Item A1: Master List of Discussion Items

Science SMC Meeting- February 19, 2016

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
1	Gen.		Item A2	For General- Consensus on line edits Item A2 # 1-10	Item A2	
2	Gen.		Comment (CSTA) & Survey	Make the document more "teacher friendly", one consistent voice. Apply NGSS terms like model and modeling consistently so meaning stays clear. Align Framework & NGSS language, e.g. Subconcept ideas should have same language as DCIs	Item B Item D 67	Structure of the Document
3	Gen.		Comment (LHS)	Identify a few clear, visionary messages and reinforce them throughout the Framework, such as: Students need to learn science and engineering by engaging directly in the same practices that scientists and engineers engage in. NGSS calls for 3-dimensional instruction, which is very different from previous approaches to science teaching. Schools cannot achieve the ambitious vision of Common Core without building a robust, high quality science program that is aligned to language arts and mathematics. Students need the rich, engaging, relevant context of science experiences in order to be able to read, write and discuss informational text at the highest levels. Schools cannot achieve the ambitious vision of NGSS without building students disciplinary literacy skills as called for in CCSS for ELA. The purpose of science and engineering education in the 21st century is to help students learn how to solve problems, improve their lives and their communities, and make the world a better place.	D65a	Structure of the Document
4	Gen.		Comment (LHS)	Move background information and other didactic sections to appendices.	D65a	Structure of the Document
5	Gen.		Comment (LHS)	Do not attempt to re-state, paraphrase or interpret the NRC Framework or NGSS; refer readers directly to those primary source documents.	D65a	Structure of the Document
6	Gen.		Comment (Children Now)	C. Sneider provided ways to improve the readability of the document: CA NGSS Framework: Readability: 1. Hire a professional writer to develop a much shorter draft with appendices. 2. Create an easy-to-navigate website. However, I think an even more valuable website would be to provide a more useful access tree with four main headings: Guidelines, Standards, Appendices, and Highlights.	D63e	Structure of Chapters
7	Gen.		Comment (Children Now)	C. Sneider provided an outline of what the framework should look like - this is a reformatting of the entire framework.	D63e	Structure of Chapters
8	Gen.		Comment (Children Now); (LHS)	Document Structure: We remain concerned by the length. Consolidate discussion of important ideas in a single place with consistent organization and remove redundancies. Clarify the purpose/ audience. Remove long discussions of core reference materials and background information. Relocate and cross-reference non-science-specific information. Note: Similar comments sent in by Education Trust-West, Attachment 68 and D65a	D63f; D68; D65a	Structure of Chapters

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9	Gen.		Comment (CSTA) & Survey	Common Core Connections: Liked any and all connections to Math, ELD, ELA, but needs to be more and consistent (either just standards or just domain for CCSS, for example). Add working live links to examples (both elsewhere in framework, or on internet sites- Khan Academy, ELA/ELD and Math Frameworks, other standards, etc.).	Item B; 67D	Common Core Connections
10	Gen.		Comment (Code.org)	We see a continuing need for the Framework to provide more guidance on richer use of computer modeling and simulation to support students in developing higher-order abstract thinking and analysis skills.	D61	Computer Science
11	Gen.		Comment	Dr. Maria Simani submitted 4 computer science vignettes on behalf of Irene Lee (Director of the Learning Lab at Santa Fe Institute, Principal investigator of the New Mexico Computer Science for All, and Founder of Project GUTS). She recommends creating a new appendix relating to computer science and NGSS. Vignette Topics: - High School Vignette: Computational Thinking to Understand Interdependent Relationships in Ecosystems - Vignette for 4 course model on Physics – Forces and Motion - Vignette for HS 4 course model on Earth and Space Science, Unit 5 Causes and Effects of Earthquakes - Middle School Vignette, Computational Thinking to Understand Human Impacts on Climate	D45a-d	Computer Science Vignettes
12	Gen.		Comment (Code.org)	Code.org engaged with Irene Lee (a noted expert in embedding computer science instruction within existing science courses) to prepare a set of detailed vignettes. Include three such vignettes, for high school biology and earth science, and for middle school instruction. Recommend the full vignettes be included in the Science Framework as a separate Appendix, with short reference descriptions inserted as pullout boxes in the appropriate locations within the middle and high school chapters.	D61; D72; D63f; D68	Computer Science Vignettes (Add Appendix)
13	Gen.		Comment (CSTA)	Provide a "crosswalk" document or appendix to bridge CA 1998 Standards and CA NGSS. Shift from scientific method to inquiry models should be stated.	Item D 67	Crosswalk
14	Gen.	22-25	Comment (CSTA) & Survey	Discussion on EEI and how it is addressed in the framework; perhaps an appendix; first mention of EEI should have explanation; question of alignment to CA NGSS. Combine California's Environmental Principles and Concepts beginning on page 22, line 606 with "A Blueprint for Environmental Literacy" beginning on page 26, line 680. The suggested title of this new section is "Human Impact." More detail on how to implement Environmental Adoption Principles are needed.	Item B D67	EEI

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15	Gen.		Comment (LHS)	Environmental Principals and Concepts (EP&C) Appendix: These pairings of NGSS and EP&C are not consistent. Some represent natural connections, but many others are improbable stretches that would only be useful to a small self-selected group of teachers already highly motivated to incorporate the EP&Cs into their instruction. Prepared a companion analysis of the relationship between NGSS and the EP&Cs that was submitted along with these comments (titled "NGSS and EP&C Alignment.pdf"). It shows clearly that some EP&Cs will be addressed automatically by a robust NGSS-aligned curriculum, but that there are significant gaps that will need to be addressed by high quality supplemental resources and professional learning experiences. [See Attachment D65 b]	D65a	EEI EP&C; Analysis of relationship between NGSS and the EP&C
16	1		Item A2	For Chapter 1- Consensus on line edits Item A2 # 11-124	Item A2	
17	1	7	Comment (CTA)	School districts and school sites must purchase these equipment for teachers to use. The sentence starting on line 171 needs to be changed to "school districts must purchase the necessary equipment for teachers to provide the equipment necessary to make relevant and necessary measurements and to ask appropriate leading questions". Teachers should not have to purchase or pay for equipment for classroom use.	D71	Cost/ Purchasing of equipment
18	1	9	Comment (CSTA) & Survey	Statements targeting administrators (especially for grades K-5) concerning their integral role in supporting science education for all grades is necessary. Add more similar to page 9, lines 219-221.	Item B Item D 67	Statement to Admin
19	1	10	Comment (CSTA) & Survey	In general, when possible, reinterpret narratives into a graphical representations. The bulleted list from lines 253-261 should be changed to a progression graphic similar to what is seen in Appendix E of NGSS.	Item B Item D 67	Structure
20	1	15	Comment & Survey	Discussion on coding and how it is addressed in the framework, who is to teach coding, which grade level to begin with and in which subject groupings coding should be taught, In addition to the resources listed here, PhET Colorado should also be included. It remains unclear if teaching coding is now a requirement	Item B Item D 67	Coding
21	1	16	CDE	Line 402-407: Remove from the Introduction "The Bifocal Modeling, computational thinking/ technology… Engineering solves problems and remove figure 2.	Item C	Remove Bifocal Modeling
22	1	19	Comment (CSTA) & Survey	Lines 493-497: The framework should address equity for higher level or gifted students, differentiation of instruction for these students, and accelerated pathways. Access and equity for all students for out-of-classroom experiences needs to be addressed in the introduction.	Item B Item D 67	Address higher and gifted students
23	1	21-22	Survey	Discussion on keeping new guiding principle #7 on motivation and student engagement.	Item B	New guiding principle #7

