# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

| # | Ch. | Source | Comments | Att. # | Recommended Action |
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| 1 | gen | Comment | The entire document needs to be more concise. We don't have time to read all of this deeply! | D37 | Writer's Discretion/ Line Edit |
| 2 | gen | Comment (LHS) | Overarching Recommendations from pages 6-67 of attachment 65a | D65a | Writer's Discretion/ Line Edit |
| 3 | gen | Comment | Each chapter should have a short section (like a cliff notes or bulleted list of key ideas) that would be expandable with internal links based on teacher interest and need | D37 | Writer's Discretion/ Line Edit |
| 4 | gen | Comment | There is inconsistent formatting throughout in how standards are listed – please pick one way or the other and make them all the same. The same problem with inconsistent bold and italic use, particularly in titles, and section subtitles. | D37 | Writer's Discretion/ Line Edit |
| 5 | gen | Comment | Although there is a glossary for abbreviations, it is advisable to write out the abbreviated word in full before using the abbreviation. An example is the term DCI. The full description, Disciplinary Core Idea, should be used with DCI in parenthesis before the abbreviated term is used throughout the text. If the abbreviation is going to be used, then discipline core idea which is written in lower case should be capitalized at the beginning of each word, Discipline Core Idea (DCI). | D71 | Do Not Recommend: Science Framework must follow CDE Press Formatting |
| 6 | gen | Survey | Recommendations: Use words carefully and consistently when teaching mass, volume and density concepts. Avoid words such as size, amount, heavy, and light because they are vague and, at times, misleading. Teach density as an intensive quantity with many opportunities to observe, model, and predict how changing one variable at a time will affect the density of matter. Spend as much time as possible modeling, predicting, and observing the effect of different volumes on the density of matter. Give students ample opportunities to discuss thought experiments and to develop solutions together in order to refine their understandings of how to measure matter. This is particularly important with problems that have non-obvious solutions, such as finding the mass of air or finding the volume of a drop of water. When comparing the densities of materials, make sure that the volumes span a range. Comparing the densities of equal volumes of materials may encourage student conflation of mass and density. When discussing thermal expansion of matter, ensure that students keep the concepts of conservation of mass and variable volume distinct. Practice with the density formula is both useful and practical, but be sure that students have plenty of opportunities to model their answers diagrammatically as well. Further, using diagrams along with d = m/v to solve for unknowns is helpful for developing deeper understanding. | Item B | Writer's Discretion/ Line Edit |
| 7 | gen | Survey | We are not only short changing career and college readiness, we are not taking advantage middle school minds ability to learn coding, and computer science/ circuits by not including this as part of science. We are only given 2000 character limit for feedback for each section. I wanted to add that not all the guiding questions that were addressed in each summary, and site specific lines, but could not. | Item B | Writer's Discretion/ Line Edit |
| 8 | gen | Survey | Additional Comments for grades 3-5: 531: "Nevertheless, modern crops and livestock were created by people" -maybe say cultivated, manipulated, or bred instead of created? 542: what is meant by "unique lifecycles?" 693, 694: For example, animals that live in snowy places grow white fur in the winter and brown fur in the summer for camouflage. This change is NOT induced by the environment, but is a genetic adaptation that evolved because it helps the animals survive. -the example could be confusing for students, maybe to clarify say some animals -also, they do this for survival rather than for camouflage -maybe use a more clear cut example 1276 (background for teachers) -since this is a completely new topic for fourth grade, it would be good to have more visuals, links to videos, etc. 1325 "students need to develop the idea that solid matter has internal structure. At the same time. They should also recognize that solid matter is not just one continuous rigid object." -confusing, maybe it should read: Students need to develop the idea that solid matter has internal structure. At the same time, they should also recognize that solid matter is not just one continuous rigid object. 1338 "A person cannot just make energy from nothing, and that after one "uses it" it is not "used up" but that it is still around in some distributed form in the local environment." -saying "still around" is vague, should refer directly to the transformation of energy -maybe should say "but one form of energy when it is used, is being transformed into another form of energy in the local environment." 1358, 1362 information is contradicting, maybe the second line is incorrect | Item B | Writer's Discretion/ Line Edit |

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| 9 | gen | Survey | 1340 “Another idea students should understand is that every machine stops operating if fuel is not continually provided because friction converts the energy of the machine’s motion to heat its motor or the surrounding environment.” -confusing example, maybe refer to a “car” rather than a “machine” because it gives a more familiar image for students, easier for them to visualize -the sentence seems to imply that there is no friction when there is fuel 2892 (photosynthesis diagram) -the beginning of the reaction formula should be CO2 + H20 -use an improved diagram -another fourth output should be chemicals for the plant to make new cells, for example: amino acids, lipids that are part of new cells 2900 “Sugar made in the leaves of the plant is transported down to the roots.” -maybe should say it’s transported everywhere, including down to the roots 2908 “the plant does acquire some essential materials from the soil. Nitrogen, iron, and a host of other nutrients must be obtained from the soil (usually by the roots) and the plant cannot survive without these.” -maybe should say plants acquire minerals rather than materials (to say materials or nutrients is misleading because it gives the impression that it’s a big portion of the nutrition of a plant when it’s actually a very small amount) 2952 “Plants, on the other hand, are able to absorb individual metal atoms from the soil surrounding the roots.” -this is incorrect because plants do not absorb metal atoms, rather they absorb minerals (ions in solutions) 2966 “placing a bag around the leaves of a plant to show the condensation collected” -should specify plastic bag | Item B | Writer's Discretion/ Line Edit |
| 10 | gen | | The writer will fix syntax, grammar, punctuation, word choice, and place the draft in a cohesive voice. Writer will address all acronyms and will make it consistent thought the document. | | Writer to address |
| 11 | 1 | CDE | Line 149-152….students make observations…. Add: ….students make multi-sensory observations….Students who are blind or neurologically impaired, resulting in loss of observation skills need to be paired or with a group that collaborates the observations so that everyone is included. | Item C | Writer's Discretion/ Line Edit |
| 12 | 1 | CDE | This will allow both teachers within and across schools and districts to share expertise, reflect on challenges, and plan for future units of instruction. This will allow both teachers within and across schools and districts to share expertise, reflect on challenges, and plan for future units of instruction. Add: For Example, a collaboration between a general and special education teacher can provide accommodations in the lessons from planning to assessment, making the lessons accessible to all students. | Item C | Writer's Discretion/ Line Edit |
| 13 | 1 | CDE | Page 14 Line 345-46 shared among principals, district administrators, and designated lead or mentor teachers Suggested Edit: shared among principals, district administrators, education specialists, both ELD and special education, and designated lead or mentor teachers | Item C | Writer's Discretion/ Line Edit |
| 14 | 1 | CDE | Page 16-17 Line 423-24: students are not trained to blindly accept the models and theories put forth by others as black boxes, Suggested Edit: students are not trained to (delete blindly) accept the models and theories put forth by others as scientific fact. | Item C | Writer's Discretion/ Line Edit |
| 15 | 1 | CDE | Page 18 Line 467-68 ….differentiated instruction in the core curriculum, which includes science…. Suggested Edit: differentiated instruction in the core curriculum, honoring accommodations in the Section 504 Plan and IEP, which includes science | Item C | Writer's Discretion/ Line Edit |
| 16 | 1 | CDE | Page 20 Line 533-34 varying amounts of time and addressing different aspects of student learning. Suggested Edit: varying amounts of time, formats, accessibility, and addressing different aspects of student learning. | Item C | Writer's Discretion/ Line Edit |
| 17 | 1 | CDE | Page 11 Line 282: At the elementary level, it also requires teachers… Suggested edit: At the elementary and secondary level, it requires teachers… | Item C | Writer's Discretion/ Line Edit |
| 18 | 1 | CDE | Page 19 Line 487 …and develop academic English in science. Suggested edit: …and develop the academic use of English in science. | Item C | Writer's Discretion/ Line Edit |
| 19 | 1 | CDE | Page 2 Line 58-59 (CA CCSS for ELA/Literacy), California Common Core State Standards for Mathematics (CA CCSSM), Suggested edit (CA CCSS for ELA/Literacy), California Model School Library Standards (CA MSLS), California Common Core State Standards for Mathematics (CA CCSSM), ( place after ELD Standards) ....and CA ELD Standards and the CA ModeLine... | Item C | Writer's Discretion/ Line Edit |
| 20 | 1 | CDE | Page 11 Line 281 Insert a line after - to support learning in science and engineering. Suggested edit The California Model School Library Standards (CA MSLS) provides guidance across all grade levels in formulating appropriate questions, evaluating and analyzing information, and using information and technology creatively. | Item C | Writer's Discretion/ Line Edit |
| 21 | 1 | CDE | Page 17 Line D438 Insert a line after - … evaluating and communicating information. Suggested edits: In addition, CA MSLS delineates what students should know and be able to do at each grade level as they access, evaluate, use, and integrate information into their lives. | Item C | Writer's Discretion/ Line Edit |
| 22 | 1 | CDE | Page 8 Line 204 Can we call out the EP and Cs here? | Item C | Writer's Discretion/ Line Edit |
| 23 | 1 | CDE | Page 13 Line 340 Experts are brought in as providers.. Suggested edit which include expertise from within the LEA or external providers | Item C | Writer's Discretion/ Line Edit |
| 24 | 1 | CDE | Page 18 Line 459 "do science" suggested edit "participate in" | Item C | Writer's Discretion/ Line Edit |
| 25 | 1 | CDE | Page 18 Line 472 education suggested edit : More specific content area or just leave off since this is a science framework | Item C | Writer's Discretion/ Line Edit |
| 26 | 1 | CDE | Page 19 Line 510 work suggested edit: Instruction and opportunities. | Item C | Writer's Discretion/ Line Edit |
| 27 | 1 | CDE | Page 19 Line 515 "grading may also be based on" suggested edit "assessment may also include" | Item C | Writer's Discretion/ Line Edit |

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| 28 | 1 | CDE | Page 21 553 "testes" suggest: "assessments" | Item C | Writer's Discretion/ Line Edit |
| 29 | 1 | CDE | Page 23 Line 612 head": "suggest guide" | Item C | Writer's Discretion/ Line Edit |
| 30 | 1 | CDE | Page 13 Line 341-342 Teachers can work with other teachers suggest: Teachers can work with other teachers and support staff | Item C | Writer's Discretion/ Line Edit |
| 31 | 1 | CDE | Page 18 Line 465-466 "Both general education and special education teachers" suggest General education and special education teachers and support staff should ensure | Item C | Writer's Discretion/ Line Edit |
| 32 | 1 | CDE | Page 18 Line 468-472 remove sentence | Item C | Writer's Discretion/ Line Edit |
| 33 | 1 | CDE | Page 3 Line 82-83 …three dimensions of science (i.e., disciplinary core ideas, science and engineering practices, and crosscutting concepts). Suggest: …three dimensions of science (practices, crosscutting concepts, and disciplinary core ideas) | Item C | Writer's Discretion/ Line Edit |
| 34 | 1 | CDE | Page 15 Line 377-378 suggest Be assessed for learning and problem solving (or demonstrate learning and problem solving) | Item C | Writer's Discretion/ Line Edit |
| 35 | 1 | CDE | Page 18 Line 456 Including English learners, are able to … suggest: Including English learners and students with special needs, are able to… | Item C | Writer's Discretion/ Line Edit |
| 36 | 1 | CDE | Page 18 Line 458 …language development. Suggest: …language development and learning abilities | Item C | Writer's Discretion/ Line Edit |
| 37 | 1 | CDE | Page 18 Line 463 …as well as culturally and linguistically response instruction that values and leverages students' experiences. | Item C | Writer's Discretion/ Line Edit |
| 38 | 1 | CDE | Page 20 Line 537 …at the center of instruction. Suggest: …at the center of teaching and learning process. | Item C | Writer's Discretion/ Line Edit |
| 39 | 1 | Comment | Line 275: Change. Please put ELA in the natural order of LISTEN, SPEAK, READ, WRITE rather than the traditional RWSL, you do this in later chapters | D25 | Do not recommend. It depend on the activity. |
| 40 | 1 | Comment | Line 282: Change. With the influx of newcomer students, and long-term EL students, incorporating language learning into science is not just for elementary teachers | D25 | Writer's Discretion/ Line Edit |
| 41 | 1 | Comment | Line 563: Question: Is it 6 guiding principles or 7? The chart at the beginning of the chapter has 7 or am I confusing titles on the tables? | D25 | Writer's Discretion/ Line Edit |
| 42 | 1 | Comment | Environmental Adoption Principles: More detail - about this and how to integrate | D6b | Writer's Discretion/ Line Edit |
| 43 | 1 | Comment | P. 9, Lines 213-221: Add importance of administrators buy-in. Currently not all CA students get science every year from K-12. All students/all standard require a significant shift that starts with educational leaders. | 6b | Writer's Discretion/ Line Edit |
| 44 | 1 | Comment | P. 10, Lines 253-261: Change from bulleted list to Progression graphic similar to Appendix E in NGSS. Illustrate the coherence, reference additional progressions, easier to read. | D6b | Writer's Discretion/ Line Edit |
| 45 | 1 | Comment | P. 15, lines 378-398: Provide language about access to technology devices and teacher training needed to make this a reality. | D6b | Writer's Discretion/ Line Edit |
| 46 | 1 | Comment | P. 3, line 76: Suggested revision: "are included in chapter 2,..." wrong syntax | D16 | Writer's Discretion/ Line Edit |
| 47 | 1 | Comment | P. 11, line 299: Suggested revision: "... according to the description…" word omission | D16 | Writer's Discretion/ Line Edit |
| 48 | 1 | Comment | P. 6, lines 136-147: "the following PE contains only." need to delete the word "only." it seems to be listed as an example but 'only' makes it seem like it is not an example to follow. | D7 | Writer's Discretion/ Line Edit |
| 49 | 1 | Comment | P. 7, line 153: "varied." Suggested revision: independent. typically use independent & dependent variables and control; varied variables seems a bit redundant. | D7 | Writer's Discretion/ Line Edit |
| 50 | 1 | Comment | P. 11, lines 275-276: "need to learn and do science." Suggested revision: "need to learn and do in science." do within the disciplines of science and engineering | D7 | Writer's Discretion/ Line Edit |
| 51 | 1 | Comment | P. 19, lines 473-478: repetitive; could be eliminated; doesn't add house building weak analogy | D7 | Writer's Discretion/ Line Edit |
| 52 | 1 | Comment | P. 21, lines 546-548: Suggested revision: "In and out of class activities and tasks including community based science, field experiences, and informal learning opportunities, provide a basis for rich assessment of student understanding and capabilities." wording was unclear; need to specify out of class activities and assessment doesn't need to happen in the classroom | D7 | Writer's Discretion/ Line Edit |
| 53 | 1 | Comment | P. 21, lines 576-578: Suggested revision: "In addition to the importance of engaging students in science content, it is also critical to incorporate motivational factors while developing content literacy expectations." original was less clear. | D7 | Writer's Discretion/ Line Edit |
| 54 | 1 | Comment | P. 22, line 596: "Schools can support teachers to make connections between student learning and career options, by exposing students to engaging science experiences, providing interactions with the natural world, introducing role models that lead to future career choices, and motivating students' learning by developing relationships and partnerships with scientists, engineers, organizations, agencies, industry and informal centers throughout the extended community." not as inclusive | D7 | Writer's Discretion/ Line Edit |
| 55 | 1 | Comment | P. 22, line 596-603: Suggested revision: "Secondary students benefit from these partnerships as they extend internships, job shadowing and applied science and engineering practices and communication in out of school environments. Elementary students' interests in diverse careers is fostered through cross age mentors, scientists', engineers' presentations, and visits to informal science centers." makes it more concise. also need to include the field experiences and more experiential learning opportunities. | D7 | Writer's Discretion/ Line Edit |
| 56 | 1 | Comment | P. 22, line 606: add" CA has long been a leader in Environmental education programs and recognizes environmental literacy is crucial to the economic and environmental well being of the state." missing and needs to start section. | D7 | Writer's Discretion/ Line Edit |

