correspondence of the CA ELD Standards with the CA NGSS, since, as noted in Appendix F of the CA NGSS:

> Engagement in [science and engineering] practices is *language intensive* and requires students to *participate in classroom science discourse*.... When supported appropriately, these [EL] students are capable of learning science through their emerging language and *comprehending and carrying out sophisticated language purposes* (e.g., arguing from evidence, providing explanations, developing models) using less-than-perfect English. By engaging in such practices, moreover, they simultaneously build on their understanding of science and their language proficiency (i.e., capacity to do more with language). (p. 3; emphasis added)

As also noted in Appendix F of the CA NGSS, “the eight practices are not separate; they intentionally overlap and interconnect” (p. 3). While the SEP are numbered 1–8, they are not intended to be interpreted or implemented in a linear or sequential way, due to this overlap and interconnectedness.

Science and Engineering Practices

Appendix F – Science and Engineering Practices in the NGSS. California Department of Education. (2013). *Next Generation Science Standards for California Public Schools, Kindergarten through Grade Twelve.* Sacramento, CA.
http://www.nextgenscience.org/sites/ngss/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf

1. Ask questions and define problems.
2. Develop and use models.
3. Plan and carry out investigations.
4. Analyze and interpret data.
5. Use mathematics and computational thinking.
6. Construct explanations and design solutions.
7. Engage in argument from evidence.
8. Obtain, evaluate, and communicate information.

This supplementary resource lists the key SEPs related to each ELD standard, and, for each ELD standard, provides a sample classroom content description, based on one or more PEs, that exemplifies the language demands that are entailed in the CA NGSS and explicit in the CA ELD Standards.

A Supplementary Resource for Integrating the CA ELD Standards into K–12 Mathematics and Science Teaching and Learning

This supplementary resource, when used along with the standards and curriculum frameworks previously mentioned and hyperlinked in this resource, illustrates ways to integrate use of ELD standards into mathematics and science curriculum design and instruction. More specifically, it is intended to highlight ways in which the CA ELD Standards, when used in combination with the CA CCSSM and/or the CA NGSS, can be applied to mathematics and science language and content learning. It is intended to serve as one of many resources to consult, *not* as a guide to curriculum design, or to unit or lesson planning, in and of itself.

For guidance on integrating the CA ELD Standards into mathematics and science teaching and learning, educators should consult the CDE's curriculum framework documents (see figure 1 on page 3 for hyperlinks) and online professional learning modules (see figure 6 below for hyperlinks), which provide detailed explanations of each set of standards, describe how to design rich and rigorous curricula, and illustrate powerful teaching and learning for ELs. These resources describe in detail how to address the needs of ELs at a variety of English language proficiency levels, so that all ELs can develop their English language skills to move into the Bridging level as soon as possible. In addition, these resources provide information on engaging diverse ELs in academic content instruction. For example, ELs in a given classroom may have different home languages, different levels of literacy in their home language and in English, and different prior schooling experiences.

Figure 6. Links to California Standards Online Professional Learning Modules

California English Language Development Standards: Getting Started https://www.mydigitalchalkboard.org/portal/default/Content/Viewer/Content?action=2&scId=509334
A Deeper Dive into the California English Language Development Standards https://www.mydigitalchalkboard.org/portal/default/Content/Viewer/Content?action=2&scId=509621
Mathematics: Kindergarten through Grade Twelve Standards for Mathematical Practice https://www.mydigitalchalkboard.org/portal/default/Content/Viewer/Content?action=2&scId=306591
Mathematics: Kindergarten through Grade Eight Learning Progressions https://www.mydigitalchalkboard.org/portal/default/Content/Viewer/Content?action=2&scId=306589&sciId=9898
Content Literacy in Science https://www.mydigitalchalkboard.org/portal/default/Content/Viewer/Content?action=2&scId=506599

Sections II and III of this resource contain charts that include the full text of the grade-level CA ELD Standards for each of the three proficiency levels, organized into grade-level/grade-span groupings as follows: K, 1, and 2; 3, 4, and 5; 6, 7, and 8; and 9–10 and 11–12. Following each set of ELD standards are sets of corresponding mathematics or science and engineering practices that correspond to the ELD standard, as well as additional descriptors that aid mathematics and science educators in understanding how the CA ELD Standards can be integrated into the planning of mathematics and science teaching and learning. These charts are intended to be used along with the relevant standards and curriculum frameworks when planning curriculum or instructional units and lesson plans for mathematics and science courses or content. **These charts are not intended to be the sole source of curriculum, unit, or lesson planning.** Rather, they can be used as one of a number of resources from which to glean ideas for how to design mathematics or science units or lessons that address the needs of EL students. For further explanation of what each chart contains, see the introductory page of each set of charts: Section II, CA ELD Standards Applied to Mathematics Teaching and Learning, and Section III, CA ELD Standards Applied to Science Teaching and Learning.

II. Integrating CA ELD Standards into Mathematics Teaching and Learning

The charts in this section are organized into the elements described in the table below. For each element, the table explains what the element is and is not, along with guidance for how to use it.

Chart Element	What It Is	How to Use It	What It Is Not
CA ELD Standards	The full text of each CA ELD Standard for each grade and for each of the three proficiency levels (CDE, 2014)	Consider how the standard applies to mathematics teaching and learning in classrooms with EL students	***Not:*** Complete information on the organization, structure, or use of the CA ELD Standards
Applying ELD Standards to Mathematics	Additional information to *supplement* the text of each CA ELD Standard, describing how the standard applies to mathematics teaching and learning	Consider how the additional information helps to apply the standard to mathematics teaching and learning in classrooms with EL students	***Not:*** A full version of the standard, rewritten so that it applies to mathematics teaching and learning
Corresponding Standards for Mathematical Practice	The Standards for Mathematical Practice (MPs) that best correspond to each CA ELD Standard	Consider how each MP applies to designing mathematics units or lessons that integrate the ELD standard	***Not:*** All possible MPs that can be addressed when implementing combinations of multiple ELD standards and mathematics standards
Sample Integration of Mathematical and ELD Standards in the Classroom	An illustrative *sample* activity or activities that EL students at one grade level in the grade-level grouping could engage in, with a focus on the CA ELD Standard, MPs, and mathematical content standards listed for that grade level	Consider how the sample activity or activities can be adapted for: • mathematics instruction at other grade levels in the grouping; or • EL students at Emerging, Expanding, or Bridging levels of English language proficiency. Standards in Part II should always be used in tandem with standards in Part I. The Part I and Part II samples are separate only for purposes of the organization of the resource.	***Not:*** All knowledge or skills described in the CA ELD Standard, MPs, or mathematical content standards listed; content or strategies for students at all grade levels or at all English language proficiency levels; all possible processes, strategies, tasks, or activities related to the sample; a lesson plan; a description of an actual or complete classroom or lesson
Sample-Specific Standards for Mathematical Practice	Additional MPs that correspond to the activities described in the sample	Consider how each of these MPs applies to the sample classroom activities	***Not:*** MPs that always correspond to the standard

Index of Mathematics Charts Organized by ELD Standard

Grades K, 1, and 2			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	K	K.CC.4b	24
PI.2	1	1.OA.1	26
PI.3	1	1.MD.4	28
PI.4	2	2.NBT.9	30
PI.5	K	K.OA.2	32
PI.6	2	2.OA.1	34
PI.7	1	1.NBT.4	36
PI.8	2	2.MD.8	38
PI.9	K	K.MD.2	40
PI.10	2	2.G.3	42
PI.11	2	2.NBT.7	44
PI.12	K	K.G.1	46
PII.1	2	2.OA.3	48
PII.2	1	1.NBT.6	51
PII.3	K	K.G.5	53
PII.4	2	2.MD.10	56
PII.5	K	K.MD.1	58
PII.6	1	1.OA.6	60
PII.7	1	1.G.1	62

Grades 3, 4, and 5			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	3	3.OA.1	64
PI.2	5	5.G.3	66
PI.3	4	4.NF.1	68
PI.4	3	3.MD.7c	70
PI.5	5	5.NBT.6	72
PI.6	5	5.OA.3	75
PI.7	3	3.NF.3d	77
PI.8	4	4.NBT.5	79
PI.9	4	4.OA.5	81
PI.10	3	3.MD.8	84
PI.11	4	4.OA.3	87
PI.12	5	5.NBT.2	89
PII.1	4	4.NF.4c	93
PII.2	3	3.NBT.2	96
PII.3	3	3.G.2	98
PII.4	5	5.NF.7c	100
PII.5	5	5.MD.2	103
PII.6	4	4.NF.3d	207
PII.7	4	4.MD.2	110

Grades 6, 7, and 8			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	7	7.NS.1a	112
PI.2	8	8.F.5	114
PI.3	8	8.EE.6	116
PI.4	7	7.RP.2d	118
PI.5	7	7.G.6	120
PI.6	6	6.SP.5	124
PI.7	6	6.RP.1	126
PI.8	8	8.SP.1	128
PI.9	8	8.G.6	130
PI.10	6	6.NS.7b	133
PI.11	7	7.SP.2	135
PI.12	6	6.EE.2b	139
PII.1	7	7.NS.1b	142
PII.2	6	6.EE.7	145
PII.3	8	8.SP.3	147
PII.4	7	7.RP.3	149
PII.5	8	8.F.4	151
PII.6	6	6.G.2	154
PII.7	7	7.EE.4	156

Grades 9–10 and 11–12			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	9–12	G-MG.1	159
PI.2	9–12	A-REI.11	161
PI.3	9–12	N-RN.1	163
PI.4	9–12	S-ID.5	166
PI.5	9–12	F-IF.9	168
PI.6	9–12	N-Q.1	171
PI.7	9–12	G-SRT.2	173
PI.8	9–12	F-LE.3	175
PI.9	9–12	A-REI.5	177
PI.10	9–12	S-ID.6a	179
PI.11	9–12	G-GPE.5	181
PI.12	9–12	N-RN.3	183
PII.1	9–12	A-SSE.3c	186
PII.2	9–12	F-TF.2	189
PII.3	9–12	G-CO.6	191
PII.4	9–12	F-IF.4	193
PII.5	9–12	S-CP.5	195
PII.6	9–12	G-GMD.4	197
PII.7	9–12	F-BF.1a	199

Index of Mathematics Charts Organized by Grade Level

Grades K, 1, and 2			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.1	K	K.CC.4b	24
PI.5	K	K.OA.2	32
PI.9	K	K.MD.2	40
PI.12	K	K.G.1	46
PII.3	K	K.G.5	53
PII.5	K	K.MD.1	58
PI.2	1	1.OA.1	26
PI.3	1	1.MD.4	28
PI.7	1	1.NBT.4	36
PII.2	1	1.NBT.6	51
PII.6	1	1.OA.6	60
PII.7	1	1.G.1	62
PI.4	2	2.NBT.9	30
PI.6	2	2.OA.1	34
PI.8	2	2.MD.8	38
PI.10	2	2.G.3	42
PI.11	2	2.NBT.7	44
PII.1	2	2.OA.3	48
PII.4	2	2.MD.10	56

Grades 3, 4, and 5			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.1	3	3.OA.1	64
PI.4	3	3.MD.7c	70
PI.7	3	3.NF.3d	77
PI.10	3	3.MD.8	84
PII.2	3	3.NBT.2	96
PII.3	3	3.G.2	98
PI.3	4	4.NF.1	68
PI.8	4	4.NBT.5	79
PI.9	4	4.OA.5	81
PI.11	4	4.OA.3	87
PII.1	4	4.NF.4c	93
PII.6	4	4.NF.3d	107
PII.7	4	4.MD.2	110
PI.2	5	5.G.3	66
PI.5	5	5.NBT.6	72
PI.6	5	5.OA.3	75
PI.12	5	5.NBT.2	89
PII.4	5	5.NF.7c	100
PII.5	5	5.MD.2	103

Grades 6, 7, and 8			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.6	6	6.SP.5	124
PI.7	6	6.RP.1	126
PI.10	6	6.NS.7b	133
PI.12	6	6.EE.2b	139
PII.2	6	6.EE.7	145
PII.6	6	6.G.2	155
PI.1	7	7.NS.1a	112
PI.4	7	7.RP.2d	118
PI.5	7	7.G.6	120
PI.11	7	7.SP.2	135
PII.1	7	7.NS.1b	142
PII.4	7	7.RP.3	149
PII.7	7	7.EE.4	156
PI.2	8	8.F.5	114
PI.3	8	8.EE.6	116
PI.8	8	8.SP.1	128
PI.9	8	8.G.6	130
PII.3	8	8.SP.3	147
PII.5	8	8.F.4	151

Grades 9–10 and 11–12			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.1	9–12	G-MG.1	159
PI.2	9–12	A-REI.11	161
PI.3	9–12	N-RN.1	163
PI.4	9–12	S-ID.5	166
PI.5	9–12	F-IF.9	168
PI.6	9–12	N-Q.1	171
PI.7	9–12	G-SRT.2	173
PI.8	9–12	F-LE.3	175
PI.9	9–12	A-REI.5	177
PI.10	9–12	S-ID.6a	179
PI.11	9–12	G-GPE.5	181
PI.12	9–12	N-RN.3	183
PII.1	9–12	A-SSE.3c	186
PII.2	9–12	F-TF.2	189
PII.3	9–12	G-CO.6	191
PII.4	9–12	F-IF.4	193
PII.5	9–12	S-CP.5	195
PII.6	9–12	G-GMD.4	197
PII.7	9–12	F-BF.1a	199

Index of Mathematics Charts Organized by ELD Standard Across Grade Levels (K–12)

ELD Standards PI.1–PI.4			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	K	K.CC.4b	24
PI.1	3	3.OA.1	64
PI.1	7	7.NS.1a	112
PI.1	9–12	G-MG.1	159
PI.2	1	1.OA.1	26
PI.2	5	5.G.3	66
PI.2	8	8.F.5	114
PI.2	9–12	A-REI.11	161
PI.3	1	1.MD.4	28
PI.3	4	4.NF.1	68
PI.3	8	8.EE.6	116
PI.3	9–12	N-RN.1	163
PI.4	2	2.NBT.9	30
PI.4	3	3.MD.7c	70
PI.4	7	7.RP.2d	118
PI.4	9–12	S-ID.5	166

ELD Standards PI.5–PI.8			
ELD Standard	Grade Level	Sample Standard	Page #
PI.5	K	K.OA.2	32
PI.5	5	5.NBT.6	72
PI.5	7	7.G.6	120
PI.5	9–12	F-IF.9	168
PI.6	2	2.OA.1	34
PI.6	5	5.OA.3	75
PI.6	6	6.SP.5	124
PI.6	9–12	N-Q.1	171
PI.7	1	1.NBT.4	36
PI.7	3	3.NF.3d	77
PI.7	6	6.RP.1	126
PI.7	9–12	G-SRT.2	173
PI.8	2	2.MD.8	38
PI.8	4	4.NBT.5	79
PI.8	8	8.SP.1	128
PI.8	9–12	F-LE.3	175

ELD Standards PI.9–PI.10			
ELD Standard	Grade Level	Sample Standard	Page #
PI.9	K	K.MD.2	40
PI.9	4	4.OA.5	81
PI.9	8	8.G.6	130
PI.9	9–12	A-REI.5	177
PI.10	2	2.G.3	42
PI.10	3	3.MD.8	84
PI.10	6	6.NS.7b	133
PI.10	9–12	S-ID.6a	179

ELD Standards PI.11–PI.12			
ELD Standard	Grade Level	Sample Standard	Page #
PI.11	2	2.NBT.7	44
PI.11	4	4.OA.3	87
PI.11	7	7.SP.2	135
PI.11	9–12	G-GPE.5	181
PI.12	K	K.G.1	46
PI.12	5	5.NBT.2	89
PI.12	6	6.EE.2b	139
PI.12	9–12	N-RN.3	183

ELD Standards PII.1–PII.2			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PII.1	2	2.OA.3	48
PII.1	4	4.NF.4c	93
PII.1	7	7.NS.1b	142
PII.1	9–12	A-SSE.3c	186
PII.2	1	1.NBT.6	51
PII.2	3	3.NBT.2	96
PII.2	6	6.EE.7	145
PII.2	9–12	F-TF.2	189

ELD Standards PII.3–PII.5			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PII.3	K	K.G.5	53
PII.3	3	3.G.2	98
PII.3	8	8.SP.3	147
PII.3	9–12	G-CO.6	191
PII.4	2	2.MD.10	56
PII.4	5	5.NF.7c	100
PII.4	7	7.RP.3	149
PII.4	9–12	F-IF.4	193
PII.5	K	K.MD.1	58
PII.5	5	5.MD.2	103
PII.5	8	8.F.4	151
PII.5	9–12	S-CP.5	195

ELD Standards PII.6–PII.7			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PII.6	1	1.OA.6	60
PII.6	4	4.NF.3d	107
PII.6	6	6.G.2	154
PII.6	9–12	G-GMD.4	197
PII.7	1	1.G.1	62
PII.7	4	4.MD.2	110
PII.7	7	7.EE.4	156
PII.7	9–12	F-BF.1a	199

<table>
<tr><th colspan="4">Integrating CA ELD Standards into Mathematics Teaching and Learning
Grades K, 1, and 2</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
A. Collaborative</th></tr>
<tr><th colspan="4">1. Exchanging information and ideas</th></tr>
<tr><th>Grade</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>K</td><td>Contribute to conversations and express ideas by asking and answering yes-no and wh- questions and responding using gestures, words, and simple phrases.</td><td>Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.</td><td>Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.</td></tr>
<tr><td>1</td><td>Contribute to conversations and express ideas by asking and answering yes-no and wh- questions and responding using gestures, words, and simple phrases.</td><td>Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.</td><td>Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.</td></tr>
<tr><td>2</td><td>Contribute to conversations and express ideas by asking and answering yes-no and wh- questions and responding using gestures, words, and learned phrases.</td><td>Contribute to class, group, and partner discussions, including sustained dialogue, by listening attentively, following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.</td><td>Contribute to class, group, and partner discussions, including sustained dialogue, by listening attentively, following turn-taking rules, asking relevant questions, affirming others, adding pertinent information, building on responses, and providing useful feedback.</td></tr>
<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3">Working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts. While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.</td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3">MP.1 Make sense of problems and persevere in solving them.
MP.3 Construct viable arguments and critique the reasoning of others.
• Justify their conclusions, communicate them to others, and respond to the arguments of others.
MP.6 Attend to precision.</td></tr>
</table>

	• Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	K.CC.4b: Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. Students develop an understanding of the relationship between numbers and quantities by counting orally and listening as their peers count. First as a whole class and then in pairs, using teacher-facilitated structured routines for think-pair-share, students count out loud different arrangements of objects and confirm how many objects are in each arrangement. During the lesson, the teacher rearranges the objects that were just counted, or encourages students to count the same arrangement of objects but in a different order, so that students have the opportunity to recognize that arrangement and counting method do not affect the number of objects. The teacher guides the students in verifying which number name represents how many objects were counted. In pairs or in groups, students ask and answer questions to ensure that they understand that the number of objects is the same, regardless of their arrangement or the order in which they are counted. Students contribute to class, group, and partner discussions by using common phrases that they have learned, including: "How many do we have?"; "What number does that show?"; "What do you think?"; "Do you agree with me?"; "I like your math thinking!"; "I'm not sure I agree, so let's try it again."; "I want to add on to your idea." To support students at the Emerging level of English proficiency, the teacher allows students first to count in their home language. The teacher also provides oral support by having students repeat her phrasing when asking and answering questions.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Collaborate with the teacher and peers on joint composing projects of short informational and literary texts that include minimal writing (labeling with a few words), using technology, where appropriate, for publishing, graphics, and the like.	Collaborate with the teacher and peers on joint composing projects of informational and literary texts that include some writing (e.g., short sentences), using technology, where appropriate, for publishing, graphics, and the like.	Collaborate with the teacher and peers on joint composing projects of informational and literary texts that include a greater amount of writing (e.g., a very short story), using technology, where appropriate, for publishing, graphics, and the like.
1	Collaborate with teacher and peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
2	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
Applying ELD Standards to Mathematics	Students often use sketches and drawings to support their thinking. Sharing their work, students may make generalizations or justify their thinking in writing with step-by-step reasoning.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Compare the effectiveness of plausible arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.OA.1: Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. In mathematics at the first-grade level, writing includes creating diagrams and number sentences to match situations. Working in groups with mixed English language proficiency levels, students use objects or make drawings (MP.5) to represent the situations described in addition and subtraction word problems. To support students in learning about a variety of addition and subtraction situations, the teacher chooses word problems that involve unknowns in different parts of the matching number sentence. Students collaborate with partners to read and discuss each word problem, model the situation, and then use the model or diagram to find the result for the word problem and write a number sentence that represents the situation.
Sample-Specific Standards for Mathematical Practice	MP.5 Use appropriate tools strategically.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Offering opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Offer opinions and ideas in conversations using a small set of learned phrases (e.g., *I think X*), as well as open responses.	Offer opinions in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X*), as well as open responses, in order to gain and/or hold the floor.	Offer opinions in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X, but…*), as well as open responses, in order to gain and/or hold the floor or add information to an idea.
1	Offer opinions and ideas in conversations using a small set of learned phrases (e.g., *I think X*), as well as open responses in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X*), as well as open responses in order to gain and/or hold the floor, elaborate on an idea, and so on.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X*), and open responses in order to gain and/or hold the floor, elaborate on an idea, provide different opinions, and so on.
2	Offer opinions and negotiate with others in conversations using learned phrases (e.g., *I think X.*), as well as open responses, in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but X.*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and the like.	Offer opinions and negotiate with others in conversations using a variety of learned phrases (e.g., *That's a good idea, but X*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and the like.
Applying ELD Standards to Mathematics	In making mathematical arguments and critiquing the reasoning of others, students need to connect and/or counter others' ideas, using mathematical justification.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.MD.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. When students analyze data sets, they organize, represent (MP.4), and interpret the data. In small groups, they offer opinions about their representations and interpretations of the data. As part of the conversations, they ask and answer questions, such as: "What is the total number of data points?"; "How many are in each category?"; "How many more or less are in one category than in another?" They also explain their reasoning by elaborating on ideas.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

<table>
<tr><th colspan="4">Integrating CA ELD Standards into Mathematics Teaching and Learning
Grades K, 1, and 2</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
A. Collaborative</th></tr>
<tr><th colspan="4">4. Adapting language choices</th></tr>
<tr><th>Grade</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>K</td><td>No standard for kindergarten.</td><td>No standard for kindergarten.</td><td>No standard for kindergarten.</td></tr>
<tr><td>1</td><td>No standard for grade 1.</td><td>No standard for grade 1.</td><td>No standard for grade 1.</td></tr>
<tr><td>2</td><td>Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.</td><td>Adjust language choices (e.g., vocabulary, use of dialogue, and so on) according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peers versus adults), with moderate support from peers or adults.</td><td>Adjust language choices according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peer-to-peer versus peer-to-teacher), with light support from peers or adults.</td></tr>
<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3">Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend mathematical arguments, interpretations, and procedures).</td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3">MP.1 Make sense of problems and persevere in solving them.

MP.3 Construct viable arguments and critique the reasoning of others.
• Justify their conclusions, communicate them to others, and respond to the arguments of others.

MP.6 Attend to precision.
• Try to communicate precisely to others.
• Try to use clear definitions in discussion with others and in their own reasoning.</td></tr>
</table>

Sample Integration of Mathematical and ELD Standards in the Classroom	2.NBT.9: Explain why addition and subtraction strategies work, using place value and the properties of operations. When students explain mathematics concepts, such as why addition and subtraction strategies work, they must use accurate vocabulary and terms and must adjust language choices to share their ideas with peers and with the teacher. For example, students work in pairs to solve addition and subtraction problems, using more than one strategy, and then explain to another pair of students why their strategies work, using accurate terms and vocabulary. Students may use place value and appropriate vocabulary to explain how they add or subtract the ones, tens, hundreds, and so on. They may also mention the commutative and associative principles of addition and subtraction to describe the order in which they added or subtracted values. The whole class is then brought together to share the students' different strategies.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Demonstrate active listening to read-alouds and oral presentations by asking and answering *yes-no* and *wh-* questions with oral sentence frames and substantial prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering questions with oral sentence frames and occasional prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
1	Demonstrate active listening to read-alouds and oral presentations by asking and answering *yes-no* and *wh-* questions with oral sentence frames and substantial prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering questions, with oral sentence frames and occasional prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
2	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with oral sentence frames and substantial prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with oral sentence frames and occasional prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
Applying ELD Standards to Mathematics	Students listen to a variety of orally expressed mathematical information, such as explanations, procedures, or word problems, and demonstrate understanding by asking and answering questions.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		

Sample Integration of Mathematical and ELD Standards in the Classroom	K.OA.2: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. When the teacher reads word problems out loud, students actively listen and ask clarifying questions about the problem situation. Students use objects or drawings (MP.4) to help them represent and solve word problems involving addition and subtraction. The teacher then encourages students to share their thinking about the problem and their addition and subtraction strategies. The teacher provides oral sentence frames and occasional prompting to support students in actively listening to the presentations. Students might ask one another common questions about their strategies, including "How many objects did you start with?" or "How many did you remove or add?"
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Describe ideas, phenomena (e.g., parts of a plant), and text elements (e.g., characters) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how butterflies eat), and text elements (e.g., setting, characters) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., insect metamorphosis), and text elements (e.g., major events, characters, setting) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
1	Describe ideas, phenomena (e.g., plant life cycle), and text elements (e.g., characters) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how earthworms eat), and text elements (e.g., setting, main idea) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., erosion), and text elements (e.g., central message, character traits) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
2	Describe ideas, phenomena (e.g., plant life cycle), and text elements (e.g., main idea, characters, events) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how earthworms eat), and text elements (e.g., setting, events) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., erosion), and text elements (e.g., central message, character traits) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.

Applying ELD Standards to Mathematics	In mathematics, close reading and viewing are often required in order to determine key details in the context of examining, interpreting, and creating graphs and other models in real-world problem situations. Students use these details when describing ideas, concepts, and procedures.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.OA.1: Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. When students solve one- and two-step word problems involving addition and subtraction, they may use drawings (MP.4) and equations, with symbols for unknowns, to represent a variety of addition and subtraction situations, with the unknowns in any of the positions in the related number sentence. Understanding the text elements and key details of a word problem helps them better describe their ideas and strategies for solving the problem. The teacher provides scaffolding and support where needed, such as reading the text aloud to students or pairing students during this activity.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Describe the language an author uses to present an idea (e.g., the words and phrases used when a character is introduced), with prompting and substantial support.	Describe the language an author uses to present an idea (e.g., the adjectives used to describe a character), with prompting and moderate support.	Describe the language an author uses to present or support an idea (e.g., the vocabulary used to describe people and places), with prompting and light support.
1	Describe the language writers or speakers use to present an idea (e.g., the words and phrases used to describe a character), with prompting and substantial support.	Describe the language writers or speakers use to present or support an idea (e.g., the adjectives used to describe people and places), with prompting and moderate support.	Describe the language writers or speakers use to present or support an idea (e.g., the author's choice of vocabulary to portray characters, places, or real people) with prompting and light support.
2	Describe the language writers or speakers use to present an idea (e.g., the words and phrases used to describe a character), with prompting and substantial support.	Describe the language writers or speakers use to present or support an idea (e.g., the author's choice of vocabulary or phrasing to portray characters, places, or real people), with prompting and moderate support.	Describe how well writers or speakers use specific language resources to support an opinion or present an idea (e.g., whether the vocabulary used to present evidence is strong enough), with light support.
Applying ELD Standards to Mathematics	When critiquing others' presentations on mathematical topics, students can describe how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.NBT.4: Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. To show understanding of adding various one- and two-digit numbers with a variety of strategies, students relate the strategy to a written method (MP.2) and explain their reasoning. When students listen to others' presentations and explanations of the models and strategies that they used, and observe others describing their reasoning, students determine whether or not the explanations make sense and describe how the explanations could have been improved. In addition, students determine whether their peers have used the correct terminology (e.g., *add, subtract, one-digit, two-digit*) when describing their processes, with light prompting and support from the teacher. To support students at the Emerging level of English proficiency, the teacher provides more substantial support. For example, she ensures the students understand the specific term under discussion (e.g., one-digit, two digit) and asks a direct question such as “Mary said this is a two-digit number [pointing to a number]. Is this a two-digit number?”
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Distinguish how two different frequently used words (e.g., describing an action with the verb *walk* versus *run*) produce a different effect.	Distinguish how two different words with similar meaning (e.g., describing an action as *walk* versus *march*) produce shades of meaning and a different effect.	Distinguish how multiple different words with similar meaning (e.g., *walk, march, strut, prance*) produce shades of meaning and a different effect.
1	Distinguish how two different frequently used words (e.g., *large* versus *small*) produce a different effect on the audience.	Distinguish how two different words with similar meaning (e.g., *large* versus *enormous*) produce shades of meaning and a different effect on the audience.	Distinguish how multiple different words with similar meaning (e.g., *big, large, huge, enormous, gigantic*) produce shades of meaning and a different effect on the audience.
2	Distinguish how two different frequently used words (e.g., describing a character as *happy* versus *angry*) produce a different effect on the audience.	Distinguish how two different words with similar meaning (e.g., describing a character as *happy* versus *ecstatic*) produce shades of meaning and different effects on the audience.	Distinguish how multiple different words with similar meaning (e.g., *pleased* versus *happy* versus *ecstatic, heard* or *knew* versus *believed*) produce shades of meaning and different effects on the audience.
Applying ELD Standards to Mathematics	When reading or listening to others' presentations on mathematical topics, students can distinguish how the writer's or speaker's selection of particular words or phrases with related meanings (e.g., *divide* versus *partition*) affects the audience's understanding.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.MD.8: Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* Students use different strategies and a variety of representations to explain how they solved a word problem involving money, with a focus on the precise symbols and words used to describe money. For example, to solve the problem "Using $1, $5, and $10 bills, how many different ways can you make $12?," students must use correct terminology to explain how to think of combining the bills in different ways. They must also correctly use the $ symbol to represent "dollars." The students can then compare when to use *put together two bills* versus *combine two bills*. The teacher encourages students to demonstrate problem situations, using actual money or other objects (MP.4) to represent dollar bills; use accurate vocabulary to describe the process; and use correct symbols to write equations representing the problems.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Plan and deliver very brief oral presentations (e.g., show and tell, describing a picture).	Plan and deliver brief oral presentations on a variety of topics (e.g., show and tell, author's chair, recounting an experience, describing an animal).	Plan and deliver longer oral presentations on a variety of topics in a variety of content areas (e.g., retelling a story, describing a science experiment).
1	Plan and deliver very brief oral presentations (e.g., show and tell, describing a picture).	Plan and deliver brief oral presentations on a variety of topics (e.g., show and tell, author's chair, recounting an experience, describing an animal, and the like).	Plan and deliver longer oral presentations on a variety of topics in a variety of content areas (e.g., retelling a story, describing a science experiment).
2	Plan and deliver very brief oral presentations (e.g., recounting an experience, retelling a story, describing a picture).	Plan and deliver brief oral presentations on a variety of topics (e.g., retelling a story, describing an animal).	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., retelling a story, recounting a science experiment, describing how to solve a mathematics problem).
Applying ELD Standards to Mathematics	Students share their thinking and findings by explaining or describing the mathematics content, providing supporting evidence, and, in many cases, using graphics or demonstrations as part of an oral presentation.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.		

Sample Integration of Mathematical and ELD Standards in the Classroom	K.MD.2: Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.* When students explain a process or procedure, they will typically provide a logical progression of statements. If students are to directly compare two objects with a measurable attribute in common, they may describe the difference and explain how they know (MP.2) which has "more of"/"less of" the attribute. For example, a student is asked to "Choose two classmates who seem to be about the same height. Is one student actually taller or shorter than the other? How would you decide?" The student then explains a process of having the two students take off their shoes and stand back to back. A taller student or the teacher could put a yardstick (or book or similar suitable object) on the tops of both students' heads and try to place it so as to account for hairstyles that might affect the comparison. The student then plans and delivers an oral presentation to the group on his or her findings by describing how the yardstick shows which student is taller/shorter or if they still seem to be exactly the same height.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Composing/Writing			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Draw, dictate, and write to compose very short literary texts (e.g., story) and informational texts (e.g., a description of a dog), using familiar vocabulary collaboratively in shared language activities with an adult (e.g., joint construction of texts), with peers, and sometimes independently.	Draw, dictate, and write to compose short literary texts (e.g., story) and informational texts (e.g., a description of dogs), collaboratively with an adult (e.g., joint construction of texts), with peers, and with increasing independence.	Draw, dictate, and write to compose longer literary texts (e.g., story) and informational texts (e.g., an information report on dogs), collaboratively with an adult (e.g., joint construction of texts), with peers, and independently using appropriate text organization.
1	Write very short literary texts (e.g., story) and informational texts (e.g., a description of an insect) using familiar vocabulary collaboratively with an adult (e.g., joint construction of texts), with peers, and sometimes independently.	Write short literary texts (e.g., a story) and informational texts (e.g., an informative text on the life cycle of an insect) collaboratively with an adult (e.g., joint construction of texts), with peers, and with increasing independence.	Write longer literary texts (e.g., a story) and informational texts (e.g., an informative text on the life cycle of insects) collaboratively with an adult (e.g., joint construction), with peers, and independently.
2	Write very short literary texts (e.g., story) and informational texts (e.g., a description of a volcano) using familiar vocabulary collaboratively with an adult (e.g., joint construction of texts), with peers, and sometimes independently.	Write short literary texts (e.g., a story) and informational texts (e.g., an explanatory text explaining how a volcano erupts) collaboratively with an adult (e.g., joint construction of texts), with peers, and with increasing independence.	Write longer literary texts (e.g., a story) and informational texts (e.g., an explanatory text explaining how a volcano erupts) collaboratively with an adult (e.g., joint construction), with peers and independently.
Applying ELD Standards to Mathematics	Students may work independently or collaboratively to write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying conclusions.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.G.3: Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. To show fractional parts, students may work collaboratively or independently to make sketches or drawings (MP.4) to show a variety of ways to partition circles and rectangles into two, three, or four equal shares. When they explain their sketches or drawings in writing, they use correct terminology (e.g., *halves, thirds, half of, a third of*) to describe the squares, and describe the whole as two halves, three thirds, or four fourths. They use correct terminology (e.g., "This circle has *two halves*") to write explanations of their drawings. Drawings or sketches may also be used to show that equal shares of identical wholes need not have the same shape (MP.2). For example, given a square shape, students may partition the square into fourths by drawing the diagonals, showing three parallel lines that are equally spaced horizontally or vertically, showing a vertical line and a horizontal line, or using combinations of these partitionings, or by creating various non-linear partitions.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Supporting opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Offer opinions and provide good reasons (e.g., *My favorite book is X because X.*) referring to the text or to relevant background knowledge.	Offer opinions and provide good reasons and some textual evidence or relevant background knowledge (e.g., paraphrased examples from text or knowledge of content).	Offer opinions and provide good reasons with detailed textual evidence or relevant background knowledge (e.g., specific examples from text or knowledge of content).
1	Offer opinions and provide good reasons (e.g., *My favorite book is X because X*) referring to the text or to relevant background knowledge.	Offer opinions and provide good reasons and some textual evidence or relevant background knowledge (e.g., paraphrased examples from text or knowledge of content).	Offer opinions and provide good reasons with detailed textual evidence or relevant background knowledge (e.g., specific examples from text or knowledge of content).
2	Support opinions by providing good reasons and some textual evidence or relevant background knowledge (e.g., referring to textual evidence or knowledge of content).	Support opinions by providing good reasons and increasingly detailed textual evidence (e.g., providing examples from the text) or relevant background knowledge about the content.	Support opinions or persuade others by providing good reasons and detailed textual evidence (e.g., specific events or graphics from text) or relevant background knowledge about the content.
Applying ELD Standards to Mathematics	Students may be required to make decisions based on evidence, including use of reasonable estimates of known quantities to find unknown quantities.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.		

Sample Integration of Mathematical and ELD Standards in the Classroom	2.NBT.7: Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. Students use various concrete models and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to add and subtract larger numbers. Students use detailed evidence from their models to relate their strategy to a written method (MP.2) and to persuade others that their strategy is correct. Using examples and counterexamples, students show that sometimes it is necessary to compose or decompose tens or hundreds. For example, using place-value models, a student may show why 376 + 252 is not equal to 5128 (where 7 tens and 5 tens are written as "12" rather than composing a hundred), or may use estimation strategies to show that a sum of 5128 is not reasonable. To engage students at the Emerging level of English proficiency, the teacher provides verbal support to help the students express their understanding about the reasonableness of the solution. For example, once a student has used a model to test whether 5128 is the correct answer to 376 + 252, the teacher engages in a conversation with the student asking about the correctness of the solution, recasting the student's responses into appropriate phrases.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grade	**Emerging**	**Expanding**	**Bridging**
K	a. Retell texts and recount experiences using a select set of key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *spicy* to describe a favorite food, using the word *larva* when explaining insect metamorphosis) while speaking and composing.	a. Retell texts and recount experiences using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail or to create shades of meaning (e.g., using the word *scurry* versus *run*) while speaking and composing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language to create an effect (e.g., using the word *suddenly* to signal a change) or to create shades of meaning (e.g., The cat's fur was *as white as snow*) while speaking and composing.
1	a. Retell texts and recount experiences, using key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *scrumptious* to describe a favorite food, using the word *thorax* to refer to insect anatomy) while speaking and writing.	a. Retell texts and recount experiences, using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *prance* versus *walk*) while speaking and writing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language (e.g., The dog was *as big as a house*) to create an effect, precision, and shades of meaning while speaking and writing.