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24	1	26-27	Comment (CSTA) & Survey	Keep section on the Blueprint for Environmental Literacy and add more emphasis on Scientific Literacy. "We do not need this much detail from the Environmental Literacy Blueprint."	Item B; Item D67	Environmental Literacy
25	1		Comment (CSTA) & Survey	Include language that acknowledges the time teachers need to prepare curriculum, manage supplies, and implement more hands-on lessons as well as providing space and equipment for all teachers.	Item B Item D 67	Time to implement the CA NGSS
26	1		Comment (CSTA) & Survey	Rewrite the introduction to excite and inspire teachers, administrators and other readers to support science and engineering instruction. Currently, too academically dense.	Item B Item D 67	Rewrite the Intro
27	2		Item A2	For Chapter 2- Consensus on line edits Item A2 # 125-400	Item A2	
28	2		Comment (CSTA) & Survey	Provide more diagrams and charts to clarify its content to teachers. Also the examples should align more directly with the standards, so teachers can easily understand the connection.	Item B Item D 67	Structure
29	2		Comment (CSTA) & Survey	The notion of "model" and "modeling" are used a lot but not clearly described, but simply used throughout text.	Item B Item D 67	Modeling
30	2		Comment (Children Now)	Given its position and prominence in the document, the highest priority is to include a stronger presence for engineering in Chapter 2.	D63b	Engineering focus in Chapter 2.
31	2	13	Comment	Line 359: Question: Where do you define 'essential questions"? Several of the math publishers started each unit or lesson with a question they labeled as 'essential' but it was a low level question. The guiding questions that help people determine which model to adopt or revise are really helpful.	25	Questioning
32	2	69-76	Survey	Categorize the crosscutting concept questions into grade bands so they are aligned to the learning progressions. The different questions will demonstrate the increase in depth of questioning that teachers can use as students learn at a deeper level.	Item B	Questioning
33	3		Item A2	For Chapter 3- Consensus on line edits Item A2 # 401-403	Item A2	
34	3		Survey	Please replicate the TK program at the beginning of the Kindergarten-2 standards. Place a greater emphasis on the integration of disciplines, play/experimentation, environmental inquiry, and the development of oral language and vocabulary in grade K-2.	Item B	TK Intro
35	4		Item A2	For Chapter 4- Consensus on line edits Item A2 # 404-544	Item A2	

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36	4		Comment (CSTA) & Survey	Need more focus on 3D learning and other pedagogical shifts. Intro is written academically and needs modification to excite support from administrators, teachers, and others. For example, experiences outside the classroom are key to applying science & engineering practices with access and equity for all students.	Item B Item D67	Structure Chapter
37	4		Comment	More examples of what three dimensional learning looks like. There's a lot of "Big Ideas" but not enough details. (In the math frame work, when a model is referenced, an example is offered.) There seems to be an assumption that teachers know the models or what patterns to look for or to assess.	D42	Structure Chapter
38	4		Comment (Achieve)	Grade 3: Provided 6 pages on how to broaden the instructional segments. The NGSS Vision that is not limited to PEs: Overall, the grade 3 framework is a topic approach almost exclusively. 1) Each unit is designed to meet a specific PE and includes activities that match the dimensions of the PE which may narrow the options for instruction. 2) Integrating the disciples beyond engineering could be included. For example, Unit 4 could include life science connections in which the environment affect traits, but the life science in the instructional segment does not connect to 3rd grade DCIs	D70i	Structure Chapter
39	4		Comment (Achieve)	Grade 4: Provided 11 pages of commentary and modeling The chart in the CA framework is following the topic model way of putting together a unit or bundle. The way the PEs have been bundled in the segments feels very siloed, often falling short of the integration of the science disciplines earth, physical and life not to mention engineering. It is possible to integrate the disciplines even in a topic model over a year. For example, 4th grade students might be asked to consider how does knowing how animals receive, translate and communicate using sound help them understand transfer of energy?	D70f	Structure Chapter
40	4		Comment	It would be more useful and more comprehensible for educators to see more than one example for how to teach a particular standard, rather than trying to show a lot of detail for all the standards during a whole year.	D47	Structure Chapter
41	4		Public Comment (Achieve)	Chapter 4, text. Example of possible SEP/ PE arrangement. Completely rewritten chapter. (See D70e for track changed chapter)	D70e	Structure Chapter
42	4		Survey	It would be helpful to separate each grade level into separate chapters given the length of each segment. The resolution on the overview/storyline tables at the beginning of each grade level could also be improved.	Item B	Structure Chapter

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43	4		Comment (CSTA) & Survey	Please address the Science & Engineering Practices consistently at all grade levels. All grades should have all SEP's.	Item B; 67D	Structure Chapter
44	4		Comment (CSTA) & Survey	More specific table of contents (more than K-2, 3-5), and reintroduce acronyms at the beginning of each grade level. It would be helpful to have some organization earlier in the chapter that would help teachers more quickly navigate the various sections of the document. At each grade level, give one very specific example of planning, learning sequence, video sequence, assessment at the level of the PE would be beneficial (less big vignettes, more specific)	Item B; 67D	Structure Chapter
45	4		Comment	Extensions and enrichments are needed for students with varied learning abilities.	D42	Structure Instructional Segments
46	4		Comment	Aligned the vignettes to more inquiry based learning	D42	Structure Instructional Segments
47	4, 5		Comment (Achieve)	Revise the architecture of the Instructional Segment Tables to include detailed information and be consistent across K-5. The NGSS document is familiar to teachers and should be used in order to alleviate confusion. The first table at each grade level uses an abbreviated version of the NGSS architecture or layout but it is not the same as the NGSS document which is familiar to teachers. K-2 uses an alternative and very different layout. It would be more useful to teachers to have everything spelled out entirely. For example: to just say patterns, does not assist the teacher in understanding the relationships between the PEs, DCIs, and CCCs in each segment. When the PEs, SEPs, DCIs, and CCCs are only coded and are not spelled out, as with bullets, they require that the teacher take the time to look them up. Using the same layout K-5 provides consistency. These tables will be very useful to teachers as they plan out their year.	D70b	Structure Instructional Segments
48	4		Comment	More Examples of 3 Dimensional Learning; more details for the cross cutting concepts	D42	Structure Instructional Segments