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| 57 | 1 | Comment | P. 24-25 Lines 636 - 659: recommend eliminate these lines (636-659). entire section is written as a separate; not integrated component of the curriculum; would be ideal to have eei ep&c integrated; 660-664 is what is key for teachers to know but it gets lost. | D7 | Writer's Discretion/ Line Edit |
| 58 | 1 | Comment | Create a teacher oriented synopsis or abstract, use line 71 as example | D37 | Writer's Discretion/ Line Edit |
| 59 | 1 | Comment | P. 3, line 76: Suggested text: "are included." match subject | D35 | Writer's Discretion/ Line Edit |
| 60 | 1 | Comment | P. 6, line 141: Suggested text: relationships among; relationship between | D35 | Writer's Discretion/ Line Edit |
| 61 | 1 | Comment | P. 6, line 146: Suggested text: "students" | D35 | Writer's Discretion/ Line Edit |
| 62 | 1 | Comment | P. 7, line 162: Suggested text: "to describe" | D35 | Writer's Discretion/ Line Edit |
| 63 | 1 | Comment | P. 7, line 163: Suggested text: "object and" | D35 | Writer's Discretion/ Line Edit |
| 64 | 1 | Comment | Lines 170, 282: Extend language/responsibility to LEAs or districts, community, and state | D37 | Writer's Discretion/ Line Edit |
| 65 | 1 | Comment | Line 183: Suggested text: “told." “simply” is unnecessary | D37 | Writer's Discretion/ Line Edit |
| 66 | 1 | Comment | Line 191: Add in developmental language (instead of just gradelevel specific) it would be more inclusive of alternative schooling situations | D37 | Writer's Discretion/ Line Edit |
| 67 | 1 | Comment | Line 210: add in: “... In various content areas.” this would emphasize the multidisciplinary nature of crosscutting concepts | D37 | Writer's Discretion/ Line Edit |
| 68 | 1 | Comment | Emphasize/highlight point on line 219 | D37 | Writer's Discretion/ Line Edit |
| 69 | 1 | Comment | P. 10, line 269: Suggested text: "The *CA NGSS* link engineering design and the application of science." | D35 | Writer's Discretion/ Line Edit |
| 70 | 1 | Comment | P. 11, line 276: Suggested text: "to learn to do" | D35 | Writer's Discretion/ Line Edit |
| 71 | 1 | Comment | P. 11, line 286: Suggested text: "all disciplines." “other” but science is included | D35 | Writer's Discretion/ Line Edit |
| 72 | 1 | Comment | Line 320: Add in a link/reference or resource to PLCs | D37 | Writer's Discretion/ Line Edit |
| 73 | 1 | Comment | Line D350: Set guidelines for corporations and businesses for their depth and nature of involvement | D37 | Writer's Discretion/ Line Edit |
| 74 | 1 | Comment | P. 14, line D351: Suggested text: "backgrounds" - remove comma after | D35 | Writer's Discretion/ Line Edit |
| 75 | 1 | Comment | P. 14, line D352: Suggested text: "families" - remove comma after | D35 | Writer's Discretion/ Line Edit |
| 76 | 1 | Comment | P. 14, line D358: Suggested text: "chapter" - remove comma after | D35 | Writer's Discretion/ Line Edit |
| 77 | 1 | Comment | P. 15, line 380: Suggested text: "new" - remove comma after | D35 | Writer's Discretion/ Line Edit |
| 78 | 1 | Comment | Line 393: add in that teachers need training on these resources | D37 | Writer's Discretion/ Line Edit |
| 79 | 1 | Comment | Line 399: good key point | D37 | Writer's Discretion/ Line Edit |
| 80 | 1 | Comment | P. 15, line 417: Suggested text: "increase" - delete "and" | D35 | Writer's Discretion/ Line Edit |
| 81 | 1 | Comment | Line 419: Add in “See *** for suggestions” to give teachers more information about how tech and resources are accessible | D37 | Writer's Discretion/ Line Edit |
| 82 | 1 | Comment | P. 18, line 454: Suggested text: "NGSS are" - remove comma | D35 | Writer's Discretion/ Line Edit |
| 83 | 1 | Comment | P. 18, line 469: Suggested text: "all English learners *or* standard English learners and English language learners," | D35 | Writer's Discretion/ Line Edit |
| 84 | 1 | Comment | Line 499: Add in a graphic that would summarize the difference between the assessment types | D37 | Writer's Discretion/ Line Edit |
| 85 | 1 | Comment | P. 19, line 504: Suggested text: "learning" - delete "their." “their” doesn’t refer to the students as written | D35 | Writer's Discretion/ Line Edit |
| 86 | 1 | Comment | P. 20, line 541: Suggested text: "are," not is | D35 | Writer's Discretion/ Line Edit |
| 87 | 1 | Comment | P. 21, line 547: Suggested text: "learn *then* class," | D35 | Writer's Discretion/ Line Edit |
| 88 | 1 | Comment | P. 21, line 547: Suggested text: "In-classroom." contrasting with out-of-class, more awkward since it is at start of sentence | D35 | Writer's Discretion/ Line Edit |
| 89 | 1 | Comment | Line 610: Reference Funds of Knowledge - Moll | D37 | Writer's Discretion/ Line Edit |
| 90 | 1 | Comment | P. 27, line 726: Suggested text: "follows" | D35 | Writer's Discretion/ Line Edit |
| 91 | 1 | Comment | P. 28, line 759: Insert a line. looks like continuation of previous bullet instead of new paragraph | D35 | Writer's Discretion/ Line Edit |
| 92 | 1 | Comment | P. 29, line 773: Suggested text: "prescriptive, rather" | D35 | Writer's Discretion/ Line Edit |
| 93 | 1 | Comment | P. 7, lines 165-168: Another important shift includes when to introduce science specific vocabulary and when to require students to add these advanced terms to their models and explanations, when traditional practice has often emphasized vocabulary acquisition before experimentation and explanation of phenomena. As such, I urge framework writers to explain and use the term “tier three vocabulary” when describing the practice of “name[ing] the set of findings”. (Beck, McKeown, & Lucan, 2002) | D46 | add tier 3 vocabulary sentence |
| 94 | 1 | Comment | P. 8, lines 19o-193 I suggest referencing conceptual shift #1 and #3 in order to support this statement . | D46 | |
| 95 | 1 | Comment | P. 10, lines 253-261 The progression shown in this bulleted list is very important, but would be more useful if presented as a graphic and titled “Learning Progressions of Instructional Experiences”. | D46 | |

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| 96 | 1 | Comment | On Page 13 of 32, line 314 states that “effective teaching and support for teacher learning are essential for student success”. CTA suggests that “effective teaching and **ongoing** support for teacher learning are essential for student success”.<br>On Page 14 of 32, appropriate use of technology is meaningful and timely for career and college readiness. Unless money is added in a schools district budget and appropriate professional development is provided, the appropriate use of technology is an ideal not realized without commiserate funds and training. The framework might stipulate some of these limitations. | D71 | The science framework writer will address this at his discretion. |
| 97 | 1 | Comment | Page 18 of 32 discusses supports for students and identifies which students are being supported. GLBT students were not addressed in this section. There needs to be some consideration for the engagement and inclusion of learning opportunities for GLBT students. | D71 | The science framework writer will address this edit. |
| 98 | 1 | Survey | 17/D430 insert word long term before links to ensure that teachers have access to links long term. 18/464-472 | Item B | Writer's Discretion/ Line Edit |
| 99 | 1 | Survey | Lines 961-964 Cut these lines or re-phrase. "Data produced by a stochastic model will have variation due to randomness inherent in the model" has no value for ordinary teachers. | Item B | Writer's Discretion/ Line Edit |
| 100 | 1 | Survey | In the introduction clarifying language about the 3 parts of 3-D learning. Addition of a simple sentence on line about 180 to illustrated what 3D learning means. | Item B | Writer's Discretion/ Line Edit |
| 101 | 1 | Survey | Line 134 -136 When students are engaged throughout each instructional sequence with multiple practices and crosscutting concepts to explain phenomena and design solutions, they build a more robust and connected understanding that leads to authentic three-dimensional learning. Change to “When students are engaged throughout each instructional sequence practicing engineering and crosscutting concepts to explain phenomena and design solutions, they build a more robust and connected understanding that leads to authentic three-dimensional learning. Rationale: Practice means many things but I think the purpose of engagement is to actual practice skills of application. | Item B | Writer's Discretion/ Line Edit |
| 102 | 1 | Survey | Please add a comment that the state is committed to ensuring the safety of all students, teachers and the environment and promote the safe use of chemicals and equipment necessary for the implementation of NGSS in California. | Item B | Writer's Discretion/ Line Edit |
| 103 | 1 | Survey | p18/Ln491 ELL or EL Consistency in acronyms with ELL and EL | Item B | Writer will address |
| 104 | 1 | Survey | Figure 3 (page 25) is an issue that has been identified. Too old or unclear. | Item B | Writer's Discretion/ Line Edit |
| 105 | 1 | Survey | Not sure if this figure can be changed, Chapter 1 Fig. 1 Where is says EPA under the ELA section could be moved up to the center of the diagram because the idea of building upon a person's own ideas with others ideas can help to solve complex math problems and create stronger hypotheses and conclusions in science | Item B | Writer's Discretion/ Line Edit |
| 106 | 1 | Survey | Good intro. Cite more clearly that the NGSS shifts (line 71) are appendix A of NGSS and that the standards and the appendices are part of CA NGSS. People may try to do a 1:1 correlation between the 7 shifts in the table (line 71) and the 7 guiding principles (line 97) when that correlation doesn't exist. In the coherence section it would be good to mention explicitly that progressions are in the NGSS appendices (for DCIs and the other dimensions too) and that coherence with ELA and Math is facilitated through the architecture of NGSS (the connections box). Technology section: I get frustrated when something is mentioned, like the bifocal modeling project at Stanford, and I go to their website and it's not clear whether it has any actual use to me as a teacher. Sure it's interesting and it would be great to implement in NGSS lessons but if it's still in research phase and not widely available it's only frustrating to have it mentioned. It becomes extraneous information that doesn't inform the reader. Shorten the EEI and Environmental Literacy sections - focus more on their tie-in to NGSS and not so much on those topics themselves. | Item B | Writer's Discretion/ Line Edit |
| 107 | 1 | Survey | Page 2, line D43: Add more here about the Nature of Science Page 6, line 133: Change "understanding of" to "ability to achieve" the PE. Page 10, line 248: Change "infer" to "develop an understanding of" concepts .... page 11, line 288: "health" doesn't seem like a discipline, but if so, add "arts" as well. page 15, line 401: delete "completely" In general, the guiding principles and attention to 3-D learning is great. Following are some suggested changes: page 18, line 459: Change "do science and engage in scientific discourse" to "engage in the science and engineering practices." page 22, line 607: Use language from the Environmental Literacy Blue print page 23, line 609: This statement makes it sound like diverse students aren't currently contributing members.... page 24, line 649: CA standards are no longer in effect. Should not be promoting the curriculum as science - not 3-D as per NGSS Page 26 - A Blueprint for Environmental Literacy - Yes! This is great. Should be the focus "moving forward..." | Item B | Writer's Discretion/ Line Edit |
| 108 | 1 | Survey | (637-723); One's personal connection to the living world is based in direct experience with living systems, especially in a relevant, place-based context. Students in low-income urban neighborhoods do not generally have this experience, and unless financial resources are specifically set aside to enable the vast % of California's students that live in these neighborhoods to have these experiences as part of their schooling (professional development, program coordination, field study trips, project-based learning, supplies/materials, etc.), the enormous effort that went into creating the framework can only be viewed as incomplete and inadequate. | Item B | Writer's Discretion/ Line Edit |

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| 109 | 1 | Survey | Framework is very hard to follow and comprehend for example "Patterns - Macroscopic patterns are related to the nature of microscopic and atomic-level structure" pg. 99 this statement could be interpreted many different ways. The framework is also misleading in the content knowledge a student must have regarding vocabulary; one section has the example reading material discuss ions yet the vocabulary word ion is never mentioned in the framework.pg. 97 Covalent bonds also used in an example of a model yet they are not suppose to be taught pg. 96. The guiding questions are very vague and not do not flow well in terms of relationships.pg. 100. | Item B | Writer's Discretion/ Line Edit |
| 110 | 1 | Survey | The draft is wordy. We might need to say these concepts with less words, and more visuals. | Item B | Writer's Discretion/ Line Edit |
| 111 | 1 | Survey | Guiding principles omit the historical context of science and engineering. (This would be in the center of your Venn Diagram). From what I understand, NGSS is seeking to launch a "second renaissance" so to speak. What launched the (original) Renaissance was a re-discovery (and hunger) for historic scientific knowledge. For example, children could (and should) be exposed to Archimedes as he experimentally discovered the physical (and mathematical) principle behind buoyancy. In my opinion, this type of knowledge should be foundational to further instruction. | Item B | Writer's Discretion/ Line Edit |
| 112 | 1 | Survey | Provide more applied mathematics. We need less calculus and more geometry/applied physics (common when have you honestly used a derivative) | Item B | Writer's Discretion/ Line Edit |
| 113 | 1 | Survey | Line 39-40 Through the implementation of the CA NGSS, all students kindergarten through grade 12 will have the opportunity to thrive in a 21st century world which demands an increasingly sophisticated ability to make personal decisions, use technology proficiently, solve humanity's current and future challenges, and participate wisely in a democratic society. There are no changes requested to this statement only the ability to access students through grade 12. I understand that there is the option to test 10-12. At the end of 12th grade is the time that all standards have been implemented. I have heard that the 11th grade is the preferred testing time because the llth graders are already are accessed for the Common Core ELA and Math standards. I hope that 11th grade testing is not a foregone conclusion for science and my recommendation is that NGSS be assessed at the high school level in the 12th grade. | Item B | Writer's Discretion/ Line Edit |
| 114 | 1 | Survey | Line 99-101 Coherent instruction: Learning opportunities in science are based on a carefully designed and coherent instructional sequence with clear and focused learning goals, and appropriate connections to grade-level expectations in other disciplines. Change to: Clear and focused learning goals should read "clear and focused learning goals developed during implementation and disseminated statewide by County Office of Education for reference allowing appropriate connections to grade-level expectations in other disciplines." Rationale: Since the framework has stated many times in the documents that the framework is not curriculum I worry that levels of minimum instructional sequence rigor will vary in quality throughout our state. The focused learning goals necessary to implement don't have to be content specific but teachers need to know what level of performances the students are expected to master so that teachers have something concrete with which to collaborate with cross curricular disciplines. Having this guidance may not be such a big deal for high performance schools and districts. Leaving so much to the individual teacher in classrooms that have diverse ability levels and a low performance culture is sending the message that you can do it without providing the directions and scaffolding that is needed for many teachers, schools, and districts in our state. LEA's will be the ultimate consumers of approved curriculum and if everyone had access to the best developed curriculum and ancillary equipment, perhaps more students would be at grade level. | Item B | Writer's Discretion/ Line Edit |
| 115 | 1 | Survey | 1. page #5, line # 106: The colors for the column titled Preferred Integrated and Discipline specific, in fact the word "preferred" is highly suggestive and takes away from the readers ability to make independent decision. The colors red and green should be deleted and the word 'preferred' should be also deleted or replaced with 'recommended." 2. page #4, lines 77~ 84: Line 80 - There is single evidence from Darling-Hammond referring to adequacy of general science certification. This is not enough to convince middle school teachers; more specific evidence is required. Teachers are hesitant to teach in areas where they do not have specialty, especially when there is no resources available. Specific evidence and references to specific plans to provide resources and support will help convince the teachers | Item B | Writer's Discretion/ Line Edit |
| 116 | 1 | Survey | Line 111 Student motivation and engagement: The vision of the CA NGSS and the NRC Framework highlights the importance of student motivation and engagement as critical factors in providing a rich science education linked to students' interests, experiences, and engagement. The last engagement should be changed to "the development of student grit or student's persistence in solving problems." Rationale: motivation was described as linked to students' interests, experiences. Engagement was described as engagement. The challenge with engagement is keeping students working when the topics are deemed hard by a student. Engagement cannot happen if the student has a mindset of defeat and inability. It is easy for teachers to develop lessons that are fun focused on students immediate interests but may lack the rigor necessary to develop mastery of performance expectations. Not so easy to keep students engaged in more difficult activities. Helping students develop a mindset of persistence or grit will lead to better engagement when the student is faced with a difficult task. | Item B | Writer's Discretion/ Line Edit |