2	a. Retell texts and recount experiences by using key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *generous* to describe a character, using the word *lava* to explain volcanic eruptions) while speaking and writing.	a. Retell texts and recount experiences using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *scurry* versus *dash*) while speaking and writing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language (e.g., He was *as quick as a cricket*) to create an effect, precision, and shades of meaning while speaking and writing.
Applying ELD Standards to Mathematics	Students use key words and a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		
Sample Integration of Mathematical and ELD Standards in the Classroom	K.G.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of*, *behind,* and *next to*. Students provide sufficient details and domain-specific vocabulary as they describe or explain concepts or procedures. For example, when describing objects in the environment, they may use names of shapes and describe the relative positions of these objects with sentences such as "The *square* is *above* the *triangle* and *next to* the *circle*." The teacher may scaffold student use of appropriate language by providing prompting and support during discussions.		
Sample-Specific Standards for Mathematical Practice	N/A		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Apply understanding of how text types are organized (e.g., how a story is organized by a sequence of events) to comprehending and composing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how an informative text is organized by topic and details) to comprehending texts and composing texts in shared language activities guided by the teacher, collaboratively with peers, and with increasing independence.	Apply understanding of how different text types are organized predictably (e.g., a narrative text versus an informative text versus an opinion text) to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and independently.
1	Apply understanding of how text types are organized (e.g., how a story is organized by a sequence of events) to comprehending texts and composing basic texts with substantial support (e.g., using drawings, through joint construction with a peer or teacher) to comprehending texts and writing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how an informative text is organized by topic and details) to comprehending texts and writing texts in shared language activities guided by the teacher and with increasing independence.	Apply understanding of how different text types are organized predictably to express ideas (e.g., how a story is organized versus an informative/ explanatory text versus an opinion text) to comprehending texts and writing texts in shared language activities guided by the teacher and independently.
2	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially) to comprehending and composing texts in shared language activities guided by the teacher, with peers, and sometimes	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how an information report is organized by topic and details) to comprehending texts and composing texts	Apply understanding of how different text types are organized predictably to express ideas (e.g., a narrative versus an informative/explanatory text versus an opinion text) to comprehending and writing texts

	independently.	with increasing independence.	independently.
Applying ELD Standards to Mathematics	As students express ideas, they use their understandings about how mathematics texts are organized, and about mathematical symbols or words, to help them comprehend and write texts so that they communicate clearly.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.		
Sample Integration of Mathematical and ELD Standards in the Classroom	2.OA.3: Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. To show comprehension and to express ideas about odd and even numbers, students may determine whether a group of objects has an odd or even number of members in a variety of ways (e.g., by pairing objects or counting them by 2s). To communicate their understanding, they write an equation (MP.4), using what they know about the structure of equations to express an even number as a sum of two equal addends, with prompting and support from the teacher. For example, "When I count these 13 pennies by 2s, I have one penny left over, so 13 is an odd number. If I had one penny more, I would have 7 pairs of pennies. The equation 7 + 7 = 14 shows that 14 is an even number." To support students at the Emerging level of English proficiency, the teacher offers language support to help students complete the task. For example, the teacher helps the students take the task one step at a time and uses a combination of written and oral language frames to help students appropriately structure their responses to each segment of the task. Once the student has completed all of the segments of the task and given oral or written responses, the teacher asks the students to practice their responses three times with a partner before sharing out to the class.		
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
2. Understanding cohesion			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Apply basic understanding of how ideas, events, or reasons are linked throughout a text using more everyday connecting words or phrases (e.g., *one time, then*) to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a growing number of connecting words or phrases (e.g., *next, after a long time*) to comprehending texts and composing texts in shared language activities guided by the teacher, collaboratively with peers, and with increasing independence.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *first/second/third, once, at the end*) to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and independently.
1	Apply basic understanding of how ideas, events, or reasons are linked throughout a text using more everyday connecting words or phrases (e.g., *one day, after, then*) to comprehending texts and writing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a growing number of connecting words or phrases (e.g., *a long time ago, suddenly*) to comprehending texts and writing texts in shared language activities guided by the teacher and with increasing independence.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, after that, first/second/third*) to comprehending texts and writing texts in shared language activities guided by the teacher and independently.
2	Apply basic understanding of how ideas, events, or reasons are linked throughout a text using more everyday connecting words or phrases (e.g., *today, then*) to comprehending and composing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a growing number of connecting words or phrases (e.g., *after a long time, first/next*) to comprehending texts and writing texts with increasing independence.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, after that, suddenly*) to comprehending and writing texts independently.

Applying ELD Standards to Mathematics	As students describe or explain mathematical concepts or procedures, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.NBT.6: Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. When students subtract multiples of 10 from multiples of 10 (in the range 10–90, with positive or zero differences), they may use concrete models or drawings (MP.5) and a variety of strategies. For example, a student may use place-value models of 10s (such as 10-rods, 10-sticks, or bundles of 10) to demonstrate the problem "60 – 20" as beginning with six 10-rods, then taking away two 10-rods, which leaves four 10-rods. Students work with partners and explain to one another the sequence of steps they took to subtract multiples of 10 by using language frames with text connectives (e.g., *We started with ____. First we ___. Then we ___. So now we ____.*), which supports them to connect the steps in ways that help others (and themselves) understand the flow of ideas.
Sample-Specific Standards for Mathematical Practice	MP.5 Use appropriate tools strategically.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
K	a. Use frequently used verbs (e.g., go, eat, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and with increasing independence. b. Use simple verb tenses appropriate for the text type and discipline to convey time (e.g., simple past for recounting an experience) in shared language activities guided by the teacher and with increasing independence.	a. Use a growing number of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and independently. b. Use a growing number of verb tenses appropriate for the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) in shared language activities guided by the teacher and independently.	a. Use a wide variety of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and independently. b. Use a wide variety of verb tenses appropriate for the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict) in shared language activities guided by the teacher and independently.
1	a. Use frequently used verbs (e.g., go, eat, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and sometimes independently. b. Use simple verb tenses appropriate for the text type and discipline to convey time (e.g., simple past for recounting an experience) in shared language activities guided by the teacher and sometimes independently.	a. Use a growing number of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and with increasing independence. b. Use a growing number of verb tenses appropriate for the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) in shared language activities guided by the teacher and with increasing independence.	a. Use a wide variety of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and independently. b. Use a wide variety of verb tenses appropriate for the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict) in shared language activities guided by the teacher and independently.

2	a. Use frequently used verbs (e.g., walk, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and sometimes independently. b. Use simple verb tenses appropriate to the text type and discipline to convey time (e.g., simple past tense for recounting an experience) in shared language activities guided by the teacher and sometimes independently.	a. Use a growing number of verb types (e.g., doing, saying, being/having, thinking/feeling) with increasing independence. b. Use a growing number of verb tenses appropriate to the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) with increasing independence.	a. Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling) independently. b. Use a wide variety of verb tenses appropriate to the text type and discipline to convey time (e.g., simple present tense for a science description, simple future to predict) independently.
Applying ELD Standards to Mathematics	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		
Sample Integration of Mathematical and ELD Standards in the Classroom	K.G.5: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. In describing a process or explaining a strategy used to solve a problem, students use various verb types and tenses. When modeling shapes in the real world, students build shapes from components (e.g., sticks and clay balls) and sketch shapes (MP.4). When explaining their process and reasoning, they use past tense to tell what they did and why, present tense to describe what they now have, and future tense to make "what if" conjectures. For example: "I *made* this model of a house by using a shoe box. I *bent* a sheet of construction paper to make the roof. That *looks* like a tent. If I need to show the back porch, I *will add* a smaller shoe box to the back." To support students at the Emerging level of English proficiency, the teacher explicitly teachers the verb “make” in the past and future tenses, and helps students practice using it in the context of the task. Students say things such as, “Today I *made* a house. Tomorrow I will *make* a roof.”		

Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards **Part II: Learning About How English Works** **B. Expanding and Enriching Ideas**			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and with increasing independence.	Expand noun phrases in a wide variety of ways (e.g., adding a variety of adjectives to noun phrases) in order to enrich the meaning of phrases/sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and independently.
1	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) to enrich the meaning of sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and with increasing independence.	Expand noun phrases in a wide variety of ways (e.g., adding a variety of adjectives to noun phrases) in order to enrich the meaning of phrases/ sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and independently.
2	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and to add details about ideas, people, things, and the like, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) in order to enrich the meaning of sentences and to add details about ideas, people, things, and the like, with increasing independence.	Expand noun phrases in a variety of ways (e.g., adding comparative/superlative adjectives to nouns) in order to enrich the meaning of phrases/sentences and to add details about ideas, people, things, and the like, independently.

Applying ELD Standards to Mathematics	In mathematics, oral and written problems may have long noun phrases. Students need to be able to identify what the main noun is and also use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.MD.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. When presented with descriptions of data sets, students may encounter long noun phrases and detailed information that is needed in order to understand the problem and context. Students use expanded noun phrases to describe the graphs that they draw to represent data and their reasoning for drawing their graphs as they did (MP.2). For example, students may use the following expanded noun phrases to describe a bar graph about bird sightings: "<u>The blue bar on the left</u> represents the number of blue jays that were seen. The number of cardinals is represented by <u>the tall red bar</u>." Students also understand and use details when they solve simple put-together, take-apart, and compare problems related to their graphs. A student might use expanded noun phrases, using a frame with the main noun filled in (e.g., ______ *bar* _______), to help explain what they learn from the graph. For example: "I know that 3 more cardinals than blue jays were seen because <u>the red bar to the right</u> is 3 units higher than <u>the blue bar</u>."
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Expand sentences with frequently used prepositional phrases (such as *in the house, on the boat*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process in shared language activities guided by the teacher and with increasing independence.	Expand simple and compound sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) in shared language activities guided by the teacher and independently.
1	Expand sentences with frequently used prepositional phrases (such as *in the house, on the boat*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process in shared language activities guided by the teacher and with increasing independence.	Expand simple and compound sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) in shared language activities guided by the teacher and independently.
2	Expand sentences with frequently used adverbials (e.g., prepositional phrases, such as *at school, with my friend*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with a growing number of adverbials (e.g., adverbs, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process with increasing independence.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) independently.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	K.MD.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. As students explore, and show understanding about, attributes of objects, they use modifying words and phrases to make observations. For example, when describing the length of a table in the classroom, they might measure with a non-standard measure such as a pencil or a block, and begin by simply stating, "Length is 18 pencils" or "Length is 30 blocks." Upon prompting from the teacher for further details about how they measured the length, they expand their description to explain, "The length of the table is 18 pencils when I measure *with this pencil*. The block is smaller, so the length of the table *in blocks* is 30."
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*) in shared language activities guided by the teacher and with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete simple sentences to form compound sentences) to make connections between and join ideas (e.g., *The boy was hungry. The boy ate a sandwich.* → *The boy was hungry so he ate a sandwich*) in shared language activities guided by the teacher and independently.
1	Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*), in shared language activities guided by the teacher and with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete, simple-to-form compound sentences) to make connections between and to join ideas (e.g., *The boy was hungry. The boy ate a sandwich*. → *The boy was hungry so he ate a sandwich*) in shared language activities guided by the teacher and independently.
2	Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*) with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete simple to form compound sentences) to make connections between and to join ideas (e.g., *The boy was hungry. The boy ate a sandwich.* → *The boy was hungry so he ate a sandwich*) independently.

Applying ELD Standards to Mathematics	When explaining their thinking, or listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.OA.6: Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). When adding and subtracting within 20, students work in pairs or triads to connect their ideas, using language frames to combine clauses. For example, to explain how they solved 13 – 4 by decomposing a number to find the difference, students use teacher-provided language frames that support them in deepening their mathematical thinking and extending their use of mathematical language (e.g., "We wanted to find the difference, so we ___. We started with _____, and then we ____. We knew that ____, so we ____. We decided to ____ because ____."). Using these frames, the students write an explanation such as: "We wanted to find the difference, so we started by decomposing the 4 to 3 + 1. Then we subtracted 13 – 3 to get 10. We knew that we needed to subtract 1 more, and then our final answer was 9. 13 – 4 = 9." During this activity, the teacher pulls a small group comprised of students at the Emerging level of English proficiency. First, the students work in pairs to solve the equation. Then, the teacher works with the students to jointly construct the explanation, focusing on mathematical terminology as well as combining clauses to create compound sentences.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	No standard for kindergarten.	No standard for kindergarten.	No standard for kindergarten.
1	Condense clauses in simple ways (e.g., changing: *I like blue. I like red. I like purple* → *I like blue, red, and purple*) to create precise and detailed sentences in shared language activities guided by the teacher and sometimes independently.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *She's a doctor. She saved the animals.* → *She's the doctor who saved the animals*) to create precise and detailed sentences in shared language activities guided by the teacher and with increasing independence.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing, for example, through embedded clauses as in *She's a doctor. She's amazing. She saved the animals*. → *She's the amazing doctor who saved the animals*) to create precise and detailed sentences in shared language activities guided by the teacher and independently.
2	Condense clauses in simple ways (e.g., changing: *It's green. It's red.* → *It's green and red*) to create precise and detailed sentences in shared language activities guided by the teacher and sometimes independently.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *It's a plant. It's found in the rain forest.* → *It's a green and red plant that's found in the rain forest*) to create precise and detailed sentences with increasing independence.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing as in, *It's a plant. It's green and red. It's found in the tropical rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences independently.
Applying ELD Standards to Mathematics	When explaining their thinking, or listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.G.1: Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. As students use defining and non-defining attributes to build and draw shapes in small groups, they learn to describe the shapes in different ways. For example, as students work to draw squares, they might start with a description such as "Squares have four sides and all four sides are the same length. The corners are right angles." The teacher supports students to condense their descriptions of shapes by providing them with sentence frames such as "Squares have ___ that ____." An example of a condensed student description could be "Squares have four equal sides that meet to form right angles." The teacher also provides students with a list of important vocabulary, such as *equal*, *side*, *corner*, and *angle*, with accompanying diagrams, in order to support students in using precise terminology when describing the shapes.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
4	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
5	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
Applying ELD Standards to Mathematics	Working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts. While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	3.OA.1: Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.* When interpreting products of whole numbers, students work in pairs, describing to each other different contexts that represent each product. Still in partners, students ask and answer relevant questions about each other's descriptions. This pair work occurs in a sustained dialogue that includes building on each other's responses and following turn-taking rules. After pair work, students contribute to a whole-class discussion about the process of writing and solving word problems such as "There are 5 bags of marbles, with 7 marbles in each bag. How many marbles are there altogether?"
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
4	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
5	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
Applying ELD Standards to Mathematics	Students often support their writing in mathematics with graphs, sketches and drawings, or geometric constructions. Sharing their work, students may make generalizations or justify their thinking with step-by-step reasoning.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	5.G.3: Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.* Students collaborate to determine attributes of various two-dimensional figures and create graphic representations (MP.4) to emphasize relationships between categories and subcategories of the figures. In a small-group activity, students work together to determine attributes of quadrilaterals. The groups co-construct short written descriptions of the attributes of squares and other rectangles, using pictures of a variety of quadrilaterals to show examples and counterexamples to support their descriptions. The teacher has ensured that each student at the Emerging level of English proficiency is working with a language broker, another student who is bilingual in English and the student's home language. The teacher checks in specifically to verbally support each student at the Emerging level of English proficiency, asking probing questions and recasting the student's descriptions to help the student use specific mathematical terminology and language features appropriate to mathematical descriptions (e.g., complete sentences, relating verbs such as "is" and "have").
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Offering opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Offer opinions and negotiate with others in conversations using basic learned phrases (e.g., *I think...*), as well as open responses in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I agree with X, and...*), as well as open responses in order to gain and/or hold the floor, provide counterarguments, and the like.	Offer opinions and negotiate with others in conversations using a variety of learned phrases (e.g., *That's a good idea, but...*), as well as open responses in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and the like.
4	Negotiate with or persuade others in conversations using basic learned phrases (e.g., *I think...*), as well as open responses, in order to gain and/or hold the floor.	Negotiate with or persuade others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and so on.	Negotiate with or persuade others in conversations using a variety of learned phrases (e.g., *That's a good idea. However...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and so on.
5	Offer opinions and negotiate with others in conversations using learned phrases (e.g., *I think X.*), as well as open responses, in order to gain and/or hold the floor.	Negotiate with or persuade others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and so on.	Negotiate with or persuade others in conversations using a variety of learned phrases (e.g., *That's an interesting idea. However,...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and so on.
Applying ELD Standards to Mathematics	In making mathematical arguments and critiquing the reasoning of others, students need to connect and/or counter others' ideas, using mathematical justification.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.NF.1: Explain why a fraction *a/b* is equivalent to a fraction (*n* x *a*)/(*n* x *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. While using visual fraction models to explain the equivalence of fractions, students use definitions and previously established results to justify their reasoning, providing counterexamples as appropriate. During a whole-class discussion, students are asked to explain the error in a student's reasoning that "6/8 is greater than 3/4 because 6 is greater than 3 and 8 is greater than 4." During the discussion, students use common phrases as they attempt to use and justify alternative, correct ways to recognize that the fractions are equal. One student says: "*I agree that* comparing the numerators is a good way to check if fractions are equal, *but* that simple comparison only works when the denominators are the same. *I can show that* 6/8 is equal to 3/4 by drawing a picture of 3/4 and cutting each fourth into two equal pieces." (MP.2)
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

<table>
<tr><th colspan="4">Integrating CA ELD Standards into Mathematics Teaching and Learning
Grades 3, 4, and 5</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
A. Collaborative</th></tr>
<tr><th colspan="4">4. Adapting language choices</th></tr>
<tr><th>Grade</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>3</td><td>Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.</td><td>Adjust language choices (e.g., vocabulary, use of dialogue, and the like) according to purpose (e.g., persuading, entertaining), social setting, and audience (e.g., peers versus adults), with moderate support from peers or adults.</td><td>Adjust language choices according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peer-to-peer versus peer-to-teacher), with light support from peers or adults.</td></tr>
<tr><td>4</td><td>Adjust language choices according to social setting (e.g., playground, classroom) and audience (e.g., peers, teacher), with substantial support.</td><td>Adjust language choices according to purpose (e.g., persuading, entertaining), task (e.g., telling a story versus explaining a science experiment), and audience, with moderate support.</td><td>Adjust language choices according to purpose, task (e.g., facilitating a science experiment), and audience, with light support.</td></tr>
<tr><td>5</td><td>Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.</td><td>Adjust language choices according to purpose (e.g., persuading, entertaining), task (e.g., telling a story versus explaining a science experiment), and audience, with moderate support.</td><td>Adjust language choices according to purpose, task (e.g., facilitating a science experiment), and audience, with light support.</td></tr>
<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3">Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend mathematical arguments, interpretations, and procedures).</td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3">MP.1 Make sense of problems and persevere in solving them.

MP.3 Construct viable arguments and critique the reasoning of others.
• Justify their conclusions, communicate them to others, and respond to the arguments of others.

MP.6 Attend to precision.
• Try to communicate precisely to others.</td></tr>
</table>

	• Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	3.MD.7c: Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b* + *c* is the sum of *a* x *b* and *a* x *c*. Use area models to represent the distributive property in mathematical reasoning. Using a drawing or model to demonstrate a concrete case relating area to the operations of multiplication and addition, students look for and make use of structure (MP.7). Students first use everyday English to explain how they might use what they know about addition and multiplication to find the area of a 5 × 12 rectangle. As the teacher circulates around the room, she prompts a student to adjust her language to incorporate more precise mathematical terms. The teacher says, "Can you use one of the mathematical terms on the word wall in your discussion?" The student incorporates the term *the distributive property* into her discussion to justify why she is able to rename the 12 as 10 + 2 and to show that 5 × 12 is the same as 5 × (10 + 2) is the same as (5 × 10) + (5 × 2).
Sample-Specific Standards for Mathematical Practice	MP.7 Look for and make use of structure.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **B. Interpretive**			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
4	Demonstrate active listening of read-alouds and oral presentations by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
5	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with oral sentence frames and substantial prompting and support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
Applying ELD Standards to Mathematics	Students listen to a variety of orally expressed mathematical information, such as explanations, procedures, or word problems, and demonstrate understanding by asking and answering questions.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		

Sample Integration of Mathematical and ELD Standards in the Classroom	5.NBT.6: Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. As students consider different oral explanations for finding whole-number quotients, using a variety of strategies (MP.2) and illustrated in various ways (MP.4), they show understanding by asking and answering appropriate questions. After an oral explanation, one student is asked to explain to the class how he divided 112 feet by 16 feet by drawing an area model with one side length of 16 feet and finding the other side length, which gives an area of 112 feet. The teacher then provides two clear questions and explicit prompting to engage other students in asking questions such as "Why is one side length 16 feet? What values did you try for the other side length before you found the correct answer? How do you know the area of the rectangle is 112 square feet?"
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Describe ideas, phenomena (e.g., insect metamorphosis), and text elements (e.g., main idea, characters, setting) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how cows digest food), and text elements (e.g., main idea, characters, events) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., volcanic eruptions), and text elements (e.g., central message, character traits, major events) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
4	a. Describe ideas, phenomena (e.g., volcanic eruptions), and text elements (main idea, characters, events, and the like) based on close reading of a select set of grade-level texts, with substantial support. b. Use knowledge of frequently used affixes (e.g., *un-, mis-*) and linguistic context, reference materials, and visual cues to determine the meaning of unknown words on familiar topics.	a. Describe ideas, phenomena (e.g., animal migration), and text elements (main idea, central message, and the like) in greater detail based on close reading of a variety of grade-level texts, with moderate support. b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar topics.	a. Describe ideas, phenomena (e.g., pollination), and text elements (main idea, character traits, event sequence, and the like) in detail based on close reading of a variety of grade-level texts, with light support. b. Use knowledge of morphology (e.g., affixes, roots, and base words) and linguistic context to determine the meaning of unknown and multiple-meaning words on familiar and new topics.

<table>
<tr><td rowspan="1">5</td><td> a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with substantial support. b. Use knowledge of frequently-used affixes (e.g., un-, mis-), linguistic context, reference materials, and visual cues to determine the meaning of unknown words on familiar topics. </td><td> a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support. b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar and new topics. </td><td> a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar and new topics. </td></tr>
<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3"> a. In mathematics, close reading and viewing are often required in order to determine key details in the context of examining, interpreting, and creating graphs and other models in real-world problem situations. Students use these details when describing or explaining ideas, concepts, and procedures. b. Students need to be able to use their morphological knowledge and context (e.g., the words or symbols around an unknown word) to derive the meaning of multiple-meaning words or unknown words in mathematics. </td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3"> MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others.
• Compare the effectiveness of plausible arguments. MP.6 Attend to precision.
• Try to communicate precisely to others.
• Try to use clear definitions in discussion with others and in their own reasoning.
• Calculate accurately and efficiently and express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. </td></tr>
</table>

Sample Integration of Mathematical and ELD Standards in the Classroom	5.OA.3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.* When students generate numerical patterns based on rules—such as "multiply by 2" and "multiply by 6," both with a starting number of 1—they closely read and interpret the meaning of each rule. Their close reading of the rules and of the numerical patterns supports them to describe, in writing, the relationship between corresponding terms (MP.2): for example, the terms in the second sequence are three times the corresponding terms in the first sequence. Students also graph ordered pairs consisting of the corresponding terms on a coordinate plane (MP.4) to illustrate and explain the relationship between the two rules. As students examine the graphs and written descriptions made by other students, they deepen both their understanding of the relationships between corresponding terms and their understanding of how to effectively use graphs to investigate and communicate ideas. Students develop illustrations labeled with key mathematical terms, and develop written descriptions of their observations. With peers, in pairs or small groups, the students examine and explain one another's descriptions and illustrations, using posted “success criteria” that promote their use of mathematical language and textual evidence. When solving problems, the students also refer to mathematical terminology posted on the Math Terms Wall. The Math Terms Wall includes terms that have a different meaning in mathematics than they do in English language arts or everyday language (e.g., *product, equal, difference, proper/improper*).
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Describe the language writers or speakers use to support an opinion or present an idea (e.g., by identifying the phrases or words in the text that provide evidence), with prompting and substantial support.	Describe the specific language writers or speakers use to present or support an idea (e.g., the specific vocabulary or phrasing used to provide evidence), with prompting and moderate support.	Describe how well writers or speakers use specific language resources to support an opinion or present an idea (e.g., whether the vocabulary or phrasing used to provide evidence is strong enough), with light support.
4	Describe the specific language writers or speakers use to present or support an idea (e.g., the specific vocabulary or phrasing used to provide evidence), with prompting and substantial support.	Describe how well writers or speakers use specific language resources to support an opinion or present an idea (e.g., whether the vocabulary or phrasing used to provide evidence is strong enough), with prompting and moderate support.	Describe how well writers and speakers use specific language resources to support an opinion or present an idea (e.g., the clarity or appealing nature of language used to present evidence), with prompting and light support.
5	Describe the specific language writers or speakers use to present or support an idea (e.g., the specific vocabulary or phrasing used to provide evidence), with prompting and substantial support.	Explain how well writers and speakers use language resources to support an opinion or present an idea (e.g., whether the vocabulary used to provide evidence is strong enough, or if the phrasing used to signal a shift in meaning does this well), with moderate support.	Explain how well writers and speakers use specific language resources to support an opinion or present an idea (e.g., the clarity or appealing nature of language used to provide evidence or describe characters, or if the phrasing used to introduce a topic is appropriate), with light support.
Applying ELD Standards to Mathematics	When critiquing others' presentations on mathematical topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Distinguish correct logic or reasoning from that which is flawed and, if there is a flaw, explain what it is. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	3.NF.3d: Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. Students use visual fraction models and a variety of examples to show equivalence of fractions and to compare fractions (MP.2). Working in heterogeneous language-proficiency groups, students prepare presentations that (1) address comparisons such as the following and (2) justify their reasoning. a) "Write a mathematics sentence that compares one-third of a large pizza and one-fourth of a same-sized pizza." b) "How does three-sixths of a medium-sized pizza compare to two-fourths of a same-sized pizza?" c) "Use models to compare two-thirds of a large pizza and four-sixths of a small pizza. Explain why two-thirds is *not* equivalent to four-sixths *in this situation*." The teacher leads the students through co-constructing some examples of language that the students might use to justify their reasoning, and creates an anchor chart for students to use (including phrases such as "We know this because ___"; "Our thinking was as follows ___"; "We checked our answer for accuracy by ___"). Before the first presentation, the teacher tells the students to listen for the language that the presenters use to justify their response, and models two responses for the class. After each presentation, the teacher asks partners to work together to identify the language that the groups used to justify their reasoning, and to refer to the anchor chart that the class prepared earlier.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **B. Interpretive**			
8. Analyzing language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Distinguish how different words produce different effects on the audience (e.g., describing a character as *happy* versus *sad*).	Distinguish how different words with similar meanings (e.g., describing a character as *happy* versus *ecstatic*) produce shades of meaning and different effects on the audience.	Distinguish how multiple different words with similar meanings (e.g., *pleased* versus *happy* versus *ecstatic, heard* versus *knew* versus *believed*) produce shades of meaning and different effects on the audience.
4	Distinguish how different words with similar meanings produce different effects on the audience (e.g., describing a character's actions as *whined* versus *said*).	Distinguish how different words with similar meanings (e.g., describing a character as *smart* versus *an expert*) and figurative language (e.g., as big as a whale) produce shades of meaning and different effects on the audience.	Distinguish how different words with related meanings (e.g., *fun* versus *entertaining* versus *thrilling, possibly* versus *certainly*) and figurative language produce shades of meaning and different effects on the audience.
5	Distinguish how different words with similar meanings produce different effects on the audience (e.g., describing a character as *angry* versus *furious*).	Distinguish how different words with similar meanings (e.g., describing an event as *sad* versus *tragic*) and figurative language (e.g., *she ran like a cheetah*) produce shades of meaning and different effects on the audience.	Distinguish how different words with related meanings (e.g., *fun* versus *thrilling, possibly* versus *certainly*) and figurative language (e.g., *the stream slithered through the parched land*) produce shades of meaning and different effects on the audience.
Applying ELD Standards to Mathematics	When reading or listening to others' presentations on mathematical topics, students can distinguish how the writer's or speaker's selection of particular words or phrases with related meanings (e.g., *divide* versus *partition*) affects the audience's understanding.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.NBT.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. By using different strategies (MP.2) and providing a variety of representations to illustrate and explain whole-number multiplication, students provide their audience with opportunities to understand the key terms, as well as the strategies and representations, related to multiplication. When showing the class the different ways that she calculated the product of 53 and 27, a student uses place value to write 53 as 50 + 3 and to write 27 as 20 + 7. Then, she uses a rectangular area model that illustrates $(50 + 3) \times (20 + 7)$ by showing the four partitions with side lengths of 50×20, 50×7, 3×20, and 3×7. The student explains the model using terms such as *place value* and *distributive property* and represents it with the equation $53 \times 27 = 1000 + 350 + 60 + 21 = 1431$. After the student's explanation, the teacher asks the students to work in pairs to answer the questions "How do the words *place value* and *distributive property* help you understand the explanation?" and "How do the area models help you understand the explanation?" To support students at the Emerging level of English proficiency, the teacher works with the students to jointly construct their explanation, attending specifically to the terms *place value* and *distributive property* and the information those terms give the audience.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Plan and deliver very brief oral presentations (e.g., retelling a story, describing an animal, and the like).	Plan and deliver brief oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process, and the like).	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process or historical event, and the like).
4	Plan and deliver brief oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process, reporting on a current event, recounting a memorable experience, and so on), with substantial support.	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process, reporting on a current event, recounting a memorable experience, and so on), with moderate support.	Plan and deliver oral presentations on a variety of topics in a variety of content areas (e.g., retelling a story, explaining a science process, reporting on a current event, recounting a memorable experience, and so on), with light support.
5	Plan and deliver brief oral presentations on a variety of topics and content areas (e.g., providing a report on a current event, reciting a poem, recounting an experience, explaining a science process), with moderate support, such as graphic organizers.	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., providing an opinion speech on a current event, reciting a poem, recounting an experience, explaining a science process), with moderate support.	Plan and deliver oral presentations on a variety of topics in a variety of content areas (e.g., providing an opinion speech on a current event, reciting a poem, recounting an experience, explaining a science process), with light support.
Applying ELD Standards to Mathematics	Students share their thinking and findings by explaining or describing the mathematics content, providing supporting evidence, and, in many cases, using graphics or demonstrations as part of an oral presentation.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.OA.5: Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* In pairs, students plan and deliver oral presentations on number or shape patterns. Each pair of students is given a rule to generate a number or shape pattern, and the pairs work to generate the pattern and to note features of the pattern that were not mentioned in the pattern rule (MP.7). English learners at the Emerging or early Expanding level are paired with students of higher English proficiency, in order to support them in their explanations of their findings about the patterns. To further support students at the Emerging or early Expanding level, the teacher provides time and a structure for the students to practice their presentations several times before delivering them.
Sample-Specific Standards for Mathematical Practice	MP.7 Look for and make use of structure.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grade	**Emerging**	**Expanding**	**Bridging**
3	a. Write short literary and informational texts (e.g., a description of a flashlight) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently. b. Paraphrase texts and recount experiences using key words from notes or graphic organizers.	a. Write longer literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence using appropriate text organization. b. Paraphrase texts and recount experiences using complete sentences and key words from notes or graphic organizers.	a. Write longer and more detailed literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently using appropriate text organization and growing understanding of register. b. Paraphrase texts and recount experiences using increasingly detailed complete sentences and key words from notes or graphic organizers.
4	a. Write short literary and informational texts (e.g., a description of a flashlight) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).

5	a. Write short literary and informational texts (e.g., a description of a camel) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an informative report on different kinds of camels) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence by using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an explanation of how camels survive without water for a long time) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently by using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to Mathematics	a. Students write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying conclusions. b. Students summarize and write concisely in a variety of mathematical contexts, with particular attention to modeling. Students analyze relationships and represent them symbolically, using appropriate quantities.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others.		

Sample Integration of Mathematical and ELD Standards in the Classroom	3.MD.8: Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. Students are asked to find different lengths of fencing that could be used to surround a rectangular garden that has an area of 72 square feet. They create diagrams (MP.4) and write explanations to illustrate the different lengths of fencing. Students also extend their investigations to determine the least amount of fencing needed (MP.2). Students first work individually to create their drawings. The teacher co-constructs a sample explanation with students. She then asks students to collaborate with partners to write an explanation of the different lengths of fencing needed, using the sample explanation as a guide. Students also refer to a word wall with key terms, including *area*, *perimeter*, *square*, *rectangle*, and *quadrilateral*, and illustrative diagrams related to perimeters and polygons.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Supporting opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Support opinions by providing good reasons and some textual evidence or relevant background knowledge (e.g., referring to textual evidence or knowledge of content).	Support opinions by providing good reasons and increasingly detailed textual evidence (e.g., providing examples from the text) or relevant background knowledge about the content.	Support opinions or persuade others by providing good reasons and detailed textual evidence (e.g., specific events or graphics from text) or relevant background knowledge about the content.
4	a. Support opinions by expressing appropriate/accurate reasons using textual evidence (e.g., referring to text) or relevant background knowledge about content, with substantial support. b. Express ideas and opinions or temper statements using basic modal expressions (e.g., *can, will, maybe*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using some textual evidence (e.g., paraphrasing facts) or relevant background knowledge about content, with moderate support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *maybe/probably, can/must*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using detailed textual evidence (e.g., quotations or specific events from text) or relevant background knowledge about content, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly, should/would*) and phrasing (e.g., *In my opinion...*).

5	a. Support opinions by expressing appropriate/accurate reasons using textual evidence (e.g., referring to text) or relevant background knowledge about content, with substantial support. b. Express ideas and opinions or temper statements using basic modal expressions (e.g., *can, has to, maybe*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using some textual evidence (e.g., paraphrasing facts from a text) or relevant background knowledge about content, with moderate support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *maybe/probably, can/must*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using detailed textual evidence (e.g., quoting the text directly or specific events from text) or relevant background knowledge about content, with mild support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly, should/would*) and phrasing (e.g., *In my opinion...*).
Applying ELD Standards to Mathematics	Students may be required to make decisions based on evidence, including use of reasonable estimates of known quantities to find unknown quantities. Students explain procedures, justify solutions grounded in mathematical concepts, and use specified parameters to model situations.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. Students use the four operations to solve the following multistep word problem: "Three fourth-grade classes have a total of 83 students. One day, exactly two students from each class are absent. If there are about the same number of students in each class, about how many students are in attendance in one class? Write an equation to represent the situation, describe how to solve the problem, and explain why your answer is reasonable." As students of different English language proficiency levels work in pairs, they write an equation, such as $83/3 - 2 = s$, that uses a variable to represent the unknown number of students in one of the classes (MP.4). Students then solve their equations and present their solutions to other pairs of students, referring to the original word problem and their equations to persuade others about the reasonableness of their solutions, demonstrating an understanding of the content (MP.2). English learners at the Emerging or early Expanding level should work in pairs with students of higher English proficiency to support their interpretation of the word problem. In sharing their work, they use sentence starters such as: "My equation is ___"; "I agree with ___ because ___"; "This is a reasonable answer because..."; "I know my answer is accurate because..."
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *dangerous* to describe a place, using the word *habitat* when describing animal behavior) while speaking and writing.	Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *scurry* versus *dash*) while speaking and writing.	Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language to create an effect, precision, and shades of meaning while speaking and writing.
4	a. Use a select number of general academic and domain-specific words to create precision while speaking and writing. b. Select a few frequently used affixes for accuracy and precision (e.g., She walks, I'm *un*happy).	a. Use a growing number of general academic and domain-specific words, synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Select a growing number of frequently used affixes for accuracy and precision (e.g., She walked. He likes... , I'm *un*happy).	a. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Select a variety of appropriate affixes for accuracy and precision (e.g., She's walking. I'm *un*comfortable. They left reluctantly).
5	a. Use a select number of general academic and domain-specific words to create precision while speaking and writing. b. Select a few frequently used affixes for accuracy and precision (e.g., She walks, I'm *un*happy).	a. Use a growing number of general academic and domain-specific words, synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Select a growing number of frequently used affixes for accuracy and precision (e.g., She walked. He likes..., I'm *un*happy).	a. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Select a variety of appropriate affixes for accuracy and precision (e.g., She's walking. I'm *un*comfortable. They left reluctantly).

Applying ELD Standards to Mathematics	Students use a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. In the elementary grades, students give carefully formulated explanations to each other.
Sample Integration of Mathematical and ELD Standards in the Classroom	5.NBT.2: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. Working in pairs, students investigate the following pattern (MP.7) related to powers of 10: "Describe and explain the pattern of zeros in these products: 15×10; 15×10^2; 15×10^3; 15×10^4; and 15×10^5. Using the pattern, describe the products 15×10^{25} and 0.15×10^{25}." Students create diagrams to illustrate the pattern, and explain their conclusions. In their explanations, students carefully choose words to precisely describe the placement of the decimal point and the powers of ten with which they are working. For example, students must be precise when discussing "fifteen" and "fifteen hundredths." English learners at the Emerging or early Expanding level are paired with students of higher English proficiency. As needed, they refer to a word wall describing the different place values: *ones, tens, hundreds, thousands,* and *ten thousands,* and *tenths, hundredths, thousandths,* and *ten thousandths.*
Sample-Specific Standards for Mathematical Practice	MP.7 Look for and make use of structure.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially) to comprehending texts and writing basic texts.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages) to comprehending texts and writing texts with increasing cohesion.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how opinion/arguments are structured logically, grouping related ideas) to comprehending texts and writing cohesive texts.
4	Apply understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially) to comprehending texts and writing basic texts.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how an explanation is organized around ideas) to comprehending texts and writing texts with increasing cohesion.	Apply understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how opinions/arguments are structured logically, grouping related ideas) to comprehending texts and writing cohesive texts.
5	Apply basic understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how opinions/arguments are organized around ideas) to comprehending texts and writing basic texts.	Apply growing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how opinions/arguments are structured logically around reasons and evidence) to comprehending texts and writing texts with increasing cohesion.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a historical account is organized chronologically versus how opinions/arguments are structured logically around reasons and evidence) to comprehending texts and writing cohesive texts.

Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how text is structured (e.g., what information is needed first, what information is needed using mathematical symbols or words), so that their communication is clear to their audiences.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.NF.4c: Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?* English learners at the Emerging or early Expanding level are paired with students of higher English proficiency to solve word problems involving multiplication of a fraction by a whole number. The teacher asks the pairs of students to use visual fraction models and equations to represent the problem and then write mathematical explanations that may be shared with another pair of students. To support her students in structuring their explanations well, the teacher shows the students a sample explanation on chart paper, and then leads the class through labeling the structure: a brief description of the problem, followed by an explanation of the students' approach, an explanation of the visual fraction model, and a justification of the approach and solution. She works with her students to identify sentence stems in the sample explanation that they could adopt in their own writing, and she highlights these stems on the sample. She then posts the sample for students to refer to. Students complete their mathematical explanations with their partners.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
2. Understanding cohesion			
Grade	**Emerging**	**Expanding**	**Bridging**
3	a. Apply basic understanding of language resources that refer the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *then, next*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources that refer the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *at the beginning/end, first/next*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources that refer the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of connecting and transitional words or phrases (e.g., *for example, afterward, first/next/last*) to comprehending texts and writing cohesive texts.