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49	4, 5		Comment (Achieve)	The Instructional Segments in K-5 do not represent three-dimensional learning vision of the *Framework for K-12 Science Education* or the NGSS adequately. Rewrite with bundling between disciplines. Consider the Model Content Framework suggestions from Achieve. Rewrite using element language from NGSS Appendix F and G. Include SEP and CCC elements that fit the Instructional. Include additional grade level DCIs as appropriate.	D70b	Structure Instructional Segments
50	4, 5		Comment (Achieve)	Include multiple opportunities for students to make meaning by engaging in evidence based discourse and reflection (student-student, student-science notebook, student-teacher, student-class). Rewrite the CCCs with specific language and teacher prompts (See NGSS Appendix G).	D70b	Structure Instructional Segments
51	4		Comment	Each grade level section should have a introduction or table of contents that states what teachers will be able to find in their grade level section. (i.e., Background information for teachers, Overview of instructional segments, snapshots, connections, etc.)	D28	Structure Instructional Segments
52	4		Comment	Suggestion for the Grade Level Format: 1. Begin with what students will learn (NGSS) 2. Background - NRC framework description of the DCI's, language about "time for science," and what students will learn. 3. Description of Instructional Segments - Explain the purpose of the questions in the chart; include curriculum and instruction expectations for that grade level, what to look for in curriculum, i.e., 3-D, teachable and learnable, and how are PE's bundled. 4. Exemplar of what that looks like with one vignette per grade level 5. Box for Engineering Connections 6. Box for ELA/ELD Connection	D47	Structure Instructional Segments
53	4, 5		Comment (Achieve)	Rewrite the Instructional Segments from the student point of view rather than the teacher point of view. Include anchoring phenomena and focused questions for the unit.	D70b	Structure Instructional Segments
54	4		Comment (Achieve)	It was not always clear where and when assessment occurred in each unit although when shown, I think that some care was taken to show performance assessments as a possibility as opposed to paper/pencil assessments.	D70g	Assessment
55	4		Comment	The framework must clearly state what is going to be assessed. i.e.; flow map, visual organizer, etc. (By the end of the lesson the students will know this. A clear standards based objective.) A framework, a two page synopsis, a condensed version.	D42	Depth of assessment for each example and modifications.

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56	4		Comment (CSTA)	Provide more examples of phenomenon that focus on an elementary level. Phenomena are initiators of 3D learning. Elementary teachers need clear, concise examples. They should be introduced before vocabulary to allow students to develop academic language rather than front load it.	D67	Examples of Phenomena
57	4		Comment (CSTA) & Survey	Please provide EL scaffolds listed throughout the framework; provide samples from the Integrating ELD Standards into K–12 Mathematics and Science Teaching and Learning: A Supplementary Resource for Educators document (augmentation document.)	Item B; 67D	EL Support
58	4		Comment (CTA)	More support for EL students. Also, what is missing in the framework that may be helpful for teachers supporting EL students is identifying key words for EL support that is consistently provided at each grade level. Supports for special needs students were basically absent throughout the framework. The different levels of student engagement and support in this framework is needed to show how teachers might adapt the content at each grade level for the diversity of students in this state which includes students of color, ELs, LGBTQ, and special needs students.	D71	Support for EL and diverse students
59	4		Comment (LHS)	Elementary Year-long Course Models: At the elementary grades, teachers and principals need stronger, more explicit recommendations about how to create more time for science so that science is given the same priority as other core subjects. They need examples of daily and weekly schedules and examples of using science to accomplish ELA goals.	D65a	Elementary Grades Guidance
60	4		Comment (Achieve)	In the NGSS, engineering is not meant to stand-alone (why is the engineering in a box?) and engineering is included as a domain of knowledge (DCI) and in the SEP. Also, the engineering design process is sometimes incorrect, missing, and often not explicit. Rewrite the Instructional Segments so that engineering is integrated into the segment and includes explicit language from the engineering DCIs. The information for teachers should be specific to the grade level and included in each grade level.	D70b	Engineering

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61	4		Comment (Children Now)	C. Sneider feedback on Engineering grades K-8. Attachment 63c provides guidance to make these sections stronger. Keep "Engineering Connections" boxes. Gr. 8: a) science helps engineering to advance, while engineering helps science to advance through the creation of new technologies; and b) science, engineering, and technology profoundly influence society and the environment. Choose one or two units each year where these ideas could best be included. The engineering connection is helpful but there is a need for more within each grade level. There should be an engineering connection for all three dimensions. Engineering: (chapters 2, 8, 9 and 11) make surprisingly few references to actually engaging students in engineering design or assessing their learning of engineering practices or disciplinary core ideas.	D63c; D42; D63f; D42	Engineering
62	4, 5		Comment (Achieve)	Use of language in the CA Framework is often vague. What is the meaning of terms like "explore," "discuss" "demonstrate," "alert"? e.g., What SEP is "explore?" Investigate? Observe? Explain? Ask questions? RECOMMENDATIONS: Revise the Instructional Segment sections to be aligned to the NGSS/Framework language.	D70b	Language
63	4		Comment (Achieve)	Grades 4 and 5: Units did not emphasize explaining phenomena as a focus for learning the science content. One of the shifts that we should see in curriculum is a shift in focus to explanation of phenomena as the driver for learning content.	D70g; D42	Phenomena
64	4		Comment	Provide more questions for science instruction and to facilitate student science thinking. Example : example 2nd Grade Section Line 1284-1290.	28	Questioning
65	4		Comment, Survey	Provide examples of student notebooks at each grade level, student examples; "discussion" vs what happened before; concern over using notebooks as formative assessment rather than a sense-making tool. John Muir Laws provided information to support science notebooks (Attachment 59). Emilie Lygren suggested revisions to the science notebook portion of the Instructional Strategies document (Attachment 60).	Item B, 6b, D59; D60	Science Notebooks
66	4, 5		Comment (Achieve)	In K-5, there are many developmentally inappropriate ideas, words, guiding questions, and activities. The instruction sequence includes DCIs from beyond the grade level. RECOMMENDATION: Identify developmentally inappropriate pieces and rewrite. Rewrite with grade level appropriate vocabulary, ideas, and activities. Identify DCI content from beyond grade band and replace with grade appropriate DCI or delete beyond grade band ideas. Do not include DCIs beyond the grade level.	D70b	Topics developmentally inappropriate.