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| 117 | 1 | Survey | Page 7 line 11 replace "leading question" with guiding question as it fits current educational language better. Page 8 line 208 "for this reason teachers need access to well designed curricular materials... engineering practices" This should be highlighted for this chapter. Alternately or in addition this paragraph might be considered as part of the introduction to Chapter 12. It highlights the critical need for exemplary curricular materials. Page 11 consider using terminology more familiar to classroom teachers - such a CCR Anchor Standards or other Common Core wording than "student capacities" regarding the ELA portion of the Venn. | Item B | Writer's Discretion/ Line Edit |
| 118 | 1 | Survey | Line 171 teachers need to provide the equipment necessary to make relevant and accurate measurements Change to: teachers need to have available to them equipment necessary so that students can make relevant and accurate measurements Rationale. I am now in my 12th year of teaching and have purchased too much equipment using my own money. This is a second career for me and I continue to be amazed that so many schools and districts expect teachers to purchase classroom supplies. Schools and districts need to provide the tools and supplies necessary for teachers to carry out the job of instruction. For a new teacher, depending on the school and district, the lack of supplies is onerous. The supply issue directly impacts the educational opportunities that students have. I believe strongly that the Framework or some supplemental document prepared in the near future outline mandatory labs that are grade/course specific. This does not have to be an exhaustive list but a minimum list that ALL students in California experience. This requirement has been adopted in at least one other state, NY, and I believe it creates more opportunities than many California schools provide. | Item B | Writer's Discretion/ Line Edit |
| 119 | 1 | Survey | Line 205-207 Coherence is achieved through careful planning and communication among teachers in different subject areas at the same grade level, as well as across science disciplines and grade levels. Change to: Coherence is only achieved through careful planning and communication among teachers in different subject areas at the same grade level, as well as across science disciplines and grade levels. Rationale: Please excuse the wordsmithing, but this coherence is vitally important and an area of education that has been sorely lacking. I want to see this statement strengthened so I suggested only to make the needed collaboration seem mandated by the state. Line 218-221 Therefore, it is of great importance that science educators support students to master the content expected at each grade level. Any omissions in content at lower grades can severely impact the success of students' later achievement and compromise the instructional work of science educators in subsequent grade levels. Change science teachers to all teachers or just teachers Rationale: Multiple subject teachers have been directed by some administrators to not focus on science but instead to focus on Math and English. So, 1) multiple subject teachers may not consider themselves science teachers, and 2) some of the skills learned in science are needed to critically analyze social studies or math problems or engage in an English discourse. | Item B | Writer's Discretion/ Line Edit |
| 120 | 1 | Survey | Line 277-281 . The California ELA/ELD, Mathematics, and History- Social Science frameworks provide some guidance to elementary-level teachers, as well as secondary science teachers and ELD teachers, for incorporating instructional strategies that develop students' language proficiency, literacy, and mathematics skills to support learning in science and engineering. Change to The California ELA/ELD, Mathematics, History- Social Science, and Health Content Standards and associated frameworks provide some guidance to elementary-level teachers, as well as secondary science teachers and ELD teachers, for incorporating instructional strategies that develop students' language proficiency, literacy, and mathematics skills to support learning in science and engineering. Rationale: Later in this section Line 288 health is mentioned. I know that there is not a current framework document to support the new health education standards but there will be one day. Line 295 I don't know what is meant by "capacities" Line 302-305 For example, educators can stress the similarity in the structure of an argument (claim, evidence, reasoning, rebuttal or counter-claim) across disciplines, while at the same time discussing the particularity of what counts as evidence, and types of reasoning used within each discipline. Change by adding the following sentence: " Another example, educators know all too well is the similarity of MP1. Make sense of problems and persevere in solving them for application in English, science and math. Teaching students how to read problem statements (directions) and to feel able to dig deep into problem topics rather than be satisfied with superficiality." Line 332 "multiple years". Is there an expectation as to how many years implementation is expected to take – how many beyond when assessments begin? | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 121 | 1 | Survey | Line 344-346 This will allow both teachers within and across schools and districts to share expertise, reflect on challenges, and plan for future units of instruction. Responsibility for the preparation and support of teachers as they progress towards implementation of the CA NGSS is shared among principals, district administrators, and designated lead or mentor teachers. Change to: Responsibility for the preparation and support of teachers as they progress towards full implementation of the CA NGSS is shared among principals, district administrators, designated lead or mentor teachers and regional county offices of education. Rationale: If there is going to be collaboration across districts that will require the active involvement of County Offices of Education. I personally this this is great opportunity because in some regions there is great disparity between districts. For example, all of the districts in and around Stockton Unified have much higher proficiency levels for 3rd grade reading. What are the other districts doing that Stockton Unified is not. Line 391 Because computer models are written in code, Change to Because some computer models are written in code. Rationale: Computer models can be written in Excel or some other spreadsheet program. For example, the Physics Solar Project Assessment requires that student not develop a graphics based model but instead a spreadsheet model. Please include some mention of the utility of creating spreadsheet models or utilizing pHet. | Item B | Writer's Discretion/ Line Edit |
| 122 | 1 | Survey | Page 13, section 3, paragraph 1: learning opportunities mentioned seem to be vague; is there a way to clarify what those entail? Are those state-mandated? State-funded? Page 20, 1st paragraph: "There are examples of integrated ELD ....." I didn't see or read any examples in the 9th-12th chapter. | Item B | Writer's Discretion/ Line Edit |
| 123 | 1 | Survey | Line 174-176 Students will not “discover” Newton’s laws or even draw graphs of speed versus time without well-planned guidance from the teacher. Change to: Students will not “discover” Newton’s laws, be able to describe the relationship between speed and time, be able to develop and use the linear expression to make predictions without well-planned guidance from the teacher in the form of experimental inquiry and computational practice and supports. Rationale: When I read the example and the statements comparing 3-d learning with the traditional approach it seemed that the authors were stating that it was better to just be able to draw a graph rather than solving an algebraic problem. What I think the authors were getting at is that it would be better to be able to understand the relationship and to derive the algebraic expression, and then to make predictions. Developing design solutions requires an understanding of factors involved and at some point a mathematic relationship to make predictions of changing variables and scale. | Item B | Writer's Discretion/ Line Edit |
| 124 | 1 | Survey | Pg. 64 "Sounds Wild" lacked "Crosscutting" dimension. Lesson did integrate music but I thought teacher could have easily integrated Writing task. This task would provide a venue for students to analyze and synthesize what they've learned and teacher can use the writing for assessment component. | Item B | Writer's Discretion/ Line Edit |
| 125 | 2 | Comment | Line 274: Add: Please add the reference for the progressions: Next Generation Science Standards, Volume 2 Appendixes, App. E or CA NGSS appen C | D25 | Writer's Discretion/ Line Edit |
| 126 | 2 | Comment | Lines 701-171: Add: Connect this to inquiry learning and essential questions | D25 | Writer's Discretion/ Line Edit |
| 127 | 2 | Comment | Line 830: Question: If ‘law’ is not an appropriate term, what is a more accurate term? | D25 | Writer's Discretion/ Line Edit |
| 128 | 2 | Comment | Line 1305: Change: “generate energy” change to “TRANSFORM ENERGY INTO A USEABLE FORM” to stay true to conservation of energy | D25 | Writer's Discretion/ Line Edit |
| 129 | 2 | Comment | Line 1769: Add: Need to anticipate that results might change as the scale changes, air over an airplane wing, drag on a car design, earthquake stabilization for a building, house design to minimize tornado or hurricane damage | D25 | Writer's Discretion/ Line Edit |
| 130 | 2 | Comment | Lines 1773-1774: Change: Not “distance over time” or “mass over volume”, but ‘DISTANCE IN RELATION TO TIME” OR “DISTANCE PER UNIT OF TIME” AND “MASS IN RELATION TO VOLUME” OR “MASS PER UNIT OF VOLUME” | D25 | Writer's Discretion/ Line Edit |
| 131 | 2 | Comment | Line 1774: Change: Not a ‘numerical fraction’ but “A WHOLE: WHOLE RATIO IN FRACTION FORM” | D25 | Writer's Discretion/ Line Edit |
| 132 | 2 | Comment | P. 32: Too wordy. Use a different model? Maybe the Human Body. System Model - human model perhaps? too much detail, needs to be condensed | D25 | Writer's Discretion/ Line Edit |
| 133 | 2 | Comment | Pp. 10-11, lines 275-277: Omit the sentence: "This column may also include the particular nature of science concepts…" This sentence should be shifted to the SEP foundation boxes. | D25 | Writer's Discretion/ Line Edit |
| 134 | 2 | Comment | P. 16, Box 2: Suggested revision: "Models that students develop and use to explain…" unnecessary "used" | D16 | Writer's Discretion/ Line Edit |
| 135 | 2 | Comment | P. 23, line 574: Suggested revision: "... data are produced." "data" is a plural term | D16 | Writer's Discretion/ Line Edit |

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| 136 | 2 | Comment | P. 23, line 577: Suggested revision: "... data are produced." "data" is a plural term | D16 | Writer's Discretion/ Line Edit |
| 137 | 2 | Comment | P. 25, line 6D43.5: "The word phenomenon...occurs in a…" ??? (and why in footer?) where's the rest of the sentence? | D16 | Writer's Discretion/ Line Edit |
| 138 | 2 | Comment | P. 29, line 732: Suggested revision: "...prosthetic limb so as to minimize…" clearer completion of thought | D16 | Writer's Discretion/ Line Edit |
| 139 | 2 | Comment | P. 29, line 738: Suggested revision: "... the role of models in science has not been." role is singular, requiring "has not" instead of "have not" | D16 | Writer's Discretion/ Line Edit |
| 140 | 2 | Comment | P. 30, line 761: Suggested revision: "Models represent things that are…" are" not needed; use "that " with "things" | D16 | Writer's Discretion/ Line Edit |
| 141 | 2 | Comment | P. 32, box, line 1: Suggested revision: "In this example, an ATM is a…" wrong article, or typo | D16 | Writer's Discretion/ Line Edit |
| 142 | 2 | Comment | P. 33, box, next to last line: Suggested revision: "and/or an equation…" and/or requires slash | D16 | Writer's Discretion/ Line Edit |
| 143 | 2 | Comment | P. 34, end of next to last box: "The ability to understand and interpret such equations," ??? [missing phrase] Last phrase of sentence is missing. | D16 | Writer's Discretion/ Line Edit |
| 144 | 2 | Comment | P. 38, line 824: Suggested revision: "...moving with a kinetic energy…" typo? | D16 | Writer's Discretion/ Line Edit |
| 145 | 2 | Comment | P. 47, line 1083-4: Suggested revision: "...have learned in mathematics is simply a ratio…" "it" is not necessary here | D16 | Writer's Discretion/ Line Edit |
| 146 | 2 | Comment | P. 49, line 1142: Suggested revision: "...encode computer algorithms…" typo | D16 | Writer's Discretion/ Line Edit |
| 147 | 2 | Comment | P. 51, line 1193: Suggested revision: "...the phenomenon of a balloon being blown up…" "of" missing | D16 | Writer's Discretion/ Line Edit |
| 148 | 2 | Comment | P. 53, line 1245-1247: Suggested revision: "An explanation may serve as a hypothesis providing the basis for predicting the outcome of an investigation (a test) to collect further evidence." Typical usage for hypothesis is not as a prediction for the outcome of a test, but rather as a tentative explanation on which tests can be made with predictable outcomes. | D16 | Writer's Discretion/ Line Edit |
| 149 | 2 | Comment | P. 55, line 1324-1325: Suggested revision: "...as well as learning…" typo | D16 | Writer's Discretion/ Line Edit |
| 150 | 2 | Comment | P. 76, line 1940: Suggested revision: "...presented in Figure 6…" wrong figure number | D16 | Writer's Discretion/ Line Edit |
| 151 | 2 | Comment | P. 82, line 2056: Suggested revision: "...grade bands…" incomplete word | D16 | Writer's Discretion/ Line Edit |
| 152 | 2 | Comment | P. 82, line 2057: Suggested revision: "Figure 7 shows…" wrong figure number | D16 | Writer's Discretion/ Line Edit |
| 153 | 2 | Comment | P. 84, line 2076: Suggested revision: "...(see figure 8)." wrong figure number | D16 | Writer's Discretion/ Line Edit |
| 154 | 2 | Comment | P. 86, line 2163: "...chapters X to X of the CA Science Framework,…" ??? What are "chapters X to X? | D16 | Writer's Discretion/ Line Edit |
| 155 | 2 | Comment | Page 36, Three Dimensional Scale Model,<br><br>This section is not quantitatively different from scale model, so it should be omitted or replaced by another model.<br><br>This section should be be renamed, “Dimensional-Reduced Model” and should describe a model that has been project to lower dimensions. For example, when only one or two dimensions may be of interest in a 3D model in the floor plans of a building. | D8 | Writer's Discretion/ Line Edit |

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| 156 | 2 | Comment | P. 37 Line, 839-841<br><br>“Computer modeling and simulation present a concrete way to make explicit the links between scientific and engineering practices. Computer models are engineered designs manifested in computer code.”<br><br>These two sentences are incoherent and maundering and should be omitted.<br><br>Consider replacing them by:<br><br>Computational science is one of three modalities, of science along with experimentation and theory that is emerging due to increased computational power. This new modality encompasses all the scientific practices of the other two forms and all three modalities of science work in synergy to validate each other. Computational science has also revolutionized and enhanced scientific practices such as data collection, analysis, and visualization. The same computational model may used to answer a scientific question or engineering a solution to a problem. | D8 | Writer's Discretion/ Line Edit |
| 157 | 2 | Comment | Line 1904: More elaboration is needed to clarify the difference between static and stable. Please add:<br><br>A static system is stable if perturbations will always lead to the same static condition and unstable if these perturbations take it away from this stable condition.<br><br>A ladder leaning against a wall is neutrally stable if it leans close to the wall but may become unstable if it leans farther from a wall. In the ladder example, if the frictional force between the ladder and the wall and ladder and ground is strong enough to balance the weight of the ladder, then the ladder is at equilibrium and is static. On the other hand, if the static frictional force is at it's maximum possible value in the regime that the static frictional coefficient is larger than the kinetic frictional coefficient, perturbing the ladder will make it slide down to the floor, which represents another stationary configuration. In fact, there is a range of angles you can place the ladder that will lead to a static and stable configuration, so there exist a region of neutral stability. Now, if the ladder is placed flat against the wall, this state is unstable because it could fall forward. The stability of a system depends on the number of degrees of freedom. A ladder constrained to move in two dimensions has three degrees of freedom, so equilibrium is achieved by balancing the forces in the x and y directions and balancing the torques acting on the ladder. In chemical systems, the number of degrees of freedom is on the order of Avogrado's number, so stability of the system is define with respect to a mean field description of the system, i.e. when the Gibbs free energy becomes constant in time (in the NPT ensemble). The term "dynamic" in dynamic stability describes the fluctuation properties of the chemical system. | D8 | Writer's Discretion/ Line Edit |
| 158 | 2 | Comment | Page 34, Computer model or simulation.<br><br>Please add the following in order to clarity and connect between different models.<br><br>Computer simulations are an extension of a mathematical model that cannot be be solved through analytic methods or is too large and complex that a computer is needed to automate the enormous amount of computations. For example, Typhoon Mawar is simulated by solving the Navier-Stokes equations numerically under appropriate boundary and initial conditions. The Navier-Stokes equations are a mathematical model of conservation of mass, momentum and energy for fluids. Numerical solutions to the Navier-Stokes equations involve breaking up the domain of interest into tiny boxes and defining the temperature, pressure, velocity and density of the air in each of them. As air flows from one box the its neighboring boxes, these parameters are updated in time. | D8 | Writer's Discretion/ Line Edit |
| 159 | 2 | Comment | In General:<br>-Edit out Passive Voice<br>-Double Check all Figure # references as that all are incorrect<br>-Edit down sentences<br>-Check grammar/verb tenses agreement<br>-Reduce word count significantly | D3 | Writer's Discretion/ Line Edit |
| 160 | 2 | Comment | Lines 50-54: Delete from the word → “Such ……..(delete all) …… professional paths.” | D3 | Writer's Discretion/ Line Edit |