4	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *first, yesterday*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *since, next, for example*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, at the end*) to comprehending texts and writing cohesive texts.
5	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using a select set of everyday connecting words or phrases (e.g., *first/next, at the beginning*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, in the first place, as a result*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *consequently, specifically, however*) to comprehending texts and writing cohesive texts.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	3.NBT.2: Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Students use the relationship between addition and subtraction to solve the following problem: "Gwen has 842 points in a game. Her friend Dan has 738 points. By how many points is Gwen ahead of Dan?" English learners at the Emerging or early Expanding level are paired with students of higher English proficiency to choose a strategy and collaboratively solve the problem. Some pairs consider the subtraction equation $842 – 738 = x$ and use a standard algorithm. Other pairs choose to consider this as a missing addend situation, and decide to mentally solve (MP.8) for how many more points Dan needs in order to catch up with Gwen ($738 + x = 842$). Alternatively, other pairs consider that Dan needs 4 points to get to 742 and then another 100 points to get to Gwen's 842, for a total of 104 points. After solving the problem, pairs collaboratively write explanations of their procedures and justifications of their solutions. Before the students begin writing, the teacher leads the class through an analysis of a sample explanation and justification, in which the class highlights the text connectives. When the students are ready to begin writing, the teacher displays the sample explanation with text connectives highlighted, and also provides a chart showing sentence stems that contain connectives appropriate for explanations of procedures (e.g., "We decided that we would start with ____. First we ___. Then we ___. When we finished, we realized that ____.") and justifications of solutions (e.g., "We verified our answer by ______; therefore we knew ___________."). To explain their procedures and justify solutions, the students make connections to previous learning as well as to how concepts are linked to one another (MP.2).
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.8 Look for and express regularity in repeated reasoning.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**

3	Use frequently used verbs, different verb types (e.g., doing, saying, being/having, thinking/feeling), and verb tenses appropriate to the text type and discipline to convey time (e.g., simple past for recounting an experience).	Use a growing number of verb types (e.g., doing, saying, being/having, thinking/feeling) and verb tenses appropriate to the text type and discipline to convey time (e.g., simple past for retelling, simple present for a science description).	Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling) and verb tenses appropriate to the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict).
4	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the text type and discipline (e.g., simple past for recounting an experience) for familiar topics.	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task, text type, and discipline (e.g., simple past for retelling, timeless present for science explanation) for an increasing variety of familiar and new topics.	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task and text type (e.g., timeless present for science explanation, mixture of past and present for historical information report) for a variety of familiar and new topics.
5	Use frequently used verbs (e.g., take, like, eat) and various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the text type and discipline (e.g., simple past for recounting an experience) on familiar topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task, text type, and discipline (e.g., simple past for recounting an experience, timeless present for a science description) on an increasing variety of topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task and text type (e.g., timeless present for science description, mixture of past and present for narrative or history explanation) on a variety of topics.
Applying ELD Standards to Mathematics	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	3.G.2: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.* In describing a process or explaining a strategy used to solve a problem, students use various verb types and tenses. When partitioning a variety of shapes into parts with equal areas, students recognize that each part has an area that is a fraction of the original shape. They use the present tense to describe what they notice during the activity. When describing their procedure for making the partitions and determining that the parts have equal areas, they use past tense to explain what they did. Students are given a rectangle and asked to find different ways to fold the rectangle to show four equal parts. During the activity, a student describes, "The rectangle has four equal parts!" To support students at the Emerging level of English proficiency, the teacher takes time to highlight the present tense of the verb has, briefly discussing that when we classify objects and describe their characteristics, we use the present tense of relating verbs such as “has” or “is.” The teacher then asks the students to make a few additional observations about the rectangle using the verb “has.” After the activity, the teacher asks the students what they did to partition the rectangle. A student reports, "First, I folded the rectangle in half horizontally to have two equal-sized parts, and then I folded each of those parts in half vertically so that each had two equal-sized parts." The teacher points out that the student is describing something that has already been done, so the verb “folded” is in the past tense. The teacher asks the partners to share what they did to partition the rectangle, practicing using the past tense. The teacher circulates and provides the past tense of verbs as necessary. The teacher then asks what the students have learned. One student reports, "There are 4 parts in all, and each part is the same size, so each part is 1/4 of the entire rectangle."
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Expand noun phrases in simple ways (e.g., adding an adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a growing number of ways (e.g., adding comparative/superlative adjectives to nouns) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases, simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
4	Expand noun phrases in simple ways (e.g., adding an adjective) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in a variety of ways (e.g., adding adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in an increasing variety of ways (e.g., adding general academic adjectives and adverbs to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.
5	Expand noun phrases in simple ways (e.g., adding an adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in an increasing variety of ways (e.g., adding comparative/superlative and general academic adjectives to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.

Applying ELD Standards to Mathematics	In mathematics, oral and written problems may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	5.NF.7c: Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share ½ lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?* Students solve the following two real-world problems (MP.2), using visual fraction models to represent the problem (MP.4). After solving each problem, they will describe their procedure. Problem 1: Mary and two friends want a snack. Mary's mom says they may have a ½-lb bar of chocolate from the refrigerator. How much chocolate will each person have if they share the chocolate equally? Problem 2: Barry and some friends want a snack. Barry's mom says they may have the 2 cups of raisins that she has left over from baking, and each may have a 1/3-cup serving. How many friends can Barry serve if each has one serving? The teacher leads the students through reading the problems closely, highlighting the main nouns, as well as important mathematical information in expanded noun phrases (e.g., "½-lb bar of chocolate"), in the first problem. The students work in pairs to solve the first problem and then co-construct an explanation of their procedure. After they have written their procedures, the teacher works with the class to expand their noun phrases. Many students write that they made "a model." The teacher shows them how to add precision by expanding the noun phrase to read "visual fraction model." For the second problem, the teacher asks the students, "What are the important nouns and noun phrases in this problem? What information do they give us?" The teacher gives the students time to think and process with their partners after each question before discussing as a whole class. After students have solved the problem and co-constructed their explanation with their partners, the teacher asks the students to meet in groups of four and provide one another with suggestions about expanding one or more noun phrases in their explanations.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar activity or process (e.g., They walked *to the soccer field*).	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar or new activity or process (e.g., They worked *quietly;* they *ran across the soccer field*).	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a range of familiar and new activities or processes (e.g., They worked *quietly all night in their room*).
4	Expand sentences with familiar adverbials (e.g., basic prepositional phrases) to provide details (e.g., time, manner, place, cause, and so on) about a familiar activity or process (e.g., They walked *to the soccer field*).	Expand sentences with a growing variety of adverbials (e.g., adverbs, prepositional phrases) to provide details (e.g., time, manner, place, cause, and so on) about a familiar or new activity or process (e.g., They worked *quietly*. They *ran across the soccer field*).	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and so on) about a variety of familiar and new activities and processes (e.g., They worked *quietly all night in their room*).
5	Expand and enrich sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar activity or process.	Expand and enrich sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar or new activity or process.	Expand and enrich sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a variety of familiar and new activities and processes.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		
Corresponding Standards for	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others.		

Mathematical Practice	• Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	5.MD.2: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.* When making and analyzing a data set of measurements displayed on a line plot, students observe relationships within the data set that require understanding and use of adverbs and adverbial phrases. Students use a line plot displaying the distances that runners traveled in five minutes, to the nearest quarter mile. The teacher asks the students to identify four pieces of information: (1) the greatest distance run (MP.2); (2) which runners ran fastest, assuming each runner ran at an approximately constant rate; (3) how much farther the fastest runner(s) ran than the slowest runner(s); and (4) which runner(s) would have been at the middle of the group of runners, and how far they would have run, if they all ran at the same time. After each identification, the students work together to write their procedure and explain their reasoning. In order to support students at the Emerging and early Expanding levels of English proficiency, the teacher has ensured that each is paired with a language broker, another student who is bilingual in English and the student's home language. After the first identification, the teacher works with the students to co-construct an explanation of their procedure and a justification of their reasoning. As the class co-constructs the text, the teacher both models and asks questions regarding expanding the writing to include more adverbials and details appropriate to a mathematical explanation (e.g., moving from "We examined the line plot" to "We examined the line plot closely before we chose an approach"). Through the next three identifications, the teacher gradually releases support, asking students to complete the entire task including expanding the writing in pairs and then independently. During independent work time, the teacher pulls a small group of students at the Emerging and early Expanding levels of English proficiency and continues the task by leading the students through more co-construction.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion approached them*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*).
4	Combine clauses in a few basic ways to make connections between and join ideas in sentences (e.g., creating compound sentences using coordinate conjunctions, such as *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating complex sentences using familiar subordinate conjunctions) to make connections between and join ideas in sentences, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating complex sentences using a variety of subordinate conjunctions) to make connections between and join ideas, for example, to express cause/effect (e.g., *Since the lion was at the waterhole, the deer ran away*), to make a concession, or to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*).

5	Combine clauses in a few basic ways to make connections between and join ideas (e.g., You must X because X) or to provide evidence to support ideas or opinions (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to provide reasons to support ideas (e.g., *X is an extremely good book because* ______).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion approached them*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*), or to provide reasons to support ideas (e.g., *The author persuades the reader by* _____).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.		

Sample Integration of Mathematical and ELD Standards in the Classroom	4.NF.3d: Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. The teacher presents students with the problem: "Pete has three packages to tie with ribbon and a piece of ribbon that is 9 3/8 feet long. His first package requires 3 3/8 feet of ribbon; his second package needs 2 7/8 feet of ribbon; and his third package needs 2 5/8 feet of ribbon. Does Pete have enough ribbon to tie around each of the three packages? Explain your answer." Using visual fraction models or equations, the students, in pairs, calculate the exact amount needed, and share out their reasoning: e.g., "This is 9 1/8 feet of ribbon," "That's the total amount of ribbon needed altogether," and "There is enough ribbon to do the packaging." Each student at the Emerging level of English proficiency is partnered with a student who is bilingual in English and the student's home language. The teacher charts the different responses. To support students at every level of English proficiency, the teacher leads the whole class through a joint construction activity to combine these ideas into one sentence: "Altogether, Pete needs 9 1/8 feet of ribbon to tie around the three packages, which means that he has enough to do his packaging, because he has 9 3/8 feet of ribbon."
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Condense clauses in simple ways *(e.g., changing: It's green. It's red.* → *It's green and red*) to create precise and detailed sentences.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *It's a plant. It's found in the rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing as in, *It's a plant. It's green and red. It's found in the tropical rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences.
4	Condense clauses in simple ways (e.g., through simple embedded clauses, as in, The woman is a doctor. She helps children. → The woman is a doctor *who helps children*) to create precise and detailed sentences.	Condense clauses in an increasing variety of ways (e.g., through a growing number of embedded clauses and other condensing, as in, The dog ate quickly. The dog choked. → The dog ate so quickly *that it choked*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through various types of embedded clauses and other ways of condensing as in, There was a Gold Rush. It began in the 1850s. It brought a lot of people to California. → The Gold Rush *that began in the 1850s* brought a lot of people to California) to create precise and detailed sentences.
5	Condense clauses in simple ways (e.g., through simple embedded clauses as in, *The book is on the desk. The book is mine.* → *The book that is on the desk is mine*) to create precise and detailed sentences.	Condense clauses in an increasing variety of ways (e.g., through a growing number of types of embedded clauses and other condensing as in, *The book is mine. The book is about science. The book is on the desk.* → *The science book that's on the desk is mine*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through various types of embedded clauses and some nominalizations as in, *They were a very strong army. They had a lot of enemies. They crushed their enemies because they were strong.* → Their strength helped them crush their numerous enemies) to create precise and

			detailed sentences.

Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.MD.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. English learners at the Emerging or early Expanding level are paired with students of higher English proficiency to solve the following word problem involving intervals of time: "It takes Kyra 8 minutes to ride her bike to her friend's house, and it takes her the same amount of time to ride back. She rode to her friend's house and back twice this week. How much time did she spend riding her bike on these trips?" As students make sense of the word problem and put it in their own words, they condense the wording of the problem. For example, "It takes Kyra 8 minutes to ride to or from her friend's house. She rides there and back twice." After students have solved the problem, they explain their thinking. One pair writes, "We used the number of minutes it took Kyra to ride to her friend's house. We used the number of minutes it took for Kyra to ride back home. This was the same number. We added these numbers together to make one trip. We added that number twice." The teacher asks the students to try to combine the first two sentences. Once they have done so, she asks them to combine that sentence with their third sentence and then their fourth and fifth sentences. With her guidance, the students' new sentence reads, "We used the number of minutes Kyra rode to and from her friend's house and doubled that number, because she made two round trips." Some students also draw a number line to represent the intervals of time that

	Kyra spends on her bike and to summarize their reasoning in a succinct way.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **A. Collaborative**			
1. Exchanging information and ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Engage in conversational exchanges and express ideas on familiar topics by asking and answering *yes-no* and *wh-* questions and responding using simple phrases.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information and evidence, paraphrasing key ideas, building on responses, and providing useful feedback.
7	Engage in conversational exchanges and express ideas on familiar topics by asking and answering *yes-no* and *wh-* questions and responding using simple phrases.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information and evidence, paraphrasing key ideas, building on responses, and providing useful feedback.
8	Engage in conversational exchanges and express ideas on familiar topics by asking and answering *yes-no* and *wh-* questions and responding using simple phrases.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information and evidence, paraphrasing key ideas, building on responses, and providing useful feedback.
Applying ELD Standards to	Working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts. While focusing on		

Mathematics	specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	7.NS.1a: Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.* In class and group discussions, students share ideas about a variety of real-world situations in which opposite quantities combine to make 0. For example, students build on one another's understanding that "a hydrogen atom has 0 charge because its two constituents are oppositely charged." They suggest alternative situations, such as the temperature rising and then falling by the same amount, leading to a change of 0 (MP.2). They also ask relevant questions, affirm others, add relevant information, and paraphrase key ideas. The teacher models for students and provides students with sentence starters to support their contributions to the conversation, such as "Will you explain that again?," "I agree with ___ that ___ ," or "Maybe we could ___." To support students at the Expanding level of English proficiency, the teacher engages in more substantial verbal support, such as recasting what the student says using domain specific terminology or full sentences that are structured according to the rules of academic English. The teacher also offers her students the opportunity to practice with a partner before sharing out to the whole class.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Engage in short written exchanges with peers and collaborate on simple written texts on familiar topics, using technology when appropriate.	Engage in longer written exchanges with peers and collaborate on more detailed written texts on a variety of topics, using technology when appropriate.	Engage in extended written exchanges with peers and collaborate on complex written texts on a variety of topics, using technology when appropriate.
7	Engage in short written exchanges with peers and collaborate on simple written texts on familiar topics, using technology when appropriate.	Engage in longer written exchanges with peers and collaborate on more detailed written texts on a variety of topics, using technology when appropriate.	Engage in extended written exchanges with peers and collaborate on complex written texts on a variety of topics, using technology when appropriate.
8	Engage in short written exchanges with peers and collaborate on simple written texts on familiar topics, using technology when appropriate.	Engage in longer written exchanges with peers and collaborate on more detailed written texts on a variety of topics, using technology when appropriate.	Engage in extended written exchanges with peers and collaborate on complex written texts on a variety of topics, using technology when appropriate.
Applying ELD Standards to Mathematics	Students often support their writing in mathematics with graphs, sketches and drawings, or geometric constructions. Sharing their work, students may make generalizations or justify their thinking with step-by-step reasoning.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	8.F.5: Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. Students often analyze and create graphs when describing a functional relationship between two quantities (MP.2). Collaboratively in small groups, students discuss and then write descriptions of a relationship represented in a graph, such as to indicate where a function is increasing or decreasing, and provide justification as to whether is it a linear or nonlinear relationship. Students also draw a graph to match a function that was described verbally by other students or the teacher.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Supporting opinions and persuading others			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Negotiate with or persuade others in conversations (e.g., to gain and hold the floor or ask for clarification) using basic learned phrases (e.g., *I think..., Would you please repeat that?*), as well as open responses.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using an expanded set of learned phrases *(I agree with X, but...*), as well as open responses.	Negotiate with or persuade others in conversations using appropriate register (e.g., to reflect on multiple perspectives) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and Gabriel just pointed out Y*), as well as open responses.
7	Negotiate with or persuade others in conversations (e.g., to gain and hold the floor or ask for clarification) using learned phrases (e.g., *I think..., Would you please repeat that?*) and open responses.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using learned phrases (*I agree with X, but...*), and open responses.	Negotiate with or persuade others in conversations using appropriate register (e.g., to acknowledge new information) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and I haven't thought about that before*), and open responses.
8	Negotiate with or persuade others in conversations (e.g., to gain and hold the floor or to ask for clarification) using learned phrases (e.g., *I think..., Would you please repeat that?*) and open responses.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using learned phrases (*I agree with X, but...*) and open responses.	Negotiate with or persuade others in conversations using an appropriate register (e.g., to acknowledge new information and justify views) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and that's a good point. I still think Y, though, because...*) and open responses.
Applying ELD Standards to Mathematics	In making mathematical arguments and critiquing the reasoning of others, students need to connect and/or counter others' ideas, using mathematical justification.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Compare the effectiveness of plausible arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.EE.6: Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. Students investigate the slope of a line on the coordinate plane by drawing similar triangles in which two of the three vertices fall on the line. Students are encouraged to justify their methods for drawing the triangles and the conclusions they reach about the slope of the line based on the triangles using a variety of learned phrases (e.g., "I agree, but if you look at this equation ___"). The teacher supports students by directing them toward a word wall, which contains definitions and diagrams of important words, such as *line*, *slope*, and *vertex*. After the class has agreed that the slope of the line is the same between any two distinct points, based on their observations about the similar triangles, students then extend their understanding to derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.
Sample-Specific Standards for Mathematical Practice	N/A

<table>
<tr><th colspan="4">Integrating CA ELD Standards into Mathematics Teaching and Learning
Grades 6, 7, and 8</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
A. Collaborative</th></tr>
<tr><th colspan="4">4. Adapting language choices</th></tr>
<tr><th>Grade</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>6</td><td>Adjust language choices according to social setting (e.g., classroom, break time) and audience (e.g., peers, teacher).</td><td>Adjust language choices according to purpose (e.g., explaining, persuading, entertaining), task, and audience.</td><td>Adjust language choices according to task (e.g., facilitating a science experiment, providing peer feedback on a writing assignment), purpose, task, and audience.</td></tr>
<tr><td>7</td><td>Adjust language choices according to social setting (e.g., classroom, break time) and audience (e.g., peers, teacher).</td><td>Adjust language choices according to purpose (e.g., explaining, persuading, entertaining), task, and audience.</td><td>Adjust language choices according to task (e.g., facilitating a science experiment, providing peer feedback on a writing assignment), purpose, task, and audience.</td></tr>
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<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3">Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend mathematical arguments, interpretations, and procedures).</td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3">MP.1 Make sense of problems and persevere in solving them.

MP.3 Construct viable arguments and critique the reasoning of others.
• Understand and use stated assumptions, definitions, and previously established results in constructing arguments.
• Justify their conclusions, communicate them to others, and respond to the arguments of others.

MP.6 Attend to precision.
• Try to communicate precisely to others.
• Try to use clear definitions in discussion with others and in their own reasoning.</td></tr>
</table>

Sample Integration of Mathematical and ELD Standards in the Classroom	7.RP.2d: Explain what a point *(x*, *y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and 1, *r*) where *r* is the unit rate. When analyzing and describing real-world proportional relationships shown on a graph (MP.2), students work collaboratively and individually to explain what a point (*x, y*) on the graph means in terms of the situation, paying special attention to the points (0, 0) and (1, *r*), where *r* is the unit rate. For example, when viewing a graph that represents how far a car travels at a speed of 50 miles an hour, students discuss with one another to collaboratively describe a point (*x*, *y*) as the distance, *y*, that the car has traveled in *x* hours. Students adjust their language choices by using appropriate terminology when presenting their findings to the class and when further explaining what the points (0, 0) and (1, 50) represent in the situation.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Demonstrate active listening in oral presentation activities by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with minimal prompting and support.
7	Demonstrate active listening in oral presentation activities by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with minimal prompting and support.
8	Demonstrate active listening in oral presentation activities by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with minimal prompting and support.
Applying ELD Standards to Mathematics	Students listen to a variety of orally expressed mathematical information, such as explanations, procedures, or word problems, and demonstrate understanding by asking and answering questions.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	7.G.6: Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. When presented with problems involving area, volume, and surface area of two- and three-dimensional objects (composed of triangles, quadrilaterals, polygons, cubes, and right prisms), students may make or analyze sketches (MP.4) or other representations and use formulas or other methods to determine the needed measurements (MP.7). As students share their work with one another and listen to the reasoning of their classmates, especially regarding complex problems about two- and three-dimensional objects, they ask and answer questions to learn and to show understanding. The teacher provides students with sentence frames, such as "How did you determine ___?" or "First I ___, and then I ___," to support their engagement in these conversations and to scaffold their acquisition of domain-specific vocabulary.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics. MP.7 Look for and make use of structure.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with substantial support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using some frequently used verbs (e.g., *shows that, based on*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of verbs (e.g., *suggests that, leads to*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., *indicates that, influences*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.

7	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with substantial support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using some frequently used verbs (e.g., *shows that, based on)*. c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using a variety of verbs (e.g., *suggests that, leads to*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., *indicates that, influences*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.

8	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with substantial support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using some frequently used verbs (e.g., *shows that, based on*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meanings of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with moderate support. b. Express inferences and conclusions drawn based on close reading grade-appropriate texts and viewing of multimedia using a variety of verbs (e.g., *suggests that, leads to*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meanings of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., *indicates that, influences*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meanings, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.
Applying ELD Standards to Mathematics	a. In mathematics, close reading and viewing are often required in order to determine key details in the context of examining, interpreting, and creating graphs and other models in real-world problem situations. Students use these details when explaining ideas, concepts, and procedures. b. As students analyze situations and draw inferences and conclusions based on data, graphs, or other models, they explain and justify their reasoning. c. Students need to be able to use their morphological knowledge and context (e.g., the words or symbols around an unknown word) to derive the meaning of multiple-meaning words or unknown words in mathematics.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	6.SP.5: Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. When examining and analyzing data sets and situations, students model the situations (MP.4) based on careful reading and understanding of the context. For example, students investigate a data set regarding wingspans of condors. To understand how wingspans of condors are typically measured, students first read about wingspans of birds. Students work together to draw inferences about common wingspans of condors by describing the measures of center of the data set. The teacher provides sentence frames for students at different English language proficiency levels to use to explain and justify their reasoning as they describe the data in relation to the context (MP.2), using academic language (e.g., *based on ___, leads to ___, indicates that ___*). Students also derive meanings of familiar and unfamiliar terms by using their knowledge of morphology (e.g., *uni-, bi-, tri-*). While most of the class works in pairs, the teacher works with a small group of students at the Emerging and early Expanding levels of English proficiency. In this group, the teacher reads the text to the students first, highlighting specific vocabulary. Then the teacher leads a detailed reading of the text, following a process that includes: the teacher identifying a sentence; the teacher paraphrasing its basic meaning in words the students will understand (using illustrations or pictures if necessary); the students locating the words that show the meaning of the paraphrase while the teacher affirms and supports them in understanding the meaning.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **B. Interpretive**			
7. Evaluating language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Explain how well writers and speakers use language to support ideas and arguments with detailed evidence (e.g., identifying the precise vocabulary used to present evidence, or the phrasing used to signal a shift in meaning) with substantial support.	Explain how well writers and speakers use specific language to present ideas or support arguments and provide detailed evidence (e.g., showing the clarity of the phrasing used to present an argument) with moderate support.	Explain how well writers and speakers use specific language resources to present ideas or support arguments and provide detailed evidence (e.g., identifying the specific language used to present ideas and claims that are well supported and distinguishing them from those that are not) with light support.
7	Explain how well writers and speakers use language to support ideas and arguments with detailed evidence (e.g., identifying the precise vocabulary used to present evidence, or the phrasing used to signal a shift in meaning) when provided with substantial support.	Explain how well writers and speakers use specific language to present ideas of support arguments and provide detailed evidence (e.g., showing the clarity of the phrasing used to present an argument) when provided with moderate support.	Explain how well writers and speakers use specific language resources to present ideas or support arguments and provide detailed evidence (e.g., identifying the specific language used to present ideas and claims that are well supported and distinguishing them from those that are not) when provided with light support.
8	Explain how well writers and speakers use language to support ideas and arguments with detailed evidence (e.g., identifying the precise vocabulary used to present evidence, or the phrasing used to signal a shift in meaning) when provided with substantial support.	Explain how well writers and speakers use specific language to present ideas or support arguments and provide detailed evidence (e.g., showing the clarity of the phrasing used to present an argument) when provided with moderate support.	Explain how well writers and speakers use specific language resources to present ideas or support arguments and provide detailed evidence (e.g., identifying the specific language used to present ideas and claims that are well supported and distinguishing them from those that are not) when provided with light support.
Applying ELD Standards to	When critiquing others' presentations on mathematical topics, students can describe or explain how well the writers or speakers used particular vocabulary or		

Mathematics	phrasing, for example, to provide a definition or explanation.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	6.RP.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* Students explain, as well as listen to others' explanations, about the concept of ratio, in order to gain understanding of important concepts. For example, students consider the relationship between the numbers of dogs and dogs' tails in the animal shelter. Students work together in pairs or groups and use ratio language to describe the relationship as 1:1 because each dog has one tail. Students then generate other ratios regarding the animals in the animal shelter and share their work with one another. As they listen to the thinking of their classmates, students determine how well their classmates present and explain their ideas and reasoning, paying close attention to the language resources used (e.g., the sentence structure "The ratio of _____ to _____ was ____, because for every ____ there was ____.").
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Explain how phrasing or different common words with similar meaning (e.g., choosing to use the word *cheap* versus the phrase *a good saver)* produce different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., describing a character as *stingy* versus *economical*), or figurative language (e.g., *The room was like a dank cave, littered with food wrappers, soda cans, and piles of laundry*) produce shades of meaning and different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., *stingy, economical, frugal, thrifty*), or figurative language (e.g., *The room was depressed and gloomy. The room was like a dank cave, littered with food wrappers, soda cans, and piles of laundry*) produce shades of meaning, nuances, and different effects on the audience.
7	Explain how phrasing or different common words with similar meaning (e.g., choosing to use the word *polite* versus *good*) produce different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., describing a character as *diplomatic* versus *respectful*) or figurative language (e.g., *The wind blew through the valley like a furnace*) produce shades of meaning and different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., *refined-respectful-polite-diplomatic*), or figurative language (e.g., *The wind whispered through the night*) produce shades of meaning, nuances, and different effects on the audience.
8	Explain how phrasing or different common words with similar meanings (e.g., choosing to use the word *persistent* versus the term *hard worker*) produce different effects on the audience.	Explain how phrasing or different words with similar meanings (e.g., describing a character as *stubborn* versus *persistent*) or figurative language (e.g., *Let me throw some light onto the topic*) produce shades of meaning and different effects on the audience.	Explain how phrasing or different words with similar meanings (e.g., *cunning* versus *smart, stammer* versus *say*) or figurative language (e.g., *Let me throw some light onto the topic*) produce shades of meaning, nuances, and different effects on the audience.

Applying ELD Standards to Mathematics	When reading or listening to others' presentations on mathematical topics, students can distinguish how the writer's or speaker's selection of particular words or phrases with related meanings (e.g., *divide* versus *partition*) affects the

	audience's understanding.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.SP.1: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. In learning about bivariate measurement data, students analyze and interpret scatter plots to investigate patterns of association between two quantities (MP.2). English learners at the Emerging or early Expanding level are paired with students of higher English proficiency to engage in explaining the data. The pairs encounter a variety of examples and situations that illustrate properties and concepts of relationships, such as clustering, outliers, positive or negative association, linear association, and nonlinear association. As students read or listen to descriptions or explanations of the thinking of others in the class, they pay attention to their classmates' word choices or examples, and they think about and discuss how different words convey meanings.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Plan and deliver brief oral presentations on a variety of topics and content areas.	Plan and deliver longer oral presentations on a variety of topics and content areas, using details and evidence to support ideas.	Plan and deliver longer oral presentations on a variety of topics and content areas, using reasoning and evidence to support ideas, as well as growing understanding of register.
7	Plan and deliver brief informative oral presentations on familiar topics.	Plan and deliver longer oral presentations on a variety of topics, using details and evidence to support ideas.	Plan and deliver longer oral presentations on a variety of topics in a variety of disciplines, using reasoning and evidence to support ideas, as well as growing understanding of register.
8	Plan and deliver brief informative oral presentations on concrete topics.	Plan and deliver longer oral presentations on a variety of topics using details and evidence to support ideas.	Plan and deliver longer oral presentations on a variety of concrete and abstract topics using reasoning and evidence to support ideas and using a growing understanding of register.
Applying ELD Standards to Mathematics	Students share their thinking and findings by explaining or describing the mathematics content, providing supporting evidence, and, in many cases, using graphics or demonstrations as part of an oral presentation.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases. MP.6 Attend to precision.		

	• Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.G.6: Explain a proof of the Pythagorean Theorem and its converse. When developing and orally presenting formal or informal proofs, students plan how to use algebraic and/or geometric examples and models to support their explanation. For example, in order to explain a proof of the Pythagorean Theorem and its converse, one student provides specific examples of right triangles, such as 3-4-5 or 5-12-13, and shows the relationships among the sides (e.g., $3^2 + 4^2 = 5^2$, or $5^2 + 12^2 = 13^2$). The student then introduces the converse by presenting a triangle and asking, "How do we know whether or not it is a right triangle?" The student writes an equation to generalize the situations: if a triangle with legs a and b and hypotenuse c is a right triangle, then $a^2 + b^2 = c^2$, and if a triangle has sides a, b, and c such that $a^2 + b^2 = c^2$, then it is a right triangle. Using a coordinate plane or geometric shapes (MP.4), the student then shows the steps justifying the reasons (MP.2) for both the Pythagorean Theorem and its converse. The teacher expects all of the students to present, either to the whole class or to each other in groups. To support students at the Emerging and early Expanding levels, the teacher first pairs each student with a language broker, another student who speaks English and the student's home language proficiently. In their partners, the students get to practice their presentation, while their partner provides feedback on the presentation, including terminology and sentence structure. The teacher gives the students the option of writing down notes in preparation for presenting.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Write short literary and informational texts (e.g., an argument for protecting the rain forests) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument for protecting the rain forests) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument for protecting the rain forests) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
7	a. Write short literary and informational texts (e.g., an argument for wearing school uniforms) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument for wearing school uniforms) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument for wearing school uniforms) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).

8	a. Write short literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to Mathematics	a. Students write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying conclusions. b. Students summarize and write concisely in a variety of mathematical contexts, with particular attention to modeling. Students analyze relationships and represent them symbolically, using appropriate quantities.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	6.NS.7b: Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3° C > –7° C to express the fact that –3° C is warmer than –7° C.* Collaboratively and independently, students examine and describe real-world contexts involving comparisons. Students are asked to write a statement of order (MP.2) that describes how 3 feet above sea level compares to 5 feet below sea level. Students share their expressions with one another, and explain how they determined that their expression correctly compares the two real-world values. Students then write about their reasoning and summarize the reasoning expressed by other students. Students may also draw number lines to support what they write. The teacher provides sentence starters as options for students as they write their explanations. For example, a student might use the sentence starters "First I noticed ___. Then ___." and "I know that ___" to explain, "*First I noticed* the 3 is above sea level. *Then* I noticed the 5 is below sea level. *I know that* above sea level is positive and below sea level is negative. So I need to compare 3 and –5."
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Justifying/arguing			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Justify opinions by providing some textual evidence (e.g., quoting from the text) or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with some basic modal expressions (e.g., *can, has to*).	a. Justify opinions or persuade others by providing relevant textual evidence (e.g., quoting from the text or referring to what the text says) or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *maybe/probably, can/could, must*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence (e.g., quoting from the text directly or referring to specific textual evidence) or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly/definitely, should/would, might) and phrasing (e.g., In my opinion...*).
7	a. Justify opinions by providing some textual evidence or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions or persuade others by providing relevant textual evidence or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would/should*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ absolutely, should/might*).

8	a. Justify opinions by providing some textual evidence or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions or persuade others by providing relevant textual evidence or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *potentially/certainly/ absolutely, should/might*).
Applying ELD Standards to Mathematics	Students may be required to make decisions based on evidence, including use of reasonable estimates of known quantities to find unknown quantities. Students explain procedures, justify solutions grounded in mathematical concepts, and use specified parameters to model situations.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		
Sample Integration of Mathematical and ELD Standards in the Classroom	7.SP.2: Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.* When students make observations based on data, they use models to represent the data (MP.4), and they provide evidence to justify their findings or inferences (MP.2). For example, students investigate the lengths of students' names by taking a random sample of students in the school, using the school yearbook as the source for the names. Students work in groups, and each group gathers a (different) random sample of the same size. Each group then draws inferences from its random sample, and the groups present and justify their opinions by showing evidence to the class. The class compares the conclusions reached by the various groups and gauges the variation in predictions.		
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Use a select number of general academic words (e.g., *author, chart*) and domain-specific words (e.g., *scene, cell, fraction*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X*).	a. Use a growing set of academic words (e.g., *author, chart, global, affect*), domain-specific words (e.g., *scene, setting, plot, point of view, fraction, cell membrane, democracy*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes X. That's impossible*).	a. Use an expanded set of general academic words (e.g., *affect, evidence, demonstrate, reluctantly*), domain-specific words (e.g., *scene, setting, plot, point of view, fraction, cell membrane, democracy*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *observe* → *observation, reluctant* → *reluctantly, produce* → *production,* and so on).
7	a. Use a select number of general academic words (e.g., *cycle, alternative*) and domain-specific words (e.g., *scene, chapter, paragraph, cell*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X. He walked to school*).	a. Use a growing set of academic words (e.g., *cycle, alternative, indicate, process*), domain-specific words (e.g., *scene, soliloquy, sonnet, friction, monarchy, fraction*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes walking to school. That's impossible*).	a. Use an expanded set of general academic words (e.g., *cycle, alternative, indicate, process, emphasize, illustrate*), domain-specific words (e.g., *scene, soliloquy, sonnet, friction, monarchy, fraction*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *destroy* → *destruction, probably* → *probability, reluctant* → *reluctantly*).

8	a. Use a select number of general academic words (e.g., *specific, contrast*) and domain-specific words (e.g., *scene, cell, fraction*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X. He walked to school*).	a. Use a growing set of academic words (e.g., *specific, contrast, significant, function*), domain-specific words (e.g., *scene, irony, suspense, analogy, cell membrane, fraction*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to mani*pulate language (e.g., She likes walking to school. That's impossible*).	a. Use an expanded set of general academic words (e.g., *specific, contrast, significant, function, adequate, analysis*), domain-specific words (e.g., *scene, irony, suspense, analogy, cell membrane, fraction*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *destroy* → *destruction, probably* → *probability, reluctant* → *reluctantly*).

Applying ELD Standards to Mathematics	Students use a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	6.EE.2b: Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.* In mathematics, students use a variety of mathematical terms when they write, read, and evaluate numerical and variable expressions. When describing an expression, students use mathematically precise terms such as *sum, term, product, factor, quotient,* and *coefficient* to refer to the parts of the expression. Students may also view and describe one or more parts of an expression as a single entity. For example, a student describes the expression $2(x + 7)$ as a product of the two factors "2" and "$(x + 7)$"; and describes the second factor, $(x + 7)$, as both the single entity "$(x + 7)$" and the sum of the two addends, "x" and "7". Students refer to a word wall containing definitions and diagrams or examples of key mathematical terms.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Apply basic understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how arguments are organized around ideas) to comprehending texts and writing basic texts.	Apply growing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how arguments are structured logically around reasons and evidence) to comprehending texts and writing texts with increasing cohesion.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a historical account is organized chronologically versus how arguments are structured logically around reasons and evidence) to comprehending texts and writing cohesive texts.
7	Apply understanding of how different text types are organized to express ideas (e.g., how narratives are organized sequentially) to comprehending texts and to writing brief arguments, informative/ explanatory texts and narratives.	Apply understanding of the organizational features of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing increasingly clear and coherent arguments, informative/explanatory texts and narratives.	Apply understanding of the organizational structure of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts and narratives.
8	Apply understanding of how different text types are organized to express ideas (e.g., how narratives are organized sequentially) to comprehending texts and to writing brief arguments, informative/ explanatory texts and narratives.	Apply understanding of the organizational features of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing increasingly clear and coherent arguments, informative/explanatory	Apply understanding of the organizational structure of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory

		texts and narratives.	texts and narratives.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how text is structured (e.g., what information is needed first, what information is needed using mathematical symbols or words), so that their communication is clear to their audiences.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		
Sample Integration of Mathematical and ELD Standards in the Classroom	7.NS.1b: Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.* In real-world contexts, students may interpret sums of rational numbers. They apply and extend previous understandings of addition and subtraction to add and subtract rational numbers (MP.2), and they represent addition and subtraction on a horizontal or vertical number-line diagram. Using such diagrams, students describe and demonstrate understanding of $p + q$ as the number located a distance $\|q\|$ from p, in a positive or negative direction, and justify their reasoning when explaining why a number and its opposite have a sum of 0 (i.e., are additive inverses). For example, students may compare and contrast two situations: "Amy earned $10 doing chores and then spent $10 at the movies. Ben borrowed $6 from his dad and later repaid the $6 with money from his birthday." In describing and comparing these situations verbally and in writing, students must learn to organize their reasoning logically for a reader to understand. To support students in gaining an increasing understanding of how mathematical explanations and arguments are organized and how the structure of these texts differs from those of other text types, the teacher leads the class through an analysis of the structure and language features of mathematical explanations. The teacher creates anchor charts highlighting the structure and language features of mathematical explanations based on the class's analysis, which are then posted around the room for students to refer to when they are writing their own explanations. To support students at the Emerging level of English proficiency, the teacher works with a small group of students to jointly construct their		

	mathematical explanations, taking ideas from students while asking probing questions and thinking aloud to ensure the text follows the structure and contains some of the language features of a mathematical explanation.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards **Part II: Learning About How English Works** **A. Structuring Cohesive Texts**			
2. Understanding cohesion			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using a select set of everyday connecting words or phrases (e.g., *first/next, at the beginning*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, in the first place, as a result, on the other hand*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *consequently, specifically, however, moreover*) to comprehending texts and writing cohesive texts.

7	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing brief texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *at the end, next*) to comprehending texts and writing brief texts.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text, how using synonyms helps avoid repetition) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, as a result, on the other hand*) to comprehending texts and writing texts with increasing cohesion.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns, synonyms, or nominalizations are used to refer backward in a text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, consequently*) to comprehending texts and writing texts with increasing cohesion.
8	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text) to comprehending and writing brief texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *at the end, next*) to comprehending and writing brief texts.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text, how using synonyms helps avoid repetition) to comprehending and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, as a result, on the other hand*) to comprehending and writing texts with increasing cohesion.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns, synonyms, or nominalizations are used to refer backward in a text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, consequently*) to comprehending and writing texts with increasing cohesion.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	6.EE.7: Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers. To explain procedures and justify solutions, students make connections between the real world and mathematical representations. Students may write and solve equations to represent a real-world problem. They explain the connections between the situation and the equation, and they justify steps in solving the equation. Students work with a partner to solve a problem and then work with a different partner to explain the procedure that they used. Students may use language frames with text connectives, which supports them to connect the sequence of steps that they took, in ways that help others (and themselves) understand the connections between and the flow of ideas (e.g., "We decided that we would start with ____. In addition, ___. Consequently, ___. When we finished, we realized that ____."). Students also use text connectives when writing explanations, using specific language choices, to refer the reader back and forth in their writing.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling), tenses (e.g., present, past, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling, reporting), tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., simple present for literary analysis) on an increasing variety of topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling, reporting), tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on a variety of topics.
7	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., simple present for literary analysis) on an increasing variety of topics.	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on a variety of topics.
8	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on an increasing variety of topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), voices (active and passive), and moods (e.g., declarative, interrogative, subjunctive) appropriate to the task, text type, and discipline (e.g., the passive voice in simple past to describe the methods of a scientific experiment) on a variety of topics.
Applying ELD Standards to	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		

Mathematics	
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.SP.3: Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.* In analyzing data and making observations, students use various verb types and tenses to describe what happened, and use data to predict what may happen in the future (MP.2). In the context of bivariate measurement data, students use the equation of a linear model to solve problems (MP.4). For example, in a linear model for a biology experiment, students interpret a slope, based on data points from the past, to predict parameters needed for a plant to reach maturity in a variety of situations. A slope of 1.5 cm/hr indicates that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. An intercept of 0 indicates that the plant will not grow without any light. Students work together to discuss and solve such problems, using sentence starters provided by the teacher. The verb tense in the sentence starters matches the task: for example, if students are making predictions (e.g., "The plant will not grow"), the sentence starters will be in the future tense. To support students at the Emerging level of English proficiency, the teacher highlights the different verb tenses in the sentence starters.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Expand noun phrases in simple ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in an increasing variety of ways (e.g., adding comparative/superlative and general academic adjectives to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
7	Expand noun phrases in basic ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, and things.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, and things.	Expand noun phrases in an increasing variety of ways (e.g., more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, and things.
8	Expand noun phrases in basic ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in a growing number of ways (e.g., adding prepositional or adjective phrases) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in an increasing variety of ways (e.g., embedding relative or complement clauses) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.
Applying ELD Standards to Mathematics	In mathematics, oral and written problems may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	7.RP.3: Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.* When making sense of real-world and mathematical situations, students encounter nouns and detailed phrases that may be unfamiliar but necessary to solving the problem. For example, students may solve multistep ratio and percent problems by using proportional relationships involving simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, or percent error. In doing so, students must be able to differentiate the types of percent or ratios needed and the noun phrases used to describe them, based on the context (e.g., *markups* and *percent increase*). Students engage in think-pair-share protocols as they consider how to solve the problems, expanding on appropriate noun phrases to describe their reasoning.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with an increasing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
7	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
8	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with increasingly complex adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.F.4: Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. When analyzing and modeling linear relationships between two quantities, students may interpret rates of change in terms of the situation being modeled (MP.4). Their observations may require understanding and use of adverbs and adverbial phrases when given a verbal description of the relationship or when reading values from a table or graph (e.g., "the y values increase *more rapidly* than the x values") and in constructing the function used to model the relationship. Students work together to support their explanations and descriptions of the function. The teacher provides sentence frames and scaffolds, when appropriate, for students at different English language proficiency levels.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday because he had an exam on Monday*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to link two ideas that happen at the same time (e.g., *The students worked in groups while their teacher walked around the room*).
7	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so;* creating complex sentences using because).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound, complex, and compound–complex sentences) to make connections between and join ideas, for example, to show the relationship between multiple events or ideas (e.g., *After eating lunch, the students worked in groups while their teacher walked around the room*) or to evaluate an argument (e.g., *The author claims X, although there is a lack of evidence to support this claim*).