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67	4	58	Comment, Comment (CSTA), Survey	California is a diverse state, therefore please provide more resources for other areas of the state. The example given was "crayfish." Line 790. Chapter 4 Line 746, Vignette: Using penguins in first grade is not contextual. There are a lot of animals that would showcase family behavior in a fascinating way that live right here in California. Sea Otters would be a great example.	Item B D67; D27	Use a variety of local examples
68	4		Comment (LHS)	Remove the EEI vignettes and develop a new suite of vignettes with clear purposes: Include only one vignette per grade, and ensure that each illustrates 3-dimensional teaching and learning. Vignettes should be held to a high standard, and measured against vetted criteria such as the EQUIP Rubric. Vignettes should lead with first-hand engagement with phenomena and/or organisms, not with reading a passage.	D65a	Vignettes
69	4		Comment (LHS)	Provided a sample vignette: 1st Grade Animal Defenses Post-Unit Assessment, possibly use at the first grade level. (see D65j)	D65j	Vignettes
70	4		Comment	Use one vignette per grade level with the following guidelines: • showcase the science specific and hard to teach practices • use ELA/ELD strategies strategically to develop science concepts and academic language • align the content to NGSS keeping in mind appropriate development levels of students at the K, 1, and 2nd grades. • keep the ELA/ELD connections to the box • explain the purpose of the vignette • eliminate the debrief and additional NGSS boxes	D47	Vignettes
71	4		Comment (CSTA)	Provide a vignette to focus on 3D teaching and learning that includes hands-on, real life examples along with the included literacy connection.	D67	Vignettes
72	4		Comment, Comment (CSTA) & Survey	Please make sure that the vignette and snapshots refer to a curriculum that are free and general resources, texts, etc. so that the majority of teachers can access. K needs to be structured more like the 1st grade and 2nd grade. Make sure that the Vignettes contain all 3 Dimensions and all vignettes should contain instructional strategies and connections to literacy instruction to scaffold for ELs and special needs students. The vignettes needs to reflects students doing more. Engineering: Include more engineering examples/vignettes. Vignettes need to show students doing inquiry using the tools of science. Show PE in context with greater focus on phenomena and relevancy. NGSS mentions 5E model but none of the vignettes apply the 5E model. Snapshots should have overarching view of progressions through and beyond unit vignettes need to be tighter and need to be more 3-D focused; not so detailed on lesson plan. Should highlight guiding questions more, rather than tucked away at the end. Snapshots and vignettes are so needed to assist the teacher in translating theory into action!	D67 D28, D5,	Vignette

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73	4		Comment	Each chapter, perhaps in a vignette, should highlight teacher use of the NGSS evidence statements to inform instruction and determine assessment points.	D56	Vignettes
74	4		Comment	Each chapter, perhaps in a vignette, should feature how to fully close and assess a lesson sequence; Align the vignettes to more inquiry based learning. Scaffolds for English learners support should be listed separately in a table next to all vignettes or in the debrief area.	D56; D42	Vignettes
75	4		Comment	Feels very DCI focused and somewhat shallow. A couple of suggestions that might help with this are: 1. *Each chapter, perhaps in a vignette, should emphasize and showcase the potential of the use of phenomenon that is compelling to students to anchor instruction and provide opportunity for student inquiry. 2. *Each chapter, throughout all vignettes, should emphasize students working with Crosscutting Concepts to ground thinking in a lesson sequence (not just show it in teacher planning or unit bridges)	D56	Vignettes
76	4		Comment	Submitted a model vignette (Attachment 56) where students engage in a phenomenon.	D56	Vignettes
77	4		Comment (LHS)	Vignettes and Snapshots: The purpose of the vignettes and snapshots is not clear. There are generally too many vignettes, and they are not of sufficient quality…(EEI), do not describe 3-dimensional learning experiences and are a confusing distraction, taking attention away from understanding high quality, 3-dimensional instruction. Some snapshots do not say what they are illustrating or what is their purpose. We see the vignettes and snapshots as a critical element of the framework, but nearly all need to be replaced or re-written. None of the current vignettes would hold up to evaluation against the Achieve EQUIP Rubric or other measures of fidelity to NGSS. Intended Purpose: Among the vignettes, snapshots, Teacher Background, instructional suggestions and other categories, it is often not clear what constitutes requirements, suggestions, examples or interpretations of the intent of the standards.	D65a	Vignettes
78	4		Comment (CSTA) & Survey	Support the connection of concepts from one grade level to the next by introducing relevant academic language and content vocabulary. Also state if this is the first or last time concept is covered from TK-12.	Item B Item D 67	Vocabulary
79	5		Item A2	For Chapter 5- Consensus on line edits Item A2 # 545-693	Item A2	
80	5		Comment (CSTA); Comment (CTA); Survey	Chapter 5: Provide more information on bundling - what is it and how to bundle.	Item B;D67; D6b; D71	Structure Instructional Segments

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81	5		Comment, Comment (CSTA) & Survey	Chapter 5 P. 47, Vignette debrief: Move before the PE table so it doesn't get missed. Helpful but could be simplified to bullets or a chart so that it is more quickly accessible.	D67 D28, D5,	Vignettes
82	5		Comment (CSTA) & Survey	Text needs to be more focused and mainstreamed. Bold the SEP/CCC, DCI within text, coloration needs to be consistent throughout (some sections have tri-color, while others are only grayscale- prefer tricolor).	Item B Item D 67	
83	6		Item A2	For Chapter 6- Consensus on line edits Item A2 # 694-869	Item A2	
84	6		Comment	Intro to chapter needs to be stronger: softens the difficulty of making the choice between integrated vs. discipline specific. Doesn't adequately explain why integrated was preferred and the challenges of the discipline specific. Doesn't lay out the benefits of both or the cons of both or why one works better. More philosophy and pedagogy of why would be helpful. (although storylines help)	D5	Intro
85	6		Comment (CTA)	For grades 6-8, there is a choice between a Discipline Specific Model and a Preferred Integrated Model. CTA has concerns about the title "Preferred Integrated Model". It suggests to districts that the framework is advocating for this model. The recommendation is to delete "Preferred" to remove any hint of suggestion. CTA likes the Integrated Model but each district should make that choice depending upon the type of credential that their teachers hold. CTA does not want to jeopardize a teacher's standing if one model is favored over another, and if it causes teachers to be excessed, laid off, or required to seek additional certification.	D71	Discuss
86	6		Comment	Chapter 6 Integrated: Need a 1-pager of guiding questions for 6-8th.	28	Questioning
87	6		Comment (CSTA)	Chapter 6: More examples of targeted phenomena and linked to a concept.	D67	Examples of Phenomena
88	6		Comment (CSTA) & Survey	Color-code vignettes to match SEP, DCI, and CCC. Write chapters to be read in isolation. Spell out acronyms the first time used.	Item B Item D 67	Structure Chapter
89	6		Comment	Emphasize that grading is about the process not product (we want this really emphasized because this is an issue for parents too).	D5	Structure Chapter
90	6		Comment	Integrated: Framework lacks hands-on, engaging, inquiry-based data collection and experimentation. Lacks engineering. Needs more between scientific practices and literacy skills.	D44	Structure Chapter