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| 161 | 2 | Comment | Line 59: Passive verb tense → change to active<br>(Passive- should have)<br>Example of change = deserve<br>ALSO -> what is meant by 'capacity'?? | D3 | Writer's Discretion/ Line Edit |
| 162 | 2 | Comment | P. 2 Lines 59-62: All students deserve the opportunity to gain understanding of the nature of science and engineering ideas from repeated meaningful, (engaging and successful) learning experiences. | D3 | Writer's Discretion/ Line Edit |
| 163 | 2 | Comment | P. 2 Lines 64-67: "Students who demonstrate understanding' placed at the beginning of Performance Expectations shows the shift towards deeper level of understanding and application of science standards. | D3 | Writer's Discretion/ Line Edit |
| 164 | 2 | Comment | P. 2 Lines 67-69: Delete from the word -> "Demonstration …… (delete all) …… solve familiar problem types" | D3 | Writer's Discretion/ Line Edit |
| 165 | 2 | Comment | P. 3 Line 69: Start with Demonstration…<br>Line 70: Delete: "are able to;" Change "through the" to using<br>Line 71: Delete "to" (before apply); "through those practices" | D3 | Writer's Discretion/ Line Edit |
| 166 | 2 | Comment | P. 3 Line 73-75: This chapter clarifies the importance of teaching and learning science as a three-dimensional process, as outlined in the NRC Framework. | D3 | Writer's Discretion/ Line Edit |
| 167 | 2 | Comment | P. 5 Line 126- Change this sentence— "Their integration"→ Integration of what?<br>Does 'their' refer to students (per how it is written)? | D3 | Writer's Discretion/ Line Edit |
| 168 | 2 | Comment | P. 5 Line 127-131: Rewrite to clarify point | D3 | Writer's Discretion/ Line Edit |
| 169 | 2 | Comment | P. 5 Line 135-140: Run on sentence, needs to be broken up into 2 or more sentences → Check grammar. | D3 | Writer's Discretion/ Line Edit |
| 170 | 2 | Comment | P. 6 Line 145-148: Change to → 'With the adoption of NGSS, California has transitioned from an focus on what students should know to a focus on students' expected performance at the end of instruction.' | D3 | Writer's Discretion/ Line Edit |
| 171 | 2 | Comment | P.6 Line 153-154: Delete → 'that are used by both scientists and engineers in similar and unique ways. | D3 | Writer's Discretion/ Line Edit |
| 172 | 2 | Comment | P. 6 Line 154-155: The second are the disciplinary core ideas (DCI's) which focuses on core content for PE's | D3 | Writer's Discretion/ Line Edit |
| 173 | 2 | Comment | P. 7 Line 176-177: Change to → "The NGSS uses the same layout" | D3 | Writer's Discretion/ Line Edit |
| 174 | 2 | Comment | P. 7 Line 178: Referencing 'figure' which is multiple pages away---references should be near figure/chart being referenced. | D3 | Writer's Discretion/ Line Edit |
| 175 | 2 | Comment | P. 7 Line 182-199: Should be located on the page adjacent to the figure. There is no "reference" point for readers to visually understand the reference. Should this be referencing Figure 3. | D3 | Writer's Discretion/ Line Edit |
| 176 | 2 | Comment | P. 7-8 Line 203: Change → "able to demonstrate in order to show understanding of the core content in that subject area." To → "able to demonstrate understanding of a subject area's core content." | D3 | Writer's Discretion/ Line Edit |
| 177 | 2 | Comment | P. 8 Line 204-206: Change to → "scientifically literate students understand and are able to apply these expectations to Earth Science, Space Science, Life Science, Physical Science and Engineering" | D3 | Writer's Discretion/ Line Edit |
| 178 | 2 | Comment | P. 8 Line 206: What does (they) reference? | D3 | Writer's Discretion/ Line Edit |
| 179 | 2 | Comment | P. 8 Line 210: Unnecessary verbage needs to be Deleted from "Upon which additional…to…and on going interest and"<br>…Add in → "for" before "learning in later life."<br>Delete—"can build upon' Is this referring to Figure 3 on page 9?<br>Also, on page 178 could this be referring to Figure 2? If so it is redundant to have both Figure 2 & 3 → Just use Figure 3 and reference appropriately in only 1 place on the same page as the figure. | D3 | Writer's Discretion/ Line Edit |
| 180 | 2 | Comment | P. 8-9 Line 218-236: Repeats info from 189-195<br>Delete 189-195 → Delete Figure 2 as it is redundant and should only be in one area. | D3 | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 181 | 2 | Comment | P. 10 Line 242-256: REPEAT OF Line 189-195… This info should only be in one place | D3 | Writer's Discretion/ Line Edit |
| 182 | 2 | Comment | P. 18 Line 454: Figure 2? Should be Figure 4? | D3 | Writer's Discretion/ Line Edit |
| 183 | 2 | Comment | P. 22 Line 538: Figure 3? Should be Figure 5. | D3 | Writer's Discretion/ Line Edit |
| 184 | 2 | Comment | P. 22 Line 551: What 'component' is being referred too | D3 | Writer's Discretion/ Line Edit |
| 185 | 2 | Comment | Line 583-586 "The" … capitalize…..<br>Remove (;) from bulleted items | D3 | Writer's Discretion/ Line Edit |
| 186 | 2 | Comment | P. 7, lines 178, 182: Suggested text: "Figure 3," instead of "Figure 8." wrong figure | D35 | Writer's Discretion/ Line Edit |
| 187 | 2 | Comment | P. 8, lines 218, 227, 234: Suggested text: "Figure 3," instead of "Figure 9." wrong figure | D35 | Writer's Discretion/ Line Edit |
| 188 | 2 | Comment | P. 8, line 222: Suggested text: "Forces" - consistency | D35 | Writer's Discretion/ Line Edit |
| 189 | 2 | Comment | P. 8, line 225: Suggested text: "each," instead of "that" | D35 | Writer's Discretion/ Line Edit |
| 190 | 2 | Comment | P. 10, lines 248, 250: Suggested text: "document." consistency | D35 | Writer's Discretion/ Line Edit |
| 191 | 2 | Comment | P. 10, line 260: Suggested text: "are," instead of "and." wrong word | D35 | Writer's Discretion/ Line Edit |
| 192 | 2 | Comment | P. 18, line 450: Suggested text: "Poincaré" - name correction | D35 | Writer's Discretion/ Line Edit |
| 193 | 2 | Comment | P. 19, line 463: Suggested text: "common elements among structures people inhabit (*list*) that influence their design and construction." | D35 | Writer's Discretion/ Line Edit |
| 194 | 2 | Comment | P. 19, line 466: Suggested text: "ideas about" - clarify | D35 | Writer's Discretion/ Line Edit |
| 195 | 2 | Comment | P. 20, line 477: Suggested text: "diverse." too many "different"s | D35 | Writer's Discretion/ Line Edit |
| 196 | 2 | Comment | P. 20, line 478: Suggested text: (delete) "different." too many "different"s | D35 | Writer's Discretion/ Line Edit |
| 197 | 2 | Comment | P. 20, line 492: Suggested text: "those practices" instead of "them" - clarify | D35 | Writer's Discretion/ Line Edit |
| 198 | 2 | Comment | P. 20, line 492: Suggested text: (delete) "They" - clarify | D35 | Writer's Discretion/ Line Edit |
| 199 | 2 | Comment | P. 20, line 495: Suggested text: "develop a" - clarify | D35 | Writer's Discretion/ Line Edit |
| 200 | 2 | Comment | P. 20, line 505: Suggested text: delete "that will allow them to do so." "them" has different referent | D35 | Writer's Discretion/ Line Edit |
| 201 | 2 | Comment | P. 21, line 513: Suggested text: "knowledge and use." have to "know" something before "using" it | D35 | Writer's Discretion/ Line Edit |
| 202 | 2 | Comment | P. 21, line 514: Suggested text: delete "both because it must address the three-dimensional structure of the CA NGSS performance expectations, and also because it must encourage and support teachers and students to engage in three-dimensional instruction and learning." redundant and confusing | D35 | Writer's Discretion/ Line Edit |
| 203 | 2 | Comment | P. 22, line 538; p. 25, lines 620, 624: Suggested text: "Figure 5" instead of "Figure 3." wrong figure | D35 | Writer's Discretion/ Line Edit |
| 204 | 2 | Comment | P. 23, line 566: Suggested text: "out" instead of "our." doesn't make sense | D35 | Writer's Discretion/ Line Edit |
| 205 | 2 | Comment | P. 23, line 575: Suggested text: "in" instead of "between." not sure what is meant | D35 | Writer's Discretion/ Line Edit |
| 206 | 2 | Comment | P. 24, line 594: Suggested text: "Reported experimental results are subjected to critical examination by other scientists." doesn't make sense | D35 | Writer's Discretion/ Line Edit |
| 207 | 2 | Comment | P. 24, line 609: Suggested text: "There are different approaches to scientific inquiry." Clarify | D35 | Writer's Discretion/ Line Edit |
| 208 | 2 | Comment | P. 25, line 615: Suggested text: "Conversely, the theorists may develop theories and formulate hypotheses based on the criticisms of their colleagues and the data produced by the experimentalists to assess the validity" | D35 | Writer's Discretion/ Line Edit |
| 209 | 2 | Comment | P. 26, line 668: Suggested text: "the styles of reasoning in which scientists engage." missing word | D35 | Writer's Discretion/ Line Edit |
| 210 | 2 | Comment | P. 26, line 670: Suggested text: "students develop a conceptual understanding that becomes integrated into their own understanding of the world" | D35 | Writer's Discretion/ Line Edit |
| 211 | 2 | Comment | P. 27, line 677: Suggested text: "As scientists engage." verb agreement | D35 | Writer's Discretion/ Line Edit |
| 212 | 2 | Comment | P. 28, line 708: Suggested text: "Likewise, if "What is amazing about levers?" is the question" | D35 | Writer's Discretion/ Line Edit |
| 213 | 2 | Comment | P. 28, line 725: Suggested text: "how a plane can use less fuel" - parallel construction to surrounding sentences | D35 | Writer's Discretion/ Line Edit |
| 214 | 2 | Comment | P. 28, line 727: Suggested text: "how an electronic system can support" - parallel construction to surrounding sentences | D35 | Writer's Discretion/ Line Edit |
| 215 | 2 | Comment | P. 29, line 751: delete: ", and the incorporation of new observatioins and learning over time." redundant, observations misspelled | D35 | Writer's Discretion/ Line Edit |
| 216 | 2 | Comment | P. 29, line 753: Suggested text: "In science, the attempt to represent any system by a model and use it as a tool for developing an explanation allows students to observe more closely (directly or indirectly) details previously ignored, define boundaries, and apply knowledge of the crosscutting concept of a system." Laborious and redundant | D35 | Writer's Discretion/ Line Edit |
| 217 | 2 | Comment | P. 30, line 761: Suggested text: "Models may represent" | D35 | Writer's Discretion/ Line Edit |

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| 218 | 2 | Comment | P. 30, line 762: Suggested text: "Models may represent concepts of a relevant scientific theory, or products of processes in a system." Not only one theory or system | D35 | Writer's Discretion/ Line Edit |
| 219 | 2 | Comment | P. 30, line 764: Suggested text: "side notes" - on the side of what? | D35 | Writer's Discretion/ Line Edit |
| 220 | 2 | Comment | P. 30, line 766: Suggested text: "aspects" - misspelled | D35 | Writer's Discretion/ Line Edit |
| 221 | 2 | Comment | P. 30, line 783: accessible languages? I have no idea what this means | D35 | Writer's Discretion/ Line Edit |
| 222 | 2 | Comment | P. 31, sys model: Suggested text: "which specifies" - less confusing | D35 | Writer's Discretion/ Line Edit |
| 223 | 2 | Comment | P. 32, sys model: Suggested text: "example models an ATM as a system surrounded by the interactions of a" - less confusing | D35 | Writer's Discretion/ Line Edit |
| 224 | 2 | Comment | P. 32, sys model: Suggested text: "systems" - there are many interacting systems to make the ATM, not just one | D35 | Writer's Discretion/ Line Edit |
| 225 | 2 | Comment | P. 33, math model: Suggested text: remove comma after "F=ma" | D35 | Writer's Discretion/ Line Edit |
| 226 | 2 | Comment | P. 33, math model: Suggested text: "understanding as both" - them refers to what in the original? | D35 | Writer's Discretion/ Line Edit |
| 227 | 2 | Comment | P. 33, math model: delete: ", for example the spring constant k in the relationship F= - kx between the force F with which a spring pulls on an object and the amount x that the spring is stretched. (The relationship is general but the constant is particular to a given spring.)" an example is consistently given in the right column | D35 | Writer's Discretion/ Line Edit |
| 228 | 2 | Comment | P. 33, math model: Suggested text: "stressed, meaning translating a relationship stated in words or observed through a set of measurements into a graph and/or an equation as described above." cumbersome and confusing | D35 | Writer's Discretion/ Line Edit |
| 229 | 2 | Comment | P. 34, math model: "The ability to understand and interpret such equations," ? I'm not sure what you intended to say - sentence fragment | D35 | Writer's Discretion/ Line Edit |
| 230 | 2 | Comment | P. 34, comp model: Suggested text: "of a system" - There is more than one system in science, consistency with other model descriptions | D35 | Writer's Discretion/ Line Edit |
| 231 | 2 | Comment | P. 34, comp model: "includes specification of objects" - ? I'm not sure what you intended to say | D35 | Writer's Discretion/ Line Edit |
| 232 | 2 | Comment | P. 34, comp model: Suggested text: "mimic a system" - There is more than one system in science, consistency with other model descriptions | D35 | Writer's Discretion/ Line Edit |
| 233 | 2 | Comment | P. DD36d, scale model: delete comma between "size" and "to" | D35 | Writer's Discretion/ Line Edit |
| 234 | 2 | Comment | P. DD36d, scale model: Suggested text: "This map is a two-dimensional scale drawing" - verbose and redundant | D35 | Writer's Discretion/ Line Edit |
| 235 | 2 | Comment | P. DD36d, 3d model: Suggested text: "A three-dimensional scale model is one which has been reduced or enlarged from its original size to a different scale in three dimensional space." consistency with other model descriptions | D35 | Writer's Discretion/ Line Edit |
| 236 | 2 | Comment | P. DD36d, 3d model: Suggested text: "This is toy car is a three-dimensional model with a 1:18 scale." verbose and redundant, incorrect its | D35 | Writer's Discretion/ Line Edit |
| 237 | 2 | Comment | P. D37, line 796: Suggested text: "structure" - misspelled word | D35 | Writer's Discretion/ Line Edit |
| 238 | 2 | Comment | P. D37, line 804: Suggested text: "more dynamic" - consistent format | D35 | Writer's Discretion/ Line Edit |
| 239 | 2 | Comment | P. D37, line 806: Suggested text: "(for example changes over time)" - incomplete thought | D35 | Writer's Discretion/ Line Edit |
| 240 | 2 | Comment | P. 38, line 821: Suggested text: "for a gas" - which gas | D35 | Writer's Discretion/ Line Edit |
| 241 | 2 | Comment | P. 38, line 824: Suggested text: "a kinetic" - article agreement | D35 | Writer's Discretion/ Line Edit |
| 242 | 2 | Comment | P. 38, line 824: Suggested text: "that changes" | D35 | Writer's Discretion/ Line Edit |
| 243 | 2 | Comment | P. 39, line 853: Suggested text: "key aspects of that system and its relevant variables " the? | D35 | Writer's Discretion/ Line Edit |
| 244 | 2 | Comment | P. 39, line 857: Suggested text: "practice of building" | D35 | Writer's Discretion/ Line Edit |
| 245 | 2 | Comment | P. 39, line 859: Suggested text: "toward" instead of "to focus" | D35 | Writer's Discretion/ Line Edit |
| 246 | 2 | Comment | P. D40, line 871: Suggested text: "or incorporate" - misspelled word | D35 | Writer's Discretion/ Line Edit |
| 247 | 2 | Comment | P. D40, line 875: Suggested text: "experimentalist, asking questions and making discoveries that are new to science" - too many "and"s | D35 | Writer's Discretion/ Line Edit |
| 248 | 2 | Comment | P. D40, line 889: Suggested text: "decisions must be made about what to record in order to be able to analyze" - repetitiveness causes confusion | D35 | Writer's Discretion/ Line Edit |
| 249 | 2 | Comment | P. 41, line 892: Suggested text: "outcomes of a sweeping set" - "a" in the wrong place | D35 | Writer's Discretion/ Line Edit |
| 250 | 2 | Comment | P. 41, line 915: "Control of variables strategy and its role" ? Not sure what you want to say; very awkward | D35 | Writer's Discretion/ Line Edit |
| 251 | 2 | Comment | P. 41, line 917: Suggested text: "appropriate investigative design" - I don't think you mean design of the question itself | D35 | Writer's Discretion/ Line Edit |
| 252 | 2 | Comment | P. 42, line 9DD36d: Suggested text: "understand the variety" - "both" not appropriate since three items are listed | D35 | Writer's Discretion/ Line Edit |
| 253 | 2 | Comment | P. 42, line 944: Suggested text: "of a redesigned solution" - no mention of redesigning a solution to allow use of "the" | D35 | Writer's Discretion/ Line Edit |
| 254 | 2 | Comment | P. D43, line 963: Suggested text: "the goal" - I think this is what you actually meant | D35 | Writer's Discretion/ Line Edit |
| 255 | 2 | Comment | P. 46, line 1009: Suggested text: "both data that" - need subject for clause | D35 | Writer's Discretion/ Line Edit |
| 256 | 2 | Comment | P. 46, line 1010: Suggested text: "data produced" | D35 | Writer's Discretion/ Line Edit |