8	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so;* creating complex sentences using because).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences, and compound-complex sentences) to make connections between and join ideas, for example, to show the relationship between multiple events or ideas (e.g., *After eating lunch, the students worked in groups while their teacher walked around the room*) or to evaluate an argument (e.g., *The author claims X, although there is a lack of evidence to support this claim*).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	6.G.2: Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. As students develop formulas, they may begin with concrete examples that lead to more general equations that model situations (MP.4). In the context of solving real-world and mathematical problems involving right rectangular prisms with fractional edge lengths, students may find the volume by packing the prism with unit cubes of the appropriate unit fraction edge lengths. They may relate this method to finding volume (from earlier grades) and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Students may explain the connections between the models to justify applying the formulas $V = lwh$ and $V = bh$ (MP.2). For example, students explain whether or not a shoe box that is 7 1/2 inches wide, 10 inches long, and 5 1/4 inches high could hold a collection of sea shells currently contained in a box that is 6 1/2 inches × 6 inches × 9 1/4 inches. The teacher provides sentence frames, when appropriate, to support students in deepening their mathematical thinking and in extending their use of mathematical language by combining clauses (e.g., "We wanted to find the difference, so we ___. We started with _____, and then we ____. We knew that ____, so we ____. We decided to ____ because ____."). To support students at the Emerging level of English proficiency, the teacher works with a small group to jointly construct mathematical explanations, working toward combining clauses. After the teacher and students have worked together to join clauses, the teacher asks pairs of students to work together to join two statements into one clause using a conjunction that makes sense.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Condense ideas in simple ways (e.g., by compounding verbs, adding prepositional phrases, or through simple embedded clauses or other ways of condensing as in, This is a story about a girl. The girl changed the world. → This is a story about a girl *who changed the world*) to create precise and detailed sentences.	Condense ideas in an increasing variety of ways (e.g., through various types of embedded clauses and other ways of condensing, as in, Organic vegetables are food. They're made without chemical fertilizers. They're made without chemical insecticides) → Organic vegetables are foods *that are made without chemical fertilizers or insecticides*) to create precise and detailed sentences.	Condense ideas in a variety of ways (e.g., through various types of embedded clauses, ways of condensing, and nominalization as in, They *destroyed* the rain forest. Lots of animals *died* → The destruction of the rain forest led to *the death of many animals*) to create precise and detailed sentences.
7	Condense ideas in simple ways (e.g., by compounding verbs, adding prepositional phrases, or through simple embedded clauses or other ways of condensing as in, This is a story about a girl. The girl changed the world → This is a story about a girl *who changed the world*) to create	Condense ideas in an increasing variety of ways (e.g., through various types of embedded clauses and other ways of condensing, as in, Organic vegetables are food. They're made without chemical fertilizers. They're made without chemical insecticides. → Organic vegetables are foods *that are made without chemical fertilizers or insecticides*) to create precise and detailed sentences.	Condense ideas in a variety of ways (e.g., through various types of embedded clauses, ways of condensing, and nominalization as in, They *destroyed* the rain forest. Lots of animals *died* → The *destruction* of the rainforest led to *the death of many animals*) to create precise and detailed sentences.

8	Condense ideas in simple ways (e.g., by compounding verbs, adding prepositional phrases, or through simple embedded clauses or other ways of condensing as in, This is a story about a girl. The girl changed the world. → This is a story about a girl *who changed the world*) to create precise and detailed sentences.	Condense ideas in an increasing variety of ways (e.g., through various types of embedded clauses and other ways of condensing, as in, Organic vegetables are food. They're made without chemical fertilizers. They're made without chemical insecticides. → Organic vegetables are foods *that are made without chemical fertilizers or insecticides*) to create precise and detailed sentences.	Condense ideas in a variety of ways (e.g., through various types of embedded clauses, ways of condensing, and nominalization as in, They *destroyed* the rain forest. Lots of animals *died.* → The destruction of the rain forest led to *the death of many animals*) to create precise and detailed sentences.
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		
Sample Integration of Mathematical and ELD Standards in the Classroom	7.EE.4: Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. Working collaboratively, students use variables to write an equation and solve the following word problem: "Vince baked a cake and several batches of cookies this weekend. He used 4 cups of flour to bake the cake, and he used 1/4 cup of flour in each batch of cookies. He used 6 cups of flour altogether for the cake and the cookies. How many batches of cookies did he bake?" As students make sense of the word problem and put it in their own words, they may condense the wording of the problem: for example, "Vince used 6 cups of flour to bake a cake and cookies. He used 4 cups of flour for the cake and 1/4 cup of flour for each batch of cookies." Students may use this condensed wording to help them determine the unknown in the word problem and to write an equation modeling the situation (MP.4). After students have solved the problem, they may use similar condensed clauses to explain their thinking to other groups of students.		
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering *yes-no* questions and *wh-* questions and responding using phrases and short sentences.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, and providing coherent and well-articulated comments and additional information.
11–12	Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering *yes-no* questions and *wh-* questions and responding using phrases and short sentences.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, and providing coherent and well-articulated comments and additional information.
Applying ELD Standards to Mathematics	Working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts. While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	G-MG.1: Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). In class and group discussions, students share ideas, ask relevant questions, provide relevant information, paraphrase key ideas and affirm other's ideas about everyday objects by using geometric shapes, their measures and their properties to model the objects (MP.2). For example, students may use the properties and measures of cylinders to model a tree trunk or a human torso. The teacher provides sentence starters for English learners at the Emerging and early Expanding levels of English language proficiency, such as "I think that ___" and students contribute suggestions, such as, "I think that the tree trunk looks like a cylinder." The teacher encourages students to build on each other's ideas, such as by adding descriptions of the measures (e.g., "tall cylinder") or properties (e.g., "because it is round") of the geometric shapes. Students can also refer to a word wall, previously created with guidance from the teacher, that provides definitions and diagrams of various geometric shapes that the class has been investigating.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

<table>
<tr><th colspan="4">Integrating CA ELD Standards into Mathematics Teaching and Learning
Grades 9–10 and 11–12</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
A. Collaborative</th></tr>
<tr><th colspan="4">2. Interacting via written English</th></tr>
<tr><th>Grades</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>9–10</td><td>Collaborate with peers to engage in short, grade-appropriate written exchanges and writing projects, using technology as appropriate.</td><td>Collaborate with peers to engage in increasingly complex grade-appropriate written exchanges and writing projects, using technology as appropriate.</td><td>Collaborate with peers to engage in a variety of extended written exchanges and complex grade-appropriate writing projects, using technology as appropriate.</td></tr>
<tr><td>11–12</td><td>Collaborate with peers to engage in short, grade-appropriate written exchanges and writing projects, using technology as appropriate.</td><td>Collaborate with peers to engage in increasingly complex grade-appropriate written exchanges and writing projects, using technology as appropriate.</td><td>Collaborate with peers to engage in a variety of extended written exchanges and complex grade-appropriate writing projects, using technology as appropriate.</td></tr>
<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3">Students often support their writing in mathematics with graphs, sketches and drawings, or geometric constructions. Sharing their work, students may make generalizations or justify their thinking with step-by-step reasoning.</td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3">MP.1 Make sense of problems and persevere in solving them.
MP.3 Construct viable arguments and critique the reasoning of others.
• Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments.
• Compare the effectiveness of plausible arguments.
• Justify their conclusions, communicate them to others, and respond to the arguments of others.
MP.6 Attend to precision.
• Try to communicate precisely to others.
• Try to use clear definitions in discussion with others and in their own reasoning.</td></tr>
</table>

Sample Integration of Mathematical and ELD Standards in the Classroom	A-REI.11: Explain why the *x*-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. Working collaboratively, students analyze a variety of graphs (e.g., linear, polynomial, rational, exponential) to determine that the *x*-coordinates of the points where the graphs of two equations $y = f(x)$ and $y = g(x)$ intersect represent the solutions of the equation $f(x) = g(x)$. They develop a written explanation for this fact, making use of technology to graph the functions and/or make tables of values (MP.4) or to find successive approximations. For example, students may graph the equations $y = 3x + 7$ and $y = x^2 + 3x - 9$ on the same coordinate plane. The graphs may appear to intersect at two points (4, 19) and (–4, 19). Students should verify that this is true and relate it to the solutions of the equation $3x + 7 = x^2 + 3x - 9$. Working through a variety of examples, students generalize their findings in written statements. For English learners at the Emerging or early Expanding levels of English language proficiency, the teacher provides sentence starters such as "We noticed ____," "Based on ____, we infer that ___," or "We concluded that____."
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **A. Collaborative**			
3. Supporting opinions and persuading others			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Negotiate with or persuade others in conversations using learned phrases (e.g., *Would you say that again? I think...*), as well as open responses to express and defend opinions.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using a growing number of learned phrases (*I see your point, but...*) and open responses to express and defend nuanced opinions.	Negotiate with or persuade others in conversations in appropriate registers (e.g., to acknowledge new information in an academic conversation but then politely offer a counterpoint) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and I haven't thought about that before. However...*), and open responses to express and defend nuanced opinions.
11–12	Negotiate with or persuade others in conversations (e.g., ask for clarification or repetition) using learned phrases (e.g., *Could you repeat that please? I believe...*) and open responses to express and defend opinions.	Negotiate with and persuade others (e.g., by presenting counter-arguments) in discussions and conversations using learned phrases (e.g., *You make a valid point, but my view is...*) and open responses to express and defend nuanced opinions.	Negotiate with or persuade others in discussions and conversations in appropriate registers (e.g., to acknowledge new information and politely offer a counterpoint) using a variety of learned phrases (e.g., *You postulate that X. However, I've reached a different conclusion on this issue.*) and open responses to express and defend nuanced opinions.
Applying ELD Standards to Mathematics	In making mathematical arguments and critiquing the reasoning of others, students need to connect and/or counter others' ideas, using mathematical justification.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Compare the effectiveness of plausible arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	N-RN.1: Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.* Students use a variety of examples and counterexamples to justify to others how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values. Students may use properties of integer exponents to show examples of powers, and relate powers to roots. They may then reason (MP.2) that using rational notation for roots is consistent with the properties of integer exponents, thus extending those properties to the rational numbers. For example, using $5 \times 5 \times 5 = 5^3$ and $5^3 = 125$, students work in pairs to create statements that use specific words, phrases, and sentence structures to express their reasoning: • "*Five cubed is* 125, *so the cube root of* 125 *is* 5." • "*To find the cube root of any number* 'n,' *you must find a factor* 'f' *so that* $f \times f \times f = n$, or $f^3 = n$." • "*If we allow* rational exponents *and define them to have the same properties as* integer exponents, *then we can say that, in this case,* f *must equal* $n^{1/3}$ *because* $(n^{1/3}) \times (n^{1/3}) \times (n^{1/3}) = n^{(1/3 + 1/3 + 1/3)} = n^{(1/3 \times 3)} = n^1 = n$ [*using a property of exponents, we can multiply numbers with the same base* (b) using $b^p \times b^p \times b\ b^p = b^{(p+p+p)} = b^{3p}$]." • *"So,* $(n^{1/3})^3 = n^{(1/3 \times 3)} = n^1 = n$. *So, the cube root of* n *is* $n^{1/3}$." The teacher has ensured that each student at the Emerging or Expanding level of English proficiency is partnered with a language broker, a student who is bilingual in English and in the student’s home language. The teacher encourages these partners to discuss the concepts in their home language first, and then work on wording them in English. Additionally, the teacher circulates while the students are working, ensuring that each partner understands and helping with both the concepts and the language of the responses.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **A. Collaborative**			
4. Adapting language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Adjust language choices according to the context (e.g., classroom, community) and audience (e.g., peers, teachers).	Adjust language choices according to the context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), task, and audience (e.g., peers, teachers, guest lecturer).	Adjust language choices according to the task (e.g., group presentation of research project), context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), and audience (e.g., peers, teachers, college recruiter).
11–12	Adjust language choices according to the context (e.g., classroom, community) and audience (e.g., peers, teachers).	Adjust language choices according to the context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), task, and audience (e.g., peers, teachers, guest lecturer).	Adjust language choices according to the task (e.g., group presentation of research project), context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), and audience (e.g., peers, teachers, college recruiter).
Applying ELD Standards to Mathematics	Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend mathematical arguments, interpretations, and procedures).		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • In high school, students have learned to examine claims and make explicit use of definitions.		

Sample Integration of Mathematical and ELD Standards in the Classroom	S-ID.5: Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. In analyzing and describing data, students use language to present results and interpretations accurately to their classmates or others. In summarizing data in frequency tables, students interpret relative frequencies in the context of the data, and recognize possible associations and trends by looking for patterns in the data. They must communicate this in ways that are understood by their audience. Students may refer to a word wall, created with guidance from the teacher, that includes definitions and diagrams of key terms, such as *relative frequency*, *joint relative frequency*, *marginal relative frequency*, and *conditional relative frequency*.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Demonstrate comprehension of oral presentations and discussions on familiar social and academic topics by asking and answering questions, with prompting and substantial support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering questions that show thoughtful consideration of the ideas or arguments with moderate support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering detailed and complex questions that show thoughtful consideration of the ideas or arguments, with light support.
11–12	Demonstrate comprehension of oral presentations and discussions on familiar social and academic topics by asking and answering questions with prompting and substantial support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering questions that show thoughtful consideration of the ideas or arguments with moderate support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering detailed and complex questions that show thoughtful consideration of the ideas or arguments with light support.
Applying ELD Standards to Mathematics	Students listen to a variety of orally expressed mathematical information, such as explanations, procedures, or word problems, and demonstrate understanding by asking and answering questions.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	F-IF.9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.* Whether listening to classmates or teachers, students encounter a variety of complex situations, and they must ask and answer questions to learn and to show understanding. For example, when considering two functions represented in different ways, students must be able to compare different properties of the functions. Given a graph of one quadratic function and an algebraic expression for another, students are asked to determine which has the larger maximum. Using a think-pair-share protocol, English learners at the Emerging or early Expanding level of English language proficiency are paired with those at late Expanding or Bridging level, to collaborate to develop and share ideas about the graphs, asking and answering each other questions to clarify their understanding. Each student in a pair then has to explain the thinking of his or her partner. As part of the protocol, students rehearse what they will share with the class, including one question that was answered during the discussion as well as a question the pair was unable to answer, if any.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using short sentences and a select set of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using familiar verbs (e.g., *seems that*). c. Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using increasingly detailed sentences, and an increasing variety of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using an increasing variety of verbs and adverbials (e.g., *indicates that, suggests, as a result*). c. Use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-level texts, presented in various print and multimedia formats, using a variety of detailed sentences and a range of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-level texts and viewing of multimedia using a variety of verbs and adverbials (e.g., *creates the impression that, consequently*). c. Use knowledge of morphology (e.g., derivational suffixes), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.

11–12	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using phrases, short sentences, and a select set of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia, using familiar verbs (e.g., *seems that*). c. Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using increasingly detailed sentences, and a range of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using a variety of verbs and adverbials (e.g., *indicates that, suggests, as a result*). c. Use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-level texts, presented in various print and multimedia formats, using a variety of detailed sentences and precise general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-level texts and viewing of multimedia using a variety of verbs and adverbials (e.g., *creates the impression that, consequently*). c. Use knowledge of morphology (e.g., derivational suffixes), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.
Applying ELD Standards to Mathematics	a. In mathematics, close reading and viewing are often required in order to determine key details in the context of examining, interpreting, and creating graphs and other models in real-world problem situations. Students use these details when explaining ideas, concepts, and procedures. b. As students analyze situations and draw inferences and conclusions based on data, graphs, or other models, they explain and justify their reasoning. c. Students need to be able to use their morphological knowledge and context (e.g., the words or symbols around an unknown word) to derive the meaning of multiple-meaning words or unknown words in mathematics.		
Corresponding Standards for Mathematical	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously		

Practice	established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • In high school, students have learned to examine claims and make explicit use of definitions.
Sample Integration of Mathematical and ELD Standards in the Classroom	N-Q.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Students read carefully and use their knowledge of units as a way to interpret and solve written multistep problems (MP.2). Students work in small groups to make arguments to explain their understanding, their choice of units in formulas, and their choices of scale and origin in graphs. Each student in the group must derive meaning from the formulas and graphs generated by other students. During the group discussions, students must correctly use units to make meaning of the problems and of the reasoning of other students, as well as to explain their own thinking. While most of the small groups work independently, the teacher works with one group of students at the Emerging and early Expanding levels of English language proficiency to create a word wall of common units, to ensure that the students can read and understand these units as they develop their explanations of multistep problems.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing evidence to support claims or connecting points in an argument) or create other specific effects, with substantial support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with moderate support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with light support.
11–12	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing evidence to support claims or connecting points in an argument) or create other specific effects.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with moderate support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with light support.
Applying ELD Standards to Mathematics	When critiquing others' presentations on mathematical topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	G-SRT.2: Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. Working in groups, students explain as well as listen to others' explanations about similarity transformations. They may use the definition of similarity in terms of similarity transformations to decide whether two figures are similar. For example, given two triangles, they may determine whether they can find a dilation center and scale factor that transforms one triangle into the other (MP.2). As part of this exploration, students in each group must work to convince one another of their ideas, and they must evaluate how well other students have presented their ideas and convinced those in the group. Students continue to investigate other triangles to determine what properties of triangles define similarity for triangles. Collaboratively, the class comes to explain the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., describing a character or action as *aggressive* versus *bold*) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., using figurative language or words with multiple meanings to describe an event or character) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of a variety of different types of phrasing or words (e.g., hyperbole, varying connotations, the cumulative impact of word choices) produces nuances and different effects on the audience.
11–12	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., describing a character or action as *aggressive* versus *bold*) produces nuances or different effects on the audience.	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., using figurative language or words with multiple meanings to describe an event or character) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of a variety of different types of phrasing or words (e.g., hyperbole, varying connotations, the cumulative impact of word choices) produces nuances and different effects on the audience.
Applying ELD Standards to Mathematics	When reading or listening to others' presentations on mathematical topics, students can distinguish how the writer's or speaker's selection of particular words or phrases with related meanings (e.g., *divide* versus *partition*) affects the audience's understanding.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	F-LE.3: Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. In many situations, students are reading or listening to descriptions or explanations of mathematical concepts and depend upon the author's word choices or examples to convey meaning. Students may study several sets of tables and graphs together and present their ideas to others, considering their word choices and the word choices of their classmates. Collaboratively, in small groups, students generalize their observations to explain that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or as a polynomial function (MP.2).
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

<table>
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Grades 9–10 and 11–12</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
C. Productive</th></tr>
<tr><th colspan="4">9. Presenting</th></tr>
<tr><th>Grades</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>9–10</td><td>Plan and deliver brief oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas.</td><td>Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas by using growing understanding of register.</td><td>Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that express complex and abstract ideas well supported by evidence and sound reasoning, and are delivered using an appropriate level of formality and understanding of register.</td></tr>
<tr><td>11–12</td><td>Plan and deliver brief oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas.</td><td>Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas using growing understanding of register.</td><td>Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that express complex and abstract ideas, well supported by evidence and reasoning, and are delivered using an appropriate level of formality and understanding of register.</td></tr>
<tr><td>Applying ELD Standards to Mathematics</td><td colspan="3">Students share their thinking and findings by explaining or describing the mathematics content, providing supporting evidence, and, in many cases, using graphics or demonstrations as part of an oral presentation.</td></tr>
<tr><td>Corresponding Standards for Mathematical Practice</td><td colspan="3">MP.1 Make sense of problems and persevere in solving them.

MP.3 Construct viable arguments and critique the reasoning of others.
• Understand and use stated assumptions, definitions, and previously established results in constructing arguments.
• Make conjectures and build a logical progression of statements to explore the truth of their conjectures.
• Analyze situations by breaking them into cases.

MP.6 Attend to precision.
• Try to communicate precisely to others.
• Try to use clear definitions in discussion with others and in their own reasoning.</td></tr>
</table>

Sample Integration of Mathematical and ELD Standards in the Classroom	A-REI.5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. When developing and presenting formal or informal proofs, students may use algebraic or geometric examples. For example, given a system of two equations in two variables, students work in pairs to determine whether one of the equations can be replaced by the sum of that equation and a multiple of the other without impacting the solutions of the system. The teacher pairs English learners at the Emerging or early Expanding level of English language proficiency with students at higher levels of proficiency, with the expectation that all students will contribute to an oral presentation. Students first show each other graphs or use an example system of equations to demonstrate their thinking (MP.2). The pairs then collaborate to plan and present a formal algebraic proof, with each student in the pair taking responsibility for presenting part of the explanation.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly or quantitatively.

Integrating CA ELD Standards Augmentation for Mathematics Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Write short literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences by using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently by using appropriate text organization and growing understanding of register. b. Write increasingly concise summaries of texts and experiences by using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently using appropriate text organization and register. b. Write clear and coherent summaries of texts and experiences by using complete and concise sentences and key words (e.g., from notes or graphic organizers).
11–12	a. Write short literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently using appropriate text organization and register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to Mathematics	a. Students write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying conclusions.		

	b. Students summarize and write concisely in a variety of mathematical contexts, with particular attention to modeling. Students analyze relationships and represent them symbolically, using appropriate quantities.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • In high school, students have learned to examine claims and make explicit use of definitions.
Sample Integration of Mathematical and ELD Standards in the Classroom	S-ID.6a: Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. Collaboratively and independently, students may represent data on two quantitative variables on a scatter plot (MP.4) and use the graph to describe how the variables are related. Students use sentence frames to "tell a story" about the graph and describe the situation. For example, students might use the following sentence frames: "First, I noticed ____," "The slope of the graph is ___," and "As one variable increases, the other variable ___." English learners at the Emerging and Expanding levels of English language proficiency may also refer to a word wall with key terms, such as *linear function, quadratic function,* and *exponential function.* In order to clarify their ideas, students first discuss the data in partners, using their home language if they wish. As students discuss, the teacher makes sure to check in with each student at the Emerging or early Expanding level of English proficiency. The teacher affirms the students’ work and asks partners probing questions and, when necessary, recasts their ideas using mathematical terminology and/or the structure and language features of mathematical descriptions. Students then summarize in writing their descriptions by identifying a function that fits the data. If any student at the Emerging level needs more support than independent work provides, the teacher works with that student (or a small group of students) to jointly construct the description.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Justifying/arguing			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Justify opinions by articulating some relevant textual evidence or background knowledge, with visual support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ certainly/absolutely, should/might*).
11–12	a. Justify opinions by articulating some textual evidence or background knowledge with visual support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ certainly/absolutely, should/might*).
Applying ELD Standards to Mathematics	Students may be required to make decisions based on evidence, including use of reasonable estimates of known quantities to find unknown quantities. Students explain procedures, justify solutions grounded in mathematical concepts, and use specified parameters to model situations.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • In high school, students have learned to examine claims and make explicit use of definitions.
Sample Integration of Mathematical and ELD Standards in the Classroom	G-GPE.5: Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). As they work in small groups, students express and justify their opinions to prove the slope criteria for parallel and perpendicular lines. After the whole class has agreed on an appropriate proof, students then use the slope criteria to solve geometric problems (MP.2). For example, students find the equation of a line parallel or perpendicular to a given line that passes through a given point. The teacher provides sentence starters, such as "I think that____," "In my opinion, ___," or "Based on my experience, I think ___," for English learners at the Emerging and Expanding levels of English language proficiency, to support the expression of their ideas.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly or quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Use familiar general academic (e.g., *temperature, document*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) words to create clear spoken and written texts. b. Use knowledge of morphology to appropriately select basic affixes (e.g., The skull protects the brain).	a. Use an increasing variety of grade-appropriate general academic (e.g., *dominate, environment*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) academic words accurately and appropriately when producing increasingly complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., diplomat*ic*, stems are branch*ed* or *un*branched).	a. Use a variety of grade-appropriate general (e.g., *anticipate, transaction*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) academic words and phrases, including persuasive language, accurately and appropriately when producing complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *humiliate* to *humiliation* or *incredible* to *incredibly*).
11–12	a. Use familiar general academic (e.g., *temperature, document*) and domain-specific (e.g., *cell, the Depression*) words to create clear spoken and written texts. b. Use knowledge of morphology to appropriately select basic affixes (e.g., The	a. Use an increasing variety of grade-appropriate general academic (e.g., *fallacy, dissuade*) and domain-specific (e.g., *chromosome, federalism*) academic words accurately and appropriately when producing increasingly complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a growing	a. Use a variety of grade-appropriate general (e.g., *alleviate, salutary*) and domain-specific (e.g., *soliloquy, microorganism*) academic words and phrases, including persuasive language, accurately and appropriately when producing complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *inaugurate* to *inauguration*).

	news media rel*ies* on official sources.).	number of ways to manipulate language (e.g., The card*iac* muscle works continuous*ly*.).	

Applying ELD Standards to Mathematics	Students use a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	N-RN.3: Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. Students investigate rational and irrational numbers to reach conclusions about the sums and products of these types of numbers. As they share their ideas with one another, they accurately use mathematics-specific terminology when providing examples and justifying their reasoning (MP.2). Students must also understand and use appropriate prefixes, for example, when differentiating between the terms *rational* and *irrational* in their conversations.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing brief arguments, informative/explanatory texts and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing increasingly clear and cohesive arguments, informative/ explanatory texts and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts and narratives.
11–12	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing brief arguments, informative/ explanatory texts, and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing increasingly clear and cohesive arguments, informative/ explanatory texts, and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts, and narratives.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how text is structured (e.g., what information is needed first, what information is needed using mathematical symbols or words), so that their communication is clear to their audiences.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • In high school, students have learned to examine claims and make explicit use of definitions.
Sample Integration of Mathematical and ELD Standards in the Classroom	A-SSE.3c: Use the properties of exponents to transform expressions for exponential functions. *For example, the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.* In real-world contexts, students may examine an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression, using the properties of exponents to transform expressions for exponential functions (MP.7). Students read a text that describes a situation where, given a specific annual interest rate, students must use the properties of exponents to approximate the equivalent monthly interest rate. Individually and collaboratively, students read the text, write an expression to represent the annual interest rate, and then use the expression to write an equivalent expression that represents the monthly interest rate. As students work with the expressions, they consider how to create clear and cohesive explanations of their reasoning to present to each other and to the teacher. For example, the expression 1.15^t, which represents an annual interest rate of 15%, can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$. This rewritten expression shows that the equivalent monthly interest rate is approximately 1.2%.
Sample-Specific Standards for Mathematical Practice	MP.7 Look for a make use of structure.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
2. Understanding cohesion			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., using pronouns to refer back to nouns in text) to comprehending and writing brief texts. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *first, second, third*) to comprehending and writing brief texts.	a. Apply knowledge of a growing number of language resources for referring to make texts more cohesive (e.g., using nominalizations to refer back to an action or activity described earlier) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *meanwhile, however, on the other hand*) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences.	a. Apply knowledge of a variety of language resources for referring to make texts more cohesive (e.g., using nominalization, paraphrasing, or summaries to reference or recap an idea or explanation provided earlier) to comprehending grade-level texts and to writing clear and cohesive grade-level texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *on the contrary, in addition, moreover*) to comprehending grade-level texts and to writing cohesive texts for specific purposes and audiences.

11–12	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., using pronouns or synonyms to refer back to characters or concepts introduced earlier) to comprehending. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *first, second, finally*) to comprehending and writing brief texts.	a. Apply knowledge of a growing number of language resources for referring to make texts more cohesive (e.g., using nominalizations to refer back to an action or activity described earlier) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *meanwhile, however, on the other hand*) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences.	a. Apply knowledge of a variety of resources for referring to make texts more cohesive (e.g., using nominalization, paraphrases, or summaries to reference or recap an idea or explanation provided earlier) to comprehending grade-level texts and to writing clear and cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *on the contrary, in addition, moreover*) to comprehending grade-level texts and writing cohesive texts for specific purposes and audiences.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	F-TF.2: Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. To explain procedures and justify solutions, students make connections to previous learning as well as to how concepts are linked to one another (MP.2). Students may link the unit circle to radian measure in order to explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers. Students work in pairs to reason about the unit circle and trigonometric functions, and then work with a different partner to explain their reasoning. Before writing, the teacher leads the students through an examination of a sequential mathematical description, highlighting the words the author used to make the text cohesive. For English learners at the Emerging and Expanding levels of English language proficiency, the teacher provides sentence frames with text connectives, which supports them to connect the sequence of steps that they took in ways that help clarify the connections between ideas and how they flow (e.g., "We decided that we would start with ____. First we ___. Then we ___. When we finished, we realized that ____.").
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the text type and discipline to create a variety of texts that explain, describe, and summarize concrete and abstract thoughts and ideas.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), and mood (e.g., subjunctive) appropriate to the text type and discipline to create a variety of texts that describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view.
11–12	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the text type and discipline to create a variety of texts that explain, describe, and summarize concrete and abstract thoughts and ideas.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), and mood (e.g., subjunctive) appropriate to the text type and discipline to create a variety of texts that describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view.
Applying ELD Standards to Mathematics	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	G-CO.6: Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent. In describing a process or explaining a strategy used to solve a problem, students use various verb types and tenses. Students use verbs in future tense for predictions of the effect of a rigid motion on a figure, such as a rotation on a trapezoid, and use geometric descriptions of the motion. When explaining and justifying their prediction, they may employ models (MP.2) to demonstrate how this would work, using present tense to describe the model. Students may also use the definition of congruence in terms of rigid motions to decide if two given figures are congruent, and then explain, using models to describe the motions, again in present tense. For example, given two trapezoids, students use models to rotate, reflect, and/or translate one of the trapezoids in an attempt to transform it into the other trapezoid. Based on whether they are able to transform the first trapezoid into the second using rigid motions, they explain whether the two trapezoids are congruent or not.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Expand noun phrases to create increasingly detailed sentences (e.g., adding adjectives for precision) about personal and familiar academic topics.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns; simple clause embedding) to create detailed sentences that accurately describe, explain, and summarize information and ideas on a variety of personal and academic topics.	Expand noun phrases in a variety of ways (e.g., more complex clause embedding) to create detailed sentences that accurately describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view on a variety of academic topics.
11–12	Expand noun phrases to create increasingly detailed sentences (e.g., adding adjectives for precision) about personal and familiar academic topics.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns, simple clause embedding) to create detailed sentences that accurately describe, explain, and summarize information and ideas on a variety of personal and academic topics.	Expand noun phrases in a variety of ways (e.g., complex clause embedding) to create detailed sentences that accurately describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view on a variety of academic topics.
Applying ELD Standards to Mathematics	In mathematics, oral and written problems may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	F-IF.4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* When interpreting and sketching key features of a graph and tables, given a verbal description, students must recognize the features. For a function that models a relationship between two quantities (MP.4), students interpret and describe key features in terms of the quantities. The teacher pairs students at different levels of English language proficiency so that the students can work together to support their reasoning. As they work together, students expand noun phrases to better explain the key features of the function.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part II: Learning About How English Works** **B. Expanding and Enriching Ideas**			
5. Modifying to add details			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar activities or processes.	Expand sentences with a growing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar or new activities or processes.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
11–12	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar activities or processes.	Expand sentences with a growing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar or new activities or processes.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Sample Integration of Mathematical and ELD Standards in the Classroom	S-CP.5: Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.* In order to describe and explain mathematical concepts, students may use everyday language as well as mathematics-specific terms. In probability, students may recognize and explain the concepts of conditional probability and independence, using everyday language and situations. For example, students use modifying words and phrases (e.g., "a skateboarder *with a broken arm*") when comparing the chance of breaking your arm if you are a skateboarder with the chance of being a skateboarder if you broke your arm. The teacher creates groups with students at different levels of English language proficiency, so that the students can work together to support their reasoning and to expand on one another's explanations. Each group is tasked with writing an explanation. The teacher then supports the students in expanding their explanations to add more details. The teacher pulls the class back together and uses a model text, asking students for suggestions as to how to add details pertaining to the specificity of the explanation. The students then return to their own group to add details to the text they have written. To support students at all levels of English proficiency, the teacher has established systems of equitable contribution and support when students work in groups. For example, when co-constructing explanations, each student must write in a unique color of ink, showing their contribution. All students in the group are tasked with helping each other understand both the content and the language, and each student at the Emerging or Early Expanding level of English proficiency has a "language buddy" in their group who speaks the same home language.
Sample-Specific Standards for Mathematical Practice	N/A

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so;* creating complex sentences using *because*) to make connections between and to join ideas (e.g., *I want to read this book because it describes the solar system).*	Combine clauses in a growing number of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a variety of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to make a concession (e.g., *While both characters strive for success,* they each take different approaches through which to reach their goals.), or to establish cause (e.g., Women's lives were changed forever after World War II *as a result of joining the workforce)*.
11–12	Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so;* creating complex sentences using *because*) to make connections between and join ideas (e.g., *I want to read this book because it tells the history of Pi*).	Combine clauses in a growing number of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a variety of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to make a concession (e.g., *While both characters strive for success, they each take different approaches to reach their goals*), or to establish cause (e.g., *Women's lives were changed forever after World War II as a result of joining the workforce*).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	G-GMD.4: Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects. When making connections among a variety of two-dimensional shapes and three-dimensional objects, students identify and describe the shapes of two-dimensional cross-sections of three-dimensional objects, and identify and describe three-dimensional objects generated by rotations of two-dimensional objects. They use concrete models (MP.4) to demonstrate how the abstract mathematical concepts relate to everyday objects and situations (MP.2). For example, students show different ways in which a brick of clay may be cut to create other three-dimensional figures with a variety of cross-sections, including cutting off a corner of the brick. Students describe the cross-sections and justify their reasoning, combining clauses to make complex statements about the two-dimensional and three-dimensional shapes. The teacher provides sentence frames (e.g., “We wanted to cut the brick in different ways, so we ___. We started by _____, and then we ____. We knew that ____, so we ____. Cutting it like ____ made a shape like ____.”) to support students to deepen their mathematical thinking and to extend their use of language to describe mathematical concepts.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part II: Learning About How English Works** **C. Connecting and Condensing Ideas**			
7. Condensing ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*).	Condense ideas in a growing number of ways (e.g., through embedded clauses or by compounding verbs or prepositional phrases) to create more precise and detailed simple, compound, and complex sentences (e.g., *Species that could not adapt to the changing climate eventually disappeared*).	Condense ideas in a variety of ways (e.g., through a variety of embedded clauses, or by compounding verbs or prepositional phrases, nominalization) to create precise simple, compound, and complex sentences that condense concrete and abstract ideas (e.g., *Another issue that people may be concerned with is the amount of money that it will cost to construct the new building*).
11–12	Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*).	Condense ideas in a growing number of ways (e.g., through embedded clauses or by compounding verb or prepositional phrases) to create more precise and detailed simple, compound, and complex sentences (e.g., *Species that could not adapt to the changing climate eventually disappeared*).	Condense ideas in a variety of ways (e.g., through a variety of embedded clauses, or by compounding verb or prepositional phrases, nominalization) to create precise simple, compound, and complex sentences that condense concrete and abstract ideas (e.g., *The epidemic, which ultimately affected hundreds of thousands of people, did not subside for another year*).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	F-BF.1a: Determine an explicit expression, a recursive process, or steps for calculation from a context. Students write a function that describes a relationship between two quantities in a context (MP.4). As they work to make meaning of the context, and then to explain their thinking to others, students condense descriptions to more clearly present the details relevant to the expression, process, or steps for calculation (e.g., "First, I calculated ___" → "The first step of the calculation ___"). To support students at the Emerging level of English proficiency, the teacher shows examples of language that have been condensed and then jointly constructs and condenses text with students.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

III. Integrating CA ELD Standards into Science Teaching and Learning

The charts in this section are organized into the elements described in the table below. For each element, the table explains what the element is and is not, along with guidance for how to use it.