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91	6		Comment (CSTA) & Survey	Need more focus on 3D learning and other pedagogical shifts. Intro is written academically and needs modification to excite support from administrators, teachers, and others. For example, experiences outside the classroom are key to applying science & engineering practices with access and equity for all students.	Item B Item D 67	Structure Chapter
92	6		Comment (CSTA); Comment (CTA); Survey	Chapter 6: Model for teachers how to "bundle" and create storylines, then assess quality. Explain how the Framework storylines were created and assessed. Grade 8 lacks a unifying theme. The Disciplinary Core Ideas (DCI) summary (6-12) for integrated story lines need to be consistently applied.	Item B;D67; D6b; D71	Structure Instructional Segments
93	6		Comment	Instructional Segment 2 Vignette: Interactions of Earth Systems Cause Weather: The ELA/ELD Connection boxes should be included in all grades and in all vignettes/snapshots. Additionally, math connections should be included.	D43	Structure Instructional Segments
94	6		Comment	Integrated: PS3.C is not in the 8th grade framework….but it is assigned to 8th grade; LS1.D is missing from the framework; PS3.D is missing from the framework.	D42	Structure Instructional Segments
95	6		Comment	6-12 needs more explicit instruction with text structure, collaborative conversations, presenting language features in informational text, and argument/info writing.	D43	Structure Instructional Segments
96	6		Comment	Integrated: We would like to see more examples of how to bundle using the CCC. Integrating around the big ideas of science.	D42	Bundling
97	6		Comment (Achieve)	Middle Grades Integrated: Upon review of the seventh grade preferred integrated model, it appears that decisions were made to bundle performance expectations based on the wording of the performance expectations. When reviewed more closely, the connections appear tenuous. Questions begin with: "what" rather than "how" or "why". Engineering activity does not align with the expressed intent of the PE	D70l	Bundling
98	6		Comment (Children Now)	The inclusion of engineering in science teaching goes beyond the literal inclusion of design challenges. Equally important are the contexts that frame the instructional segments, helping students understand the value of science to society and the environment.	D63b	Engineering
99	6		Comment (LHS)	At middle school, teachers and principals need examples of not only individual integrated learning experiences, but also whole integrated course models.	D65a	Middle Grade Guidance
100	6		Comment	Provide narrative about time (how long do I let kids "go" in their own sense making before directing them more, or how do I redirect so I don't "sell their thinking short", how do I move them forward in students explaining phenomenon)	D5	Time

Item A1: Master List of Discussion Items

Science SMC Meeting- February 19, 2016

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
101	7		Item A2	For Chapter 7- Consensus on line edits Item A2 # 870-1362	Item A2	
102	7		Comment (CSTA) & Survey	Physics: HS-ESS1-4 regarding Kepler's Laws is not included in the CA physics 3 year plan and should be. We would suggest it be located in Instructional segment 4.	Item B, D68	Add Kepler's Laws to HS Phys 3 course
103	7	76	Comment	3-Course, The Living Earth, Using and understanding data seems like it is weak for science and engineering practices. Could possibly add in making models or all the other SEP's.	D42	Add making models
104	7		Comment (CSTA) & Survey	The Segment Vignettes are well done - but maybe we need tabs to make it easier to access. It is important to keep the portions with the standards so one can see how it works together. Add more vignette example lessons - one suggestion is to include summaries of the vignettes in the document and place links to the full vignettes so that the length isn't overwhelming.	Item B, D68	Vignettes
105	7		Comment (CSTA) & Survey	Provide more information about credentialing issues. Who can teach what? What happens if people don't have the correct credential (meaning, how do we make it accessible and not cost-prohibitive for people to get the correct credential)?	D7, D67	Credentialing issues
106	7		Comment, Survey	Provide more information about CTE and how it supports the NGSS? Provide students with understanding of diversity and # of people entering college declaring majors in STEM, # graduating with STEM degrees and the job availability in STEM fields.	Item B, 6b	CTE
107	7		Comment	4-Course, Bio: With reference to background and Instructional Suggestions it appears that only one dimension of 3-D instruction has been presented. The conceptual shift of using science and engineering practices as the method of accessing content is lacking.	D44	Discussion on 3-D
108	7		Comment (Children Now)	Engineering design material is weak in the high school Biology and Chemistry courses. The biology/life science treatment includes very few engineering design activities. D42 - Would like more Engineering connections/suggestions throughout High School courses where appropriate.	D63c; D42; D63f; D42	Engineering
109	7		Comment (CSTA) & Survey	Provide more information about Graduation Requirements: Many schools and districts only have a two-year science requirement, but it seems that the minimum requirement is three years. How to deal with issues that come along with that: lab space, teacher shortages, space for electives in student schedules.	D6B, D67	Graduation Requirements