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| 257 | 2 | Comment | P. 46, line 1018: "human ability to formulate problems so that their solutions can be represented as computational steps or algorithms to be carried out by a computer." Need source for quote | D35 | Writer's Discretion/ Line Edit |
| 258 | 2 | Comment | P. 47, line 1028: Suggested text: "Science and engineering are an" - subject/verb agreement, also indent for paragraph | D35 | Writer's Discretion/ Line Edit |
| 259 | 2 | Comment | P. 47, line 1030: Suggested text: "Science teachers should help students apply mathematics and computational thinking as much as possible, working together with mathematics teachers to help students bridge the gaps between the way the mathematics looks in mathematics class and the way it is used in science. Working with mathematics and computer science teachers, science teachers can help students see the relevance of mathematics and computers in advancing science as well as addressing (and potentially solving) real-world problems." Major run on sentence | D35 | Writer's Discretion/ Line Edit |
| 260 | 2 | Comment | P. 47, line 1039: Suggested text: "Mathematics serves both a communicative function as" - verbose and cumbersome | D35 | Writer's Discretion/ Line Edit |
| 261 | 2 | Comment | P. 47, line 1041: Suggested text: "quantity and a structural function which" - changed sentence structure above | D35 | Writer's Discretion/ Line Edit |
| 262 | 2 | Comment | P. 49, line 1084: Suggested text: "mathematics is simply" - remove extra word | D35 | Writer's Discretion/ Line Edit |
| 263 | 2 | Comment | P. 50, line 1122: Suggested text: "Engaging in program coding work" - remove extra word | D35 | Writer's Discretion/ Line Edit |
| 264 | 2 | Comment | P. 50, line 1123: "make abstract real-world phenomena" I don't understand what you wanted to say | D35 | Writer's Discretion/ Line Edit |
| 265 | 2 | Comment | P. 51, line 1142: Suggested text: "encode computer algorithms" - incorrect word | D35 | Writer's Discretion/ Line Edit |
| 266 | 2 | Comment | P. 51, line 1155: Suggested text: "deepen students' acquisition" - "youth" doesn't make sense here | D35 | Writer's Discretion/ Line Edit |
| 267 | 2 | Comment | P. 51, line 1169: "6. Constructing Explanations and Designing Solutions" - insert a space. consistent formatting | D35 | Writer's Discretion/ Line Edit |
| 268 | 2 | Comment | P. 52, line 1178: Suggested text: "Scientific concepts and terminology are learned as students seek information and words to develop their models and explanations." These sentences say the same thing. | D35 | Writer's Discretion/ Line Edit |
| 269 | 2 | Comment | P. 52, line 1193: Suggested text: "phenomenon of a balloon" - missing word | D35 | Writer's Discretion/ Line Edit |
| 270 | 2 | Comment | P. 53, line 1206: Suggested text: "explaining many other phenomena as it has become more defined and detailed." - awkward | D35 | Writer's Discretion/ Line Edit |
| 271 | 2 | Comment | P. 53, line 1210: Delete: "To resolve the inherent contradiction in the Michelson-Morley experiment which showed no variation in the velocity of light with the direction of the travel of the Earth, Einstein asked whether the speed of light varies with the speed of an observer and derived the special theory of relativity." Extremely abrupt. You have a better transition to another example after this sentence | D35 | Writer's Discretion/ Line Edit |
| 272 | 2 | Comment | P. 53, line 1223: Suggested text: "idea does not agree with" How does an idea fail? It's like an opinion, it just is. A theory or conception can fail. | D35 | Writer's Discretion/ Line Edit |
| 273 | 2 | Comment | P. 53, line 1226: Suggested text: "can incorporate first ideas about density, then eventually the more subtle ideas about balance of the various forces involved." run on sentence, misspelled word | D35 | Writer's Discretion/ Line Edit |
| 274 | 2 | Comment | P. 54, line 1232: Suggested text: "need many carefully" - better choice of words | D35 | Writer's Discretion/ Line Edit |
| 275 | 2 | Comment | P. 54, line 1233: Suggested text: "test them against subsequent observations" - "them' and "their" refer to two different nouns | D35 | Writer's Discretion/ Line Edit |
| 276 | 2 | Comment | P. 54, line 1238: Suggested text: "potential conflicts. Such conflicts" - agreement | D35 | Writer's Discretion/ Line Edit |
| 277 | 2 | Comment | P. 54, line 1246: Suggested text: "hypothesis for an investigation" - sounds like you are trying to predetermine an outcome, not design an investigation | D35 | Writer's Discretion/ Line Edit |
| 278 | 2 | Comment | P. 54, line 1248: Suggested text: "fit" - match tense of other verbs | D35 | Writer's Discretion/ Line Edit |
| 279 | 2 | Comment | P. 54, line 1250: Suggested text: "were" - match tense of other verbs | D35 | Writer's Discretion/ Line Edit |
| 280 | 2 | Comment | P. 54, line 1258: Suggested text: "into a theory" - "coherent" used immediately in next sentence | D35 | Writer's Discretion/ Line Edit |
| 281 | 2 | Comment | P. 55, line 1267: Suggested text: "incorporates" - misspelled word | D35 | Writer's Discretion/ Line Edit |
| 282 | 2 | Comment | P. 55, line 1282: Suggested text: "argumentation" - misspelled word | D35 | Writer's Discretion/ Line Edit |
| 283 | 2 | Comment | P. 55, line 1288: Suggested text: "to take ownership of them through development" - Many students can "make sense" of ideas but not remember them later unless they derive the concepts themselves. | D35 | Writer's Discretion/ Line Edit |
| 284 | 2 | Comment | P. 56, line 1292: Suggested text: "equilibria in predator-prey populations can be explained by creating populations with different mechanisms or procedures for behaviors." be consistent in number, I don't understand the part about different procedures for birth or death. | D35 | Writer's Discretion/ Line Edit |
| 285 | 2 | Comment | P. 56, line 1304: delete "may" - These examples already exist | D35 | Writer's Discretion/ Line Edit |
| 286 | 2 | Comment | P. 56, line 1308: Suggested text: "a" instead of "the" - three examples previously listed, sentence discusses problems in general | D35 | Writer's Discretion/ Line Edit |
| 287 | 2 | Comment | P. 56, line 1314: Delete: "In short, engineers use a different set of criteria than scientists use to evaluate proposed solutions. Because engineering constraints include both objecive and subjective criteria, there is not one best solution to a design problem; different solutions satisfy the needs and desires of different users." Repeats previous sentences almost word for word. | D35 | Writer's Discretion/ Line Edit |
| 288 | 2 | Comment | P. 57, line 1321: delete "thus" - "thus" used in very next sentence | D35 | Writer's Discretion/ Line Edit |

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| 289 | 2 | Comment | P. 57, line 1325: Suggested text: "as learning" - no space between two words | D35 | Writer's Discretion/ Line Edit |
| 290 | 2 | Comment | P. 57, line 1331: "Figure 3" should be "Figure 5" - I think you mean a different figure. | D35 | Writer's Discretion/ Line Edit |
| 291 | 2 | Comment | P. 57, line 1332: delete "contested" - If something is contested, there is argument about it. This is redundant. | D35 | Writer's Discretion/ Line Edit |
| 292 | 2 | Comment | P. 57, line 13D43: Suggested text: "common sense" - common sense is everyday, that is why it is common. | D35 | Writer's Discretion/ Line Edit |
| 293 | 2 | Comment | P. 58, line 1DD36d3: no comma after used - comma breaks flow | D35 | Writer's Discretion/ Line Edit |
| 294 | 2 | Comment | P. 58, line 1DD36d5: "specific to each" - each (what?) Do you mean subject area? Discipline? | D35 | Writer's Discretion/ Line Edit |
| 295 | 2 | Comment | P. 58, line 1DD36d7: no comma after opinion - you didn't use one after claim. | D35 | Writer's Discretion/ Line Edit |
| 296 | 2 | Comment | P. 59, line 1D379: no comma between "resistance" and "to" - no comma in from / to construction | D35 | Writer's Discretion/ Line Edit |
| 297 | 2 | Comment | P. 59, line 1394: Suggested text: "Another major goal" - You never listed a "first." | D35 | Writer's Discretion/ Line Edit |
| 298 | 2 | Comment | P. 59, line 1395: Suggested text: "different types of reasoning contribute to the range of arguments in science" - I think this is what you meant. | D35 | Writer's Discretion/ Line Edit |
| 299 | 2 | Comment | P. 60, line 1420: Suggested text: "lead the student" - one student mentioned earlier, I don't know where the group came from | D35 | Writer's Discretion/ Line Edit |
| 300 | 2 | Comment | P. 60, line 1422: Suggested text: "by (delete the)" - I think science in general is meant | D35 | Writer's Discretion/ Line Edit |
| 301 | 2 | Comment | P. 60, line 1442: they? Does they refer back to scientists and engineer like the "their" just used? That doesn't make sense. I'm confused here. | D35 | Writer's Discretion/ Line Edit |
| 302 | 2 | Comment | P. 60, line 1450: Delete: "to educate students in the specific forms of disciplinary literacy for science" - repeats first part of sentence | D35 | Writer's Discretion/ Line Edit |
| 303 | 2 | Comment | P. 60, line 1452: Delete: "While reliant on basic literacy," - Doesn't add to the message | D35 | Writer's Discretion/ Line Edit |
| 304 | 2 | Comment | P. 62, line 1486: Suggested text: "what scientific information is valid and what is less reliable" - word order makes concept clearer | D35 | Writer's Discretion/ Line Edit |
| 305 | 2 | Comment | P. 62, line 1487: Suggested text: "These strategies" - Otherwise "these" seems to refer obliquely to students | D35 | Writer's Discretion/ Line Edit |
| 306 | 2 | Comment | P. 63, line 1513: Suggested text: "Doing so can" - Comma not logical | D35 | Writer's Discretion/ Line Edit |
| 307 | 2 | Comment | P. 63, line 1514: Suggested text: "of scientific" - choppy | D35 | Writer's Discretion/ Line Edit |
| 308 | 2 | Comment | P. 63, line 1515: Suggested text: "concepts as" - Comma not logical | D35 | Writer's Discretion/ Line Edit |
| 309 | 2 | Comment | P. 63, line 1524: "This section" - ? What section is referred to? I thought you were taking about a dimension. | D35 | Writer's Discretion/ Line Edit |
| 310 | 2 | Comment | P. 63, line 1527: Suggested text: "ability and disposition" - mass noun, also to be consistent with p 66/ line 1595 | D35 | Writer's Discretion/ Line Edit |
| 311 | 2 | Comment | P. 64, lines 1531 and 1534: delete "the" - follow NRC quote example which uses practices (in general) | D35 | Writer's Discretion/ Line Edit |
| 312 | 2 | Comment | P. 64, line 1554: After each CCC use either a : or a . Uniformly - There is random switching back and forth in the list. | D35 | Writer's Discretion/ Line Edit |
| 313 | 2 | Comment | P. 65, line 1567: Suggested text: "a" instead of "the" - move to general, not only one system in science | D35 | Writer's Discretion/ Line Edit |
| 314 | 2 | Comment | P. 65, line 1572: Suggested text: "changes" instead of "fluxes" - Does matter flux? | D35 | Writer's Discretion/ Line Edit |
| 315 | 2 | Comment | P. 65, line 1577: Suggested text: "natural and synthetic; natural and manmade" nature builds | D35 | Writer's Discretion/ Line Edit |
| 316 | 2 | Comment | P. 66, line 1592: Suggested text: "an instructional" - specific to general | D35 | Writer's Discretion/ Line Edit |
| 317 | 2 | Comment | P. 66, line 1597: Delete: "A coherent plan of study should ensure that, as with the practices, every one of the crosscutting concepts receives explicit attention and is used often enough that students recognize it and develop the disposition to apply it for themselves when presented with a new problem." repeats previous sentence | D35 | Writer's Discretion/ Line Edit |
| 318 | 2 | Comment | P. 66, line 1602: Suggested text: "of earlier" - clarification | D35 | Writer's Discretion/ Line Edit |
| 319 | 2 | Comment | P. 66, line 1612: delete entire paragraph. It says the same thing as the next paragraph but not as clearly. | D35 | Writer's Discretion/ Line Edit |
| 320 | 2 | Comment | P. 67, line 1628: Suggested text: "Not only can the cross cutting concept act as a tool to help students engage more effectively in explaining a phenomenon, it allows students to recognize similarities between many seemingly different phenomena and systems." clarification | D35 | Writer's Discretion/ Line Edit |
| 321 | 2 | Comment | P. 67, line 1634: Suggested text: "be introduced in the context of a practice when skillfully applied in learning about" - repetitive use of "context" | D35 | Writer's Discretion/ Line Edit |
| 322 | 2 | Comment | P. 67, line 16DD36d: Suggested text: "particular concept should" - "practice" means something else in this document | D35 | Writer's Discretion/ Line Edit |
| 323 | 2 | Comment | P. 67, line 16D40: delete "hence," insert "the." Just started a recent sentence with "hence" | D35 | Writer's Discretion/ Line Edit |
| 324 | 2 | Comment | P. 67, line 16D43: delete "within each instructional segment" - repeats what was earlier in the sentence | D35 | Writer's Discretion/ Line Edit |
| 325 | 2 | Comment | P. 67, line 1646: delete "An understanding of the concept of patterns and their role in scientific studies of systems can provide students with questions that they can use in the context of any of the practices of designing and carrying out investigations and of analyzing and interpreting data" - Abrupt jump from previous sentences breaks flow | D35 | Writer's Discretion/ Line Edit |
| 326 | 2 | Comment | P. 68, line 1651: delete entire paragraph. It says the same thing as the next paragraph but not as clearly. | D35 | Writer's Discretion/ Line Edit |
| 327 | 2 | Comment | P. 68, line 1667: Suggested text: "more detailed questions one asks about them take distinct disciplinary forms" - more concise | D35 | Writer's Discretion/ Line Edit |
| 328 | 2 | Comment | P. 69, line 1678: Suggested text: "should start with these examples, then expand further" | D35 | Writer's Discretion/ Line Edit |

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| 329 | 2 | Comment | P. 69, line 1700: delete "in the designed system" - repetitive | D35 | Writer's Discretion/ Line Edit |
| 330 | 2 | Comment | P. 70, line 1711: Suggested text: "The following section provides more general questions that can be used to apply a concept in many different contexts." - clarification | D35 | Writer's Discretion/ Line Edit |
| 331 | 2 | Comment | P. 70, line 1731: delete "correlated." Doesn't make sense here | D35 | Writer's Discretion/ Line Edit |
| 332 | 2 | Comment | P. 70, line 1732: Suggested text: "Such a correlation may suggest that the conditions or events are otherwise related" - clarification | D35 | Writer's Discretion/ Line Edit |
| 333 | 2 | Comment | P. 72, line 1775: Suggested text: "associated with" - clarification | D35 | Writer's Discretion/ Line Edit |
| 334 | 2 | Comment | P. 72, line 1793: Suggested text: "does it have" - missing a subject | D35 | Writer's Discretion/ Line Edit |
| 335 | 2 | Comment | P. 73, line 1799: Suggested text: "will form. Why?)" run on | D35 | Writer's Discretion/ Line Edit |
| 336 | 2 | Comment | P. 73, line 1806: delete ", or the action of things external to the system" - repetitive | D35 | Writer's Discretion/ Line Edit |
| 337 | 2 | Comment | P. 73, line 1808: delete "even in the context of such concrete and visible systems" - repetitive | D35 | Writer's Discretion/ Line Edit |
| 338 | 2 | Comment | P. 73, line 1815: Suggested text: "but it is useful to choose a" - clarification | D35 | Writer's Discretion/ Line Edit |
| 339 | 2 | Comment | P. 73, line 1825: delete "and multi-component" - repetitive | D35 | Writer's Discretion/ Line Edit |
| 340 | 2 | Comment | P. 73, line 1826: Suggested text: "generalities but not details" - clarification | D35 | Writer's Discretion/ Line Edit |
| 341 | 2 | Comment | P. 74, line 18DD36d: Suggested text: "location" - clarification | D35 | Writer's Discretion/ Line Edit |
| 342 | 2 | Comment | P. 74, line 1842: Suggested text: "cannot accurately predict" - we can already predict all we like but it isn't accurate | D35 | Writer's Discretion/ Line Edit |
| 343 | 2 | Comment | P. 74, line 1855: Suggested text: "affecting" instead of "controlling." I think this is what you mean | D35 | Writer's Discretion/ Line Edit |
| 344 | 2 | Comment | P. 75, line 1857: delete "etc." repetitive | D35 | Writer's Discretion/ Line Edit |
| 345 | 2 | Comment | P. 75, line 1860: "various" instead of "different" - just used "different" | D35 | Writer's Discretion/ Line Edit |
| 346 | 2 | Comment | P. 75, line 1861: "energy" instead of "it" - clarification | D35 | Writer's Discretion/ Line Edit |
| 347 | 2 | Comment | P. 75, line 1862: delete "terminologies" - doesn't make sense | D35 | Writer's Discretion/ Line Edit |
| 348 | 2 | Comment | P. 75, line 1862: "they" instead of "the differences" - concise | D35 | Writer's Discretion/ Line Edit |
| 349 | 2 | Comment | P. 75, line 1863: "follows" instead of "tracks" - tracks looks like a noun here | D35 | Writer's Discretion/ Line Edit |
| 350 | 2 | Comment | P. 75, line 1864: Suggested text: "the energy concept" - clarification | D35 | Writer's Discretion/ Line Edit |
| 351 | 2 | Comment | P. 75, line 1865: "(e.g., oxygen in oxygen-rich environments)" - (move to end of sentence after "energy.") makes more sense | D35 | Writer's Discretion/ Line Edit |
| 352 | 2 | Comment | P. 75, line 1866: Suggested text: "It is very difficult for students to connect energy usage" - clarification and flow | D35 | Writer's Discretion/ Line Edit |
| 353 | 2 | Comment | P. 75, line 1869: Suggested text: "without the teacher's guidance." - concise | D35 | Writer's Discretion/ Line Edit |
| 354 | 2 | Comment | P. 76, line 1888: Suggested text: "naturally selects for" - verb agreement | D35 | Writer's Discretion/ Line Edit |
| 355 | 2 | Comment | P. 76, line 1888: Suggested text: "within a species" - more than one species in the world | D35 | Writer's Discretion/ Line Edit |
| 356 | 2 | Comment | P. 76, line 1907: Suggested text: "short time" - better flow | D35 | Writer's Discretion/ Line Edit |
| 357 | 2 | Comment | P. 76, line 1913: Suggested text: "help integrate" instead of "provide help for integrating" - better flow | D35 | Writer's Discretion/ Line Edit |
| 358 | 2 | Comment | P. 77, line 1928: Suggested text: "Nature of Science and engineering concepts are included" - consistent format with previous bullets | D35 | Writer's Discretion/ Line Edit |
| 359 | 2 | Comment | P. 77, line 1931: remove comma after *NGSS* - unnecessary comma | D35 | Writer's Discretion/ Line Edit |
| 360 | 2 | Comment | P. 77, lines 1938 and 19D40: "Figure 5" should be "Figure 6" - wrong figure | D35 | Writer's Discretion/ Line Edit |
| 361 | 2 | Comment | P. 77, line 1942: Suggested text: "of the *Cause and Effect* " - referring to this as a type of relationship, need to be consistent with format of subsequent relationship titles in the paragraph | D35 | Writer's Discretion/ Line Edit |
| 362 | 2 | Comment | P. 77, line 1944: Suggested text: "scientific investigation" instead of "how science investigates natural phenomena" - concise | D35 | Writer's Discretion/ Line Edit |
| 363 | 2 | Comment | P. 79, line 1985: Suggested text: "to a specific" - need more general | D35 | Writer's Discretion/ Line Edit |
| 364 | 2 | Comment | P. 79, line 1988: Suggested text: "informed, critical" - less awkward | D35 | Writer's Discretion/ Line Edit |
| 365 | 2 | Comment | P. 82, line 2015: Suggested text: ""endpoints." - punctuation | D35 | Writer's Discretion/ Line Edit |
| 366 | 2 | Comment | P. 82, line 2025: Suggested text: "because they are too small" - missing a subject | D35 | Writer's Discretion/ Line Edit |
| 367 | 2 | Comment | P. 82, line 2026: Suggested text: "Earth, and with" - need connector | D35 | Writer's Discretion/ Line Edit |
| 368 | 2 | Comment | P. 83, line 2048: Suggested text: "These learning progressions reflect" - bold unnecessary | D35 | Writer's Discretion/ Line Edit |
| 369 | 2 | Comment | P. 83, line 2050: Suggested text: "scientific ideas across (grades or from) kindergarten through grade" - better flow | D35 | Writer's Discretion/ Line Edit |
| 370 | 2 | Comment | P. 83, line 2056: Suggested text: "lower grade bands" - part of word missing | D35 | Writer's Discretion/ Line Edit |
| 371 | 2 | Comment | P. 83, line 2058: Suggested text: "same DCIs" - match case of subject | D35 | Writer's Discretion/ Line Edit |
| 372 | 2 | Comment | P. 83, line 2058: Figure 6 should be Figure 7 - correct figure number | D35 | Writer's Discretion/ Line Edit |
| 373 | 2 | Comment | P. 85, line 2076: Figure 7 should be Figure 8 - correct figure number | D35 | Writer's Discretion/ Line Edit |
| 374 | 2 | Comment | P. 88, lines 2154, 2171: Suggested text: (ETS1) (ETS2) - inconsistent use of bold | D35 | Writer's Discretion/ Line Edit |
| 375 | 2 | Comment | P. 88, line 2163: Suggested text: "chapters (number) to (number)" - Are the x's place holders? It looks like you were going to | D35 | Writer's Discretion/ Line Edit |