Chart Element	What It Is	How to Use It	What It Is Not
CA ELD Standards	The full text of each CA ELD Standard for each grade and for each of the three proficiency levels (CDE, 2014)	Consider how the standard applies to science teaching and learning in classrooms with EL students	***Not:*** Complete information on the organization, structure, or use of the CA ELD Standards
Applying ELD Standards to Science	Additional information to *supplement* the text of each CA ELD Standard, describing how the standard applies to science teaching and learning	Consider how the additional information helps to apply the standard to science teaching and learning in classrooms with EL students	***Not:*** A full version of the standard, rewritten so that it applies to science teaching and learning
Corresponding Science & Engineering Practices	The Science and Engineering Practices (SEPs) that correspond to the Performance Expectations (PEs) selected for the Sample Science/ELD Classroom Close-up	Consider how each SEP applies to designing science units or lessons that correspond to the standard and to the PEs listed. Consider how additional PEs and SEPs might apply in order to integrate this standard into science teaching and learning.	***Not:*** All possible PEs or SEPs that correspond to the standard. The correspondence study cited in the Introduction to this resource typically found several PEs that correspond to each CA ELD Standard.
Sample Integration of Science and ELD Standards in the Classroom	An illustrative *sample* activity or activities that EL students at one grade level in the grade-level grouping could engage in, with a focus on the CA ELD Standard, SEPs, and PEs listed for that grade level	Consider how the sample activity or activities can be adapted for: • science instruction at other grade levels in the grouping; or • EL students at Emerging, Expanding, or Bridging levels of English language proficiency. Standards in Part II should always be used in tandem with standards in Part I. The Part II samples are isolated only for purposes of the organization of the resource.	***Not:*** All knowledge or skills described in the CA ELD Standard, SEPs, or PEs listed; content or strategies for students at all grade levels or all English language proficiency levels; all possible processes, strategies, tasks, or activities related to the sample; a lesson plan; a description of an actual or complete classroom or lesson.
Sample-Specific Science & Engineering Practices	Additional SEPs that correspond to the activities described in the sample.	Consider how each of these SEPs applies to these sample classroom activities	***Not:*** All of the PEs or SEPs that correspond to the standard

Index of Science Charts Organized by ELD Standard

Grades K, 1, and 2				Grades 3, 4, and 5			
ELD Standard	Grade Level	Sample Standard	Page #	ELD Standard	Grade Level	Sample Standard	Page #
PI.1	K	K-ESS3-2*	210	PI.1	3	3-PS2-3 3-PS2-4	249
PI.2	1	1-LS1-2 1-LS3-1	212	PI.2	4	4-ESS3-1	251
PI.3	2	2-PS1-4	214	PI.3	5	5-LS2-1	253
PI.4	2	2-LS2-1	215	PI.4	4	4-ESS3-1 3-5-ETS1-2	255
PI.5	K	K-ESS2-2	218	PI.5	3	3-PS2-3 3-PS2-4	257
PI.6	2	2-ESS1-1	220	PI.6	4	4-ESS2-2 4-ESS3-1	260
PI.7	1	1-ESS1-1	222	PI.7	5	5-PS1-1	262
PI.8	2	2-PS1-1	224	PI.8	4	4-PS4-2	264
PI.9	2	2-PS1-2*	226	PI.9	3	3-LS1-1 3-LS4-2	266
PI.10	K	K-LS1-1	228	PI.10	4	4-PS3-2 4-PS4-2 4-PS4-3* 4-LS1-1	269
PI.11	2	2-ESS2-2	230	PI.11	3	3-ESS2-1 3-ESS3-1*	271
PI.12	K	K-PS2-2*	232	PI.12	5	5-ESS1-1 5-ESS1-2	273
PII.1	K–2	K-2-ETS1-2	234	PII.1	4	4-LS1-1	275
PII.2	K–2	K-2-ETS1-2	236	PII.2	4	4-ESS1-1 4-ESS2-1	278
PII.3	K–2	K-2-ETS1-3	239	PII.3	5	5-LS2-1	280
PII.4	K	K-PS3-2* K-2-ETS1-2	241	PII.4	4	4-ESS3-2*	282
PII.5	1	1-LS1-2	243	PII.5	4	4-PS3-1	284
PII.6	1	1-LS1-1*	245	PII.6	4	4-PS3-2	286
PII.7	1	1-ESS1-1	247	PII.7	3	3-LS4-3	288

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Grades 6, 7, and 8			
ELD Standard	**Grade Level[5]**	**Sample Standard**	**Page #**
PI.1	6	MS-LS1-3	290
PI.2	6	MS-LS1-5	292
PI.3	6	MS-PS3-5	294
PI.4	6	MS-ESS2-6	296
PI.5	7	MS-PS1-2	298
PI.6	7	MS-LS2-1	302
PI.7	7	MS-PS1-3	304
PI.8	6, 7, 8[7]	MS-ETS1-3	306
PI.9	7	MS-ESS2-1	308
PI.10	7	MS-PS1-5	310
PI.11	8	MS-ESS3-4	313
PI.12	7	MS-ESS2-2	316
PII.1	8	MS-PS4-1	318
PII.2	7	MS-PS2-2	321
PII.3	8	MS-LS4-1	323
PII.4	8	MS-LS4-2	325
PII.5	7	MS-ESS2-2	327
PII.6	6	MS-PS3-4	329
PII.7	7	MS-LS2-5*	332

Grades 9–10 and 11–12			
ELD Standard	**Grade Level[6]**	**Sample Standard**	**Page #**
PI.1	9–12	HS-ESS2-1	335
PI.2	9–12	HS-ESS1-2	336
PI.3	9–12	HS-PS4-3	339
PI.4	9–12	HS-LS2-6	341
PI.5	9–12	HS-ESS2-5	343
PI.6	9–12	HS-PS4-4	346
PI.7	9–12	HS-ESS3-3	348
PI.8	9–12	HS-PS1-4	350
PI.9	9–12	HS-PS2-4	352
PI.10	9–12	HS-LS1-3	354
PI.11	9–12	HS-PS1-1	356
PI.12	9–12	HS-ESS3-6	358
PII.1	9–12	HS-LS4-3	361
PII.2	9–12	HS-LS1-1	364
PII.3	9–12	HS-PS2-1	366
PII.4	9–12	HS-LS1-2	368
PII.5	9–12	HS-ESS2-1	370
PII.6	9–12	HS-ESS3-1	372
PII.7	9–12	HS-LS2-3	374

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

[5] According to the integrated model.

[6] Placement of PEs in HS is dependent on the courses. Therefore, PEs can be at any HS grade.

[7] This PE is at all grade levels in the integrated model. The sample is related to a grade 6 PE.

Index of Science Charts Organized by Grade Level

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Grades 6, 7, and 8				Grades 9–10 and 11–12			
ELD Standard	**Grade Level[8]**	**Sample Standard**	**Page #**	**ELD Standard**	**Grade Level[9]**	**Sample Standard**	**Page #**
PI.8	6, 7, 8[10]	MS-ETS1-3	306	PI.1	9–12	HS-ESS2-1	335
PI.1	6	MS-LS1-3	290	PI.2	9–12	HS-ESS1-2	336
PI.2	6	MS-LS1-5	292	PI.3	9–12	HS-PS4-3	339
PI.3	6	MS-PS3-5	294	PI.4	9–12	HS-LS2-6	341
PI.4	6	MS-ESS2-6	296	PI.5	9–12	HS-ESS2-5	343
PII.6	6	MS-PS3-4	329	PI.6	9–12	HS-PS4-4	346
PI.5	7	MS-PS1-2	298	PI.7	9–12	HS-ESS3-3	348
PI.6	7	MS-LS2-1	302	PI.8	9–12	HS-PS1-4	350
PI.7	7	MS-PS1-3	304	PI.9	9–12	HS-PS2-4	352
PI.9	7	MS-ESS2-1	308	PI.10	9–12	HS-LS1-3	354
PI.10	7	MS-PS1-5	310	PI.11	9–12	HS-PS1-1	356
PI.12	7	MS-ESS2-2	316	PI.12	9–12	HS-ESS3-6	358
PII.2	7	MS-PS2-2	321	PII.1	9–12	HS-LS4-3	361
PII.5	7	MS-ESS2-2	327	PII.2	9–12	HS-LS1-1	364
PII.7	7	MS-LS2-5*	332	PII.3	9–12	HS-PS2-1	366
PII.1	8	MS-PS4-1	318	PII.4	9–12	HS-LS1-2	368
PII.3	8	MS-LS4-1	323	PII.5	9–12	HS-ESS2-1	370
PII.4	8	MS-LS4-2	325	PII.6	9–12	HS-ESS3-1	372
PI.11	8	MS-ESS3-4	313	PII.7	9–12	HS-LS2-3	374

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

[8] According to the integrated model.

[9] Placement of PEs in HS is dependent on the courses. Therefore, PEs can be at any HS grade.

[10] This PE is at all grade levels in the integrated model. The scenario is related to a grade 6 PE.

Index of Science Charts Organized by ELD Standard Across Grade Levels (K–12)

ELD Standards PI.1–PI.4			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.1	K	K-ESS3-2*	210
PI.1	3	3-PS2-3 3-PS2-4	249
PI.1	6	MS-LS1-3	290
PI.1	9–12	HS-ESS2-1	335
PI.2	1	1-LS1-2 1-LS3-1	212
PI.2	4	4-ESS3-1	251
PI.2	6	MS-LS1-5	292
PI.2	9–12	HS-ESS1-2	336
PI.3	2	2-PS1-4	214
PI.3	5	5-LS2-1	253
PI.3	6	MS-PS3-5	294
PI.3	9–12	HS-PS4-3	339
PI.4	2	2-LS2-1	215
PI.4	4	4-ESS3-1 3-5-ETS1-2	255
PI.4	6	MS-ESS2-6	296
PI.4	9–12	HS-LS2-6	341

ELD Standards PI.5–PI.8			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.5	K	K-ESS2-2	218
PI.5	3	3-PS2-3 3-PS2-4	257
PI.5	7	MS-PS1-2	298
PI.5	9–12	HS-ESS2-5	343
PI.6	2	2-ESS1-1	220
PI.6	4	4-ESS2-2 4-ESS3-1	260
PI.6	7	MS-LS2-1	302
PI.6	9–12	HS-PS4-4	346
PI.7	1	1-ESS1-1	222
PI.7	5	5-PS1-1	262
PI.7	7	MS-PS1-3	304
PI.7	9–12	HS-ESS3-3	348
PI.8	2	2-PS1-1	224
PI.8	4	4-PS4-2	264
PI.8	6, 7, 8[11]	MS-ETS1-3	306
PI.8	9–12	HS-PS1-4	350

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

[11] This PE is at all grade levels in the integrated model. The sample is related to a grade 6 PE.

ELD Standards PI.9–PI.12			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PI.9	2	2-PS1-2*	226
PI.9	3	3-LS1-1 3-LS4-2	266
PI.9	7	MS-ESS2-1	308
PI.9	9–12	HS-PS2-4	352
PI.10	K	K-LS1-1	228
PI.10	4	4-PS3-2 4-PS4-2 4-PS4-3 4-LS1-1	269
PI.10	7	MS-PS1-5	310
PI.10	9–12	HS-LS1-3	354
PI.11	2	2-ESS2-2	230
PI.11	3	3-ESS2-1 3-ESS3-1*	271
PI.11	8	MS-ESS3-4	313
PI.11	9–12	HS-PS1-1	356
PI.12	K	K-PS2-2*	232
PI.12	5	5-ESS1-1 5-ESS1-2	273
PI.12	7	MS-ESS2-2	316
PI.12	9–12	HS-ESS3-6	358

ELD Standards PII.1–PII.2			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PII.1	K–2	K-2-ETS1-2	234
PII.1	4	4-LS1-1	275
PII.1	8	MS-PS4-1	318
PII.1	9–12	HS-LS4-3	361
PII.2	K–2	K-2-ETS1-2	236
PII.2	4	4-ESS1-1 4-ESS2-1	278
PII.2	7	MS-PS2-2	321
PII.2	9–12	HS-LS1-1	364

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ELD Standards PII.3–PII.5			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PII.3	K–2	K-2-ETS1-3	239
PII.3	5	5-LS2-1	280
PII.3	8	MS-LS4-1	323
PII.3	9–12	HS-PS2-1	366
PII.4	K	K-PS3-2* K-2-ETS1-2	241
PII.4	4	4-ESS3-2*	282
PII.4	8	MS-LS4-2	325
PII.4	9–12	HS-LS1-2	368
PII.5	1	1-LS1-2	243
PII.5	4	4-PS3-1	284
PII.5	7	MS-ESS2-2	327
PII.5	9–12	HS-ESS2-1	370

ELD Standards PII.6–PII.7			
ELD Standard	**Grade Level**	**Sample Standard**	**Page #**
PII.6	1	1-LS1-1*	245
PII.6	4	4-PS3-2	286
PII.6	6	MS-PS3-4	329
PII.6	9–12	HS-ESS3-1	372
PII.7	1	1-ESS1-1	247
PII.7	3	3-LS4-3	288
PII.7	7	MS-LS2-5*	332
PII.7	9–12	HS-LS2-3	374

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using gestures, words, and simple phrases.	Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.	Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.
1	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using gestures, words, and simple phrases.	Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.	Contribute to class, group, and partner discussions by listening attentively, following turn-taking rules, and asking and answering questions.
2	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using gestures, words, and learned phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by listening attentively, following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by listening attentively, following turn-taking rules, asking relevant questions, affirming others, adding pertinent information, building on responses, and providing useful feedback.
Applying ELD Standards to Science	Students engage in class, small-group, and partner conversations where they ask and respond to questions, build on others' ideas, and work collaboratively to define problems, plan and carry out investigations, construct explanations, and design solutions.		
Corresponding Science & Engineering Practices	1. Asking questions (K-ESS3-2*)		

Sample Integration of Science and ELD Standards in the Classroom	Students have been collecting local weather data on a daily calendar. They work as a whole group near a large chart that shows labeled images of various types of severe weather (different from those on the daily calendar) and view a video of severe weather (such as heavy rain and wind, blizzard, or heavy snowstorm). Students explore the phenomena, asking questions about the purpose of weather forecasting and how to respond to severe weather in their locality (K-ESS3-2*). For example: "What if the forecast were this type of weather for our community?"; "What would be problems for our community if we had this type of weather?"; "What things could we do to prepare for this type of weather?"; "How can forecasting the weather help us prepare and be ready for severe weather?" The teacher supports English learners at the Emerging and Expanding levels of English language proficiency in asking and answering these questions, by providing sentence frames (e.g., "If ____, then we could ___."; "We should ___ if ___."). The teacher encourages students to refer to the labeled images of weather when they ask and answer questions. When necessary, the teacher asks probing questions and recasts students' responses, affirming their ideas and helping them use vocabulary and structure their statements in ways appropriate for a science discussion.
Sample-Specific Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering)

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Collaborate with the teacher and peers on joint composing projects of short informational and literary texts that include minimal writing (labeling with a few words), using technology, where appropriate, for publishing, graphics, and the like.	Collaborate with the teacher and peers on joint composing projects of informational and literary texts that include some writing (e.g., short sentences), using technology, where appropriate, for publishing, graphics, and the like.	Collaborate with the teacher and peers on joint composing projects of informational and literary texts that include a greater amount of writing (e.g., a very short story), using technology, where appropriate, for publishing, graphics, and the like.
1	Collaborate with teacher and peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
2	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
Applying ELD Standards to Science	Students collaboratively conduct short research projects to build knowledge through investigation. They recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information; use credible and relevant sources to provide evidence; and represent their research in writing and through multimedia. Students communicate ideas, concepts, and information related to their investigations, and produce written explanations of observed natural phenomena.		

Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (1-LS3-1) 8. Obtaining, evaluating and communicating information (1-LS1-2)
Sample Integration of Science and ELD Standards in the Classroom	The teacher writes a focus question, such as "What behaviors do parents or offspring exhibit to help their offspring survive?" on the board. Small groups of students rotate through assisted stations to read grade-appropriate texts or use media to obtain scientific and technical information to determine patterns in evidence about parents' and offspring's behaviors that help offspring survive (e.g., chirping, crying, calling) and the responses of parents (e.g., feeding, comforting, and protecting the young) (1-LS1-2). They engage in oral and written exchanges to build evidence that young plants and animals are similar to, but not exactly like, their parents (1-LS3-1), and use thinking maps, drawing, and writing to provide detail about parents' and offspring's interactions and their characteristics.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Offering opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Offer opinions and ideas in conversations using a small set of learned phrases (e.g., *I think X*), as well as open responses.	Offer opinions in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X*), as well as open responses, in order to gain and/or hold the floor.	Offer opinions in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X, but . . .*), as well as open responses, in order to gain and/or hold the floor or add information to an idea.
1	Offer opinions and ideas in conversations using a small set of learned phrases (e.g., *I think X*), as well as open responses in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X*), as well as open responses in order to gain and/or hold the floor, elaborate on an idea, and so on.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I think/don't think X. I agree with X*), and open responses in order to gain and/or hold the floor, elaborate on an idea, provide different opinions, and so on.
2	Offer opinions and negotiate with others in conversations using learned phrases (e.g., *I think X.*), as well as open responses, in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but X.*), as well as open responses, in order to gain and/or hold the floor, provide counter-arguments, and the like.	Offer opinions and negotiate with others in conversations using a variety of learned phrases (e.g., *That's a good idea, but X*), as well as open responses, in order to gain and/or hold the floor, provide counter-arguments, elaborate on an idea, and the like.
Applying ELD Standards to Science	Students participate in collaborative conversations where they engage in the design and use of models about a phenomenon, process solutions, and collect evidence. During these conversations, they construct claims and support them with reasons and evidence, working collaboratively and taking turns to critique explanations or solutions proposed by their peers, citing relevant evidence. In order to persuade others that their arguments are reasonable and supported by evidence, they may gain and/or hold the floor, provide counterarguments respectfully, or elaborate on a peer's ideas.		

Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (2-PS1-4)
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to construct an argument that some changes caused by heating or cooling can be reversed and some cannot (2-PS1-4). The students have observed plants growing both in the classroom and outdoors, and they ask questions about the changes that they see (e.g., the effect of frost and heat on leaves of plants). They have built charts to track plant growth, and they collectively record any changes that are due to extreme temperature conditions. The students build on these experiences by observing, comparing, and recording findings, from video footage, readings, and demonstrations, on the effects of temperature on other materials (e.g., eggs, butter, paper), in order to formulate claims about reversal of changes on materials by heating and cooling, based on the evidence.
Sample-Specific Science & Engineering Practices	1. Asking questions 4. Analyzing and interpreting data 5. Using mathematics and computational thinking

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
4. Adapting language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
K	No standard for kindergarten.	No standard for kindergarten.	No standard for kindergarten.
1	No standard for grade 1.	No standard for grade 1.	No standard for grade 1.
2	Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.	Adjust language choices (e.g., vocabulary, use of dialogue, and so on) according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peers versus adults), with moderate support from peers or adults.	Adjust language choices according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peer-to-peer versus peer-to-teacher), with light support from peers or adults.
Applying ELD Standards to Science	Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend scientific arguments, interpretations, and procedures).		
Corresponding Science & Engineering Practices	3. Planning and carrying out investigations (2-LS2-1)		
Sample Integration of Science and ELD Standards in the Classroom	Students plan and conduct an investigation collaboratively to produce data that serves as the basis for evidence to determine that plants need sunlight and water to grow (2-LS2-1). They obtain and record information from their explorations, books, and digital media. While working with peers, they plan investigations, predict expected results, make observations, and explain ideas for the task to others, responding to suggestions or questions about their investigation plan. With the teacher's probing, they describe observations and how they are recording measurements and findings. They adjust their language for each situation, as they continue refining questions and orally communicating ideas and information related to the investigation tasks.		

Sample-Specific Science & Engineering Practices	1. Asking questions 4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Demonstrate active listening to read-alouds and oral presentations by asking and answering *yes-no* and *wh-* questions with oral sentence frames and substantial prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering questions with oral sentence frames and occasional prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
1	Demonstrate active listening to read-alouds and oral presentations by asking and answering *yes-no* and *wh-* questions with oral sentence frames and substantial prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering questions, with oral sentence frames and occasional prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
2	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with oral sentence frames and substantial prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with oral sentence frames and occasional prompting and support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
Applying ELD Standards to Science	Students listen to oral presentations about science and engineering topics and to teacher read-alouds of science informational texts. They demonstrate their active listening by asking and answering detailed questions about what they heard.		
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (K-ESS2-2)		

Sample Integration of Science and ELD Standards in the Classroom	Students use and share pictures and drawings, and observe and listen to read-alouds about natural events, to construct an argument, supported by evidence, about how plants and animals (including humans) can change the environment to meet their needs (K-ESS2-2). They sequence events and compare predictions (based on prior experiences, such as having picked fruit from a tree to eat or having collected and used water from different sources for different purposes) to what occurred (observable events), such as seeing birds gathering materials to build nests and drinking water from puddles, squirrels storing food, and tree roots breaking the concrete of sidewalks. As they work as a class and in small groups, they ask questions of one another and respond to others in order to identify details and patterns that support their claims.
Sample-Specific Science & Engineering Practices	1. Asking questions 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Describe ideas, phenomena (e.g., parts of a plant), and text elements (e.g., characters) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how butterflies eat), and text elements (e.g., setting, characters) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., insect metamorphosis), and text elements (e.g., major events, characters, setting) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
1	Describe ideas, phenomena (e.g., plant life cycle), and text elements (e.g., characters) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how earthworms eat), and text elements (e.g., setting, main idea) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., erosion), and text elements (e.g., central message, character traits) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
2	Describe ideas, phenomena (e.g., plant life cycle), and text elements (e.g., main idea, characters, events) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how earthworms eat), and text elements (e.g., setting, events) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., erosion), and text elements (e.g., central message, character traits) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.

Applying ELD Standards to Science	Students obtain and combine information from print and digital sources to explain phenomena and to support analysis, reflection, and research. They observe experiences and read closely to evaluate the need for further information and the quality of the information source, and to explain and predict phenomena.
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (2-ESS1-1)
Sample Integration of Science and ELD Standards in the Classroom	Students read a text comparing time periods (e.g., an instant vs. their age vs. centuries). They work as a class and in small groups to make observations (firsthand or from media) to construct an evidence-based account for Earth events that occur quickly (e.g., earthquakes) or slowly (e.g., rock erosion) (2-ESS1-1). The students participate in collaborative investigations, such as tumbling various types of rocks in plastic tubs with water to see if any changes occur, and compare these investigations to a water-table model of erosion (using different soil types and/or different amounts of water) and/or video footage of mudslides, volcanoes, earthquakes, and beach erosion. Using key academic vocabulary that the teacher has posted on a word wall, students have conversations in which they provide detailed descriptions and analysis of their observations of text and images, as well as class collaborative and individually recorded ideas, to formulate clarification questions, provide summaries, and share results. The teacher provides various supports during these activities for the students at the Emerging level of English proficiency. For example, during the reading activity, the teacher shows pictures and other labeled graphic representations of the concepts to help students understand. After the reading activity during designated ELD time, the teacher works with the students to "unpack" the meaning of a key complex sentence within the text.
Sample-Specific Science & Engineering Practices	2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Describe the language an author uses to present an idea (e.g., the words and phrases used when a character is introduced), with prompting and substantial support.	Describe the language an author uses to present an idea (e.g., the adjectives used to describe a character), with prompting and moderate support.	Describe the language an author uses to present or support an idea (e.g., the vocabulary used to describe people and places), with prompting and light support.
1	Describe the language writers or speakers use to present an idea (e.g., the words and phrases used to describe a character), with prompting and substantial support.	Describe the language writers or speakers use to present or support an idea (e.g., the adjectives used to describe people and places), with prompting and moderate support.	Describe the language writers or speakers use to present or support an idea (e.g., the author's choice of vocabulary to portray characters, places, or real people) with prompting and light support.
2	Describe the language writers or speakers use to present an idea (e.g., the words and phrases used to describe a character), with prompting and substantial support.	Describe the language writers or speakers use to present or support an idea (e.g., the author's choice of vocabulary or phrasing to portray characters, places, or real people), with prompting and moderate support.	Describe how well writers or speakers use specific language resources to support an opinion or present an idea (e.g., whether the vocabulary used to present evidence is strong enough), with light support.
Applying ELD Standards to Science	When critiquing others' presentations on scientific topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		
Corresponding Science & Engineering Practices	3. Planning and carrying out investigations (make observations) (1-ESS1-1)		

Sample Integration of Science and ELD Standards in the Classroom	Students use observations and daily firsthand recordkeeping of the sun (where it is in the sky at different times of the day; the changes in a shadow throughout the day) and moon (where it is in the night sky in relation to the student's house), and use media and observations about the stars to describe patterns that can be predicted (1-ESS1-1). They share the recorded information, via charts, pictures, and writings, to compare predictions and analyze the patterns of these phenomena. They use sentence frames to analyze the patterns: for example, "Today at ___, the sun will be ____ in the sky." As students report patterns of motion of the sun, moon, and stars in the sky, they select specific language needed for clarity, and can analyze other writers' use of language. For example, students can describe the choice of verbs in a statement describing what happens when the sun and the moon move across the sky: they "appear to *rise* in one part of the sky, and *move across* the sky, to *set* in another part of the sky." To support students at the Emerging level of English proficiency, the teacher selects key verbs and spends time teaching the meaning of these verbs in vocabulary lessons. The teacher also asks students specific questions, such as "What verbs does the author use?" and, when necessary, verbally supports students when they respond.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Distinguish how two different frequently used words (e.g., describing an action with the verb *walk* versus *run*) produce a different effect.	Distinguish how two different words with similar meaning (e.g., describing an action as *walk* versus *march*) produce shades of meaning and a different effect.	Distinguish how multiple different words with similar meaning (e.g., *walk, march, strut, prance*) produce shades of meaning and a different effect.
1	Distinguish how two different frequently used words (e.g., *large* versus *small*) produce a different effect on the audience.	Distinguish how two different words with similar meaning (e.g., *large* versus *enormous*) produce shades of meaning and a different effect on the audience.	Distinguish how multiple different words with similar meaning (e.g., *big, large, huge, enormous, gigantic*) produce shades of meaning and a different effect on the audience.
2	Distinguish how two different frequently used words (e.g., describing a character as *happy* versus *angry*) produce a different effect on the audience.	Distinguish how two different words with similar meaning (e.g., describing a character as *happy* versus *ecstatic*) produce shades of meaning and different effects on the audience.	Distinguish how multiple different words with similar meaning (e.g., *pleased* versus *happy* versus *ecstatic, heard* or *knew* versus *believed*) produce shades of meaning and different effects on the audience.
Applying ELD Standards to Science	When reading or listening to others' presentations on scientific topics, students can distinguish how the writer's or speaker's selection of different words or phrases with related meanings (e.g., *rough* versus *grainy* versus *bumpy*) affects the audience's understanding.		
Corresponding Science & Engineering Practices	3. Planning and carrying out investigations (2-PS1-1)		

Sample Integration of Science and ELD Standards in the Classroom	As small groups of students engage in analysis of different kinds of materials, they record the observable properties of the materials and communicate their findings with others (2-PS1-1). For example, as students observe different textured soil materials, they may cluster them by the texture, color, size, and type of materials that the materials contain. During the process, they may encounter multiple ways to describe the texture of a rough, sandy soil as they compare it to the texture of planting soil, which is softer; when given varied types of sand grains, they may need to further identify words with similar meanings in order to more accurately describe their samples. During a gallery walk to view how other groups have organized their information, students identify words that their groups had not used, to add to their group's glossary.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Plan and deliver very brief oral presentations (e.g., show and tell, describing a picture).	Plan and deliver brief oral presentations on a variety of topics (e.g., show and tell, author's chair, recounting an experience, describing an animal).	Plan and deliver longer oral presentations on a variety of topics in a variety of content areas (e.g., retelling a story, describing a science experiment).
1	Plan and deliver very brief oral presentations (e.g., show and tell, describing a picture).	Plan and deliver brief oral presentations on a variety of topics (e.g., show and tell, author's chair, recounting an experience, describing an animal, and the like).	Plan and deliver longer oral presentations on a variety of topics in a variety of content areas (e.g., retelling a story, describing a science experiment).
2	Plan and deliver very brief oral presentations (e.g., recounting an experience, retelling a story, describing a picture).	Plan and deliver brief oral presentations on a variety of topics (e.g., retelling a story, describing an animal).	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., retelling a story, recounting a science experiment, describing how to solve a mathematics problem).
Applying ELD Standards to Science	Students plan and deliver oral presentations on scientific topics.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (2-PS1-2*)		
Sample Integration of Science and ELD Standards in the Classroom	Students conduct permeability investigations to determine which soil type (sand, clay, or loam) would be most suitable for a garden path in the school, for planting, and for making ceramic signs to identify plants (2-PS1-2*). They make observations (firsthand and with additional supporting evidence from media) and record measurements of the soils' permeability. Through pictures, drawings, and/or charting their observations, students prepare their assigned group's soil findings to present to others. Collectively, they synthesize a class chart and summary concluding statements, using sentence starters such as "The finer the		

	grain size, the more _____." or "The larger the grain size, the more ____."
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Composing/Writing			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Draw, dictate, and write to compose very short literary texts (e.g., story) and informational texts (e.g., a description of a dog), using familiar vocabulary collaboratively in shared language activities with an adult (e.g., joint construction of texts), with peers, and sometimes independently.	Draw, dictate, and write to compose short literary texts (e.g., story) and informational texts (e.g., a description of dogs), collaboratively with an adult (e.g., joint construction of texts), with peers, and with increasing independence.	Draw, dictate, and write to compose longer literary texts (e.g., story) and informational texts (e.g., an information report on dogs), collaboratively with an adult (e.g., joint construction of texts), with peers, and independently using appropriate text organization.
1	Write very short literary texts (e.g., story) and informational texts (e.g., a description of an insect) using familiar vocabulary collaboratively with an adult (e.g., joint construction of texts), with peers, and sometimes independently.	Write short literary texts (e.g., a story) and informational texts (e.g., an informative text on the life cycle of an insect) collaboratively with an adult (e.g., joint construction of texts), with peers, and with increasing independence.	Write longer literary texts (e.g., a story) and informational texts (e.g., an informative text on the life cycle of insects) collaboratively with an adult (e.g., joint construction), with peers, and independently.
2	Write very short literary texts (e.g., story) and informational texts (e.g., a description of a volcano) using familiar vocabulary collaboratively with an adult (e.g., joint construction of texts), with peers, and sometimes independently.	Write short literary texts (e.g., a story) and informational texts (e.g., an explanatory text explaining how a volcano erupts) collaboratively with an adult (e.g., joint construction of texts), with peers, and with increasing independence.	Write longer literary texts (e.g., a story) and informational texts (e.g., an explanatory text explaining how a volcano erupts) collaboratively with an adult (e.g., joint construction), with peers and independently.
Applying ELD Standards to Science	Students write a variety of science texts, such as explanatory reports or descriptive paragraphs, and create charts, tables, and diagrams as relevant to the task.		

Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (use observations to describe patterns) (K-LS1-1)
Sample Integration of Science and ELD Standards in the Classroom	Students view and explore what plants and animals (including humans) need in order to survive (K-LS1-1), and record their observations and write analyses. For example, students observe how plants in different environments (e.g., one plant near a window and another in a dark corner) grow, recording their observations on a T chart and writing a summary of their conclusions.
Sample-Specific Science & Engineering Practices	1. Asking questions 3. Planning and carrying out investigations 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering)

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Supporting opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Offer opinions and provide good reasons (e.g., *My favorite book is X because X.*) referring to the text or to relevant background knowledge.	Offer opinions and provide good reasons and some textual evidence or relevant background knowledge (e.g., paraphrased examples from text or knowledge of content).	Offer opinions and provide good reasons with detailed textual evidence or relevant background knowledge (e.g., specific examples from text or knowledge of content).
1	Offer opinions and provide good reasons (e.g., *My favorite book is X because X*) referring to the text or to relevant background knowledge.	Offer opinions and provide good reasons and some textual evidence or relevant background knowledge (e.g., paraphrased examples from text or knowledge of content).	Offer opinions and provide good reasons with detailed textual evidence or relevant background knowledge (e.g., specific examples from text or knowledge of content).
2	Support opinions by providing good reasons and some textual evidence or relevant background knowledge (e.g., referring to textual evidence or knowledge of content).	Support opinions by providing good reasons and increasingly detailed textual evidence (e.g., providing examples from the text) or relevant background knowledge about the content.	Support opinions or persuade others by providing good reasons and detailed textual evidence (e.g., specific events or graphics from text) or relevant background knowledge about the content.
Applying ELD Standards to Science	Students construct and support arguments in science with evidence, data, and/or a model. They compare and refine arguments based on evaluation of the evidence presented.		
Corresponding Science & Engineering Practices	2. Developing and using models (2-ESS2-2)		

Sample Integration of Science and ELD Standards in the Classroom	In small groups, students engage in developing models to represent the shapes and kinds of land and bodies of water in an area (2-ESS2-2). Each group examines graphics of a different type of landscape, labeling and writing brief text explanations on the location and characteristics of the area. Students collaborate and plan with their peers, utilizing the image and text evidence to support their choices for the materials, size, and process that they use to develop their models. After creating their models, students briefly explain in writing why they chose the materials they did and why they built the model the way they did. Before the students write, the teacher leads them through examining a text with a similar structure so students can see the way an author introduces the choices and supports them with reasons and evidence (e.g., "We chose to use crumpled paper to show mountains because we can make them tall and jagged. Mountains in real life are tall and jagged.") In order to support students at the Emerging level of English proficiency, the teacher pulls a small group and co-constructs an explanation with them, taking ideas from the students while recasting and asking probing questions to strengthen the writing.
Sample-Specific Science & Engineering Practices	7. Engaging in argument from evidence

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grade	**Emerging**	**Expanding**	**Bridging**
K	a. Retell texts and recount experiences using a select set of key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *spicy* to describe a favorite food, using the word *larva* when explaining insect metamorphosis) while speaking and composing.	a. Retell texts and recount experiences using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail or to create shades of meaning (e.g., using the word *scurry* versus *run*) while speaking and composing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language to create an effect (e.g., using the word *suddenly* to signal a change) or to create shades of meaning (e.g., The cat's fur was *as white as snow*) while speaking and composing.
1	a. Retell texts and recount experiences, using key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *scrumptious* to describe a favorite food, using the word *thorax* to refer to insect anatomy) while speaking and writing.	a. Retell texts and recount experiences, using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *prance* versus *walk*) while speaking and writing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language (e.g., The dog was *as big as a house*) to create an effect, precision, and shades of meaning while speaking and writing.

2	a. Retell texts and recount experiences by using key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *generous* to describe a character, using the word *lava* to explain volcanic eruptions) while speaking and writing.	a. Retell texts and recount experiences using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *scurry* versus *dash*) while speaking and writing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language (e.g., He was *as quick as a cricket*) to create an effect, precision, and shades of meaning while speaking and writing.
Applying ELD Standards to Science	Students use general academic and domain-specific vocabulary and select appropriate affixes, synonyms, and antonyms when writing or speaking about science content.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (K-PS2-2*)		
Sample Integration of Science and ELD Standards in the Classroom	Students design solutions to change the direction and speed of objects rolling on a ramp (K-PS2-2*), and determine whether the solutions work as intended. As they design the solutions and gather data on the results, they recount observations (e.g., "The marble rolled faster when the end of the ramp was higher") and use general academic and domain-specific words and phrases specific to the task (e.g., *speed, direction, distance, increase, decrease*).		
Sample-Specific Science & Engineering Practices	1. Asking questions (for science) and defining problems (for engineering) 3. Planning and carrying out investigations 6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information		

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Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Apply understanding of how text types are organized (e.g., how a story is organized by a sequence of events) to comprehending and composing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how an informative text is organized by topic and details) to comprehending texts and composing texts in shared language activities guided by the teacher, collaboratively with peers, and with increasing independence.	Apply understanding of how different text types are organized predictably (e.g., a narrative text versus an informative text versus an opinion text) to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and independently.
1	Apply understanding of how text types are organized (e.g., how a story is organized by a sequence of events) to comprehending texts and composing basic texts with substantial support (e.g., using drawings, through joint construction with a peer or teacher) to comprehending texts and writing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how an informative text is organized by topic and details) to comprehending texts and writing texts in shared language activities guided by the teacher and with increasing independence.	Apply understanding of how different text types are organized predictably to express ideas (e.g., how a story is organized versus an informative/ explanatory text versus an opinion text) to comprehending texts and writing texts in shared language activities guided by the teacher and independently.

2	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially) to comprehending and composing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how an information report is organized by topic and details) to comprehending texts and composing texts with increasing independence.	Apply understanding of how different text types are organized predictably to express ideas (e.g., a narrative versus an informative/explanatory text versus an opinion text) to comprehending and writing texts independently.
Applying ELD Standards to Science	Text types in science include simulations, videos, diagrams, charts, tables, informational narratives, graphics, and labeled illustrations depicting processes, structures, and relationships—among others. Students increase understanding of text by using it in context with the content and investigations, and by having explicit instruction about the organization of the text and its purpose.		
Corresponding Science & Engineering Practices	2. Developing and using models (K-2-ETS1-2)		
Sample Integration of Science and ELD Standards in the Classroom	Students develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem (K-2-ETS1-2). For example, teams of students may explore how to refine a boat design using aluminum foil, and then test how many pennies it can hold before it sinks. Each team of students can learn from the previous design as they take turns to test them. They use different text formats appropriate to each task: e.g., a table to record the number of pennies; an illustration with labels to indicate the boat designs; and a descriptive narrative to summarize the process. The teacher provides models of each text format and helps students understand their structure. To support students at the Emerging or early Expanding level of English proficiency, the teacher ensures that each student is paired with another student proficient in English and the student's home language. When students are writing, the teacher provides support by referring students to posted mentor texts, sentence stems, and word walls. The teacher provides more substantial support by circulating and verbally supporting students as they work, affirming their efforts, asking probing questions, and restating their ideas to foster clarity and precision when necessary.		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 4. Analyzing and interpreting data 7. Engaging in argument from evidence		

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards **Part II: Learning About How English Works** **A. Structuring Cohesive Texts**			
2. Understanding cohesion			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Apply basic understanding of how ideas, events, or reasons are linked throughout a text using more everyday connecting words or phrases (e.g., *one time, then*) to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a growing number of connecting words or phrases (e.g., *next, after a long time*) to comprehending texts and composing texts in shared language activities guided by the teacher, collaboratively with peers, and with increasing independence.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *first/second/third, once, at the end*) to comprehending texts and composing texts in shared language activities guided by the teacher, with peers, and independently.
1	Apply basic understanding of how ideas, events, or reasons are linked throughout a text using more everyday connecting words or phrases (e.g., *one day, after, then*) to comprehending texts and writing texts in shared language activities guided by the teacher, with peers, and sometimes independently.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a growing number of connecting words or phrases (e.g., *a long time ago, suddenly*) to comprehending texts and writing texts in shared language activities guided by the teacher and with increasing independence.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, after that, first/second/third*) to comprehending texts and writing texts in shared language activities guided by the teacher and independently.
2	Apply basic understanding of how ideas, events, or reasons are linked throughout a text using more everyday connecting words or phrases (e.g., *today, then*) to comprehending and composing texts in shared language activities guided by the teacher, with peers, and	Apply understanding of how ideas, events, or reasons are linked throughout a text using a growing number of connecting words or phrases (e.g., *after a long time, first/next*) to comprehending texts and writing texts with increasing independence.	Apply understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, after that, suddenly*) to comprehending and writing texts independently.

	sometimes independently.		
Applying ELD Standards to Science	Students apply understanding of how ideas, events, or reasons are linked throughout science texts, using a variety of connecting words or phrases (e.g., *for example, after that, first/second/third*) to comprehend and write science texts.		
Corresponding Science & Engineering Practices	2. Developing and using models (K-2-ETS1-2)		
Sample Integration of Science and ELD Standards in the Classroom	Students test boat, bridge, or tower designs. Upon completion of testing the designs, students may dictate and/or write narratives of their exploration independently in their science notebooks or as a whole class on a chart with teacher assistance (K-2-ETS1-2). They may use connecting words and phrases in narratives such as the following: "At first, we each had a job to do—to count marbles, to build the boat, to observe the level of the water, or to list the steps we took. Then, we rotated these jobs, so everyone got to test their own boat. We all helped each other. Each time we tried a new boat design, we knew what not to do. Finally, the last boat design held the most pennies."		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 4. Analyzing and interpreting data 7. Engaging in argument from evidence		

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
K	a. Use frequently used verbs (e.g., go, eat, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and with increasing independence. b. Use simple verb tenses appropriate for the text type and discipline to convey time (e.g., simple past for recounting an experience) in shared language activities guided by the teacher and with increasing independence.	a. Use a growing number of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and independently. b. Use a growing number of verb tenses appropriate for the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) in shared language activities guided by the teacher and independently.	a. Use a wide variety of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and independently. b. Use a wide variety of verb tenses appropriate for the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict) in shared language activities guided by the teacher and independently.
1	a. Use frequently used verbs (e.g., go, eat, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and sometimes independently. b. Use simple verb tenses appropriate for the text type and discipline to convey time (e.g., simple past for recounting an experience) in shared language activities guided by the teacher and sometimes independently.	a. Use a growing number of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and with increasing independence. b. Use a growing number of verb tenses appropriate for the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) in shared language activities guided by the teacher and with increasing independence.	a. Use a wide variety of verbs and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and independently. b. Use a wide variety of verb tenses appropriate for the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict) in shared language activities guided by the teacher and independently.