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
110	7		Comment (CSTA) & Survey	Provide more information about where AP/advanced classes fit into the progression. It would help to have more information or sample progressions, and clarification, about how to build in opportunities for students planning to take AP science classes to access all of NGSS. Many high schools offer courses in environmental science, marine science, agricultural sciences and human anatomy and physiology, there should be some discussion as to how these courses can fit into the frameworks.	D7, D67	Guidance for AP Classes
111	7		Comment	4-Course, Bio: There is a discrepancy between what is described in Chapter 10 – Instructional Strategies and the instructional suggestions made in this document. It would be consistent with the above statements, if examples of anchoring events as a method to guide an instructional sequence were described in the Background and Instructional Suggestions. Doing so would provide an opportunity to engage students, create a coherent storyline, and provide a reason for students to create an explanation of phenomena. Anchoring events also provide an opportunity to look at evidence, and argue the appropriateness, the accuracy, and the adequacy of the evidence in constructing the explanation for the phenomena. When real life phenomena are used as extensions or culminating tasks, it leads to the teaching of topics (content) followed by a practice. When phenomena are used to guide instruction, it leads to using the scientific and engineering practices to access the content (3-D learning).	D44	Instruction "Anchoring Events"
112	7		Comment	4-Course, Bio: Overall, there seems to be a lot of added content and vocabulary that is not found in the DCIs. The addition of vocabulary is done throughout the document and results in a significant increase in content. Although these concepts and the associated vocabulary may be integral to truly understanding the DCI, outlining them specifically in the framework creates the need to teach this content as what "Students should know" while, in fact, the DCI outlines no such requirement. If possible, limit the amount of vocabulary used to that used in the DCI.	D44	Vocabulary
113	7		Comment	3-Course, Chemistry + ESS: Math: Students may not have had an opportunity to learn the math needed for the PE's understanding or application.	D42	Math connection
114	7		Comment (CSTA) & Survey	Resources: Resources needed seem extreme. Are there going to be recommendations for minimum requirements, and ways to get the resources if districts/schools are unable or unwilling to purchase them.	Item B Item D67	Resources
115	7		Comment	3-Course, Chemistry + ESS: Too many PE's for the 3 course Chemistry + ESS course. Not enough time to teach everything effectively. Concern about adding ⅓ more Earth SS PE's to all disciplines: Chemistry, Life Science and Physics.	D42	PEs for Chemistry

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
116	7		Comment (CSTA) & Survey	Earth 4-year: Water quality and pollution must be addressed; Human Impact and pollution; the Central Valley produces food & fiber for the world so we need to have solutions to drought, desalinization, etc.	Item B, D67	Water quality
117	7	24	Comment	4-Course, Chemistry: Take out "Electric and magnetic fields (PS35)" and put in Physics. electric or magnetic fields, that use of vocabulary is VERY high for chemistry too difficult for HS Chemistry	D42	Writer to review
118	7	25	Comment	4-Course, Chemistry: line 625: call it "attractions" instead of naming that law. Do those terms need to be used? Advanced - maybe for AP/Honors?	D42	Writer to review
119	7		Comment (Children Now)	C. Sneider provides input to enhance the framework and High School chapter. He discussed Engineering in High School Science Courses. The Physics and Earth and Space Science course designs include strong engineering design elements in both the 3-course and 4-course models. He provided a number of suggestions for improving the engineering aspects in the Biology and Chemistry courses, and the introduction to both models.	D63b	Writer to review Attachment 63b and implement at his discretion
120	8		Item A2	For Chapter 8 - Consensus on line edits Item A2 # 1363-1500	Item A2	
121	8		CDE	Feedback from CDE Assessment Division still being developed.		Pending
122	8		Comment (CSTA) & Survey	Make sure that all examples are three dimensional instead of just one or two dimensional. Some of them don't highlight that, and they need to. The examples given for the assessment strategies do not appear to be exemplary of three-dimensional learning and assessing of the three-dimensional learning. Without examples of proper application to this new approach, and an explanation on how the strategies meet each of the three dimensions, these examples are not useful.	Item B Item D 67	3- Dimensional

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
123	8		Survey	Please focus on what it means to assess a science course that consists of the three dimensions of the NGSS – disciplinary core ideas, scientific practices and cross-cutting concepts. Exemplify how assessment in three dimensions might be different from one dimension, such as: reflection on how scoring rubrics might be different, what it means to assess (or not assess) a cross-cutting concept. Provide a discussion of how the provided examples of NGSS-aligned tasks, exemplify the three dimensions of these standards. Provide a discussion on the assessment formats shown and parts of NGSS that they might probe most effectively. Provide advice about how assessment in three dimensions might be different from one dimension, such as: how scoring rubrics might be different, what it means to assess (or not assess) a cross-cutting concept, and some of the reasoning that might need to go into developing and scoring a three-dimensional assessment., and how related changes to assessment might impact teaching and learning. In addition, the assessment formats discussed need to identify which parts of NGSS they might probe most effectively, such as formats that could be used to probe modeling, systems, planning investigations, evaluating information, arguing from evidence etc.	Item B	3- Dimensional
124	8		Survey, Comment	Throughout all of chapter 8: Referring to various tools (i.e., notebooks) as types of assessments. Explain how these tools are used as assessments. These tools can be used for assessment purposes, but how needs to be described and explained. For example: Science Notebooks are used in a large variety of ways by a large variety of teachers. Notebooks are not inherently useful for assessments, and are not an assessment in and of themselves.	Item B, D31	Science Notebooks
125	8		Comment	Missing: 1. Formative Assessment reference to Instructional Strategies Chapter 2. Appeal for resources and time management 3. Administrators role in assessment 4. Articulated (K->5) Assessment Expectations 5. Group Assessments and guidelines for grading group assessments (eg. STEM challenges and peer presentations)	D17	
126	8		Comment (CSTA) & Survey	Any time examples of assessment strategies are provided (ex. sticky bars, human scatterplot, assessment probes) a hyperlink to an example or a description of the strategy would be helpful. It would also be helpful to have alternative strategies for any that are proprietary (ex. Paige Keeley assessment probes) so that teachers don't have to spend a lot of money to develop assessments on their own.	Item B Item D 67	

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
127	8		Comment (CSTA) & Survey	The strategies that come with explanations are more helpful than the others. When rubrics are provided, they give a better illustration of how students are performing the assessments and how teachers are using them to impact instruction. However, it would help to have the full spectrum when student examples are given, rather than one rubric "bar." Also, how are the focal student selected for these examples, and how would teachers go about selecting these kids in their own classes?	Item B Item D 67	
128	8		Comment (CSTA) & Survey	Organization of the section: it's really dense and needs reference points or a better table of contents. There also needs to be a system (footnotes, hyperlinks etc.) for resources and examples that aren't expanded on in the chapter. Also, providing a shorter summary (5 pages) for administrators or district officials, who are going to be making a lot of the assessment decisions, would be a good idea. Finally, any time resources are required for the mentioned assessment, they should be footnoted/hyperlinked as well (like the other examples).	Item B Item D 67	
129	8		Comment (CSTA) & Survey	More concrete information needs to be given as to the role of teachers and administrators in these assessments. What do administrators need to do to encourage/evaluate authentic assessments? How do teachers write individual/group formative/summative assessments? How do they then find the time to accurately grade them? And then implement the information to change their instructional sequence or speed?	Item B Item D 67	
130	8	93	Survey	The Formative assessment section needs to provide greater stress on using results of assessment to inform further teaching. The section does correctly define formative assessment initially but then offers many examples of informal and embedded assessments in that it fails to point out that the information from such assessments should be used to make decisions about what to teach next. Assessment is only formative when the information is used to make pedagogic decisions. This is the important feature and each example needs to make that clear. Third when looking at the specific example on Pg. 93, there is not enough information here to follow what the students are doing and why. For instance, what questions are they trying to answer? What data are they collecting? And what does it have to do with Mars? From what is presented it does not look like this assessment will probe MS-PS3-3, 3-5, or 3-5, ETS 1-1,1-2, or 1-3, or really any of the content or cross-cutting concepts cited.	Item B	