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| 376 | 2 | Comment | P. 89, line 2181: delete "However, in many areas of science the standards do not invoke applications very often, even though there is a wide range of application, such as the applications of life science in agriculture, medicine, or health sectors." redundant | D35 | Writer's Discretion/ Line Edit |
| 377 | 2 | Comment | P. 90, line 2205: Suggested text: "concept of the" - incorrect word | D35 | Writer's Discretion/ Line Edit |
| 378 | 2 | Comment | P. 90, line 2226: Suggested text: "undertaking" instead of "engaging in" - repetitive word use | D35 | Writer's Discretion/ Line Edit |
| 379 | 2 | Comment | P. 91, line 2250: Suggested text: "engage in and reflect on" - correct word usage | D35 | Writer's Discretion/ Line Edit |
| 380 | 2 | Comment | P. 91, line 2251: delete "to make sense and" - redundant | D35 | Writer's Discretion/ Line Edit |
| 381 | 2 | Comment | P. 92, line 2273: Suggested text: "language. Attention" two sentences makes more sense | D35 | Writer's Discretion/ Line Edit |
| 382 | 2 | Comment | P. 92, line 2283: Suggested text: "all academic" - makes more sense | D35 | Writer's Discretion/ Line Edit |
| 383 | 2 | Comment | P. 94, line 2322: Suggested text: "a supplementary resource" - no italics | D35 | Writer's Discretion/ Line Edit |
| 384 | 2 | Comment | P. 95, line 2DD36d6: Suggested text: "Figure 1" instead of "Table 5" - incorrect label | D35 | Writer's Discretion/ Line Edit |
| 385 | 2 | Comment | P. 96, line 2D371: Suggested text: "appendices" - no italics | D35 | Writer's Discretion/ Line Edit |
| 386 | 2 | Comment | P. 96, line 2D377: Suggested text: "a complete listing of California's EP&Cs as well as grade" - no italics | D35 | Writer's Discretion/ Line Edit |
| 387 | 2 | Comment | P. 96, line 2D378: Suggested text: "EP&Cs" - doesn't make sense to write it out after you just used the abbreviation | D35 | Writer's Discretion/ Line Edit |
| 388 | 2 | Comment | P. 100, line 2460: Suggested text: "engineering practices" - not capitalized | D35 | Writer's Discretion/ Line Edit |
| 389 | 2 | Comment | P. 101, line 2496: Suggested text: "band" instead of "span level" - clarification | D35 | Writer's Discretion/ Line Edit |
| 390 | 2 | Survey | Page 34, Computer model or simulation. Please add the following in order to clarity and connect between different models. Computer simulations are an extension of a mathematical model that cannot be be solved through analytic methods or is too large and complex that a computer is needed to automate the enormous amount of computations. For example, Typhoon Mawar is simulated by solving the Navier-Stokes equations numerically under appropriate boundary and initial conditions. The Navier-Stokes equations are a mathematical model of conservations of mass, momentum and energy for fluids. Numerical solutions to the Navier-Stokes equations involve breaking up the domain of interest into tiny boxes and defining the temperature, pressure, velocity and density of the air in each of them. As air flows from one box the its neighboring boxes, these parameters are updated in time. Page 36, Three Dimensional Scale Model, This section is not quantitatively different from scale model, so it should be omitted or replaced by another model. This section should be be renamed, "Dimensional-Reduced Model" and should describe a model that has been project to lower dimensions. For example, when only one or two dimensions may be of interest in a 3D model in the floor plans of a building. Line, 839-841 "Computer modeling and simulation present a concrete way to make explicit the links between scientific and engineering practices. Computer models are engineered designs manifested in computer code." These two sentences are incoherent and maundering and should be omitted. | Item B | Writer's Discretion/ Line Edit |
| 391 | 2 | Survey | Move line 218-225 to Page 7, and incorporate into Line 187 Clearer understanding of how to read grade span and discipline Page 7, Line 202 The performance expectations (PE) are the assessable statements of what students should be able to demonstrate in order to show understanding of the core content in that subject area. The performance expectations (PE) are the assessable statements of what students should be able to demonstrate (through science and engineering practices) in order to show understanding of the core content and the cross cutting concepts. Teachers may believe demonstrate refers to just MC tests, whereas it is referring to the practices and using them to demonstrate knowledge of content. Maintains focus on the three dimensions throughout. Page 8, Line 206 and Space Science, Life Science, and Physical Science and Engineering. and Space Science, Life Science, and Physical Science and Engineering, Technology, and Applications of Science Engineering also represents these other areas. Page 11, Line 288 Both the SEP column and the CCC column may also contain supplemental learning goals identified as the "Engineering, Technology, and Application of Science" (found only in the green CCC column) and the "Nature of Science" connections (found both in the SEP and the CCC columns). Not sure if these are learning goals or if they are DCI – can you check this wording. Unclear – seems to minimize significance of ETS as a DCI Page 31, Table 1 Table 1: Types of models Include more examples for each model type Examples are very vague and some are not related to science or engineering. They should exemplify the power of modeling. | Item B | Writer's Discretion/ Line Edit |

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| 392 | 2 | Survey | 36, lower RH cell of table it's its 38 lines 823-826 Sentence is too long Shorten sentence incomprehensible sentence 48 line 1065 with the explosion of technology-based tools with the sharp increase in the use of technology-based tools Clearer meaning 48 line 1079 measure measurement correct word choice 49 lines 1083-4 51 line 1142 computater computer Correct spelling 51 line 1165 youth youths correct usage 53 line 1214 the force that pulls apple the force that pulls an apple correct grammar 54 line 1255 it was recognized that the continents scientists discovered that the continents Avoid use of passive voice; active voice is more direct 55 line 1282 argumentation argumentation correct spelling p. 56 line 1293 This encapsulation of explanations as mechanism is then testable - [not sure what the writer means here] Statement is unclear p. 57 line 1325 well aslearning well as learning space needed p. 57 lines 1332-5 From an educational perspective, the value of providing opportunities to students to engage in argumentation is that it demands the higher order thinking skills of evaluation, synthesis, comparison, and contrast Providing opportunities to students to engage in argumentation is valuable because it entails the higher order thinking skills of evaluation, synthesis, comparison, and contrast remove excess verbiage p. 57 lines 1342-3 are not congruent to everyday common sense. do not arise from everyday common sense. | Item B | Writer's Discretion/ Line Edit |
| 393 | 2 | Survey | clearer wording p. 59 line 1380 require justification drawing on a require justification, drawing on a correct punctuation p. 63 line 1513 Doing so, Doing so correct punctuation p. 72 line 1768 as I change the length scale of the model as I change the scale dimensions of the model clearer wording p. 77 lines 1938 and 1940 Figure 5 Figure 6 "Figure 5" refers to SEPs, not CCCs p. 83 line 2057 Figure 6 Figure 7 correct reference to figure p. 85 line 2066 so to ensure full to ensure full clearer wording | Item B | Writer's Discretion/ Line Edit |
| 394 | 2 | Survey | Page 15, line 390: "American" sounds redundant here. Does this mean all the Americas? | Item B | Writer's Discretion/ Line Edit |
| 395 | 2 | Survey | In the section about the Science and Engineering Practice "Obtaining, Evaluating and Communicating Information" (pages 60-62), the importance of scientists' abilities to communicate with the public--something scientists are engaging in more frequently--is missing. Here is some suggested language: "Scientists today not only need to be able to communicate with their peers in academia, but also with the general public, which requires a non-academic writing style. The ability for scientists to share their work is essential in contributing to the scientific literacy of the public, assisting citizens in making informed science- and health-related policy decisions. This is especially crucial with contentious topics like climate change and vaccines. Scientists communicate to the general public through various means, including writing for websites and news outlets, appearing as experts on television or in Web videos, giving public talks and lectures, and sharing their research on social media. Students should be given the opportunity to develop skills in translating complex scientific information and ideas into understandable, accessible language for the general public, while still maintaining accuracy." | Item B | Writer's Discretion/ Line Edit |
| 396 | 2 | Survey | On Line 450, misspelled Poincare In the section starting at Line 737, Developing and Using Models, there needs to be clarification in the first paragraph about what a model is since many teachers conceive as a model as being only representational such as a labeled model for the cell. There is a statement in Lines 810 to 812 that too many teachers think models are representational only ... . This entire statement on Lines 810 to 812 also needs to be brought to the first paragraph to clarify at the beginning of the reading what a model looks like in NGSS. | Item B | Writer's Discretion/ Line Edit |
| 397 | 2 | Survey | pg 22 fig 5 Diagram regarding modeling - Change the figure. That figure is outdated and the group that developed it has actually moved on in their thinking of modeling. | Item B | Writer's Discretion/ Line Edit |
| 398 | 2 | Survey | Lines 1220-1223: "Thus the young child's idea that 'heavy things sink and light things float' does explain why a stone sinks or a piece of wood floats, but fails to explain why an iron boat floats and a grain of sand sinks." The characteristics "heavy" and "light" in this context do not explain why something floats or sinks. The mass of an object is an extensive property: the mass of a material changes as the size changes. Whether an object floats or sinks, on the other hand, calls for a comparison of two intensive quantities (the ratio of mass to volume of the object, compared to the ratio of mass to volume of the fluid). I recommend not using the words "heavy" and "light" when talking about floating and sinking. In the case cited above, the writer has conflated mass and density, which is a common language and conceptual pitfall in density instruction at all grade levels. My doctoral dissertation at UCSC (Deich, 2015) focused on how 6th-grade students understand density, and I found that the imprecise use of language can have a profound effect on how students make sense of mass, volume, and density. Even though this example appears to be specifically about displacement, I recommend changing the wording so as not to create confusion around mass and density. | Item B | Writer's Discretion/ Line Edit |

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| 399 | 2 | Survey | Page 5, Line 124 Students' mastery of each of these dimensions as well as their integration is expected by the end of high school, and here a brief outline is provided for how each of these dimensions should be developed across the grade levels. Further details regarding these progressions are described in the CA NGSS Appendices E, F, and G. Students' integration and mastery of all three dimensions is expected by the end of high school. The progressions (found in the appendices) illustrate how each of these dimensions should be developed across the grade levels. Further details regarding these progressions are described in the CA NGSS Appendices E, F, and G. and in Appendix C – Progressions of this framework. First sentence need simplification and showing how mastery and integration go together. Last sentence needs explanation of what the progressions are. Page 6, Line 147 With the adoption of the Next Generation Science Standards, California has transitioned from the state content standards that were adopted in 1998, where the focus was on what students should know and be able to do, to standards where the focus is on students' expected performance at the end of instruction. With the adoption of the Next Generation Science Standards, California has transitioned from the state content standards that were adopted in 1998, where the focus was on what students should know and be able to do, to standards where the focus is on what students should know and be able to do with knowledge at the end of instruction. This shift is represented by PE that describe… The old standards did not focus on what students were able to do. Page 7, below Line 182 Page 8, Line 218 Looking at the schematic in Figure 8, the title at the top contains a code associated with the grade level or the grade band and the core ideas included in the standards. Should be Figure 3 Include a decoding key to explain the codes – example 5-PS2 (what does that mean) | Item B | Writer's Discretion/ Line Edit |
| 400 | 2 | Survey, Teacher (Part 2 of 2) | Consider replacing them by: Computational science is one of three modalities, of science along with experimentation and theory that is emerging due to increased computational power. This new modality encompasses all the scientific practices of the other two forms and all three modalities of science work in synergy to validate each other. Computational science has also revolutionized and enhanced scientific practices such as data collection, analysis, and visualization. The same computational model may used to answer a scientific question or engineering a solution to a problem. Line 1904: More elaboration is needed to clarify the difference between static and stable. A static system is stable if perturbations will always lead to the same static condition and unstable if these perturbations take it away from this stable condition. A ladder leaning against a wall is stable if it leans close to the wall but may become unstable if it leans farther from a wall. In the ladder example, if the frictional force between the ladder and the wall and ladder and ground is strong enough to balance the weight of the ladder, then the ladder is at equilibrium and is static. On the other hand, if the static frictional force is at it's maximum possible value in the regime that the static frictional coefficient is larger than the kinetic frictional coefficient, perturbing the ladder will make it slide down to the floor, which represents another stationary configuration. In fact, there is a range of angles you can place the ladder that will lead to a static and stable configuration, so there exist a region of neutral stability. Now if the ladder is placed flat against the wall, this state is unstable because it could fall forward. The stability of a system depends on the number of degrees of freedom. A ladder constrained to move in two dimensions has three degrees of freedom, so equilibrium is achieved by balancing the forces in the x and y directions and balancing the torques acting on the ladder. | | Writer's Discretion/ Line Edit |
| 401 | 3 | Comment | K-2 span one was great. Authorship seems to be important here. We need to hire the authors of the great ones to revise the less great ones . | D43 | |
| 402 | 3 | Comment | Mary Elizabeth submitted 14 pages of line edits. Framework writer to use edits at his discretion. Attachment 50 | D50 | |
| 403 | 3 | Comment | Attachment 54a provided line edits. | 54a | Science Framework writer will review and implement edits at his discretion. |
| 404 | 4 | CDE | Throughout the chapter ELA ELD Connection for the most part describes strong ELA strategies beneficial for all students. Suggest The ELA ELD Connection needs to include specific ELD instructional focus and strategies, or strategically insert specific instructional practices for English learners throughout the chapter. | Item B | Writer's Discretion/ Line Edit |
| 405 | 4 | CDE | Page 13 Line 257 Include a sentence that informs the reader of the language instruction that would benefit ELs to meet the language demands for the science content, for example, "English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction of language structures needed for making predictions, describing observations, and asking questions orally and in writing (ELD PI.K.1, PI.K.5–6, PI.K.9, PI.K.12, PII.K.3.)" | Item B | Writer's Discretion/ Line Edit |
| 406 | 4 | CDE | Page 17 Line 310 Include a subheading, "Support for English Learners:" at the end of the vignette, and inserting the sentence, "English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on prepositional phrases or sentence structure (ELD PII.K.5)." | Item C | Writer's Discretion/ Line Edit |