2	a. Use frequently used verbs (e.g., walk, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and sometimes independently. b. Use simple verb tenses appropriate to the text type and discipline to convey time (e.g., simple past tense for recounting an experience) in shared language activities guided by the teacher and sometimes independently.	a. Use a growing number of verb types (e.g., doing, saying, being/having, thinking/feeling) with increasing independence. b. Use a growing number of verb tenses appropriate to the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) with increasing independence.	a. Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling) independently. b. Use a wide variety of verb tenses appropriate to the text type and discipline to convey time (e.g., simple present tense for a science description, simple future to predict) independently.
Applying ELD Standards to Science	Students use a variety of verb types and appropriate verb tenses to express their understanding of scientific concepts and phenomena.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (K-2-ETS1-3)		
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to create boat models (K-2-ETS1-3) and provide feedback to their peers, using appropriate verb tenses (e.g., “At first, we all *wanted* to make our own boats, but we *learned* the jobs. We *waited* for our turns.").		
Sample-Specific Science & Engineering Practices	2. Developing and using models 6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information		

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and with increasing independence.	Expand noun phrases in a wide variety of ways (e.g., adding a variety of adjectives to noun phrases) in order to enrich the meaning of phrases/sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and independently.
1	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) to enrich the meaning of sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and with increasing independence.	Expand noun phrases in a wide variety of ways (e.g., adding a variety of adjectives to noun phrases) in order to enrich the meaning of phrases/ sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and independently.
2	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and to add details about ideas, people, things, and the like, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) in order to enrich the meaning of sentences and to add details about ideas, people, things, and the like, with increasing independence.	Expand noun phrases in a variety of ways (e.g., adding comparative/superlative adjectives to nouns) in order to enrich the meaning of phrases/sentences and to add details about ideas, people, things, and the like, independently.

Applying ELD Standards to Science	In science and engineering, oral and written texts may have long noun phrases. Students need to be able to identify what the main noun is and also use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.
Corresponding Science & Engineering Practices	2. Developing and using models (K-2-ETS1-2) 6. Constructing explanations (for science) and designing solutions (for engineering) (K-PS3-2*)
Sample Integration of Science and ELD Standards in the Classroom	Students explore the use of tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area (K-PS3-2*, K-2-ETS1-2). The teacher leads the students through jointly constructing an explanation, adding adjectives: "The largest model we have is a canopy in our playground. The smallest model to block the sunlight we see in our classroom is a sun cap. Can you think of a medium-size sun blocker? When you are out in a pool, what blocks the sun? What might we build or use that does the same?" To support students at the Emerging level of English proficiency, the teacher partners each student with another student who is proficient in both English and the student's home language. The teacher offers multiple opportunities for partner talk, and the students know they can talk in their home language during partner talk if they would like to. When it is time to share ideas to add details to the jointly constructed text, the teacher asks the students to practice what they will say with their partner first.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Expand sentences with frequently used prepositional phrases (such as *in the house, on the boat*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process in shared language activities guided by the teacher and with increasing independence.	Expand simple and compound sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) in shared language activities guided by the teacher and independently.
1	Expand sentences with frequently used prepositional phrases (such as *in the house, on the boat*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process in shared language activities guided by the teacher and with increasing independence.	Expand simple and compound sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) in shared language activities guided by the teacher and independently.
2	Expand sentences with frequently used adverbials (e.g., prepositional phrases, such as *at school, with my friend*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with a growing number of adverbials (e.g., adverbs, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process with increasing independence.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) independently.

Applying ELD Standards to Science	Students use modifying words and phrases to express their understanding of scientific concepts and phenomena.
Corresponding Science & Engineering Practices	8. Obtaining, evaluating, and communicating information (1-LS1-2)
Sample Integration of Science and ELD Standards in the Classroom	Students have been exploring how plants and animals' structures are similar between parents and young (offspring), and the teacher invites the children to explore the patterns in parents' and offspring's behavior that help offspring survive (1-LS1-2) by reading texts and using media, modeling the use of adverbials: "*When animals are young,* they signal their needs to their parents by calling *loudly* or *softly*, depending on how many babies there are, and the distance from their parent. *Some* animals cry, others chirp, and others make *all sorts* of sounds. *Usually* the parents feed and comfort their young." The teacher supports the students' use of adverbials in their own speaking and writing, by prompting them to add information about *when, how, where, why, how much,* etc.
Sample-Specific Science & Engineering Practices	4. Analyzing data 6. Constructing explanations (for science) and designing solutions (for engineering)

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*) in shared language activities guided by the teacher and with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete simple sentences to form compound sentences) to make connections between and join ideas (e.g., *The boy was hungry. The boy ate a sandwich.* → *The boy was hungry so he ate a sandwich*) in shared language activities guided by the teacher and independently.
1	Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*), in shared language activities guided by the teacher and with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete, simple-to-form compound sentences) to make connections between and to join ideas (e.g., *The boy was hungry. The boy ate a sandwich.* → *The boy was hungry so he ate a sandwich*) in shared language activities guided by the teacher and independently.

2	Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*) with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete simple to form compound sentences) to make connections between and to join ideas (e.g., *The boy was hungry. The boy ate a sandwich*. → *The boy was hungry so he ate a sandwich*) independently.
Applying ELD Standards to Science	Students combine clauses in a variety of ways to express ideas about scientific concepts and phenomena.		
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (1-LS1-1*)		
Sample Integration of Science and ELD Standards in the Classroom	Students use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs (1-LS1-1*). As they investigate mimicking solutions for clothing or equipment inspired by nature, the teacher guides them to combine clauses, through a process of examining a text for the ways an author combines ideas and then trying it out together using joint construction. The result is sentences such as the following: "A turtle hides under its shell *when* threatened by a predator."; "*Although* the turtle may be turned upside down, the shell provides protection."; "Biking helmets protect us *because* we design them to resemble turtle shells." Prior to this lesson, during designated ELD time, students at the Emerging and early Expanding levels of English proficiency have practiced combining similar sentences in more simple ways: "A shell protects a turtle. A helmet protects a person riding a bike."; A shell protects a turtle, and a helmet protects a person riding a bike." The teacher supports students' understanding through using pictures, highlighting cognates (e.g., *protect/proteger*), and allowing students to use their home language in partner discussions.		
Sample-Specific Science & Engineering Practices	7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	No standard for kindergarten.	No standard for kindergarten.	No standard for kindergarten.
1	Condense clauses in simple ways (e.g., changing: *I like blue. I like red. I like purple* → *I like blue, red, and purple*) to create precise and detailed sentences in shared language activities guided by the teacher and sometimes independently.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *She's a doctor. She saved the animals.* → *She's the doctor who saved the animals*) to create precise and detailed sentences in shared language activities guided by the teacher and with increasing independence.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing, for example, through embedded clauses as in *She's a doctor. She's amazing. She saved the animals.* → *She's the amazing doctor who saved the animals*) to create precise and detailed sentences in shared language activities guided by the teacher and independently.
2	Condense clauses in simple ways (e.g., changing: *It's green. It's red.* → *It's green and red*) to create precise and detailed sentences in shared language activities guided by the teacher and sometimes independently.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *It's a plant. It's found in the rain forest.* → *It's a green and red plant that's found in the rain forest*) to create precise and detailed sentences with increasing independence.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing as in, *It's a plant. It's green and red. It's found in the tropical rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences independently.
Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected and condensed.		

Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (1-ESS1-1)
Sample Integration of Science and ELD Standards in the Classroom	With guidance from the teacher, students use observations of the sun, moon, and stars to determine patterns that can be predicted (1-ESS1-1). The class is using shadows to make observations about patterns of where the sun is in the sky. Working in pairs, the students have traced their shadow on the blacktop at 9 a.m., noon, and 2 p.m. After each period of time, the teacher and students discuss the length of their shadow and the position of the sun. For example: "At 9 a.m., the sun was in the east. My shadow was long. At noon, my shadow was short. The sun was over my head. At 2 p.m., the sun was in the west. My shadow was long again." With support from the teacher, students can then condense clauses, summarizing as follows: "This morning at 9 a.m., the sun was in the east and my shadow was long. Then, at noon, the sun was over my head and my shadow was short. Later, at 2 p.m., the sun was in the west and my shadow was long again. During the day, the sun moved from the east to over my head to the west. At the same time, my shadow made a pattern of going from long to short to long again."
Sample-Specific Science & Engineering Practices	3. Constructing investigations 4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **A. Collaborative**			
1. Exchanging information and ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
4	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
5	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
Applying ELD Standards to Science	Students engage in class, small-group, and partner conversations where they ask and respond to questions, build on others' ideas, and work collaboratively to define problems, plan and carry out investigations, construct explanations, and design solutions.		

Corresponding Science & Engineering Practices	1. Asking questions (for science) and defining problems (for engineering) (3-PS2-3, 3-PS2-4)
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to observe phenomena related to magnetic interactions between two objects that are not in contact with each other (3-PS2-3). They must predict and then determine whether a small broken magnet will work as a latch for a classroom supplies box. The students ask questions about the properties of magnets and other materials, and about the magnet's magnetic forces and the forces' effect on the various materials. During the collaborative conversation, the students ask and respond to questions; build on, affirm, and provide feedback on one another's ideas; add relevant information; and collectively make predictions. After experimentation and analysis of data, students collectively propose a design for using the broken magnet piece as a latch for the supply box (3-PS2-4).
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 6. Constructing explanations (for science) and designing solutions (for engineering)

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
4	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
5	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
Applying ELD Standards to Science	Students collaboratively conduct short research projects to build knowledge through investigation. They recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information; use credible and relevant sources to provide evidence; and represent their research in writing and through multimedia.		
Corresponding Science & Engineering Practices	8. Obtaining, evaluating, and communicating information (4-ESS3-1)		

Sample Integration of Science and ELD Standards in the Classroom	Students have been engaged in investigating the phenomena of energy transformation (4-ESS3-1). Students work in small groups to conduct a short research project on different aspects of humans' impact on Earth's resources. They obtain and combine information to explain how energy and fuels are derived from natural resources and how their uses affect the environment. The students use books, Internet sources, and other reliable media to work together in small groups to construct a coherent explanation of how human uses of energy derived from natural resources affect the environment in multiple ways, how some resources are renewable and others are not, and possible actions that humans could take in the future. Each small group co-constructs a written explanation and prepares a digital presentation with relevant graphics to present their research.
Sample-Specific Science & Engineering Practices	1. Asking questions (science) and defining problems (engineering) 6. Constructing explanations (science) and designing solutions (engineering) 7. Engaging in argument from evidence

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Offering opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Offer opinions and negotiate with others in conversations using basic learned phrases (e.g., *I think...*), as well as open responses in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I agree with X, and...*), as well as open responses in order to gain and/or hold the floor, provide counterarguments, and the like.	Offer opinions and negotiate with others in conversations using a variety of learned phrases (e.g., *That's a good idea, but...*), as well as open responses in order to gain and/or hold the floor, provide counter-arguments, elaborate on an idea, and the like.
4	Negotiate with or persuade others in conversations using basic learned phrases (e.g., *I think...*), as well as open responses, in order to gain and/or hold the floor.	Negotiate with or persuade others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and so on.	Negotiate with or persuade others in conversations using a variety of learned phrases (e.g., *That's a good idea. However...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and so on.
5	Offer opinions and negotiate with others in conversations using learned phrases (e.g., *I think X.*), as well as open responses, in order to gain and/or hold the floor.	Negotiate with or persuade others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and so on.	Negotiate with or persuade others in conversations using a variety of learned phrases (e.g., *That's an interesting idea. However,...*), as well as open responses, in order to gain and/or hold the floor, provide counter-arguments, elaborate on an idea, and so on.

Applying ELD Standards to Science	Students participate in collaborative conversations where they engage in design and use of models about phenomena; process solutions; and collect evidence. During these conversations, they construct claims and support them with reasons and evidence, working collaboratively to critique explanations or solutions proposed by their peers by citing relevant evidence. In order to persuade others that their arguments are reasonable and supported by evidence, they may gain and/or hold the floor, provide counterarguments respectfully, or elaborate on a peer's ideas.
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (5-LS2-1)
Sample Integration of Science and ELD Standards in the Classroom	Students have observed, through pictures and simulations, some representations of the movement of matter within ecosystems. Working in small groups, the students build on those experiences by using their science texts and notes as they collaboratively construct their models of how matter moves within ecosystems. Each group constructs an argument about its model, focusing on the movement of matter among plants, animals, decomposers, and the environment. Each group shares its model with another group, while the other group provides feedback based on a co-constructed set of criteria on 1) presentation effectiveness 2) the types of materials and representations used, and 3) whether the cycling of matter is accurate (5-LS2-1). During their conversations, the students refer to a large chart on the classroom wall that contains options for different language purposes, such as entering a conversation (e.g., "One/another piece of evidence that supports our argument is ___."); agreeing and disagreeing (e.g., "I can see your design has ___; however, ___."); or elaborating on an idea (e.g., "That's a good choice for ___, and I'd like to add that ___."). To support students at the Emerging level of English proficiency, the teacher asks each group to practice what each member of the group will share, and no member is permitted to opt out. The teacher has created heterogeneous groups, ensuring that each student at the Emerging level of English proficiency has a "language buddy" who is proficient in both English and the student's home language. The teacher has also created a supportive environment so that the students work together to make sure that each of the other students understands and can communicate that understanding.
Sample-Specific Science & Engineering Practices	2. Developing and using models

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
4. Adapting language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.	Adjust language choices (e.g., vocabulary, use of dialogue, and the like) according to purpose (e.g., persuading, entertaining), social setting, and audience (e.g., peers versus adults), with moderate support from peers or adults.	Adjust language choices according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peer-to-peer versus peer-to-teacher), with light support from peers or adults.
4	Adjust language choices according to social setting (e.g., playground, classroom) and audience (e.g., peers, teacher), with substantial support.	Adjust language choices according to purpose (e.g., persuading, entertaining), task (e.g., telling a story versus explaining a science experiment), and audience, with moderate support.	Adjust language choices according to purpose, task (e.g., facilitating a science experiment), and audience, with light support.
5	Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.	Adjust language choices according to purpose (e.g., persuading, entertaining), task (e.g., telling a story versus explaining a science experiment), and audience, with moderate support.	Adjust language choices according to purpose, task (e.g., facilitating a science experiment), and audience, with light support.
Applying ELD Standards to Science	Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend scientific arguments, interpretations, and procedures).		
Corresponding Science & Engineering Practices	8. Obtaining, evaluating, and communicating information (4-ESS3-1, 3-5-ETS1-2)		

Sample Integration of Science and ELD Standards in the Classroom	Students have observed hazardous phenomena (e.g., earthquakes, tornadoes). They work in small groups to conduct a short research project on reducing the impacts of natural Earth processes on humans, with a culminating task of a written explanation and an oral presentation that uses multimedia (4-ESS3-1, 3-5-ETS1-2). When they engage in collaborative conversations about the information that they are gathering in their research, they may choose to use more everyday English, strategically selecting some domain-specific vocabulary that they are learning through the research (e.g., *nonrenewable energy resources*; *fossil and fissile materials*). As they prepare their written explanation, they co-construct the explanation orally, using everyday English, and then, as they collaboratively construct the written explanation, they discuss which language is most appropriate and powerful to use, based on purpose (to explain multiple solutions to the design problem), task (providing clear and coherent information in written form, using topic-relevant technical terms), and audience (their peers and the teacher).
Sample-Specific Science & Engineering Practices	N/A

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
4	Demonstrate active listening of read-alouds and oral presentations by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
5	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with oral sentence frames and substantial prompting and support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
Applying ELD Standards to Science	Students listen to oral presentations about science and engineering topics and teacher read-alouds of science informational texts. They demonstrate their active listening by asking and answering detailed questions about what they heard.		
Corresponding Science & Engineering Practices	1. Asking questions (for science) and defining problems (for engineering) (3-PS2-3, 3-PS2-4)		

Sample Integration of Science and ELD Standards in the Classroom	Students have experimented with magnets, and have observed videos of various inventions that use magnets and electricity. They listen to a teacher read aloud from an informational text about cause-and-effect relationships of electrical and magnetic interactions between two objects and how inventors design solutions to problems by using these scientific principles (3-PS2-3, 3-PS2-4). At strategic points during the teacher read-aloud, students discuss, in pairs, open-ended, detailed questions designed to promote extended discourse (e.g., "In what ways does a magnet affect a compass? How do we know? What changes would you make to X design to make it better?"). The students have an opportunity to practice their response before sharing out to the class. The teacher supports the comprehension of students at the Emerging level of English proficiency by using diagrams labeled in both English and the students' home language to support the ideas in the text and by attending to the meanings of general academic terms (in addition to science-specific terms). Before reading, the teacher also makes sure to show short videos related to the topic in the two primary home languages of students in the classroom: English and Spanish.
Sample-Specific Science & Engineering Practices	8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Describe ideas, phenomena (e.g., insect metamorphosis), and text elements (e.g., main idea, characters, setting) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how cows digest food), and text elements (e.g., main idea, characters, events) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., volcanic eruptions), and text elements (e.g., central message, character traits, major events) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
4	a. Describe ideas, phenomena (e.g., volcanic eruptions), and text elements (main idea, characters, events, and the like) based on close reading of a select set of grade-level texts, with substantial support. b. Use knowledge of frequently used affixes (e.g., *un-*, *mis-*) and linguistic context, reference materials, and visual cues to determine the meaning of unknown words on familiar topics.	a. Describe ideas, phenomena (e.g., animal migration), and text elements (main idea, central message, and the like) in greater detail based on close reading of a variety of grade-level texts, with moderate support. b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar topics.	a. Describe ideas, phenomena (e.g., pollination), and text elements (main idea, character traits, event sequence, and the like) in detail based on close reading of a variety of grade-level texts, with light support. b. Use knowledge of morphology (e.g., affixes, roots, and base words) and linguistic context to determine the meaning of unknown and multiple-meaning words on familiar and new topics.

<table>
<tr><td>5</td><td>a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with substantial support.

b. Use knowledge of frequently-used affixes (e.g., un-, mis-), linguistic context, reference materials, and visual cues to determine the meaning of unknown words on familiar topics.</td><td>a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support.

b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar and new topics.</td><td>a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support.

b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar and new topics.</td></tr>
<tr><td>Applying ELD Standards to Science</td><td colspan="3">Students obtain and combine information from print and digital sources to explain phenomena and to support analysis, reflection, and research. They observe experiences and read closely to evaluate the merit and accuracy of ideas and methods and to explain the variables that describe and predict phenomena.</td></tr>
<tr><td>Corresponding Science & Engineering Practices</td><td colspan="3">4. Analyzing and interpreting data (4-ESS2-2)

8. Obtaining, evaluating, and communicating information (4-ESS3-1)</td></tr>
<tr><td>Sample Integration of Science and ELD Standards in the Classroom</td><td colspan="3">Students have observed or experienced the phenomena of energy resources. In order to better explain the phenomena of renewable and nonrenewable energy resources, students work in small groups to conduct a short research project. They read texts closely and analyze and interpret data from maps to identify land features of Earth that may hold or harness natural resources, and to explain how energy and fuels are derived from natural resources (e.g. wind energy, water in dams, nonrenewable energy resources, fossil and fissile materials) and how their uses affect the environment (e.g. loss of habitat by use of dams or surface mining, or air pollution by use of fossil fuels) (4-ESS2-2, 4-ESS3-1). The students gather evidence and draw inferences from books, Internet sources, and other reliable media as they work together, using graphic organizers, to construct a coherent explanation of how human uses of energy derived from natural resources affect the environment in multiple ways, how some resources are renewable and others are not, locations on Earth where large-scale system interactions take place, and where humans could possibly take low-environmental-impact actions for the future (e.g., harnessing thermal heat, harnessing wind currents on mountain ranges). The small group co-constructs the written explanation and prepares a digital presentation with relevant graphics</td></tr>
</table>

	to present its careful reading and interpretation of the textual sources used in its research.
Sample-Specific Science & Engineering Practices	N/A

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Describe the language writers or speakers use to support an opinion or present an idea (e.g., by identifying the phrases or words in the text that provide evidence), with prompting and substantial support.	Describe the specific language writers or speakers use to present or support an idea (e.g., the specific vocabulary or phrasing used to provide evidence), with prompting and moderate support.	Describe how well writers or speakers use specific language resources to support an opinion or present an idea (e.g., whether the vocabulary or phrasing used to provide evidence is strong enough), with light support.
4	Describe the specific language writers or speakers use to present or support an idea (e.g., the specific vocabulary or phrasing used to provide evidence), with prompting and substantial support.	Describe how well writers or speakers use specific language resources to support an opinion or present an idea (e.g., whether the vocabulary or phrasing used to provide evidence is strong enough), with prompting and moderate support.	Describe how well writers and speakers use specific language resources to support an opinion or present an idea (e.g., the clarity or appealing nature of language used to present evidence), with prompting and light support.
5	Describe the specific language writers or speakers use to present or support an idea (e.g., the specific vocabulary or phrasing used to provide evidence), with prompting and substantial support.	Explain how well writers and speakers use language resources to support an opinion or present an idea (e.g., whether the vocabulary used to provide evidence is strong enough, or if the phrasing used to signal a shift in meaning does this well), with moderate support.	Explain how well writers and speakers use specific language resources to support an opinion or present an idea (e.g., the clarity or appealing nature of language used to provide evidence or describe characters, or if the phrasing used to introduce a topic is appropriate), with light support.
Applying ELD Standards to Science	When critiquing others' presentations on scientific topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		
Corresponding Science & Engineering	2. Developing and using models (5-PS1-1)		

Practices	
Sample Integration of Science and ELD Standards in the Classroom	Students have been observing matter that is made of parts (e.g., table made of wood and legs; coat made of sleeves and buttons; clock made of hands and gears). The students are presented with a large structure made of plastic bricks and asked to describe its component parts (smaller pieces). Finally they respond to an odor (perfume) moving across a room, and observe food coloring in heated water. As a next step, they are asked to create a model on their whiteboards to describe what matter is made of (5-PS1-1). In preparation for their presentation, the class co-constructs a rubric by which to judge the models: components are labeled; the model explains relationships of the components; and the model can be used to make predictions/explanations. In addition, the class decides that the students will look for how clearly the presenters use particular vocabulary or phrasing when sharing their models.
Sample-Specific Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering)

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Distinguish how different words produce different effects on the audience (e.g., describing a character as *happy* versus *sad*).	Distinguish how different words with similar meanings (e.g., describing a character as *happy* versus *ecstatic*) produce shades of meaning and different effects on the audience.	Distinguish how multiple different words with similar meanings (e.g., *pleased* versus *happy* versus *ecstatic, heard* versus *knew* versus *believed*) produce shades of meaning and different effects on the audience.
4	Distinguish how different words with similar meanings produce different effects on the audience (e.g., describing a character's actions as *whined* versus *said*).	Distinguish how different words with similar meanings (e.g., describing a character as *smart* versus an *expert*) and figurative language (e.g., *as big as a whale*) produce shades of meaning and different effects on the audience.	Distinguish how different words with related meanings (e.g., *fun* versus *entertaining* versus *thrilling, possibly* versus *certainly*) and figurative language produce shades of meaning and different effects on the audience.
5	Distinguish how different words with similar meanings produce different effects on the audience (e.g., describing a character as *angry* versus *furious*).	Distinguish how different words with similar meanings (e.g., describing an event as *sad* versus *tragic*) and figurative language (e.g., she ran *like a cheetah*) produce shades of meaning and different effects on the audience.	Distinguish how different words with related meanings (e.g., *fun* versus *thrilling, possibly* versus *certainly*) and figurative language (e.g., *the stream slithered through the parched land*) produce shades of meaning and different effects on the audience.
Applying ELD Standards to Science	When reading or listening to others' presentations on scientific topics, students can distinguish how the writer's or speaker's selection of different words or phrases with related meanings (e.g., *clear* versus *transparent* versus *translucent*) affects the audience's understanding.		
Corresponding Science & Engineering Practices	2. Developing and using models (4-PS4-2)		

Sample Integration of Science and ELD Standards in the Classroom	Using flashlights and various materials (mirror, reflective plastic sheets, report covers of different colors, plates, paper, cardboard, and fabric), students draw patterns of the way light travels and how it is reflecting and/or being absorbed or refracted by the different materials (4-PS4-2). As the conversations take place, students refer to a pictorial word wall, which the teacher continues to update as she listens to students' conversations and recognizes their need to use a specific academic term (e.g., when students say "Light can't go through this," the teacher adds *opaque* to the wall). This visual cue helps to remind students of the slight differences in terms for describing how the light travels through or reflects off the materials. Throughout the investigations, students remind one another when to use *opaque, dark,* or *blocking* vs. *clear, translucent, see-through,* or *transparent*. In their journals, they record the material used and its "quality or characteristic opacity," and make a model drawing of the light pathway.
Sample-Specific Science & Engineering Practices	1. Asking questions (science) and identifying problems (engineering)

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Plan and deliver very brief oral presentations (e.g., retelling a story, describing an animal, and the like).	Plan and deliver brief oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process, and the like).	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process or historical event, and the like).
4	Plan and deliver brief oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process, reporting on a current event, recounting a memorable experience, and so on), with substantial support.	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., retelling a story, explaining a science process, reporting on a current event, recounting a memorable experience, and so on), with moderate support.	Plan and deliver oral presentations on a variety of topics in a variety of content areas (e.g., retelling a story, explaining a science process, reporting on a current event, recounting a memorable experience, and so on), with light support.
5	Plan and deliver brief oral presentations on a variety of topics and content areas (e.g., providing a report on a current event, reciting a poem, recounting an experience, explaining a science process), with moderate support, such as graphic organizers.	Plan and deliver longer oral presentations on a variety of topics and content areas (e.g., providing an opinion speech on a current event, reciting a poem, recounting an experience, explaining a science process), with moderate support.	Plan and deliver oral presentations on a variety of topics in a variety of content areas (e.g., providing an opinion speech on a current event, reciting a poem, recounting an experience, explaining a science process), with light support.
Applying ELD Standards to Science	Students plan and deliver oral presentations on scientific topics.		
Corresponding Science & Engineering Practices	2. Developing and using models (3-LS1-1) 6. Constructing explanations (for science) and designing solutions (for engineering) (3-LS4-2)		

Sample Integration of Science and ELD Standards in the Classroom	Students have been studying the concept that organisms have unique and diverse life cycles but all have birth, growth, reproduction, and death in common (3-LS1-1). Their study has included research, investigations, and looking for patterns in various examples of life cycles. Students are ready to plan and deliver an oral presentation of their findings, using pictures or realia for a dramatic representation of assigned organisms as evidence to explain how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants with thorns vs. without; camouflage) (3-LS4-2). The teacher has modeled, with one example, some of the characteristics, and has built, with student input, a word wall with illustrations for student reference. The teacher lists clear goals for the presentations and discusses them with the students. As students work in their groups, they identify, in their text and visual resources, the patterns for the life cycle of their group's organism and use materials provided (e.g., cotton, yarn, colors, tape, cardboard, chart paper) to build, refine, and prepare their models of the life cycle to share with their peers. They compare their information with groups studying a similar organism, to discuss patterns that they find (e.g., birds have eggs → chicks → adult bird, and moth and butterfly [or all insects] have eggs → larva [caterpillar stage] → pupa → adult insect). With teacher facilitation, students chart the emergent patterns and discuss which organisms have better chances of living, growing, and surviving. Once the model of the life cycle is drawn/built, each group is ready to give its oral presentation. Peers listen and get insight on their peers' presentations and gain teacher and student feedback to refine their own.
Sample-Specific Science & Engineering Practices	8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grade	**Emerging**	**Expanding**	**Bridging**
3	a. Write short literary and informational texts (e.g., a description of a flashlight) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently. b. Paraphrase texts and recount experiences using key words from notes or graphic organizers.	a. Write longer literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence using appropriate text organization. b. Paraphrase texts and recount experiences using complete sentences and key words from notes or graphic organizers.	a. Write longer and more detailed literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently using appropriate text organization and growing understanding of register. b. Paraphrase texts and recount experiences using increasingly detailed complete sentences and key words from notes or graphic organizers.
4	a. Write short literary and informational texts (e.g., a description of a flashlight) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an explanatory text on how flashlights work) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).

<table>
<tr>
<td>5</td>
<td>a. Write short literary and informational texts (e.g., a description of a camel) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently.

b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).</td>
<td>a. Write longer literary and informational texts (e.g., an informative report on different kinds of camels) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence by using appropriate text organization.

b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).</td>
<td>a. Write longer and more detailed literary and informational texts (e.g., an explanation of how camels survive without water for a long time) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently by using appropriate text organization and growing understanding of register.

b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).</td>
</tr>
<tr>
<td>Applying ELD Standards to Science</td>
<td colspan="3">a. Students write a variety of science texts, such as explanatory reports or descriptions of procedures, data, and observations, and create charts, tables, diagrams, and graphics, as relevant to the task.

b. Students write summaries of experiences with the natural world and phenomena; research from various sources (e.g.. interviews, science book/magazine articles, news, digital media); and lab report narratives on an inquiry, steps, analyses, and investigation results.</td>
</tr>
<tr>
<td>Corresponding Science & Engineering Practices</td>
<td colspan="3">2. Developing a model (4-PS4-2)

3. Planning and conducting an investigation (4-PS3-2)

6. Constructing explanations (for science) and designing solutions (for engineering) (4-PS4-3*)

7. Constructing an argument (4-LS1-1)</td>
</tr>
<tr>
<td>Sample Integration of Science and ELD Standards in the Classroom</td>
<td colspan="3">a. When students are observing and explaining the phenomenon of energy transformations, they may begin by categorizing the varying forms of energy (light, sound, heat, electric current, mechanical, and chemical) and creating a list of existing examples for each, accessing experiential knowledge and language reservoirs (4-PS3-2). Ultimately, to emphasize energy transference from one place to another for the purposes of communication, students work in small groups to first construct a pictorial chart with the different forms of energy and then prepare a written report to generate, analyze, interpret, and describe multiple solutions that use patterns to transfer information (e.g., coded information through sound of drumming, Morse code, binary number encoding such as DVD and pricing tags, or simplified computer programming software/gaming) (4-PS4-3*). The teacher leads students through analyzing a model for the written report, including examining key language features used in analysis and description. To support students at the Emerging and early Expanding level of English proficiency, the teacher pulls a small group and leads the students through jointly constructing the report, concentrating on the science content and vocabulary as well as the key language features studied in the model text.</td>
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</table>

	b. Students notice that a car light shining on an animal at night reveals the animal's glowing eyes. To explain this phenomenon, students observe the structure and function of the human eye, and compare it to those of other organisms (4-LS1-1, 4-PS4-2). They create tables with brief descriptions that characterize the placement of each organism's eyes and the rationale for such placement (e.g., side placement allows animals to see both in front of and behind them, so as to be aware of predators).
Sample-Specific Science & Engineering Practices	N/A

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Supporting opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Support opinions by providing good reasons and some textual evidence or relevant background knowledge (e.g., referring to textual evidence or knowledge of content).	Support opinions by providing good reasons and increasingly detailed textual evidence (e.g., providing examples from the text) or relevant background knowledge about the content.	Support opinions or persuade others by providing good reasons and detailed textual evidence (e.g., specific events or graphics from text) or relevant background knowledge about the content.
4	a. Support opinions by expressing appropriate/accurate reasons using textual evidence (e.g., referring to text) or relevant background knowledge about content, with substantial support. b. Express ideas and opinions or temper statements using basic modal expressions (e.g., *can, will, maybe*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using some textual evidence (e.g., paraphrasing facts) or relevant background knowledge about content, with moderate support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *maybe/probably, can/must*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using detailed textual evidence (e.g., quotations or specific events from text) or relevant background knowledge about content, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly, should/would*) and phrasing (e.g., *In my opinion...*).

5	a. Support opinions by expressing appropriate/accurate reasons using textual evidence (e.g., referring to text) or relevant background knowledge about content, with substantial support. b. Express ideas and opinions or temper statements using basic modal expressions (e.g., *can, has to, maybe*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using some textual evidence (e.g., paraphrasing facts from a text) or relevant background knowledge about content, with moderate support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *maybe/probably, can/must*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using detailed textual evidence (e.g., quoting the text directly or specific events from text) or relevant background knowledge about content, with mild support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly, should/would*) and phrasing (e.g., *In my opinion...*).
Applying ELD Standards to Science	Students construct and support arguments in science with evidence, data, and/or a model. They compare and refine arguments, based on evaluation of the evidence presented.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (3-ESS2-1) 7. Engaging in argument from evidence (3-ESS3-1*)		
Sample Integration of Science and ELD Standards in the Classroom	Students gather and represent data in tables and graphical displays to describe typical weather conditions expected during a particular season (e.g., winter) (3-ESS2-1), in order to reveal patterns that indicate relationships. Students further analyze data to make sense of phenomena, through the use of logical reasoning, mathematics, and/or computation. They use the data, including quantitative details and background on the effect of heavy rains in specific locations vulnerable to flooding, to persuade others. Then students make a claim about the merit of a design solution that reduces the impacts of a hazard. Students collect information to write and support their claim that a barrier would prevent flooding during heavy storms (e.g., "The levee would probably prevent flooding if ___.") (3-ESS3-1*).		
Sample-Specific Science & Engineering Practices	N/A		

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *dangerous* to describe a place, using the word *habitat* when describing animal behavior) while speaking and writing.	Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *scurry* versus *dash*) while speaking and writing.	Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language to create an effect, precision, and shades of meaning while speaking and writing.
4	a. Use a select number of general academic and domain-specific words to create precision while speaking and writing. b. Select a few frequently used affixes for accuracy and precision (e.g., She walks, I'm *un*happy).	a. Use a growing number of general academic and domain-specific words, synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Select a growing number of frequently used affixes for accuracy and precision (e.g., She walked. He likes... , I'm *un*happy).	a. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Select a variety of appropriate affixes for accuracy and precision (e.g., She's walking. I'm *un*comfortable. They left reluctantly).
5	a. Use a select number of general academic and domain-specific words to create precision while speaking and writing. b. Select a few frequently used affixes for accuracy and precision (e.g., She walks, I'm *un*happy).	a. Use a growing number of general academic and domain-specific words, synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Select a growing number of frequently used affixes for accuracy and precision (e.g., She walked. He likes... , I'm *un*happy).	a. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Select a variety of appropriate affixes for accuracy and precision (e.g., She's walking. I'm *un*comfortable. They left reluctantly).

Applying ELD Standards to Science	Students use a variety of vocabulary and select appropriate affixes when writing or speaking about science content.
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (5-ESS1-2) 7. Engaging in argument from evidence (5-ESS1-1)
Sample Integration of Science and ELD Standards in the Classroom	Students ask questions that can be investigated in order to graphically represent patterns of the relationships among the light of the sun and the length and direction of shadows; day and night; and the seasonal appearance of stars in the night sky (5-ESS1-2). Later, students develop models using an analogy, example, or abstract representation to support an argument that differences in the apparent brightness of the sun, compared to other stars, are due to their relative distances from Earth (5-ESS1-1). Collaboratively, students develop and/or revise the model, based on evidence that shows the relationships between light and distance. The teacher guides the students to include key vocabulary (such as *distance* and *brightness*) and use of suffixes such as *–er* in their conversations, gathering of information, and explanations: "In the morning, the shadow was __ centimeters *long*; in the afternoon, it's *longer* by __ cm."; "When the light beam goes through the hole to the target white paper, it changes according to the distance. The *closer* the light is, the *brighter* it gets. The *farther*, the *dimmer*."
Sample-Specific Science & Engineering Practices	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards **Part II: Learning About How English Works** **A. Structuring Cohesive Texts**			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially) to comprehending texts and writing basic texts.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages) to comprehending texts and writing texts with increasing cohesion.	Apply understanding of how different text types are organized to express ideas (e.g., how a story is organized sequentially with predictable stages versus how opinion/arguments are structured logically, grouping related ideas) to comprehending texts and writing cohesive texts.
4	Apply understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially) to comprehending texts and writing basic texts.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how an explanation is organized around ideas) to comprehending texts and writing texts with increasing cohesion.	Apply understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how opinions/arguments are structured logically, grouping related ideas) to comprehending texts and writing cohesive texts.
5	Apply basic understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how opinions/arguments are organized around ideas) to comprehending texts and writing basic texts.	Apply growing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how opinions/arguments are structured logically around reasons and evidence) to comprehending texts and writing texts with increasing cohesion.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a historical account is organized chronologically versus how opinions/arguments are structured logically around reasons and evidence) to comprehending texts and writing cohesive texts.

Applying ELD Standards to Science	Text types in science include simulations, videos, diagrams, charts, tables, informational narratives, graphics, and labeled illustrations depicting processes, structures, and relationships. Students increase understanding of text by using it in context with the content and investigations, and by having explicit instruction about the organization of the text and its purpose.
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (4-LS1-1)
Sample Integration of Science and ELD Standards in the Classroom	To prepare for writing a text with chronological organization, students observe images of various types of animals to identify features for survival (4-LS1-1). They write the name of each animal in one column of a T chart, and write descriptive characteristics for each animal in the other column. Their task is to create instructions for a model of an organism that meets the criteria for an expository text organized chronologically. First, students create an outline that orders the steps for creating the model. Then, students write their text, using key connecting words for chronological organization so that their model can be replicated by others. For example: "*First*, you cut...; *then*, you use... to make...; *finally*, put together... in order to represent... of the organism."
Sample-Specific Science & Engineering Practices	8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
2. Understanding cohesion			
Grade	**Emerging**	**Expanding**	**Bridging**
3	a. Apply basic understanding of language resources that refer the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *then, next*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources that refer the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *at the beginning/end, first/next*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources that refer the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of connecting and transitional words or phrases (e.g., *for example, afterward, first/next/last*) to comprehending texts and writing cohesive texts.

4	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *first, yesterday*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *since, next, for example*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, at the end*) to comprehending texts and writing cohesive texts.
5	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using a select set of everyday connecting words or phrases (e.g., *first/next, at the beginning*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, in the first place, as a result*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *consequently, specifically, however*) to comprehending texts and writing cohesive texts.