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
131	8		Comment (Achieve)	In its current form, Chapter 8 will not achieve its stated aim of helping "teachers and leaders meet the three-dimensional assessment goals of the CA NGSS." Attachment D 70z1 details concerns about the report and concludes with a suggestion for how to improve its quality and potential usefulness for guiding teachers, includes 8 pages on how to address the issues.	D70z1	
132	9		Item A2	For Chapter 9 - Consensus on line edits Item A2 # 1501-1604	Item A2	
133	9		Comment (Children Now)	Move this chapter to a position earlier in the document – perhaps as a new Chapter 3	D63f D68, Item B	Move Chapter
134	9		Comment (CSTA) & Survey	Need to weave throughout the chapter (and introduction) the importance of providing examples of scientists and engineers that represent the diversity of students in the schools, meet/work with or have internships with engineers and scientists that look like the students.	Item B Item D 67	Statement/ examples of scientists and engineers
135	9		Comment, Comment (CSTA), Survey	ELD CONNECTIONS: It would be helpful to connect ELD science framework to the science framework through specific vignettes. Have references secondary and elementary in the snapshots. Explain ELD designated vs. ELD integrated earlier in the subgroup section. Emphasize that all science teachers are ELD integrated teachers earlier as well. Sections on English learners and Standard English learners need the clarification and research citations that are present and presented well in other sections such as Girls, women and gender equity.	Item B, D67, D5	ELD Support
136	9		Comment	Should there be specific attention to the migrant population? In many regions of California there are significant concerns and complications and issues that are specific to migrant population that may not be addressed within the English Learners section.	D5	Migrant population

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
137	9		Comment (CSTA); Survey; (Children Now)	MORE SUBGROUPS: Include migrant students as a different subgroup. Discuss that there are groups that have little to no access to technology outside of the classroom. Also, some groups have less access to time for "schoolwork" outside of school due to home demands, etc. Reorder the subgroups so the groups that are often not highlighted come before groups that teachers are more aware of. Include LGBTQ as its own section with guidance on how to use terms appropriately especially when teaching life science content. Should there be attention to transgender students? The identity of students is a very significant concern especially within life sciences. Include a section on LBGTQ as it's own section with guidance on how to use terms appropriately especially when teaching life science content. Support for transgender students, call attention to Latino males in K-12 and accessing higher education. P. 6, line 126: "sexual orientation." not listed as one of the key diversity listing above but is sited below in text, need to add more explicit information. Laboratory opportunities and access to technology are critical, but many schools without Title I monies do not have the additional resources to provide them; it is critical to develop strategies to focus on their provision. Address migrant and LBGTQ (particularly in life science contexts) as distinct subgroups. Recognize challenges inherent to certain subgroups (e.g., lack of time available for homework due to needs encountered at home or lack of access to technology). Note: Similar comments sent in by Education Trust-West, Attachment 68	Item B, D67; D5, D7; D63f; D68	Information on different subgroups
138	9		Comment (CSTA) & Survey	To achieve access and equity, students must be provided rich experiences in the natural world that include opportunities to apply three dimensional learning, and contribute to their observations. Schools must support teachers as they plan field trips that include opportunities to visit and experience science related museums, organizations and industry that apply science and engineering practices and concepts.	Item B Item D 67	Field trips
139	10		Item A2	For Chapter 10 - Consensus on line edits Item A2 #1605-1757	Item A2	
140	10		Comment (CSTA)	The cyclic nature of inquiry could be better highlighted.	D67	Inquiry
141	10		Comment	Where in the framework do you explain your working definition of 'inquiry in science"? Teacher resources have a range of meanings for inquiry. Add to Instructional Strategies chapter.	D5; D25	Inquiry
142	10		Survey	Mention of School Library programs and how they support (STEM / STEAM) education.	Item B	Library programs

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
143	10		Survey	Place this chapter before the grade specific chapters and reinforce within the grade level chapters the application of the instructional strategies described here. That is, make explicit the use of the strategies within the vignettes and provide some explanations of when they are used and why.	Item B	Move chapter
144	10		Comment (CSTA)	Provide narrative describing problem based learning and project based learning - highlighting the value of each and the distinctions between the two closely aligned approaches.	D67	Problem based learning vs. project based learning
145	10		Comment, Survey	Provide examples of student notebooks at each grade level, student examples; "discussion" vs what happened before; concern over using notebooks as formative assessment rather than a sense-making tool. John Muir Laws provided information to support science notebooks (Attachment 59). Emilie Lygren suggested revisions to the Science Note booking portion of the Instructional Strategies document (Attachment 60).	Item B, 6b, D59; D60	Science Notebooks
146	10		Comment (CSTA)	Need example vignettes, teachers at that Elementary level may need help with nature of science if they are not used to doing science.	D67	Add Vignettes
147	10		Comment (Achieve)	Recommendation is to restructure the chapter while maintaining the strategies described and making a few critical additions. Several critical factors underlie the following recommendations. CA NGSS is the guiding factor in making decisions about which strategy should be used. Design of an instructional sequence must be guided by the learning outcomes (performance expectations) in CA NGSS. • All listed strategies are not equal as strategies. For example, teacher questioning strategies is not equal to project-based learning. Effective questions may be included as teachers interact with students working on science projects. • Some strategies address innovations in the CA NGSS better than others. The 5E instructional model provides opportunities and time for teachers to address three-dimensional learning better than a discrepant event. • Instructional shifts are not the same as instructional innovations. Shifts, by definition, are changes from one place to another; to use something similar; to change or manage. Hence, the often heard educators' response, "we are already doing that." An innovation implies beginning or introducing something new; a new strategy, approach, or method of instruction.	D70z2	Restructure with critical additions
148	10		Comment (CSTA)	The Stanford Venn diagram highlighting the convergent practices should be in this section as well.	D67	
149	11		Item A2	For Chapter 11 - Consensus on line edits Item A2 # 1758-1785	Item A2	