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| 407 | 4 | CDE | Page 27 Line 423 Insert the subheading and sentence at the end of the vignette, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for asking and answering questions, having conversations, and responding to text for ELs orally and in writing (ELD PI.K.1–3, PI.K.5–12, PII.K.3–6).” | Item C | Writer's Discretion/ Line Edit |
| 408 | 4 | CDE | Page 39 Line 526 Include the ELD standards that correspond to the listed ELA standards at the end of the Vignette Debrief, before “Resources for the Vignette”, “ELD PI.K.1–3, PI.K.5–6, PI.K.7–12, PII.K.3–6” | Item C | Writer's Discretion/ Line Edit |
| 409 | 4 | CDE | Page 55 Line 754 Insert the subheading and sentence at the end of the Vignette Debrief, before “Resources for the Vignette”, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for asking and answering questions, making statements orally and in writing, reading text and viewing closely media, analyzing main ideas and details in text, and writing a paragraph (ELD PI.1.1–2, PI.1.5–7, PI.1.10, PII.1.6–7).” | Item C | Writer's Discretion/ Line Edit |
| 410 | 4 | CDE | Page 72 Line 1033 Connections to the CA CCSS for ELA/Literacy:W.1.2 suggest: Include the ELD standards that correspond to the writing standard: ELD PI.1.10, PII.1.1–2, PII.1.6–7 | Item C | Writer's Discretion/ Line Edit |
| 411 | 4 | CDE | Page 80 Line 1154 Include a sentence that informs the reader of the language instruction that would benefit ELs to meet the language demands for the science content, for example, “English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for asking questions, explaining, discussing, and analyzing and arguing from evidence orally and in writing (ELD PI.2.1, PI.2.3–5, PI.2.11, PII.2.3–5).” | Item C | Writer's Discretion/ Line Edit |
| 412 | 4 | CDE | Page 84 Line 1228 Include a sentence that informs the reader of the language instruction that would benefit ELs to meet the language demands for the science content, for example, “English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for writing informative text, cause and effect statements, synthesizing information to provide evidence and reasoning to support claims, and arguing to support claims orally and in writing (ELD PI.2.1, PI.2.3–6, PI.2.10–12, PII.2.3–7).” | Item C | Writer's Discretion/ Line Edit |
| 413 | 4 | CDE | Page 98 Line 1581 Insert the subheading and sentence at the end of the Vignette Debrief, before “Resources for the Vignette”, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for asking and answering questions, recalling information, and summarizing information orally and in writing (ELD PI.2.1, PI.2.3–6, PI.2.10, PI.2.12, PII.2.6–7).” | Item C | Writer's Discretion/ Line Edit |
| 414 | 4 | Comment | Line 1969: Add: Where are the learning progressions explained? Reference table 7 and Appendix E of CA NGSS | D25 | Writer's Discretion/ Line Edit |
| 415 | 4 | Comment | Pp. 31 - 36: Can there be science examples? Specific example on Modeling that is science related. Like examples. | D6b | Writer's Discretion/ Line Edit |
| 416 | 4 | Comment | Chapter 4 ELA/ELD Connection (Near Line 1360): “Unit 1” is confusing. These have been called “segments” throughout the entire chapter. Changing it to a “unit” is very confusing for the reader. ALL Units changed to Instructional Segment | D28 | Writer's Discretion/ Line Edit |
| 417 | 4 | Comment | It seems that there is a strong sense that physical science (systems of pushes and pulls) goes first in the kdg. sequence. Interesting it does not need to go first and or provide grounding in 1st grade or 2nd grade (That is the rationale stated in the framework for the position in K). My thoughts have not changed on the pedagogical issues with that decision. In fact, my academic background with early learning lead me to state it was the wrong sequence early in the framework writing. We discussed this with the STC representative and she told Pete A'Hearn that the Pushes and Pulls unit was not recommended for the beginning of Kindergarten due to the system idea of pushes and pulls as well as the academic vocabulary of describing position of objects which is better developed over-time later in the year. | D28 | Writer's Discretion/ Line Edit |
| 418 | 4 | Comment | Quite a few developmentally inappropriate conservation messages and actions. “environmental education programs for children in early childhood, from ages three to seven, should focus primarily on exploring the outdoors, building empathy for nature and living things, and fostering positive connections with nature, rather than emphasizing environmental issues or problems.” (Page 53) See this from the National Environmental Education Association of America: http://web4.audubon.org/educate/toolkit/pdf/Influencing%20Conservation%20Outcomes%20Module%202013_National%20Audubon%20Society.pdf Also, a review of literature here: http://eprints.qut.edu.au/50908/1/50908_acceptedVer.pdf and more here: http://www.eenorthcarolina.org/Documents/beyond_ecophobia.pdf In addition, there’s lots of research on the power and effectiveness of place-based education. Dillon, Justin. "Science, the environment and education beyond the classroom." *Second international handbook of science education* . Springer Netherlands, 2012. 1081-1095. | D27 | Writer's Discretion/ Line Edit |
| 419 | 4 | Comment | Lines 107-114: The idea presented is crucial but the wording is confusing. Reword this section to be more clear and specific to the importance of foundational language skills in K science instruction. | D29 | Writer's Discretion/ Line Edit |
| 420 | 4 | Comment | Lines 264-266: Question: Is it precise enough to say the “Earth is pulling”? | D25 | Writer's Discretion/ Line Edit |

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| 421 | 4 | Comment | Line 585: Add: Thanks for the math connection, could add K.MD.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. If the monthly record of daily weather was recorded on separate cards, and then sorted at the end of the month: sunny, cloudy, rainy. | D25 | Writer's Discretion/ Line Edit |
| 422 | 4 | Comment | Line 620: Add: Since K students count to 100, they could also compare the daily high temperature and the general appropriate clothing for that temperature: 80's short sleeved shirts, 60's sweaters or jackets. How does the weather forecast help you decide what to wear each day? | D25 | Writer's Discretion/ Line Edit |
| 423 | 4 | Comment | Line 728: Question: What about other ways plants reproduce besides seeds, like sending out shoots on strawberry plants and spider plants? | D25 | Writer's Discretion/ Line Edit |
| 424 | 4 | Comment | P. 55: Question: Any math connections? Add to 'harsh' with specific temperatures?<br>Compare Antarctica temperatures to Arctic temperatures? Are the seasons the same? | D25 | Writer's Discretion/ Line Edit |
| 425 | 4 | Comment | Line 901: Add: This could be a good place to connect to the sun's position in the sky during the day and how shadows change length and direction in relation. Students could model the relationships with flashlights changing height and direction to experiment with how to change the shadow length and direction and then put a paper student on a large ball and rotate the figure under the flashlight to show how the change in position in relation to the light sources changes the length and direction of the shadow. | D25 | Writer's Discretion/ Line Edit |
| 426 | 4 | Comment | Line 993: Expand: Use photographs of the sun's location in the east at the start of the school day each week, or two weeks, to show the apparent change of position on the horizon: 'moving' southward during the winter and 'moving' northward during spring to summer. | D25 | Writer's Discretion/ Line Edit |
| 427 | 4 | Comment | Line 1076: Add: There may be abundant water, but very little of it is useable for to meet the needs of plants and animals including humans so it must be conserved. | D25 | Writer's Discretion/ Line Edit |
| 428 | 4 | Comment | Line 1201: Add: Students should also investigate the impact of steepness of slope and water erosion, and wind going over a flat surface or between 'mountains'. | D25 | Writer's Discretion/ Line Edit |
| 429 | 4 | Comment | Line 1290: Expand. Properties that categorize matter into solid or liquid are more complicated than usually presented. A grain of sand or salt has the properties of a solid, but many grains of sand or salt behave like a liquid. Cornstarch + water has the properties of both solid and liquid depending on the speed with which you interact with the substance. | D25 | Writer's Discretion/ Line Edit |
| 430 | 4 | Comment | Instructional Segments: Add examples that are not just bundled by DCI. Like bundling for teachers, but all examples are based on core content - not integrated | D6b | Writer's Discretion/ Line Edit |
| 431 | 4 | Comment | Can there be another example of bundling - example via cross cutting concepts vs. DCI | D6b | Writer's Discretion/ Line Edit |
| 432 | 4 | Comment | The K-2 vignettes as a whole do not follow the NGSS ideas that phenomena is observed, learned through direct experiences with the phenomena, and deepen understanding through use of reading, writing listening, and speaking. The vignettes as written may do more harm then good for teacher direction towards NGSS. Only one uses local phenomena. | D28 | Writer's Discretion/ Line Edit |
| 433 | 4 | Comment | Overall: There are many grammar errors in the K Chapter that need to be revised and worked on | D28 | Writer's Discretion/ Line Edit |
| 434 | 4 | Comment | ELA/ELD Connections: Texts need to have a level with them (i.e. Lexile). Do the books recommended match the grade level Lexile stretch bands? | D28 | Writer's Discretion/ Line Edit |
| 435 | 4 | Comment | Science Area Connections: Related science concepts to each other makes the learning more meaningful to students. Instead of a "drive by" idea that has no connection to other learning. If possible, more science connections throughout the K-2 chapter would be beneficial. (Like example in 2nd grade Line 1300-1307) | D28 | Writer's Discretion/ Line Edit |
| 436 | 4 | Comment | Lines 119-121: The wording in this sentence is too technical and takes away from the purpose and information that teachers need to gain from it. | D28 | Writer's Discretion/ Line Edit |
| 437 | 4 | Comment | Figure 2: Recommend also showing this figure in the introduction of this chapter as well as in each grade level section. | D28 | Writer's Discretion/ Line Edit |
| 438 | 4 | Comment | Line 372: Students can also walk to their playground, school field, or a nearby park to get real life experience of the world around them. | D28 | Writer's Discretion/ Line Edit |
| 439 | 4 | Comment | Kindergarten Vignette: Needs of Animals and Plants in their Environment, Day 1:<br>- This is the beginning or near start of the middle of Kindergarten. The task using media resources is too complex and high for an independent student task at this time of year.<br>- The vocabulary in this lesson is Tier 2 and Tier 3 for Kindergarten students at this time of year, especially ELL students. This needs to be front-loaded at the beginning of the lesson for students to have the language to participate in the lesson. | D28 | Writer's Discretion/ Line Edit |
| 440 | 4 | Comment | Page 27: NGSS Connections to ELA: The alphabet cards used in this connection are resources that all teachers have access to. Resources need to be public or general ideas that all teachers can access and make connections with in their instruction. | D28 | Writer's Discretion/ Line Edit |
| 441 | 4 | Comment | Line 460-466: This sentence and information needs to be broken down to be more friendly for Kindergarten teachers such that they will know what to do and can directly apply it to their classrooms. | D28 | Writer's Discretion/ Line Edit |

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| 442 | 4 | Comment | Mathematics Connection (Near Line 1133): Students will have a difficult time connecting to and understanding this connection in California as they do not experience these temperatures. Another math connection would be better suited here. | D28 | Writer's Discretion/ Line Edit |
| 443 | 4 | Comment | Mathematics Connection (Near Line 1170): This mathematics connection needs to be explained better. It is unclear and seems forced. It may be better to look for another math focus. | D28 | Writer's Discretion/ Line Edit |
| 444 | 4 | Comment | K-2 Grade Span Vignette: Integrated Science, ELA, and ELD (Near Line 1618): The K-2 Grade Span Vignette with Integrated Science, ELA, and ELD is very specific, detailed, and gives a clear picture of what this class and lesson look like. Teachers would appreciate to have one of these for each grade level at least but even more if there was one for each teaching segment rather than the snapshots. Teachers are being asked to integrate these areas but are not being shown how it might work or look in their classrooms. | D28 | Writer's Discretion/ Line Edit |
| 445 | 4 | Comment | No examples in vignettes of key SEPs like Developing and Using Models, Arguing from Evidence and Constructing an Explanation. | D27 | Writer's Discretion/ Line Edit |
| 446 | 4 | Comment | Line 424, Vignette: Day 1: Instead of starting with content, students should go outside, and make observations on what they see animals and plants needs and where they live.<br><br>Instead of a virtual field trip around California, there are different habitats in their own community. Focus on those for stronger contextualization.<br><br>Day 3: Water in different locations is a better match for 2-ESS2-3 best instead to use the time to observe a local habitat.<br><br>A wall map of habitats of California is really broad for Kindergarten. Instead, connect to the social studies standards and have a wall map of habitats in their neighborhood.<br><br>Generally, the analyzing and interpreting data connection here seems pretty weak in this vignette. I had to go back and read a few times to even figure out what true data the students were collecting. | D27 | Writer's Discretion/ Line Edit |
| 447 | 4 | Comment | Line 528, Vignette: Two poems in one unit … that is not literacy for science. Instead, students could come outside and find water in their schoolyard (drinking fountain, puddle, dew, etc.) A leaky faucet is not in kinders locus of control. Instead the conservation message could be to turn off the faucet. In fact, the majority of Day 4 is developmentally inappropriate for 5 year olds. Please see texts in the fields of conservation psychology and works by David Sobel. Instead, focus conservation actions on what students actually have control over – picking up litter, using less paper, walking on the trail, being kind to animals, using less paper. This unit could be focused on picking up litter and changing their schoolyard (now a known habitat for plants and animals) for the better. They could collect data on this using Litterati or Ocean Swell apps and make posters informing their peers. Then they could see if their posters made a difference in the amount of litter found. | D27 | Writer's Discretion/ Line Edit |
| 448 | 4 | Comment | Line 835, Engineering Connection: Engineering is based on solving problems. The examples in this section do not begin with a problem students have to solve. This makes the activities inauthentic to the process of engineering. | D27 | Writer's Discretion/ Line Edit |
| 449 | 4 | Comment | Line 1426, Vignette: Most language scholars are in agreement that vocabulary should be taught in context, after students have had experience with the concept and after they have used their own words to make meaning of it. In this vignette, the teacher frontloads vocabulary. Talk to Dr. Okhee Lee about this if you have questions. | D27 | Writer's Discretion/ Line Edit |
| 450 | 4 | Comment | Line 1449, Vignette: The “data” that is collected is weak. Instead, they could be using quadrats to actually count the number of different species they find in different places (garden, soccer field, natural area, etc.) thereby actually looking at biodiversity. I did a CSTA and NSTA session on using quadrats in primary school for just this NGSS topic. I’d be happy to talk to you more about it. | D27 | Writer's Discretion/ Line Edit |
| 451 | 4 | Comment | Line 1508, Vignette: Another poster assignment. Using technology to communicate information is a stronger 21st century skill and connection to Common Core. They could make a digital storybook, animation, or video instead. We all bought chromebooks and ipads – let’s use them. | D27 | Writer's Discretion/ Line Edit |
| 452 | 4 | Comment | Pp. 106-107: The 97% ocean water integration is a 5th grade concept. Instead of that, why not go deeper into the K content. It is in 5-ESS2-2 – not Kindergarten. The PE and DCI is not about where we find water. | D27 | Writer's Discretion/ Line Edit |
| 453 | 4 | Comment | P. 108: The polluted water with a dead fish is again developmentally inappropriate. Kinders have no control over river pollution and it creates ecophobic kids. | D27 | Writer's Discretion/ Line Edit |
| 454 | 4 | Comment | P. 111: Having parent volunteers for a schoolyard exploration is not a strong family connection. Please re-read Appendix D Case Study 4 for a good example of family and cultural connections. | D27 | Writer's Discretion/ Line Edit |
| 455 | 4 | Comment | P. 22: Include the need for support system for plants and the need for water quality to be addressed somewhere within the vignette | 5 | Writer's Discretion/ Line Edit |

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| 456 | 4 | Comment | Line 684: Grade One-Instructional Segment 1: Family and family behavior: life science vignettes do not reflect any hands-on/real-life observations and seem to be literature based - vignettes need to reflect classroom experiences that include living things | 5 | Writer's Discretion/ Line Edit |
| 457 | 4 | Comment | Lines 820-826: "Some plants, such as fruit trees, depend on animals to disperse their seeds." move text to after line 826 so the images provided match the text. | 5 | Writer's Discretion/ Line Edit |
| 458 | 4 | Comment | Add footnote of acronyms at bottom | D37 | Writer's Discretion/ Line Edit |
| 459 | 4 | Comment | Grade One Instructional Segment 1: change title, family is an odd term for this. | D37 | Writer's Discretion/ Line Edit |
| 460 | 4 | Comment | Grade One Table 2: What about SEPs 1 | D37 | Writer's Discretion/ Line Edit |
| 461 | 4 | Comment | Line 746: Use an animal that is more local for California students: birds, sea otters, dog/cat etc. Instead of a webchat, could it be a discussion with a local scientist - maybe a parent (family-home connection)? | D37 | Writer's Discretion/ Line Edit |
| 462 | 4 | Comment | Grade One Segment 4 Title: Use the term planetary objects in the sky | D37 | Writer's Discretion/ Line Edit |
| 463 | 4 | Comment | Line 1033: Vignette starts with reading goes against recommendation from Appendix A. | D37 | Writer's Discretion/ Line Edit |
| 464 | 4 | Comment | Line 1033: Instead of starting with shadow maybe start with observing the sun location during the school day. Add in a middle piece about Earth moving vs Sun moving | D37 | Writer's Discretion/ Line Edit |
| 465 | 4 | Comment | Grade Two Segment 1: Change title - don't use geosphere and biosphere, use simpler ageappropriate terms like Features on Earth and Life on Earth | D37 | Writer's Discretion/ Line Edit |
| 466 | 4 | Comment | Throughout K2 framework: Include hyperlinks to specific suggested texts, images, diagrams of specific terms (ie; crayfish) | D42 | |
| 467 | 4 | Comment | Labels at the top of the segments to define the instructional segments | D42 | |
| 468 | 4 | Comment | Label question with purpose/use in each table for individual segments. The clearer everything is within the document the easier for teachers to understand and deliver the content. | D42 | |
| 469 | 4 | Comment | Include visual examples directly within the vignettes, snapshots, and teacher background. (Kindergarten students and their teachers need lots of visuals) | D42 | |
| 470 | 4 | Comment | Kindergarten Vignette – Needs of Animals and Plants and their Environment:<br>• The use of visuals and media helps provide context for students (assuming teacher scribing also becomes a visual posted in the room).<br>• Many opportunities for collaborative discussions, (with teacher monitoring)<br>• Teacher scaffolding through guiding discussions, acting as scribe.<br>• Day 1 suggestions: begin with accessing students' prior knowledge of habitats and patterns, background knowledge closer to students' own experience (for example, their own pets).<br>• Media and read-alouds should happen over the whole series of lessons. Day 1 is not enough.<br>• Please take out "Day 1" "Day 2," etc. These are rich lessons that might play out over 4 weeks (not 4 days).<br>• Add explicit teaching. For example, "She has students use media sources" could be "She demonstrates or teaches students to use…" Instead of "[she] reminds students that they can use text and other instructional resources," "[she] shows students how they can use…"<br>• Add emphasis on use of content-specific vocabulary and explicit vocabulary instruction. Instead of "briefly discusses the meaning of the word pattern…" Provide an specific example of an vocabulary instructional strategy.<br>• Day 2 – Provide direction for teachers to provide a higher level of scaffolding (visual and language support), such as using an information matrix with the categories as she scribes.<br>• Add teachers write on chart paper so students have a visual point of reference. | D43 | general ideas to improve vignette |
| 471 | 4 | Comment | K-2 Grade Span Vignette: Integrated Science, ELA, and ELD Caring About and Protecting the Environment:<br>o Suggestions:<br>- Provide ideas for additional writing opportunities .<br>- Discuss strategic grouping of students. For example, for pair-share or traids, students might be grouped based on English proficiency levels.<br>- P. 109/120 Mrs. J reads a text excerpt in response to Alicia's question, then says, "Let's think about…" At this point there is an opportunity to guide students through a process of text deconstruction to "unpack" and make meaning of this complex text. There might be a better time for this, but it's an idea of how to illustrate for teachers how to support language development and understanding of complex text. Another example might be highlighting different forms of key vocabulary such as pollute, pollution, polluted (added to word wall, for instance). | D43 | suggestions to improve vignette |