Applying ELD Standards to Science	a. Students apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing cohesive science texts. b. Students apply understanding of how ideas, events, or reasons are linked throughout science texts, using a variety of connecting words or phrases (e.g., *afterward*, *first/next/last*), to comprehending and writing science texts.
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (4-ESS1-1) 3. Planning and carrying out investigations (4-ESS2-1)
Sample Integration of Science and ELD Standards in the Classroom	Students identify the evidence that supports particular points in an explanation about the patterns in rock formations and fossils in rock layers as evidence of change in a landscape over time (4-ESS1-1). They conduct investigations to observe and measure erosion by water, exposing a built model with buried fossils and layered rocks/soils at different angles of slope (4-ESS2-1). They research articles on mudslides and other erosion by water hazards, in order to refine their explanations of fast and slow changes on Earth. To support students at the Emerging level of English proficiency, the teacher first highlights sequential connecting words when the class is reading together. During designated ELD time, the teacher selects one of the articles that includes clear sequential connecting words. The teacher cuts the article into individual paragraphs, mixes up the paragraphs, and leads the students through reconstructing the article using the information and the connecting words. The students then highlight the connecting words. When it comes time to describe their own processes, the students work in linguistically diverse partnerships to collaboratively describe the processes and write in their journals. They write using sequential language (e.g., "Our first trial in a flat surface caused less erosion than the tilted model. When we set it to a higher angle (30°), a lot more soil and sand moved. Consequently, rocks hidden inside were exposed... Over time, Earth has deposited sand and soil from rivers in lakes and the ocean, forming layers of rocks. Some animals got buried there. When earthquakes happen, Earth's landmasses crash and push up to form mountains. After a long time (in millions of years), animals once under ocean layers are now visible on sides of mountains that erode away.").
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Use frequently used verbs, different verb types (e.g., doing, saying, being/having, thinking/feeling), and verb tenses appropriate to the text type and discipline to convey time (e.g., simple past for recounting an experience).	Use a growing number of verb types (e.g., doing, saying, being/having, thinking/feeling) and verb tenses appropriate to the text type and discipline to convey time (e.g., simple past for retelling, simple present for a science description).	Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling) and verb tenses appropriate to the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict).
4	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the text type and discipline (e.g., simple past for recounting an experience) for familiar topics.	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task, text type, and discipline (e.g., simple past for retelling, timeless present for science explanation) for an increasing variety of familiar and new topics.	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task and text type (e.g., timeless present for science explanation, mixture of past and present for historical information report) for a variety of familiar and new topics.
5	Use frequently used verbs (e.g., take, like, eat) and various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the text type and discipline (e.g., simple past for recounting an experience) on familiar topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task, text type, and discipline (e.g., simple past for recounting an experience, timeless present for a science description) on an increasing variety of topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task and text type (e.g., timeless present for science description, mixture of past and present for narrative or history explanation) on a variety of topics.
Applying ELD Standards to Science	Students use a variety of verb types and appropriate verb tenses to express their understanding of scientific concepts and phenomena.		

Corresponding Science & Engineering Practices	2. Developing and using models (5-LS2-1)
Sample Integration of Science and ELD Standards in the Classroom	Students who have worked in small groups to create models about the cycling of matter in ecosystems provide feedback to their peers, using appropriate verb tenses (e.g., "At first, the arrows you drew *were pointing* toward the soil. Now you *have changed* them, so I understand that materials from the water and air *go* into the plant.") (5-LS2-1). The teacher provides verbal support to students at the Emerging level of English proficiency by highlighting specific verb tenses for specific purposes in texts and speech.
Sample-Specific Science & Engineering Practices	N/A

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Expand noun phrases in simple ways (e.g., adding an adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a growing number of ways (e.g., adding comparative/superlative adjectives to nouns) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases, simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
4	Expand noun phrases in simple ways (e.g., adding an adjective) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in a variety of ways (e.g., adding adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in an increasing variety of ways (e.g., adding general academic adjectives and adverbs to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.
5	Expand noun phrases in simple ways (e.g., adding an adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in an increasing variety of ways (e.g., adding comparative/superlative and general academic adjectives to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
Applying ELD Standards to Science	In science and engineering, oral and written texts may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments		

	by expanding noun phrases themselves.
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (4-ESS3-2*)
Sample Integration of Science and ELD Standards in the Classroom	While looking at the Mercalli scale of damage to buildings according to how much evidence of damage exists, students may refer to the Richter scale value for comparison, and describe and compare the data (4-ESS3-2*): "A *weaker quake*, like on a scale of 2 on the Richter, causes *little damage*. A *stronger quake*, within *the range of 6–8 on the Richter*, causes *major damage*. The *strongest quake in Alaska* did not do *too much damage* because *not many people* lived there."
Sample-Specific Science & Engineering Practices	5. Mathematical and computational thinking

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar activity or process (e.g., They walked *to the soccer field*).	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar or new activity or process (e.g., They worked *quietly*; they *ran across the soccer field*).	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a range of familiar and new activities or processes (e.g., They worked *quietly all night in their room*).
4	Expand sentences with familiar adverbials (e.g., basic prepositional phrases) to provide details (e.g., time, manner, place, cause, and so on) about a familiar activity or process (e.g., They walked *to the soccer field*).	Expand sentences with a growing variety of adverbials (e.g., adverbs, prepositional phrases) to provide details (e.g., time, manner, place, cause, and so on) about a familiar or new activity or process (e.g., They worked *quietly*. They *ran across the soccer field*).	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and so on) about a variety of familiar and new activities and processes (e.g., They worked *quietly all night in their room*).
5	Expand and enrich sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar activity or process.	Expand and enrich sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a familiar or new activity or process.	Expand and enrich sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause, and the like) about a variety of familiar and new activities and processes.
Applying ELD Standards to Science	Students use modifying words and phrases to express their understanding of scientific concepts and phenomena.		

Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (4-PS3-1)
Sample Integration of Science and ELD Standards in the Classroom	Students are building and testing a mechanical model to test how the speed of an object relates to the energy in the object (4-PS3-1). The teacher has given them a set of materials and constraints for their design, and guides the students to use descriptive language to identify specific details in sections of the design and these details' purpose (e.g., "When we pushed the car *gently*, it *only* traveled 5 ft. *Then*, when we pushed the car *harder*, it traveled 10 ft. We marked *on the ground* the starting and finishing location with tape, so we could measure how much distance there was *from here to there*. We decided to try it *again—on carpeting*—to compare the results.").
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards **Part II: Learning About How English Works** **C. Connecting and Condensing Ideas**			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion approached them*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*).
4	Combine clauses in a few basic ways to make connections between and join ideas in sentences (e.g., creating compound sentences using coordinate conjunctions, such as *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating complex sentences using familiar subordinate conjunctions) to make connections between and join ideas in sentences, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating complex sentences using a variety of subordinate conjunctions) to make connections between and join ideas, for example, to express cause/effect (e.g., *Since the lion was at the waterhole, the deer ran away*), to make a concession, or to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*).

5	Combine clauses in a few basic ways to make connections between and join ideas (e.g., You must X because X) or to provide evidence to support ideas or opinions (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to provide reasons to support ideas (e.g., X is an *extremely good book because* ______).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion approached them*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*), or to provide reasons to support ideas (e.g., *The author persuades the reader by* _____).
Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		
Corresponding Science & Engineering Practices	3. Planning and carrying out investigations (4-PS3-2)		
Sample Integration of Science and ELD Standards in the Classroom	Students are providing evidence that energy can be transferred from place to place by sound, light, heat, and electric currents (4-PS3-2). As students investigate circuits and build a model to make a doorbell ring, the teacher guides them to combine clauses, for example, as in the following: "The doorbell did not ring, even though the switch was closed."; "We put two batteries on the circuit because one barely made it work."; "We tested how long it would last, while we wrote our notes."; "When we connect all the wires, the battery, the switch, and the bell, then the bell rings."		
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence		

Integrating CA ELD Standards into Science Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Condense clauses in simple ways (e.g., changing: *It's green. It's red.* → *It's green and red*) to create precise and detailed sentences.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *It's a plant. It's found in the rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing as in, *It's a plant. It's green and red. It's found in the tropical rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences.
4	Condense clauses in simple ways (e.g., through simple embedded clauses, as in, The woman is a doctor. She helps children. → The woman is a doctor *who helps children*) to create precise and detailed sentences.	Condense clauses in an increasing variety of ways (e.g., through a growing number of embedded clauses and other condensing, as in, The dog ate quickly. The dog choked. → The dog ate so quickly *that it choked*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through various types of embedded clauses and other ways of condensing as in, There was a Gold Rush. It began in the 1850s. It brought a lot of people to California. → The Gold Rush that *began in the 1850s* brought a lot of people to California) to create precise and detailed sentences.
5	Condense clauses in simple ways (e.g., through simple embedded clauses as in, *The book is on the desk. The book is mine.* → *The book that is on the desk is mine*) to create precise and detailed sentences.	Condense clauses in an increasing variety of ways (e.g., through a growing number of types of embedded clauses and other condensing as in, *The book is mine. The book is about science. The book is on the desk*. → *The science book that's on the desk is mine*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through various types of embedded clauses and some nominalizations as in, *They were a very strong army. They had a lot of enemies. They crushed their enemies because they were strong.* → Their strength helped them crush their numerous enemies) to create precise and

			detailed sentences.
Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (3-LS4-3)		
Sample Integration of Science and ELD Standards in the Classroom	Students construct and/or support an argument that, in a particular habitat, some organisms can survive well, some can survive less well, and some cannot survive at all (3-LS4-3). They investigate whether an earthworm stays in a dark and humid environment or a bright and dry one, by placing the earthworm in each environment and observing its behavior. As they conduct the investigation and collect data, students may create clauses, such as: "The earthworm liked the moisture. It liked the darkness. It stayed in the dark environment. It did not like the light. It did not stay in the light. We did three trials." To support student at the Emerging and Expanding level of English proficiency, the teacher guides them to condense clauses to build an evidence-based argument; for example: "The earthworm stayed in the moist and dark environment more than the light environment. In the three trials, the earthworm always moved toward the dark and humid side of the model. When the rain stopped, we found dried earthworms on the playground."		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 4. Analyzing and interpreting data 6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information		

CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Engage in conversational exchanges and express ideas on familiar topics by asking and answering *yes-no* and *wh-* questions and responding using simple phrases.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information and evidence, paraphrasing key ideas, building on responses, and providing useful feedback.
7	Engage in conversational exchanges and express ideas on familiar topics by asking and answering *yes-no* and *wh-* questions and responding using simple phrases.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information and evidence, paraphrasing key ideas, building on responses, and providing useful feedback.
8	Engage in conversational exchanges and express ideas on familiar topics by asking and answering *yes-no* and *wh-* questions and responding using simple phrases.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions by following turn-taking rules, asking relevant questions, affirming others, adding relevant information and evidence, paraphrasing key ideas, building on responses, and providing useful feedback.
Applying ELD Standards to Science	Students engage in class, small-group, and partner conversations where they ask and respond to questions, build on others' ideas, and work collaboratively to define problems, plan and carry out investigations, construct explanations, and design solutions.		
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (MS-LS1-3)		

Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to brainstorm and illustrate models as a mechanism for explaining the relationships of parts to a whole in a system such as a car, a school, or a house made of toy plastic bricks. These analogous system representations support an argument for how the body is a system of interacting subsystems composed of organs and cells (MS-LS1-3). The students engage in argumentation with members of their group, listening to, comparing, and evaluating competing ideas and the accuracy of their models. To support students in using academic language during their discussions, the teacher provides sentence frames such as "The human body is like ____ because ____." To support students at the Emerging and early Expanding levels of English proficiency, the teachers partners the students with a language broker, another student who is bilingual in English and the student's home language. Partners first discuss their ideas in their home language if they wish. Additionally, the teacher points out cognates to help students learn scientific vocabulary and provides anatomy charts labeled in English and the languages of the students in the class. Further microscopic investigations of cheek cell tissue and other plant and animal tissue from a slide collection provide context into the scale of cells and an opportunity for students to further refine their models' and systems' representations and claims. Each team evaluates the models and gives and receives feedback on them.
Sample-Specific Science & Engineering Practices	2. Developing and using models 6. Constructing explanations (for science) and designing solutions (for engineering)

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Engage in short written exchanges with peers and collaborate on simple written texts on familiar topics, using technology when appropriate.	Engage in longer written exchanges with peers and collaborate on more detailed written texts on a variety of topics, using technology when appropriate.	Engage in extended written exchanges with peers and collaborate on complex written texts on a variety of topics, using technology when appropriate.
7	Engage in short written exchanges with peers and collaborate on simple written texts on familiar topics, using technology when appropriate.	Engage in longer written exchanges with peers and collaborate on more detailed written texts on a variety of topics, using technology when appropriate.	Engage in extended written exchanges with peers and collaborate on complex written texts on a variety of topics, using technology when appropriate.
8	Engage in short written exchanges with peers and collaborate on simple written texts on familiar topics, using technology when appropriate.	Engage in longer written exchanges with peers and collaborate on more detailed written texts on a variety of topics, using technology when appropriate.	Engage in extended written exchanges with peers and collaborate on complex written texts on a variety of topics, using technology when appropriate.
Applying ELD Standards to Science	Students collaboratively conduct short research projects to build knowledge through investigation. They recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information; use credible and relevant sources to provide evidence; and represent their research in writing and through multimedia.		
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (MS-LS1-5)		

Sample Integration of Science and ELD Standards in the Classroom	Students observe the phenomenon of a species of plants that have different traits and consider whether these traits are in response to environmental or genetic factors (MS-LS1-5). The students conduct investigations to test environmental conditions on the plants (e.g., light, space, fertilizer, and water), and analyze their data in writing, using data organizers provided by the teacher. Next, students read a text about environmental and genetic factors and their impact on plant characteristics. Finally, students work in small groups to co-construct a written explanation, based on data from these investigations and using text supports.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Supporting opinions and persuading others			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Negotiate with or persuade others in conversations (e.g., to gain and hold the floor or ask for clarification) using basic learned phrases (e.g., *I think…, Would you please repeat that?*), as well as open responses.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using an expanded set of learned phrases (*I agree with X, but…*), as well as open responses.	Negotiate with or persuade others in conversations using appropriate register (e.g., to reflect on multiple perspectives) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and Gabriel just pointed out Y*), as well as open responses.
7	Negotiate with or persuade others in conversations (e.g., to gain and hold the floor or ask for clarification) using learned phrases (e.g., *I think..., Would you please repeat that?*) and open responses.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using learned phrases (*I agree with X, but...*), and open responses.	Negotiate with or persuade others in conversations using appropriate register (e.g., to acknowledge new information) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and I haven't thought about that before*), and open responses.
8	Negotiate with or persuade others in conversations (e.g., to gain and hold the floor or to ask for clarification) using learned phrases (e.g., *I think... Would you please repeat that?*) and open responses.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using learned phrases (*I agree with X, but...*) and open responses.	Negotiate with or persuade others in conversations using an appropriate register (e.g., to acknowledge new information and justify views) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and that's a good point. I still think Y, though, because...*) and open responses.
Applying ELD Standards to Science	Students participate in collaborative conversations where they engage in argument from evidence. During these conversations, they construct arguments and support them with reasons and evidence, and they critique the scientific methodology and explanations or solutions proposed by their peers, by citing		

	relevant evidence.
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-PS3-5)
Sample Integration of Science and ELD Standards in the Classroom	Students work collaboratively and independently to develop logical and conceptual connections between evidence and explanations about energy. They construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object (MS-PS3-5). As part of the integrated model for middle school, students conduct investigations about the transfer of energy as it applies to weather and climate. Students participate in collaborative conversations where they engage in argument about predicting weather patterns and indicate agreement or disagreement based on evidence found in texts, investigations, and digital media sources. They use a variety of learned phrases, such as "I agree with ___ based on reasons such as ___; however, ____."
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
4. Adapting language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Adjust language choices according to social setting (e.g., classroom, break time) and audience (e.g., peers, teacher).	Adjust language choices according to purpose (e.g., explaining, persuading, entertaining), task, and audience.	Adjust language choices according to task (e.g., facilitating a science experiment, providing peer feedback on a writing assignment), purpose, task, and audience.
7	Adjust language choices according to social setting (e.g., classroom, break time) and audience (e.g., peers, teacher).	Adjust language choices according to purpose (e.g., explaining, persuading, entertaining), task, and audience.	Adjust language choices according to task (e.g., facilitating a science experiment, providing peer feedback on a writing assignment), purpose, task, and audience.
8	Adjust language choices according to social setting (e.g., classroom, break time) and audience (e.g., peers, teacher).	Adjust language choices according to purpose (e.g., explaining, persuading, entertaining), task, and audience.	Adjust language choices according to task (e.g., facilitating a science experiment, providing peer feedback on a writing assignment), purpose, and audience.
Applying ELD Standards to Science	Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend scientific arguments, interpretations, and procedures).		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-ESS2-6)		

Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to develop a simple model, based on evidence, to represent and describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates (MS-ESS2-6). They build on their understanding of energy transfer (from physical science) and gather information from text and digital media, using a graphic organizer, in preparation to present their models to peers for evaluation and critique. During the review, students use rubrics with exemplars, which include a focus on use of terminology appropriate to the purpose, task, and audience, for the evaluation. Then students showcase their models for the school community at a family science event at the school. Students use thinking maps to compare models to identify common features, so as to ground the conceptual discourse in the scientific phenomena (e.g., ocean temperature variations). They connect their learning with simulations and determine the type of model that would best represent patterns of variation in the hydrospheric and atmospheric systems of Earth.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Demonstrate active listening in oral presentation activities by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with minimal prompting and support.
7	Demonstrate active listening in oral presentation activities by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with minimal prompting and support.
8	Demonstrate active listening in oral presentation activities by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening in oral presentation activities by asking and answering detailed questions, with minimal prompting and support.
Applying ELD Standards to Science	Students listen to oral presentations about science and engineering topics. They demonstrate their active listening by asking and answering detailed questions about what they heard.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-PS1-2)		

Sample Integration of Science and ELD Standards in the Classroom	Students rotate through stations in small groups, analyzing and interpreting data on the properties of substances (e.g., data on physical and chemical changes, such as ripping a paper, baking soda and vinegar mix, and iron scrub pad and water) before and after the substances interact, to determine whether a chemical reaction has occurred (MS-PS1-2). The teacher has arranged the groups so that English learners at the Emerging and Expanding levels of English language proficiency are paired with students with higher levels of proficiency. The groups present their findings orally, with each student in the group having an equal role in the presentation. To support students at the Emerging and Expanding levels of English proficiency, the teacher provides time and a structure for students to plan and rehearse their portions of the presentation, allowing students to present from notes if they wish. The teacher has created a supportive classroom environment in which students affirm each other's efforts and provide each other with support. Additionally, the teacher provides oral feedback and support to students as they prepare for their presentations, making sure to check in specifically with each student at the Emerging or Expanding level. As the students listen to each presentation, they ask detailed questions that the presenters answer. The class then does a partner reading of photosynthesis, using a graphic organizer to determine whether it is a chemical or physical change in the properties of substances.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

<table>
<tr><th colspan="4">Integrating CA ELD Standards into Science Teaching and Learning
Grades 6, 7, and 8</th></tr>
<tr><th colspan="4">CA ELD Standards
Part I: Interacting in Meaningful Ways
B. Interpretive</th></tr>
<tr><th colspan="4">6. Reading/viewing closely</th></tr>
<tr><th>Grade</th><th>Emerging</th><th>Expanding</th><th>Bridging</th></tr>
<tr><td>6</td>
<td>a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with substantial support.

b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using some frequently used verbs (e.g., shows that, based on).

c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.</td>
<td>a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support.

b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of verbs (e.g., suggests that, leads to).

c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.</td>
<td>a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support.

b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., indicates that, influences).

c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.</td></tr>
</table>

7	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with substantial support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using some frequently used verbs (e.g., *shows that, based on*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using a variety of verbs (e.g., *suggests that, leads to*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., *indicates that, influences*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.

8	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with substantial support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using some frequently used verbs (e.g., shows that, based on). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meanings of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with moderate support. b. Express inferences and conclusions drawn based on close reading grade-appropriate texts and viewing of multimedia using a variety of verbs (e.g., suggests that, leads to). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meanings of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., indicates that, influences). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meanings, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.
Applying ELD Standards to Science	a. Students obtain and combine information from print and digital sources to explain phenomena and to support analysis, reflection, and research. They observe experiences and read closely to evaluate the merit and accuracy of ideas and methods and to explain the variables that describe and predict phenomena. b. Students refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. c. Students refer to classroom-generated reference lists of frequently used words, roots, and affixes in science, and examples of texts to recognize patterns in order to contextualize meanings of related words.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-LS2-1)		

Sample Integration of Science and ELD Standards in the Classroom	Working in collaborative groups, students analyze data, from print and digital sources, on changes in populations due to the presence of the zebra mussel. Working with a partner, they interpret the data on organisms and populations of organisms in an ecosystem (MS-LS2-1) in the context of resource availability. After discussing the data, students read additional information, using a graphic organizer to record notes, and formulate questions or statements about how changes in the abiotic environment (ideas from Earth and physical science) impact resource availability for living organisms. Students distinguish between correlation and causation data, conduct basic statistical techniques of data and error analysis, and construct explanations based on these analyses.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Explain how well writers and speakers use language to support ideas and arguments with detailed evidence (e.g., identifying the precise vocabulary used to present evidence, or the phrasing used to signal a shift in meaning) with substantial support.	Explain how well writers and speakers use specific language to present ideas or support arguments and provide detailed evidence (e.g., showing the clarity of the phrasing used to present an argument) with moderate support.	Explain how well writers and speakers use specific language resources to present ideas or support arguments and provide detailed evidence (e.g., identifying the specific language used to present ideas and claims that are well supported and distinguishing them from those that are not) with light support.
7	Explain how well writers and speakers use language to support ideas and arguments with detailed evidence (e.g., identifying the precise vocabulary used to present evidence, or the phrasing used to signal a shift in meaning) when provided with substantial support.	Explain how well writers and speakers use specific language to present ideas of support arguments and provide detailed evidence (e.g., showing the clarity of the phrasing used to present an argument) when provided with moderate support.	Explain how well writers and speakers use specific language resources to present ideas or support arguments and provide detailed evidence (e.g., identifying the specific language used to present ideas and claims that are well supported and distinguishing them from those that are not) when provided with light support.
8	Explain how well writers and speakers use language to support ideas and arguments with detailed evidence (e.g., identifying the precise vocabulary used to present evidence, or the phrasing used to signal a shift in meaning) when	Explain how well writers and speakers use specific language to present ideas or support arguments and provide detailed evidence (e.g., showing the clarity of the phrasing used to present an argument) when provided with moderate support.	Explain how well writers and speakers use specific language resources to present ideas or support arguments and provide detailed evidence (e.g., identifying the specific language used to present ideas and claims that are well supported and distinguishing them from those that are not) when

<table>
<tr><td></td><td>provided with substantial support.</td><td></td><td>provided with light support.</td></tr>
<tr><td>Applying ELD Standards to Science</td><td colspan="3">When critiquing others’ presentations on scientific topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.</td></tr>
<tr><td>Corresponding Science & Engineering Practices</td><td colspan="3">4. Analyzing and interpreting data (MS-PS1-3)</td></tr>
<tr><td>Sample Integration of Science and ELD Standards in the Classroom</td><td colspan="3">Students examine the differences between natural and synthetic resources (as an integrated topic for middle school that combines concepts from life science and Earth and space science). They gather information from multiple sources and prepare a presentation that describes how synthetic materials come from natural resources and impact society (MS-PS1-3). Examples include how medicine, food, and alternative fuels that are formed as natural resources undergo chemical processes. The students role play becoming critical consumers by applying scientific reasoning to show why the data or evidence is adequate, accurate, and valid for their explanations. They engage in argument, using evidence from multiple media and texts to support their claims. The students listening to each presentation take notes, using a listening guide that includes a focus on how well the speakers used particular vocabulary or phrasing in their explanations.</td></tr>
<tr><td>Sample-Specific Science & Engineering Practices</td><td colspan="3">3. Planning and carrying out investigations
8. Obtaining, evaluating, and communicating information</td></tr>
</table>

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Explain how phrasing or different common words with similar meaning (e.g., choosing to use the word *cheap* versus the phrase *a good saver*) produce different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., describing a character as *stingy* versus *economical*), or figurative language (e.g., *The room was like a dank cave, littered with food wrappers, soda cans, and piles of laundry*) produce shades of meaning and different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., *stingy, economical, frugal, thrifty*), or figurative language (e.g., *The room was depressed and gloomy. The room was like a dank cave, littered with food wrappers, soda cans, and piles of laundry*) produce shades of meaning, nuances, and different effects on the audience.
7	Explain how phrasing or different common words with similar meaning (e.g., choosing to use the word *polite* versus *good*) produce different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., describing a character as *diplomatic* versus *respectful*) or figurative language (e.g., *The wind blew through the valley like a furnace*) produce shades of meaning and different effects on the audience.	Explain how phrasing, different words with similar meaning (e.g., *refined-respectful-polite-diplomatic*), or figurative language (e.g., *The wind whispered through the night*) produce shades of meaning, nuances, and different effects on the audience.
8	Explain how phrasing or different common words with similar meanings (e.g., choosing to use the word *persistent* versus the term *hard worker*) produce different effects on the audience.	Explain how phrasing or different words with similar meanings (e.g., describing a character as *stubborn* versus *persistent*) or figurative language (e.g., *Let me throw some light onto the topic*) produce shades of meaning and different effects on the audience.	Explain how phrasing or different words with similar meanings (e.g., *cunning* versus *smart, stammer* versus *say*) or figurative language (e.g., *Let me throw some light onto the topic*) produce shades of meaning, nuances, and different effects on the audience.
Applying ELD Standards to Science	When reading or listening to others' presentations on scientific topics, students can distinguish how the writer's or speaker's selection of different words or phrases with related meanings (e.g., *clear* versus *transparent* versus		

	translucent) affects the audience's understanding.
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-ETS1-3)
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to investigate the effectiveness of various techniques to clean up an oil spill (Earth and space science concept) using various tools (e.g., salt, tweezers, paper towels, straws, sponges, a spatula, and cotton swabs). They analyze data from tests to determine the best characteristics of each technique, so that these characteristics can be combined into a new solution to better meet the criteria for success (MS-ETS1-3). Throughout this process, students utilize language with precision to describe the effectiveness of each technique, and clarify with one another the effect of selecting a particular term, such as *soak up* versus *absorb*. The teacher plans several supports for students at the Emerging and early Expanding levels of English proficiency. First, the teacher groups the students strategically, ensuring that each group has students at various levels of English proficiency and, if a group has a student at the Emerging level of English proficiency, there is at least one other student who speaks that student's home language as well as English. The students know they are welcome to discuss in English and their home language, using all of the language resources available to them to make sense of the content and vocabulary. Through discussion, the students develop clear criteria for specifying the success of each trial, and avoid ambiguous statements, such as "try harder to use the technique," instead clearly describing each technique used, the sequence of use, and the quality of the cleanup effort. Their conversation incorporates the concept of "like dissolves like," meaning that, for example, a water-based substance can be cleaned with water and an oil-based spill needs an oil-based solvent. The teacher circulates and provides specific support in the form of affirming students' efforts, asking probing questions such as, "Why did you choose this word," and recasting student's statements.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Plan and deliver brief oral presentations on a variety of topics and content areas.	Plan and deliver longer oral presentations on a variety of topics and content areas, using details and evidence to support ideas.	Plan and deliver longer oral presentations on a variety of topics and content areas, using reasoning and evidence to support ideas, as well as growing understanding of register.
7	Plan and deliver brief informative oral presentations on familiar topics.	Plan and deliver longer oral presentations on a variety of topics, using details and evidence to support ideas.	Plan and deliver longer oral presentations on a variety of topics in a variety of disciplines, using reasoning and evidence to support ideas, as well as growing understanding of register.
8	Plan and deliver brief informative oral presentations on concrete topics.	Plan and deliver longer oral presentations on a variety of topics using details and evidence to support ideas.	Plan and deliver longer oral presentations on a variety of concrete and abstract topics using reasoning and evidence to support ideas and using a growing understanding of register.
Applying ELD Standards to Science	Students plan and deliver oral presentations on science topics.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-ESS2-1)		
Sample Integration of Science and ELD Standards in the Classroom	Students use satellite photos and other text to gather information about slow-changing processes on Earth, such as sediment flow areas in the Mississippi Delta, erosion along coastlines, volcanic deposition on the Hawaiian islands, and the diverging Atlantic rift from Iceland south through the Atlantic. With partners, they compare these features and formulate explanations, using a set of transition words, for compare-and-contrast text structure, that they have previously developed for an explanation on a different topic. The students then develop a model to describe the cycling of Earth's materials and the flow of energy that drives the process (MS-ESS2-1). In small groups, they provide critiques of the other groups' models, using accountable talk stems. They then deliver oral presentations of their models, connecting the model to what they understand		

	about the conservation of matter and energy from physical science.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Write short literary and informational texts (e.g., an argument for protecting the rain forests) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument for protecting the rain forests) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument for protecting the rain forests) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
7	a. Write short literary and informational texts (e.g., an argument for wearing school uniforms) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument for wearing school uniforms) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument for wearing school uniforms) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).

8	a. Write short literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to Science	a. Students write a variety of science texts, such as explanatory reports or descriptions of procedures, data, and observations, and create charts, tables, diagrams, and graphics, as relevant to the task. b. Students write summaries of experiences with the natural world and phenomena; research from various sources (e.g., interviews, science book/magazine articles, news, digital media); and lab-report narratives on an inquiry, steps, analyses, and investigation results.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-PS1-5)		
Sample Integration of Science and ELD Standards in the Classroom	Students conduct investigations to measure the masses of substances before and after the substances undergo a chemical reaction. The students weigh ice packs and light sticks before and after they crack or twist them to unleash the chemical reaction in each pack, and compare the weights. Then, students develop and use a model to describe how the total number of atoms does not change in a chemical reaction and, thus, mass is conserved (MS-PS1-5). To emphasize the conservation of matter, students construct mental models that they revise as they investigate physical models (e.g., the mixture of vinegar or milk and baking soda) and digital representations, as well as gathering information from texts. Students write claim and evidence statements to summarize what they understand from their investigations and reading. They apply their model to photosynthesis as part of the integrated learning in middle school.		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information		

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Justifying/arguing			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Justify opinions by providing some textual evidence (e.g., quoting from the text) or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with some basic modal expressions (e.g., *can, has to*).	a. Justify opinions or persuade others by providing relevant textual evidence (e.g., quoting from the text or referring to what the text says) or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *maybe/probably, can/could, must*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence (e.g., quoting from the text directly or referring to specific textual evidence) or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly/definitely, should/would, might) and phrasing (e.g., In my opinion ...*).
7	a. Justify opinions by providing some textual evidence or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions or persuade others by providing relevant textual evidence or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would/should*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/absolutely, should/might*).

8	a. Justify opinions by providing some textual evidence or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions or persuade others by providing relevant textual evidence or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *potentially/certainly/absolutely, should/might*).
Applying ELD Standards to Science	Students construct and support arguments in science with evidence, data, and/or a model. They compare and refine arguments, based on evaluation of the evidence presented.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-ESS3-4)		
Sample Integration of Science and ELD Standards in the Classroom	Students view videos of Third World cities and countrysides as well as crowded cities in industrialized nations. They read informational texts about increases in animal and plant populations (life science) and their impact on resources (Earth science), including increases in human populations. They conduct experiments using rats and observe behavioral patterns of rats that have limited resources. In class discussions, students link their learning from these activities, looking for patterns of the impact of increases in living populations on resources (MS-ESS3-4). Students create a claim and support it with evidence from text, video, and experimentation. They present their ideas and engage in argument using their evidence. Students are given opportunities to revise their argument, based on the presentations of other students.		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information		

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Use a select number of general academic words (e.g., *author, chart*) and domain-specific words (e.g., *scene, cell, fraction*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X*).	a. Use a growing set of academic words (e.g., *author, chart, global, affect*), domain-specific words (e.g., *scene, setting, plot, point of view, fraction, cell membrane, democracy*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes X. That's impossible*).	a. Use an expanded set of general academic words (e.g., *affect, evidence, demonstrate, reluctantly*), domain-specific words (e.g., *scene, setting, plot, point of view, fraction, cell membrane, democracy*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *observe* → *observation, reluctant* → *reluctantly, produce* → *production,* and so on).

7	a. Use a select number of general academic words (e.g., *cycle, alternative*) and domain-specific words (e.g., *scene, chapter, paragraph, cell*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X. He walked to school*).	a. Use a growing set of academic words (e.g., *cycle, alternative, indicate, process*), domain-specific words (e.g., *scene, soliloquy, sonnet, friction, monarchy, fraction*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes walking to school. That's impossible*).	a. Use an expanded set of general academic words (e.g., *cycle, alternative, indicate, process, emphasize, illustrate*), domain-specific words (e.g., *scene, soliloquy, sonnet, friction, monarchy, fraction*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *destroy* → *destruction, probably* → *probability, reluctant* → *reluctantly*).
8	a. Use a select number of general academic words (e.g., *specific, contrast*) and domain-specific words (e.g., *scene, cell, fraction*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X. He walked to school*).	a. Use a growing set of academic words (e.g., *specific, contrast, significant, function*), domain-specific words (e.g., *scene, irony, suspense, analogy, cell membrane, fraction*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes walking to school. That's impossible*).	a. Use an expanded set of general academic words (e.g., *specific, contrast, significant, function, adequate, analysis*), domain-specific words (e.g., *scene, irony, suspense, analogy, cell membrane, fraction*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *destroy* → *destruction, probably* → *probability, reluctant* → *reluctantly*).
Applying ELD Standards to Science	Students use a variety of vocabulary and select appropriate affixes when writing or speaking about science content.		

Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-ESS2-2)
Sample Integration of Science and ELD Standards in the Classroom	Students view video footage, texts, and images of fossil-layered strata from an archeological survey of an area rich with fossils, and engage in constructing scientific explanations based on evidence obtained from varied sources. The students construct scientific explanations based on evidence from rock strata for how the geologic timescale is used to organize Earth's 4.6-billion-year-old history (MS-ESS2-2). For example, in describing layers, students will recognize the difference between an earlier layer and earliest evidence in the strata sample being analyzed. The rich discussions involve using domain-specific language and appropriate affixes, such as *strata/stratum* or *sediment/sedimentary*.
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Apply basic understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how arguments are organized around ideas) to comprehending texts and writing basic texts.	Apply growing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how arguments are structured logically around reasons and evidence) to comprehending texts and writing texts with increasing cohesion.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a historical account is organized chronologically versus how arguments are structured logically around reasons and evidence) to comprehending texts and writing cohesive texts.
7	Apply understanding of how different text types are organized to express ideas (e.g., how narratives are organized sequentially) to comprehending texts and to writing brief arguments, informative/ explanatory texts and narratives.	Apply understanding of the organizational features of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing increasingly clear and coherent arguments, informative/explanatory texts and narratives.	Apply understanding of the organizational structure of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts and narratives.

8	Apply understanding of how different text types are organized to express ideas (e.g., how narratives are organized sequentially) to comprehending texts and to writing brief arguments, informative/ explanatory texts and narratives.	Apply understanding of the organizational features of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing increasingly clear and coherent arguments, informative/explanatory texts and narratives.	Apply understanding of the organizational structure of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts and narratives.
Applying ELD Standards to Science	Text types in science include simulations, videos, diagrams, charts, tables, informational narratives, graphics, and labeled illustrations depicting processes, structures, and relationships, among others. Students increase understanding of text by using it in context with content and investigations, and by having explicit instruction about the organization of the text and its purpose.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-PS4-1)		
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups, using a slinky or rope model attached to a spring scale, to investigate a wave's amplitude. The students use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave (MS-PS4-1). Using data from their investigations and from informational text, digital representations of waves, and electronic data, students gather information to explain the relationship between a wave and its energy, using both quantitative and qualitative representations. Students determine the type of text and the text organization that are appropriate for their purposes. For example, they may create illustrations of the wave and a table depicting varying amplitudes and the corresponding force (energy) measured for each trial, as well as writing an informational text in chronological order to explain the setup, the process, and their interpretation of their findings.		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information		

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards **Part II: Learning About How English Works** **A. Structuring Cohesive Texts**			
2. Understanding cohesion			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using a select set of everyday connecting words or phrases (e.g., *first/next, at the beginning*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, in the first place, as a result, on the other hand*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *consequently, specifically, however, moreover*) to comprehending texts and writing cohesive texts.
7	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing brief texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text, how using synonyms helps avoid repetition) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns, synonyms, or nominalizations are used to refer backward in a text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or

	text using everyday connecting words or phrases (e.g., *at the end, next*) to comprehending texts and writing brief texts.	connecting words or phrases (e.g., *for example, as a result, on the other hand*) to comprehending texts and writing texts with increasing cohesion.	phrases (e.g., *for instance, in addition, consequently*) to comprehending texts and writing texts with increasing cohesion.
8	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text) to comprehending and writing brief texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *at the end, next)* to comprehending and writing brief texts.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text, how using synonyms helps avoid repetition) to comprehending and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, as a result, on the other hand*) to comprehending and writing texts with increasing cohesion.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns, synonyms, or nominalizations are used to refer backward in a text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, consequently*) to comprehending and writing texts with increasing cohesion.
Applying ELD Standards to Science	a. Students apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing cohesive science texts. b. Students apply understanding of how ideas, events, or reasons are linked throughout science texts, using a variety of connecting words or phrases (e.g., *consequently, specifically, however, moreover*), to comprehending and writing science texts.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-PS2-2)		
Sample Integration of Science and ELD Standards in the Classroom	Students conduct an investigation and evaluate and revise the experimental design to produce data to serve as the basis for evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object (MS-PS2-2). They map out a trajectory path over which they will push a chair with nothing on it and measure its mass, the force of the pull, and the time and radius of the trajectory, in order to compare these data to that of pushing the same chair with a load of books on it. As they conduct trials, their		

	verbalizations go from everyday language explanations to contextualized use of academic language terms. For example, they may refer to "the empty chair" or "the chair with books" and later use the terms *smaller-mass object* or *larger-mass object*, include the units for each type of measure, and organize them on a table. The students then write narratives of their investigations. Before the students write, the teacher leads the class through analyzing the connecting words and phrases used in sequential scientific explanations. The students works in pairs to reconstruct a text the teacher has cut apart, using the content and the connecting words to make sense of the order of sentences. The teacher then leads the class through a discussion of the importance of using connecting words to help the reader easily navigate through the text. While most students work independently using the reconstructed text as a model for their own writing, the teacher pulls a small group of students at the Emerging and early Expanding level of English proficiency and jointly constructs a scientific explanation with them, attending both to the content and the connecting words and phrases. In their explanations of their investigation, students write things such as: "Consequently, our investigation suggests that the smaller-mass object—specifically, the chair without books—. . . Moreover, the larger-mass object..."
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling), tenses (e.g., present, past, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling, reporting), tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., simple present for literary analysis) on an increasing variety of topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling, reporting), tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on a variety of topics.
7	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., simple present for literary analysis) on an increasing variety of topics.	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on a variety of topics.

8	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on an increasing variety of topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), voices (active and passive), and moods (e.g., declarative, interrogative, subjunctive) appropriate to the task, text type, and discipline (e.g., the passive voice in simple past to describe the methods of a scientific experiment) on a variety of topics.
Applying ELD Standards to Science	Students use a variety of verb types and appropriate verb tenses to express their understanding of scientific concepts and phenomena.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-LS4-1)		
Sample Integration of Science and ELD Standards in the Classroom	In the context of study of the fossil record, students analyze and interpret data from various sources (e.g., digital videos and simulations; text, images, and models; or actual specimens), looking for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth, under the assumption that the natural laws operate today as in the past (MS-LS4-1). To support students at the Emerging and early Expanding level of English proficiency, the teacher helps make the students explicitly aware of the verb tenses the narrators in the videos and the authors of text use for different purposes (e.g., present tense to discuss science concepts versus past tense to describe an event that occurred in the past). The students' oral discourse and written explanations reflect proper use of verb tenses. For example: "The older layer *shows* sea creature fossils, which *are* representative of the types of life in an earlier time."; Those students who are ready may even begin to use verbs in the subjunctive mood appropriately, and the teacher supports them in doing so: "If today we *were to bury* a time capsule with artifacts, people in the future *might be able to study* it and *learn* about today's civilization as a type of fossil record."		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information		

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Expand noun phrases in simple ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in an increasing variety of ways (e.g., adding comparative/superlative and general academic adjectives to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
7	Expand noun phrases in basic ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, and things.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, and things.	Expand noun phrases in an increasing variety of ways (e.g., more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, and things.
8	Expand noun phrases in basic ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in a growing number of ways (e.g., adding prepositional or adjective phrases) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in an increasing variety of ways (e.g., embedding relative or complement clauses) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.
Applying ELD Standards to Science	In science and engineering, oral and written texts may have long noun phrases. Students need to be able to identify what the main noun is and also to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.		

Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-LS4-2)
Sample Integration of Science and ELD Standards in the Classroom	Through the analysis of images, videos, and bone collections, groups of students apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms in order to infer evolutionary relationships (MS-LS4-2). As they compare and reconstruct evolutionary history and infer lines of evolutionary descent, students formulate ideas and answers about the changes that organisms have had over time. By comparing the anatomical similarities between living organisms and fossilized ones, they use this understanding as evidence of evolution. The teacher prompts students to incorporate expanded noun phrases in their discussion; for example: "We wondered whether *the arm of a human* and *the flipper of a whale* were similar by function or by sharing *a common ancestor."*
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with an increasing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
7	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
8	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with increasingly complex adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
Applying ELD Standards to Science	Students use modifying words and phrases to express their understanding of scientific concepts and phenomena.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-ESS2-2)		

Sample Integration of Science and ELD Standards in the Classroom	Through use of digital media and texts, students investigate and analyze real geoscience data to construct an explanation, based on evidence, for how geoscience processes have changed Earth's surface at varying timescales and spatial scales (MS-ESS2-2). As students write their summaries, the teacher guides them to expand their sentences by using adverbials; for example: “The Hawaiian Islands, located *in the North Pacific Ocean*, developed *over millions of years*, as the Pacific Plate moved *slowly over a hot spot*.”
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards **Part II: Learning About How English Works** **C. Connecting and Condensing Ideas**			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday because he had an exam on Monday*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to link two ideas that happen at the same time (e.g., *The students worked in groups while their teacher walked around the room*).
7	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so;* creating complex sentences using because).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound, complex, and compound–complex sentences) to make connections between and join ideas, for example, to show the relationship between multiple events or ideas (e.g., *After eating lunch, the students worked in groups while their teacher walked around the room*) or to evaluate an argument (e.g., *The author claims X, although there is a lack of evidence to support this claim*).

8	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so;* creating complex sentences using because).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences, and compound-complex sentences) to make connections between and join ideas, for example, to show the relationship between multiple events or ideas (e.g., *After eating lunch, the students worked in groups while their teacher walked around the room*) or to evaluate an argument (e.g., *The author claims X, although there is a lack of evidence to support this claim*).
Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-PS3-4)		
Sample Integration of Science and ELD Standards in the Classroom	Students work in groups to produce written plans for an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of particles as measured by the temperature of the sample (MS-PS3-4). Melting different masses of ice in the same volume of water, with the same initial temperature, students record the temperature change in the system and make predictions for samples of different materials with the same mass as they cool or heat the environment of the system. In their predictions, students make initial observations. The teacher then works with the students to connect their ideas together. The teacher thinks aloud while she connects two ideas for the class, explicitly relying on a posted word bank of joining words and their meanings. The teacher asks students to work together to join two of their ideas together using the word bank. The teacher circulates and notices that three students at the Emerging level of English proficiency need more support. She works with these students in a group, guiding them through joining their ideas together. "After putting the largest mass of ice on our last trial, the temperature of the water was much cooler than in the previous trial. Thus, the relationship between the temperature and the total energy of the system depends on the type, state, and amount of matter present in the system."		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information		

Integrating CA ELD Standards into Science Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Condense ideas in simple ways (e.g., by compounding verbs, adding prepositional phrases, or through simple embedded clauses or other ways of condensing as in, This is a story about a girl. The girl changed the world. → This is a story about a girl *who changed the world*) to create precise and detailed sentences.	Condense ideas in an increasing variety of ways (e.g., through various types of embedded clauses and other ways of condensing, as in, Organic vegetables are food. They're made without chemical fertilizers. They're made without chemical insecticides) → Organic vegetables are foods *that are made without chemical fertilizers or insecticides*) to create precise and detailed sentences.	Condense ideas in a variety of ways (e.g., through various types of embedded clauses, ways of condensing, and nominalization as in, They *destroyed* the rain forest. Lots of animals *died* → The *destruction* of the rain forest led to *the death of many animals*) to create precise and detailed sentences.
7	Condense ideas in simple ways (e.g., by compounding verbs, adding prepositional phrases, or through simple embedded clauses or other ways of condensing as in, This is a story about a girl. The girl changed the world → This is a story about a girl *who changed the world*) to create	Condense ideas in an increasing variety of ways (e.g., through various types of embedded clauses and other ways of condensing, as in, Organic vegetables are food. They're made without chemical fertilizers. They're made without chemical insecticides. → Organic vegetables are foods *that are made without chemical fertilizers or insecticides*) to create precise and detailed sentences.	Condense ideas in a variety of ways (e.g., through various types of embedded clauses, ways of condensing, and nominalization as in, They *destroyed* the rain forest. Lots of animals *died* → The *destruction* of the rainforest led to *the death of many animals*) to create precise and detailed sentences.

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Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (MS-LS2-5*)		
Sample Integration of Science and ELD Standards in the Classroom	Students conduct investigations, build models, and analyze data, in texts and digital media, about the relationship between biodiversity on Earth and human interaction with natural resources. Students evaluate competing design solutions for maintaining biodiversity and ecosystem services (MS-LS2-5*). Then, they construct explanations about how changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on, such as water purification, prevention of soil erosion, and recycling. Through engaging in argument from evidence, students build claims supported by the evidence in their texts, investigations, and research. Students may start with short sentences and work on condensing them by using structures more common to academic language. For example: Student's first draft: "Trash and pollution are a big problem. Lots of trash ends up in the ocean. Many sea animals die by eating the trash. Birds starve to death with plastic around their necks. Medicines and pollutants also end up in the ocean. Fish and other organisms get contaminated from dumped chemicals. There are warnings on seashell foods from contamination." Student's revised (though still imperfect) draft: "Trash and pollution of the oceans cause death of sea life by ingesting it or by starvation from being trapped within it (e.g., plastic rings around birds' necks). When we dump medications down the drain or industry dumps chemicals in water sources, living organisms in the water also get contaminated, affecting their survival and our food supply."		
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 8. Obtaining, evaluating, and communicating information		

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering *yes-no* questions and *wh-* questions and responding using phrases and short sentences.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, and providing coherent and well-articulated comments and additional information.
11–12	Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering *yes-no* questions and *wh-* questions and responding using phrases and short sentences.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, and providing coherent and well-articulated comments and additional information.
Applying ELD Standards to Science	Students engage in class, small-group, and partner conversations where they ask and respond to questions, build on others' ideas, and work collaboratively to define problems, plan and carry out investigations, construct explanations, and design solutions.		

Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (HS-ESS2-1)
Sample Integration of Science and ELD Standards in the Classroom	Students develop a model that illustrates how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features (HS-ESS2-1). Students have worked in pairs to develop their explanation by using drawings and graphics and manipulating physical materials such as cardboard, foam, or clay. Now they gather in small groups to orally explain their understanding. The teacher provides sentence frames to support students in using evidence to explain how the appearance of land features (such as mountains, valleys, and plateaus) and ocean-floor features (such as trenches, ridges, and seamounts) are a result of both constructive forces (such as volcanism, tectonic uplift, or orogeny) and destructive mechanisms (such as weathering, mass wasting, or coastal erosion). Students can also refer to important terms that are posted on charts that they previously developed through explorations and visual representations.
Sample-Specific Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Collaborate with peers to engage in short, grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in increasingly complex grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in a variety of extended written exchanges and complex grade-appropriate writing projects, using technology as appropriate.
11–12	Collaborate with peers to engage in short, grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in increasingly complex grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in a variety of extended written exchanges and complex grade-appropriate writing projects, using technology as appropriate.
Applying ELD Standards to Science	Students collaboratively conduct short research projects to build knowledge through investigation. They recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information; use credible and relevant sources to provide evidence; and represent their research in writing and through multimedia.		
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (HS-ESS1-2)		
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups collaborating on analysis of data to identify patterns and relationships. They construct graphs or diagrams to communicate their current explanations from the data analysis, gathering additional information from print and digital resources to deepen their explanations. Students use their discussions, data analysis, and additional information to co-construct a written explanation of the Big Bang Theory (HS-ESS1-2) through researching astronomical evidence of the shift of light from galaxies as an indication that the universe is currently expanding and that cosmic microwave background is remnant radiation from the Big Bang.		

Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 5. Using mathematics and computational thinking 7. Engaging in argument from evidence

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Supporting opinions and persuading others			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Negotiate with or persuade others in conversations using learned phrases (e.g., *Would you say that again? I think...*), as well as open responses to express and defend opinions.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using a growing number of learned phrases (*I see your point, but...*) and open responses to express and defend nuanced opinions.	Negotiate with or persuade others in conversations in appropriate registers (e.g., to acknowledge new information in an academic conversation but then politely offer a counterpoint) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and I haven't thought about that before. However...*), and open responses to express and defend nuanced opinions.
11–12	Negotiate with or persuade others in conversations (e.g., ask for clarification or repetition) using learned phrases (e.g., *Could you repeat that please? I believe...*) and open responses to express and defend opinions.	Negotiate with and persuade others (e.g., by presenting counter-arguments) in discussions and conversations using learned phrases (e.g., *You make a valid point, but my view is...*) and open responses to express and defend nuanced opinions.	Negotiate with or persuade others in discussions and conversations in appropriate registers (e.g., to acknowledge new information and politely offer a counterpoint) using a variety of learned phrases (e.g., *You postulate that X. However, I've reached a different conclusion on this issue.*) and open responses to express and defend nuanced opinions.
Applying ELD Standards to Science	Students participate in collaborative conversations where they engage in argument from evidence. During these conversations, they construct arguments and support them with reasons and evidence, and they critique the scientific methodology, and explanations or solutions, proposed by their peers, by citing		

	relevant evidence.
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (HS-PS4-3)
Sample Integration of Science and ELD Standards in the Classroom	Students research experimental evidence (phenomena could include resonance, interference, diffraction, or photoelectric effect) and present the evidence to support a claim and to explain how a theory is generally modified in light of new evidence (HS-PS4-3). The teacher guides students in a "four corners" strategy, in which all those who agree on an explanation gather in a corner to discuss the similarities in their argument and then produce a Venn diagram that illustrates those similarities. Each corner group will then pair with a corner group with a differing explanation, to try to persuade others that their ideas are reasonable and supported by appropriate evidence, using learned phrases to respectfully offer counterarguments or to elaborate on a peer's idea.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
4. Adapting language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Adjust language choices according to the context (e.g., classroom, community) and audience (e.g., peers, teachers).	Adjust language choices according to the context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), task, and audience (e.g., peers, teachers, guest lecturer).	Adjust language choices according to the task (e.g., group presentation of research project), context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), and audience (e.g., peers, teachers, college recruiter).
11–12	Adjust language choices according to the context (e.g., classroom, community) and audience (e.g., peers, teachers).	Adjust language choices according to the context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), task, and audience (e.g., peers, teachers, guest lecturer).	Adjust language choices according to the task (e.g., group presentation of research project), context (e.g., classroom, community), purpose (e.g., to persuade, to provide arguments or counterarguments), and audience (e.g., peers, teachers, college recruiter).
Applying ELD Standards to Science	Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend scientific arguments, interpretations, and procedures).		
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (HS-LS2-6)		

Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to research the reasons for different changes in an ecosystem, using a variety of text types and digital media as resources. Students in each group discuss the credibility of their resources, the evidence provided, and possible claims that can be generated about changes in an ecosystem. During small group discussions, students speak more informally as they negotiate with each other and the texts to learn content. To support students at the Emerging and early Expanding levels of English proficiency, the teacher has made it clear that they should use their home language, or a mix of English and their home language, in initial discussions. To facilitate this, the teacher has created linguistically heterogeneous groups and attempted to pair students at the Emerging level of English proficiency with at least one other student who is fluent in English and the student's home language. Students use graphic organizers to organize their information into possible claims and evidence that supports each claim. These changes might be modest biological or physical changes, such as hunting or a seasonal flood, or extreme changes, such as a fire, volcanic eruption, or sea-level rise (HS-LS2-6). Students work with a partner from a different group and share their current claims and evidence related to changes in an ecosystem. During this exchange, the students' language becomes a bit more formal, and the teacher has supported the students by providing language frames, such as "We assert _________ given _______". In pairs, the students evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions, to determine the merits of the arguments, using precise language that is appropriate for the audience and purpose. The teacher then challenges the students to increase the precision of their language—as appropriate for a chosen audience—while creating a formal written argument that includes the cause-and-effect reasoning behind why an ecosystem changed. To support the students in succeeding in using more precise language in a written context, the teacher leads students through analysis of science texts, creating and posting word walls and language charts that highlight the vocabulary and structural features of written science texts.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 5. Using mathematics and computational thinking 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Demonstrate comprehension of oral presentations and discussions on familiar social and academic topics by asking and answering questions, with prompting and substantial support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering questions that show thoughtful consideration of the ideas or arguments with moderate support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering detailed and complex questions that show thoughtful consideration of the ideas or arguments, with light support.
11–12	Demonstrate comprehension of oral presentations and discussions on familiar social and academic topics by asking and answering questions with prompting and substantial support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering questions that show thoughtful consideration of the ideas or arguments with moderate support.	Demonstrate comprehension of oral presentations and discussions on a variety of social and academic topics by asking and answering detailed and complex questions that show thoughtful consideration of the ideas or arguments with light support.
Applying ELD Standards to Science	Students listen to oral presentations about science and engineering topics. They demonstrate their active listening by asking and answering detailed questions about what they heard.		
Corresponding Science & Engineering Practices	3. Planning and carrying out an investigation (HS-ESS2-5)		

Sample Integration of Science and ELD Standards in the Classroom	Students plan and conduct investigations with water and a variety of solid materials, to provide evidence for the connections between the hydrologic cycle and system interactions commonly known as the rock cycle (HS-ESS2-5). Students compile their data and prepare for their oral presentation. The teacher provides a two-part, technology-based strategy for students to use tablet computers, or similar devices with a video-recording function, to record their oral presentations. In the first part, students work in pairs to record each other's oral presentations and watch the recorded presentations to predict the detailed and complex questions that they may be asked about the investigation. In the second part, each student practices answering the questions prior to the final presentation. In this way, students are able to anticipate and rehearse their responses to complex questions. After completing this strategy, students are able to communicate their findings to the class in oral presentations. Students in the class listen to the presentations and ask probing and clarifying questions of the presenters, who are now confident and ready to provide oral responses.
Sample-Specific Science & Engineering Practices	1. Asking questions 4. Analyzing and interpreting data 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **B. Interpretive**			
6. Reading/viewing closely			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using short sentences and a select set of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using familiar verbs (e.g., *seems that*). c. Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using increasingly detailed sentences, and an increasing variety of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using an increasing variety of verbs and adverbials (e.g., *indicates that, suggests, as a result*). c. Use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-level texts, presented in various print and multimedia formats, using a variety of detailed sentences and a range of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-level texts and viewing of multimedia using a variety of verbs and adverbials (e.g., *creates the impression that, consequently*). c. Use knowledge of morphology (e.g., derivational suffixes), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.

11–12	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using phrases, short sentences, and a select set of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia, using familiar verbs (e.g., seems that). c. Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using increasingly detailed sentences, and a range of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using a variety of verbs and adverbials (e.g., indicates that, suggests, as a result). c. Use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-level texts, presented in various print and multimedia formats, using a variety of detailed sentences and precise general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-level texts and viewing of multimedia using a variety of verbs and adverbials (e.g., creates the impression that, consequently). c. Use knowledge of morphology (e.g., derivational suffixes), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.
Applying ELD Standards to Science	a. Students obtain and combine information from print and digital sources to explain phenomena and to support analysis, reflection, and research. They observe experiences and read closely to evaluate the merit and accuracy of ideas and methods and to explain the variables that describe and predict phenomena. b. Students refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. c. Students refer to classroom-generated reference lists of frequently used words, roots and affixes in science, and examples of texts, to recognize patterns in order to contextualize meanings of related words.		
Corresponding Science & Engineering Practices	8. Obtaining, evaluating, and communicating information (HS-PS4-4)		

Sample Integration of Science and ELD Standards in the Classroom	Students research print and digital sources to explain phenomena (such as photons associated with different frequencies of light having different energies, or the damage of living tissue from electromagnetic radiation, depending on the energy of the radiation) (HS-PS4-4). Students evaluate at least two claims from their sources, including the data presented and reasoning about the data presented, in order to analyze the validity and reliability of the author's claims. To support students at the Emerging and early Expanding levels of English proficiency, the teacher pulls a small group and scaffolds the reading process. The teacher has chosen a short but relatively complex text on the damage of living tissues from electromagnetic radiation. As the teacher and students move through the text, the teacher repeatedly follows a process of identifying a sentence, paraphrasing it for students, asking students to find the words that represent the paraphrase, and elaborating on the meanings of the words. After reading, student teams develop explanations about the phenomena using tablet technology such as creating movies or other digital displays. Teams swap digital explanations to evaluate the merit and accuracy of the related possible negative effects to humans and provide feedback to the other team. Students then revise their explanations based on the feedback.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part I: Interacting in Meaningful Ways** **B. Interpretive**			
7. Evaluating language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing evidence to support claims or connecting points in an argument) or create other specific effects, with substantial support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with moderate support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with light support.
11–12	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing evidence to support claims or connecting points in an argument) or create other specific effects.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with moderate support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with light support.
Applying ELD Standards to Science	When critiquing others’ presentations on scientific topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		
Corresponding Science & Engineering Practices	5. Using mathematics and computational thinking (HS-ESS3-3)		

Sample Integration of Science and ELD Standards in the Classroom	Students create a simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and/or biodiversity (HS-ESS3-3), and present their findings to the class. Students critique one another’s presentations, both for content and for the particular vocabulary or phrasing used to explain their findings. To critique the simulation, students ask probing questions to compare the simulation results to real-world examples, and ask the presenters if the simulation can be viewed as realistic. Students also ask for clarification of unfamiliar terms and/or phrasing. Additionally, students ask the presenters to identify the simulation's limitations relative to the phenomenon at hand.
Sample-Specific Science & Engineering Practices	1. Asking questions 2. Developing and using models 4. Analyzing and interpreting data 6. Constructing explanations 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., describing a character or action as *aggressive* versus *bold*) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., using figurative language or words with multiple meanings to describe an event or character) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of a variety of different types of phrasing or words (e.g., hyperbole, varying connotations, the cumulative impact of word choices) produces nuances and different effects on the audience.
11–12	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., describing a character or action as *aggressive* versus *bold*) produces nuances or different effects on the audience.	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., using figurative language or words with multiple meanings to describe an event or character) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of a variety of different types of phrasing or words (e.g., hyperbole, varying connotations, the cumulative impact of word choices) produces nuances and different effects on the audience.
Applying ELD Standards to Science	When reading or listening to others' presentations on scientific topics, students can distinguish how the writer's or speaker's selection of different words or phrases with related meanings (e.g., *clear* versus *transparent* versus *translucent*) affects the audience's understanding.		
Corresponding Science & Engineering Practices	2. Developing and using models (HS-PS1-4)		

Sample Integration of Science and ELD Standards in the Classroom	After experiences with molecular-level drawings and reaction diagrams, students work in groups to develop models that include molecular-level drawings and diagrams of reactions. Students cross-check their work against agreed-upon model criteria (symbols for showing motion, arrows for showing direction of movement, labels, rationales, etc.). After their experiences with drawings, diagrams, and models, students discuss the ways in which they might describe the energy in a chemical reaction, such as kinetic energy, potential energy, molecular collisions, forming and breaking bonds, temperature, increase, or decrease, and apply these descriptions to their models. The class discusses components of a presentation, including an evidence-based statement and rationale. As they present their models illustrating that the release or absorption of energy from a chemical reaction system depends on the changes in the total bond energy (HS-PS1-4), students listen for phrases that they previously identified that would express the idea that a chemical reaction is a system that affects energy change. Discussion includes mention of reactants and products and shows that energy is conserved.
Sample-Specific Science & Engineering Practices	6. Constructing explanations

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Plan and deliver brief oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas by using growing understanding of register.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that express complex and abstract ideas well supported by evidence and sound reasoning, and are delivered using an appropriate level of formality and understanding of register.
11–12	Plan and deliver brief oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas using growing understanding of register.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that express complex and abstract ideas, well supported by evidence and reasoning, and are delivered using an appropriate level of formality and understanding of register.
Applying ELD Standards to Science	Students plan and deliver oral presentations on science topics.		
Corresponding Science & Engineering Practices	5. Using mathematics and computational thinking (HS-PS2-4)		

Sample Integration of Science and ELD Standards in the Classroom	Students gather data and information, and plan and deliver an oral presentation, to explain how the Law of Gravitation and Coulomb's Law are used to predict the gravitational and electrostatic forces between objects (HS-PS2-4). Information in the presentation explains both the quantitative and conceptual descriptions of gravitational and electrical fields, but is limited to systems with two objects. The teacher provides a graphic organizer, a compare-and-contrast bubble map that students can use to plan their presentation. On the bubble map, students clearly explain that the mathematical models describe and predict the effects of gravitational and electrostatic forces between distant objects. Students use presentation software to present their findings as identified on their bubble maps. The teacher requires that all students participate in the presentation. To support students at the Emerging and early Expanding levels of English proficiency, the teacher provides the time and structure for students to practice their presentation with a partner. The teacher has strategically chosen partners so that everyone can practice and refine their presentations based on co-constructed criteria for success.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Write short literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences by using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently by using appropriate text organization and growing understanding of register. b. Write increasingly concise summaries of texts and experiences by using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently using appropriate text organization and register. b. Write clear and coherent summaries of texts and experiences by using complete and concise sentences and key words (e.g., from notes or graphic organizers).
11–12	a. Write short literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently using appropriate text organization and register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).

Applying ELD Standards to Science	a. Students write a variety of science texts, such as explanatory reports or descriptions of procedures, data, and observations, and create charts, tables, diagrams, and graphics, as relevant to the task. b. Students write summaries of experiences with the natural world and phenomena; research from various sources (e.g., interviews, science book/magazine articles, news, digital media); and lab-report narratives on an inquiry, steps, analyses, and investigation results.
Corresponding Science & Engineering Practices	3. Planning and conducting an investigation (HS-LS1-3)
Sample Integration of Science and ELD Standards in the Classroom	Students work in groups to research the phenomenon of hormonal imbalances in human beings. They want to investigate how homeostasis works, in terms of feedback mechanisms (HS-LS1-3). In small groups, they plan and conduct an investigation on this topic. For example, one group investigates heart rate in response to exercise; another group investigates stomate response to moisture and temperature; a third group investigates the effect of temperature on goldfish respiration. Students create storyboards to communicate their plans for the investigation. The storyboards will identify, using words, drawings, and diagrams, the steps, the data to be collected, and how the investigation will provide evidence for the question being investigated. Each student group partners with another group to share their storyboard plans and provide feedback to the other group. Each group analyzes its data and writes a summary of the results. The class, as a whole, writes a generalized summary of the results from the different experiments.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 6. Constructing an explanation

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Justifying/arguing			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Justify opinions by articulating some relevant textual evidence or background knowledge, with visual support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ certainly/absolutely, should/might*).
11–12	a. Justify opinions by articulating some textual evidence or background knowledge with visual support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ certainly/absolutely, should/might*).
Applying ELD Standards to Science	Students construct and support arguments in science with evidence, data, and/or a model. They compare and refine arguments, based on evaluation of the evidence presented.		
Corresponding Science & Engineering Practices	2. Developing and using models (HS-PS1-1)		

Sample Integration of Science and ELD Standards in the Classroom	Students create a periodic table, either with common items that contain various elements or with pictures of items that contain the elements. They research how Mendeleev constructed the periodic table based on patterns. They then use the periodic table as a model to predict the relative properties of elements, based on the patterns of electrons in the outermost energy level of atoms (HS-PS1-1). As they present their predictions, they critique one another's reasoning and lines of logic.
Sample-Specific Science & Engineering Practices	6. Constructing an explanation 7. Arguing from evidence

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Use familiar general academic (e.g., *temperature, document*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) words to create clear spoken and written texts. b. Use knowledge of morphology to appropriately select basic affixes (e.g., The skull protects the brain).	a. Use an increasing variety of grade-appropriate general academic (e.g., *dominate, environment*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) academic words accurately and appropriately when producing increasingly complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., diplomat*ic*, stems are branch*ed* or *un*branched).	a. Use a variety of grade-appropriate general (e.g., *anticipate, transaction*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) academic words and phrases, including persuasive language, accurately and appropriately when producing complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *humiliate* to *humiliation* or *incredible* to *incredibly*).

11–12	a. Use familiar general academic (e.g., *temperature, document*) and domain-specific (e.g., *cell, the Depression*) words to create clear spoken and written texts. b. Use knowledge of morphology to appropriately select basic affixes (e.g., The news media rel*ies* on official sources.).	a. Use an increasing variety of grade-appropriate general academic (e.g., *fallacy, dissuade*) and domain-specific (e.g., *chromosome, federalism*) academic words accurately and appropriately when producing increasingly complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., The card*iac* muscle works continuous*ly*.).	a. Use a variety of grade-appropriate general (e.g., *alleviate, salutary*) and domain-specific (e.g., *soliloquy, microorganism*) academic words and phrases, including persuasive language, accurately and appropriately when producing complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *inaugurate* to *inauguration*).
Applying ELD Standards to Science	Students use a variety of vocabulary and select appropriate affixes when writing or speaking about science content.		
Corresponding Science & Engineering Practices	5. Using mathematical and computational thinking (HS-ESS3-6)		
Sample Integration of Science and ELD Standards in the Classroom	Students have studied various Earth systems and are ready to look at the interaction of all of these systems. Students work in pairs to develop visual representations of two spheres and identify the components of each sphere, how the spheres interact, and how the relevant components of one sphere can drive change in the other sphere. These student-generated visual representations are displayed around the room. Students are given computational representations and, in pairs, match the computational representations to the student-generated representations. Consensus is reached through teacher-facilitated class discussion. The teacher then asks the students to use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity (HS-ESS3-6). In their writing, students distinguish among the hydrosphere, atmosphere, cryosphere, geosphere, and biosphere, paying attention to the meanings of the prefixes attached to the root *sphere* in each word. They also indicate the impacts of human activity on these systems, considering the immediate, intermediary, and long-range impacts.		
Sample-Specific Science & Engineering Practices	6. Constructing an explanation		

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing brief arguments, informative/explanatory texts and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing increasingly clear and cohesive arguments, informative/ explanatory texts and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts and narratives.
11–12	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing brief arguments, informative/ explanatory texts, and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing increasingly clear and cohesive arguments, informative/ explanatory texts, and narratives.	Apply analysis of the organizational structure of different text types (e.g., how arguments are organized by establishing clear relationships among claims, counterclaims, reasons, and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts, and narratives.
Applying ELD Standards to Science	Text types in science include simulations, videos, diagrams, charts, tables, informational narratives, graphics, and labeled illustrations depicting processes, structures and relationships, among others. Students increase understanding of text by using it in context with content and investigations, and by having explicit instruction about the organization of the text and its purpose.		

Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (HS-LS4-3)
Sample Integration of Science and ELD Standards in the Classroom	Students have previously observed finch beaks and mutation rates in fruit flies and researched variations in other organisms. The teacher gives groups of students data sets related to the distribution of traits in a population, and directs them to analyze the data to determine whether the trait is advantageous to the population. Students use statistical analysis to support a claim that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking that trait (HS-LS4-3). In small groups, students use digital tools to create tables, graphs, and other statistical representations. The teacher provides three different counterclaims, and each group selects one to relate to its own current claim. The teacher leads students through analyzing the structure of a evidence-based scientific explanation, and the class co-constructs a claim-evidence-reasoning table that will help them to organize their argument and then construct an explanation of the concept, using evidence from at least three sources. To support students at the Emerging or early Expanding level of English proficiency, the teacher leads the students through jointly constructing portions of an evidence-based scientific explanation before they work independently. After students have written, they critique one another's explanations, concentrating on both language and text structure, after which the students revise their explanations.
Sample-Specific Science & Engineering Practices	5. Mathematical and computational thinking 6. Constructing an explanation 7. Arguing from evidence

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
2. Understanding cohesion			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., using pronouns to refer back to nouns in text) to comprehending and writing brief texts. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *first, second, third*) to comprehending and writing brief texts.	a. Apply knowledge of a growing number of language resources for referring to make texts more cohesive (e.g., using nominalizations to refer back to an action or activity described earlier) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *meanwhile, however, on the other hand*) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences.	a. Apply knowledge of a variety of language resources for referring to make texts more cohesive (e.g., using nominalization, paraphrasing, or summaries to reference or recap an idea or explanation provided earlier) to comprehending grade-level texts and to writing clear and cohesive grade-level texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *on the contrary, in addition, moreover*) to comprehending grade-level texts and to writing cohesive texts for specific purposes and audiences.

11–12	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., using pronouns or synonyms to refer back to characters or concepts introduced earlier) to comprehending. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *first, second, finally*) to comprehending and writing brief texts.	a. Apply knowledge of a growing number of language resources for referring to make texts more cohesive (e.g., using nominalizations to refer back to an action or activity described earlier) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *meanwhile, however, on the other hand*) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences.	a. Apply knowledge of a variety of resources for referring to make texts more cohesive (e.g., using nominalization, paraphrases, or summaries to reference or recap an idea or explanation provided earlier) to comprehending grade-level texts and to writing clear and cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *on the contrary, in addition, moreover*) to comprehending grade-level texts and writing cohesive texts for specific purposes and audiences.
Applying ELD Standards to Science	a. Students apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing cohesive science texts. b. Students apply understanding of how ideas, events, or reasons are linked throughout science texts, using a variety of connecting words or phrases (e.g., *on the contrary, in addition, moreover*), to comprehending and writing science texts.		
Corresponding Science & Engineering Practices	6. Constructing explanations (science) and designing solutions (engineering) (HS-LS1-1)		
Sample Integration of Science and ELD Standards in the Classroom	Students use modified historical data from more than one source to understand how a model of DNA structure was proposed, and read annotated excerpts from the Watson and Crick 1953 paper and a more current paper on the DNA model discussing how the model was developed. Students work in pairs to identify claims and supporting evidence from the readings, using a double bubble map to identify pieces of evidence that are cited in both readings. They use the double bubble map and their peer discussions about the readings to construct a written explanation of the DNA model, and use evidence to explain how the structure of DNA determines the structure of proteins (HS-LS1-1), paying attention to cohesive strategies such as pronoun references and transition words.		

Sample-Specific Science & Engineering Practices	N/A

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards **Part II: Interacting in Meaningful Ways** **B. Expanding and Enriching Ideas**			
3. Using verbs and verb phrases			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the text type and discipline to create a variety of texts that explain, describe, and summarize concrete and abstract thoughts and ideas.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), and mood (e.g., subjunctive) appropriate to the text type and discipline to create a variety of texts that describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view.
11–12	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the text type and discipline to create a variety of texts that explain, describe, and summarize concrete and abstract thoughts and ideas.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), and mood (e.g., subjunctive) appropriate to the text type and discipline to create a variety of texts that describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view.
Applying ELD Standards to Science	Students use a variety of verb types and appropriate verb tenses to express their understanding of scientific concepts and phenomena.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (HS-PS2-1)		

Sample Integration of Science and ELD Standards in the Classroom	Students have numerous opportunities to engage in hands-on investigations with their peers, to expose the students to everyday examples of Newton's Second Law of Motion and to provide them with multiple opportunities to develop language describing changes in motion, such as how the law applies to falling objects, objects rolling down a ramp, or moving objects being pulled by a constant force. In subsequent discussions, students are expected to begin applying appropriate verb tenses (such as past tense for describing investigations and present tense for describing findings) and science vocabulary. In some of these investigations, students work in groups to record their descriptions along with accompanying data generated by the investigation. The groups then analyze the data to support the claim that the Second Law describes the mathematical relationships among the net force on an object, its mass, and its acceleration (HS-PS2-1), and share their findings, and whether their data provides evidence for a causal relationship or a correlational relationship, with the whole class.
Sample-Specific Science & Engineering Practices	N/A

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Expand noun phrases to create increasingly detailed sentences (e.g., adding adjectives for precision) about personal and familiar academic topics.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns; simple clause embedding) to create detailed sentences that accurately describe, explain, and summarize information and ideas on a variety of personal and academic topics.	Expand noun phrases in a variety of ways (e.g., more complex clause embedding) to create detailed sentences that accurately describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view on a variety of academic topics.
11–12	Expand noun phrases to create increasingly detailed sentences (e.g., adding adjectives for precision) about personal and familiar academic topics.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns, simple clause embedding) to create detailed sentences that accurately describe, explain, and summarize information and ideas on a variety of personal and academic topics.	Expand noun phrases in a variety of ways (e.g., complex clause embedding) to create detailed sentences that accurately describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view on a variety of academic topics.
Applying ELD Standards to Science	In science and engineering, oral and written texts may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.		
Corresponding Science & Engineering Practices	2. Developing and using models (HS-LS1-2)		

Sample Integration of Science and ELD Standards in the Classroom	Students have been developing and using a model to illustrate the hierarchical organization of interacting systems that provide specific functions with multicellular organisms (HS-LS1-2). One group of students is constructing and explaining a model that shows how the muscular system interacts with the circulatory system to move blood around the body. In their descriptions, students expand noun phrases by adding adjectives—for example, *smooth involuntary muscles, thick-walled arteries,* and *autonomic neural stimuli*—and by embedding clauses, such as *an organ system that allows blood to circulate.* The teacher makes sure to check in with each student at the Emerging or early Expanding levels of English proficiency to provide verbal support through asking probing questions and helping students use descriptive vocabulary. In groups, students work on comparing domain-specific uses of terms with their uses in everyday life. For example, students discuss how *involuntary* is used in other contexts, such as military drafts during wartime, or provide examples of materials that are *smooth* or *thick-walled.*
Sample-Specific Science & Engineering Practices	N/A

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar activities or processes.	Expand sentences with a growing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar or new activities or processes.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
11–12	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar activities or processes.	Expand sentences with a growing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar or new activities or processes.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
Applying ELD Standards to Science	Students use modifying words and phrases to express their understanding of scientific concepts and phenomena.		
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (HS-ESS2-1)		

Sample Integration of Science and ELD Standards in the Classroom	Following a series of activities relating to investigation of processes that result in continental and ocean-floor features (such as work with computerized simulations, field investigations, or communication with an expert who is investigating Earth processes), students work in groups to develop their own models of a geological feature near their local community (or region that they are interested in). When explaining or providing a rationale for their model, students use modifying words and phrases explaining how the appearance of land features (such as mountains, valleys, and plateaus) and ocean-floor features (such as trenches, ridges, and seamounts) are a result of both constructive forces (such as volcanism, tectonic uplift, or orogeny) and destructive mechanisms (such as weathering, mass wasting, or coastal erosion) as well as interactions between processes and timescales involved. For example, they use adverbials describing length of time (e.g., "this has been an active fault *for centuries*") or adverbials that describe frequency (e.g., "earthquakes *frequently* happen on this fault"). The groups then compare models to develop understanding that processes operate at different spatial and temporal scales to form continental and ocean-floor features (HS-ESS2-1).
Sample-Specific Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so*; creating complex sentences using *because*) to make connections between and to join ideas (e.g., *I want to read this book because it describes the solar system.)*	Combine clauses in a growing number of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling wel*l).	Combine clauses in a variety of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to make a concession (e.g., *While both characters strive for success,* they each take different approaches through which to reach their goals.), or to establish cause (e.g., Women's lives were changed forever after World War II *as a result of joining the workforce*).
11–12	Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so;* creating complex sentences using *because*) to make connections between and join ideas (e.g., *I want to read this book because it tells the history of Pi*).	Combine clauses in a growing number of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling we*ll).	Combine clauses in a variety of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to make a concession (e.g., *While both characters strive for success,* they each take different approaches to reach their goals), or to establish cause (e.g., *Women's lives were changed forever after World War II as a result of joining the workforce*).
Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		

Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (HS-ESS3-1)
Sample Integration of Science and ELD Standards in the Classroom	Students research and collect data on how the availability of natural resources, occurrences of natural hazards, and changes in climate have influenced human activity (HS-ESS3-1). Some areas of Earth are more densely populated than others, and these differences can be explained and related to natural resources, natural hazards, and climate. Using the data that they have collected, students prepare and deliver oral presentations explaining the reasons and rationales for population clusters in specific areas. In their explanations, students combine clauses to explain relationships among the three factors and their impact on human activities (e.g., "Due to its extremely cold temperatures and long winters, Siberia has a population density of only approximately three people per square kilometer.").
Sample-Specific Science & Engineering Practices	4. Analyzing data 8. Obtaining, evaluating, and communicating information

Integrating CA ELD Standards into Science Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*).	Condense ideas in a growing number of ways (e.g., through embedded clauses or by compounding verbs or prepositional phrases) to create more precise and detailed simple, compound, and complex sentences (e.g., *Species that could not adapt to the changing climate eventually disappeared*).	Condense ideas in a variety of ways (e.g., through a variety of embedded clauses, or by compounding verbs or prepositional phrases, nominalization) to create precise simple, compound, and complex sentences that condense concrete and abstract ideas (e.g., *Another issue that people may be concerned with is the amount of money that it will cost to construct the new building*).
11–12	Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*).	Condense ideas in a growing number of ways (e.g., through embedded clauses or by compounding verb or prepositional phrases) to create more precise and detailed simple, compound, and complex sentences (e.g., *Species that could not adapt to the changing climate eventually disappeared*).	Condense ideas in a variety of ways (e.g., through a variety of embedded clauses, or by compounding verb or prepositional phrases, nominalization) to create precise simple, compound, and complex sentences that condense concrete and abstract ideas (e.g., *The epidemic, which ultimately affected hundreds of thousands of people, did not subside for another year*).
Applying ELD Standards to Science	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		

Corresponding Science & Engineering Practices	2. Developing and using models (HS-LS2-3)
Sample Integration of Science and ELD Standards in the Classroom	Students develop a model that describes how matter cycles and energy flows among the living and nonliving parts of an ecosystem (HS-LS2-3). Working with a partner, students research an aspect of an ecosystem and use a flow map to show how details are connected to one another. To support students at the Emerging and early Expanding levels of English proficiency, the teacher strategically partners students so that each student has a language buddy who is fluent in English and the student’s home language. Before the students begin constructing their explanations, the teacher leads them through analyzing texts to examine how authors condense ideas. When most students are engaged in independent work, the teacher works specifically with students at the Emerging and early Expanding levels of English proficiency to take complex ideas and condense them, first jointly constructing the text with the students and then asking them to work with increasing independence. Students then return to their partners and use the map they created to construct an explanation to share with the class. The emphasis of the model and explanation is on describing the conservation of matter and the flow of energy into and out of the ecosystem and defining the boundaries of the ecosystem. Students present their models and explanations to the class, condensing ideas in a variety of ways (e.g., using embedded clauses: "Tertiary consumers, which may or may not be apex predators, then consume the secondary consumers."). Following a discussion of the explanations presented based on a co-constructed rubric defining criteria for success, students work with their partner to revise their own explanations and provide justifications for why they made the revisions.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 6. Constructing explanations (for science) and designing solutions (for engineering) 8. Obtaining, evaluating, and communicating information

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