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
150	11	27	Survey	Add a vignette about what effective professional development looks like. Line 563 Coaching references were generic, not specific to science coaching. There needs to be a much greater focus on the funding of this professional development.	Item B	Vignette
151	11		Comment (CSTA)	Provide language detailing the need for teachers to be supported in new learning modes. Successful implementation will require new learning for teachers, so the text should support and maybe (mandate) teachers attend workshops for development. Include details on how to make these needs clear to administrators	D67	Admin Support
152	11		Comment (Children Now)	Partnerships with business and the broader community will be critical to making available practical applications of science instruction; however, the framework does not provide much specificity to educators in how to build effective partnerships (although it does provide examples of some existing partnerships). We recommend that the material addressing these important elements be expanded and improved.	D63f	Partnerships
153	11		Comment (CSTA)	Models of PL from framework may not be the most effective. Maybe suggest more than 1 day workshops and include assessments of PL.	D67	PL models
154	11		Comment (CSTA)	CDE needs to address the temporal nature of the resources, organizations, etc. that are listed as specific examples. How will those resource lists be updated or kept current? Also the funding of these PL ideas needs be addressed, like the table of contents alludes to	D67	Resources
155	11	13	Comment (CSTA)	Develop the idea of "self-developing" (line 296) more; or clarify it. Some of the text is vague about the use of proven successful PL strategies. Identify where BIG content gaps can be filled.	D67	Strategies
156	12		Item A2	For Chapter 12 - Consensus on line edits Item A2 # 1786-1824	Item A2	
157	12	5	Comment	Page 9 Lines 263-265 (5.) The instructional resources are grade-level specific and provide instructional content for 180 days of instruction for at least one daily class period, including an estimate of the necessary instructional time. For K-5 this is insane. Even for 6-8; why 'at least one'; how do we account for flexibility needed for projects, science fair, etc.	D65K	
158	12	10	Comment	Line 305: Suggested revision: "culminating projects, (PBL like)." what are culminating problems? or exercises? examples needed perhaps?	D5	Culminating projects

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
159	12	12	Comment	Page 12 Line 345-353 (7.) Summative assessments designed to provide valid, reliable and fair measures of students' progress and attainment of three-dimensional learning after a period of instruction (for example at the end of a chapter, unit or course) should involve multi-component tasks including, but not limited to: hands-on or simulation-based performance tasks, open-ended constructed response problems, or scoring of portfolios of student work collected over the course of instruction. Selected-response items, if used, should require analysis and reasoning to answer them, rather than simply memorized responses. Suggested Edit: Make this for grades 3-8 only and change language as follows: should involve multi-component tasks such as hands-on or simulation-based performance tasks, open-ended constructed response problems, or scoring of portfolios of student work collected over the course of instruction. Selected-response items, if used, should require analysis and reasoning to answer them, rather than simply memorized responses. Not appropriate for K-2; there needs to be a modified statement for younger students.		
160	12	17	Comment	Page 17 Lines 516-539 Selecting Quality Instructional Resources and tools and Equipment for Science. Description of LCAP and how districts can incorporate into their plans the time and funds to do an instructional materials review. Reference LCAP toolkit.	D65K	0
161	12		Comment	Page 8 Lines 232-238 (19.) Instructional resources engage students in the Science and Engineering Practices. Teacher resources will include discussion of expendable and permanent equipment and materials necessary to conduct activities, guidance on obtaining those materials inexpensively, recycling or disposing of materials, and explicit instructions for organizing and safely conducting instruction, labs and activities. (Aligned to the Science Safety Handbook for California Public Schools, 2014 Edition). Suggested Edit: Make this into two separate points. 19. Instructional resources engage students in the Science and Engineering Practices. 20. Teacher resources will include discussion of expendable and permanent equipment and materials necessary to conduct activities, guidance on obtaining those materials inexpensively, recycling or disposing of materials, and explicit instructions for organizing and safely conducting instruction, labs and activities. (Aligned to the Science Safety Handbook for California Public Schools, 2014 Edition). Lumping together seems to be feeding into the old-fashioned view that 'science practices' = 'hands-on labs' Not clear who the discussion of expendable and permanent equipment is for, the teacher or the student? Should be for the teacher.	D65K	

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
162	12		Comment (LHS)	Criteria for Instructional Materials: We are concerned that there are simply too many criteria for any developer of high quality materials to respond to before the materials adoption list is finalized.	D65a	Criteria
163	Apx A		Item A2	For Appendices - Consensus on line edits Item A2 # 1825-1874	Item A2	
164	Apx		Public Comment, NMEA	National Marine Educators Association (NMEA): "Ocean Literacy: The Essential Principles of Ocean Sciences K-12," and "The Ocean Literacy Scope and Sequence for Grades K-12." These documents describe the few essential ideas about the ocean that every student should understand by the end of Grade 12...Our analysis resulted in a tool that we propose should be included as an appendix in the California Science Curriculum Framework...Ocean Literacy Principle and every Next Generation Science Standard using a 5 point scoring rubric...The alignment document can be found at the following link: http://oceanliteracy.wp2.coexploration.org/next-generation-science-standards-2/ We respectfully request that the alignment document be included as an appendix to the Framework, much as you have included an appendix relating to Environmental Literacy.	D75	Add Appendix (NMEA)
165	Apx		Survey	Add an appendix showing the progression of suggested science skills that students should be introduced to and then later revisited in later grades until mastery has been achieved. The skills that should be included involve measurement with a ruler, triple beam balance, digital scale, graduated cylinder, plotting graphs of independent vs. dependent variables, reporting uncertainty in measurements etc. to name a few.	Item B	Add Appendix (Science Skills)
166	Apx A		Survey	Please include Lexile or reading levels in the charts and discuss how the text needs to follow developmental phonics.	Item B	Include lexile reading levels
167	Apx A		Comment (CSTA)	Provide instruction on how to pick outstanding trade books at different levels. Not the mechanics of using the CDE website or other lists, actually determining if a trade book is worth including.	D67	Trade books selection
168	Apx A		Comment (CSTA)	Reference "habits of mind" within the chapter (critical thinking, asking for evidence, etc.)	D67	Reference "habits of mind"
169	Apx B		Comment (CSTA)	An explanation at the beginning of the Appendix needs to be added so that people understand why these are a part of the framework, rather than just jumping into a chart.	D67	Intro

Edit #	Ch.	p.	Source	Comments	Att. #	Action / Discussion
170	Apx E		Comment (CSTA)	The assembly bill on HIV/AIDS instruction goes far beyond science to discuss socio-cultural issues about human sexuality. We are concerned that these issues might not bebest addressed in science classrooms, and might not fit well under the umbrella of NGSS.	D67	HIV/AIDS
171	Apx E		Comment (CSTA)	Please provide recommendations for what grade levels or subjects in science are most appropriate for introducing the topic of HIV/AIDS and human sexuality. Please recommend that districts offer a separate health class considering the amount of material schools need to cover and the fact that it does not integrate well with NGSS	D67	HIV/AIDS

California Department of Education, February 5, 2016