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| 472 | 4 | Comment | Add an Introduction to Segments, something like - Every curriculum will organize the instruction in different ways based on thoughtful integration of the 3 dimensions. There is no one way to do it. This is one of many examples of how it could be done. We will focus on one piece of instruction. Here are the four segments that incorporate all of the 3 dimensions that should be taught. Here is one example of what it would look like. Redo all the pages (take out diagrams, make an outline). Eliminate these vignettes and replace with one good one. Description with examples - no details. | D47 | |
| 473 | 4 | Comment | Lawrence Hall of Science Submitted 34 Edits | 48 | Framework writer to review edits and implement at his discretion. |
| 474 | 4 | Comment | Lawrence Hall of Science Submitted 32 Edits | 65c | Framework writer to review edits and implement at his discretion. |
| 475 | 4 | Comment | Grade K: Extensive Comments 8 Pages<br>The focus of all instructional segments should be on “doing science”.<br>• Instruction should always be based on local contexts and/or childhood experiences for this age group<br>• All aspects of instructional segments must be developmentally appropriate. The ideas for learning opportunities and vocabulary are often beyond the developmental level of kindergarten students.<br>• It is critical for kindergarten students to develop their SEP skills and ability to ask questions. Segments in kindergarten are not bundled. They are specific to disciplines. | 70d | |
| 476 | 4 | Comment | Grade 2: 42 Extensive line edits with commentary<br>All instructional segments, vignettes, and ELA/ELD & math connections must be developmentally appropriate – See notes • All text and tables must be teacher friendly. This document must able to be read and comprehended by your average classroom teacher. • In this framework the Instructional Segments are discipline specific and<br><br>RECOMMENDATION: Use the NGSS architecture template layout and wording, including bullets<br>(Repeated several times) | 70c | |
| 477 | 4 | Comment | P. 2, line 9: should be just about K-2. What is purpose of this chapter? | D47 | |
| 478 | 4 | Comment | P. 2, lines 28-29: Educators need more help in the teaching, not in the organizing. Think about audience. If this is for leaders than organizing is one thing - but to help teachers to implement is separate - trying to do both and missing the point. | D47 | |
| 479 | 4 | Comment | P. 2, lines 41-46: sounds good but is it true? | D47 | |
| 480 | 4 | Comment | P. 2, lines 48-54: delete | D47 | |
| 481 | 4 | Comment | P. 3, line 56: Show one strong example. For those that don’t have examples, include in appendix other vignettes. One for each grade in different strands. | D47 | |
| 482 | 4 | Comment | P. 4, lines 81 - 84: problematic having teachers make the decisions (role of the teacher) Educators need a solid framework to link the PE’s | D47 | |
| 483 | 4 | Comment | P. 4, line 87: Add something about time for science | D47 | |
| 484 | 4 | Comment | P. 5, line 98-105: Examples are not appropriate “crashing trucks” too violent and “desert” reference should be changed to something more local. | D47 | |
| 485 | 4 | Comment | P. 5, line 107: “analysis” seems too complex for young students. Language development is good. Include attitudes, discovery, inquiry, need exploration time. | D47 | |
| 486 | 4 | Comment | P. 6, line 130: sends message that this is the way to teach | D47 | |
| 487 | 4 | Comment | Kindergarten Instructional Segment 1: Forces and interactions: pushes and pulls<br>Need to explain how to use CCC’s and what they look like for stability and change and cause and effect. Teachers need to see standards unbundled with more details and explanations. (See NGSS pages 4-8) Lacking DCI. Headings are not sufficient in the DCI column for the DCI’s. (pages 7-9) Because they are in segments one assumes this is how they should be taught. Should be kept in disciplinary strands. Then show one bundle as an example. Right now the default will be to teach it this way, and it doesn’t show a good job. | D47 | |
| 488 | 4 | Comment | P. 7, chart: patterns, cause and effect, and systems, “stability and change” is not in NGSS for K. Explain why CA includes stability and change in K though not in NGSS. | D47 | |
| 489 | 4 | Comment | P. 10, line 194: change question to “Why it happened and why do you think it happen?” | D47 | |

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| 490 | 4 | Comment | P. 11, line 211: Provide direct experience with materials and then describe; What experiences do students have to explore the concepts? - most is about drawing diagrams. | D47 | |
| 491 | 4 | Comment | P. 11, line 263: a spring is not good example - too complex for explaining gravity to K's | D47 | |
| 492 | 4 | Comment | P. 13, line 278: too much structure for the engineering DIC - should be exploration then, talk about the process. Observe how students are solving the problems. Reflect on how they would change it for next time. Should be an emphasis on "failure" is ok, try different things and get better. (Go back to line 107 - goal is for free exploration working with partners and groups to develop confidence, classroom culture should be developed with engineering focusing on social emotional learning (SEL). | D47 | |
| 493 | 4 | Comment | Vignette: Too teacher-driven. Not giving students the experience. Want to see after introducing items, what do the kids do with these items? What questions do they have? This is an introduction (we don't see the common experience) What is the purpose of this snap shot? | D47 | |
| 494 | 4 | Comment | Kindergarten Instructional Segment 2: Needs of animals and plants and their environment. Need to talk about plants and animals that students can explore in the classroom. (delete this vignette and debrief - it doesn't add to the science instruction.) | D47 | |
| 495 | 4 | Comment | Kindergarten Instructional Segment 3: Animals and plants can change their environment. Very confusing to have EEI plus debriefs and charts - too much! | D47 | |
| 496 | 4 | Comment | P. 44, lines 621-626: Not appropriate for K - should be local | D47 | |
| 497 | 4 | Comment | P. 44, photo: Seems complex for K | D47 | |
| 498 | 4 | Comment | P. 45: Suggested text: "Add this Note: the integration of engineering within the vignette is a shift in instruction." Adds clarity. Shifts need to be more explicitly<br>identified throughout. | D42 | |
| 499 | 4 | Comment | Grade One: What is the storyline for the whole year? | D47 | |
| 500 | 4 | Comment | P. 46, Table 2, Segment 1: Clarify the use of "family" in the Segment title. Is there a scientific reason for the word choice. If so, please provide more explanation in the teacher background section. | D42 | |
| 501 | 4 | Comment | P. 46: Suggested text: "The term instructional segment conveys a shift in the science<br>framework where content is not specifically separated in the Life, Physical, and Earth, but rather conveys they big ideas." The instructional segment number needs to be clarified. Teachers may think they are lessons or not understand the shift in thinking. | D42 | |
| 502 | 4 | Comment | P. 47, Table 2: Suggested text: "All organisms have features that they use to help them survive and grow." More clarification was required. | D42 | |
| 503 | 4 | Comment | P. 48, line 698: "Why do animals or plants look like their parents?" change to "How are young animals or plants similar or different from the adults? | D47 | |
| 504 | 4 | Comment | P. 49, line 716: Start the Description of the Instructional Segment with line 727 - observations of plants and seed, etc., then go to enhancing the learning with reading, etc. Students should have first hand experiences before reading. | D47 | |
| 505 | 4 | Comment | P. 50, ELA ELD Connection, last line: Suggested text: "Once the two pictures are paired together, students can then discuss and record their ideas using a graphic organizer with text and pictures on how the parent and the children are similar and how they are different. Refer to chapters 10 and 11 for specific effective instructional strategies. (Include actual examples of pictures)" Explicit directions should be included to guide the activity and allow students to organize their thinking to demonstrate their understanding. | D42 | |
| 506 | 4 | Comment | P. 51, vignette: incorporate the looking at parents and offspring behaviors, you could also look at the differences. Bundle two DCI's with the resources (young and adults) talk about similarities and differences). Change to "Parents and their Young" | D47 | |
| 507 | 4 | Comment | Pp. 51-54, Vignette: This first vignette should be more focused on the other practices, not on literacy. Focus of the study should be on something local and tangible that students can observe and collect data about. Show students doing hands on. Teachers generally are well prepared to teach ELA units and need more guidance with science. This should be an opportunity to showcase inquiry and hands-on investigations. ELA units with science as context should be in supplemental. (delete debrief) | D47 | |
| 508 | 4 | Comment | P. 56, line 753: Through observations, discussions, and writing in science notebooks, in addition to read aloud texts….. (Too much reliance on reading as the primary source of information. First graders need to develop observational and communication skills.) | D47 | |
| 509 | 4 | Comment | P. 57: Suggested text: "At the beginning and end of a vignette offer ideas for alternate lessons. Example: Crayfish are one example, there are other organisms that also display easily identifiable structures and characteristic. We do not know the organisms." Teachers would find additional resources as they may not have crayfish available. | D42 | |
| 510 | 4 | Comment | P. 58, line 798: Switch the columns; Change "gas exchange" to "breathe" (Easier for students to identify parts then think about function; term gas exchange is too complex for first grade) | D47 | |
| 511 | 4 | Comment | P. 58, line 801: take out "break" (K students observe change in direction, not force that breaks objects) | D47 | |

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| 512 | 4 | Comment | P. 59, line 811: Replace, "As students view videos… to "The teacher brings in samples of plant leaves and seeds for students to observe. Or The teacher takes students out for a seed and leaf hunt on the school yard. (Again, too much reliance on secondary information. Whenever possible the framework should be showing teachers examples of how to engage students in first hand observations and their own local environment) | D47 | |
| 513 | 4 | Comment | P. 60, line 839: Where is figure 2? Please specify the exact page number to locate figures, tables, etc. | D42 | |
| 514 | 4 | Comment | P. 62, line 869: Delete section about color (Too complex for first graders) | D47 | |
| 515 | 4 | Comment | P. 62, line 885: Delete "understand this occurs because the object absorbs light" (Third graders struggle with this - not appropriate for 1st) | D47 | |
| 516 | 4 | Comment | P. 64, lines 942-9D43: Provide the standard for the math connection | D42 | |
| 517 | 4 | Comment | P. 64, Sounds Wild Snapshot: Suggestion: Text and videos used as a form of inquiry. Provide examples of culminating activities that reinforce science concepts. | D42 | May be too much for snapshot |
| 518 | 4 | Comment | P. 64, line 947: Add the purpose of the snapshot. What is it going to show? (Need to have a focus for each snapshot or vignette.) | D47 | |
| 519 | 4 | Comment | P. 65: The questions are unlabeled and the purpose is unclear. Are they overarching? | D42 | |
| 520 | 4 | Comment | P. 65, Vignette: Delete - replace with hands on activity. No need to add more examples of literacy connections. Could use live crickets or focus on instruments or simple ways to make sound | D47 | |
| 521 | 4 | Comment | P. 69, Vignette: Day 1 delete “she reads a story…” (No need to begin with a reading when students will be fully engaged with the outdoor activity observing shadows - discover first, then read!) | D47 | |
| 522 | 4 | Comment | P. 92, Vignette: Good introduction; Day 1 - shouldn’t have to frontload vocabulary - model how to introduce in context. Switch day 1 with day 2 so students have experience first. | D47 | |
| 523 | 4 | Comment | P. 94: Day 4 could be replaced with a better lesson on insects and plants | D47 | |
| 524 | 4 | Comment | P. 94, line 1495: Need more details about how students are using cause and effect | D47 | |
| 525 | 4 | Comment | Pp. 96-98: delete the debrief and charts - too much information | D47 | |
| 526 | 4 | Comment | P. 99, Vignette: Not appropriate; EEI should be put somewhere else. Distracting and confusing and takes away from the goal of the document. | D47 | |
| 527 | 4 | Comment | Science Literacy and English Learners: Problematic Vignette - science activities are not appropriate for K | D47 | |
| 528 | 4 | Comment | P. 101: Spend more time talking about the water investigations. *How did they engage in the practices? How did the teacher support communicating in meaningful ways?* | D47 | |
| 529 | 4 | Comment | P. 104, Inquiry Activator: activity with water bucket is too complex for K’s to fully understand scale and proportion. | D47 | |
| 530 | 4 | Comment | P. 107: graph is too complex for K’s to interpret. | D47 | |
| 531 | 4 | Comment | P. 108: inappropriate and disturbing for young children to deal with polluted water and dead fish. Young children develop sense of stewardship of nature when they feel like they can make a real difference in their own community. Choose a different topic such as wasted water in the school yard or lack of green on playground, etc. something tangible that students can relate too and actually influence. | D47 | |
| 532 | 4 | Comment | P. 111: activity to filter water is too complex for K. | D47 | |
| 533 | 4 | Comment | P. 113: “teams work together to write a brief explanation of their design solution” is beyond literacy skills of most K students. | D47 | |
| 534 | 4 | Comment | Diana Vélez provided a possible vignette snapshot for 1-ps4-1 | D47 | |
| 535 | 4 | Comment | Santa Clara County Office of Education provided two pages of line edits for K-5. | 52b | Writer to review and implement at his discretion |
| 536 | 4 | Comment | Wozniak Attachment 55 provided feedback and line edits for the framework. | 55 | Science Framework writer will review and implement at his discretion. |
| 537 | 4 | Comment | The Galt Elementary School District NGSS Framework Review Panel provided 22 pages of line edits in attchemnt 64 | 64 | General comments are currently being addressed |

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| 538 | 4 | Survey | Too much use of EEI curriculum, and need to "show" more of what STUDENTS are doing, rather than just what teachers are doing. Vignettes are not focused, not helpful. Some examples not grade appropriate. Line 194 – the idea of 'pushing ball up' not k appropriate – better examples: show object changing direction due to direct force Line 240 diagram. Seems non ngss to have teacher create diagram, too abstract for K. How can kids draw, develop a model of the relationship between the force and the direction of movement? Line 260 – example of a very non ngss approach: "Teacher introduces idea…" followed by a phenomenon to demonstrate. Start with the phenomenon! Vignette: mention of the talk moves should include a link to more info about talk moves. Provide sample questions, follow up q's to facilitate deeper student thinking. Less detail (such as words and tune to the sitting down song) and more specifics about suggested teacher moves/prompts Line 377 – should have more about importance of observing animals. Vignette in this section: too much books, video. Go outdoors!! Patterns is not the best ccc for this. line 481 – highlight these as examples of phenomenon k vignette 3 – day 1 example too abstract for k, day 4 "we cut down trees" is too abstract. This vignette shows 5 days of instruction with NO hands on! That does not fit with ngss K-weather Line 621 Why instruct about weather in us regions when the K standard has to do with local weather? 627 – Too doomsday for K! More about why weather forecasting helpful. Engineering connection – good, hands on. 1st grade Vignette – should be focused on the practice/student discussion to use evidence. Not "Her students have already made observations, conducted investigations, and developed evidence-based accounts to explain that young plants and animals are alike but not exactly like their parents." Show how students "developed evidence-based acounts to explain" -- what does that look like? | Item B | Writer's Discretion/ Line Edit |
| 539 | 4 | Survey | 5/99-100 they are able to see, observe, and describe. they are able to sense and describe see and observe can be construed as the same. Also, students can use all five senses -- not just their sense of sight. 5/118 .) ). Punctuation 10/193 and THROUGHOUT THE DOCUMENT phenomena phenomenon grammar 12/241 Add a hand to the left side of the force arrow, as described in the passage 13/259 students understand that objects push or pull on other objects when they collide students understand that objects push on other objects when they collide Objects do not pull on each other when they collide. Snapshots do not have line numbers. Why not? K snapshot: pushes and pulls occasion in which a Classroom Talk is occurs occasion in which a Classroom Talk occurs grammar | Item B | Writer's Discretion/ Line Edit |
| 540 | 4 | Survey | Kindergarten Comments: Segment 3 Last DCI should be ETS1.B: Developing Possible Solutions instead of ETS1.A. Second Grade Comments: Segment 1 The title should be geosphere and hydrosphere (not biosphere). I don't think Designing Solutions should be an SEP here. They aren't designing and solutions. It should be Obtaining, Evaluating, and Communicating Information. The second sentence in the Brief Summary seems like it fits better with Segment 2. Segment 1 is only about shapes of land and water features and that water can be liquid or solid. 2nd grade is limited in vignettes and samples. This does not provide many examples to aid teachers for in implementation. Segment 3 The Brief Summary only summarizes one of the standards (1-4) | Item B | Writer's Discretion/ Line Edit |
| 541 | 4 | Survey | In reviewing page 7 of 119 Table 1 "Instructional Segment 3: Animals and Plants can change in their environments", a suggestion is to add to the Highlighted SEPs to include Obtaining, Evaluating and Communicating information. Rationale: Students in K will obtain information through Big Books and informational texts. The integration of obtaining information about plants an animals is natural to how they are taught in class. For example, when I did an animal units this year, we read books, made Venn diagrams comparing animals by size, attribute and habitat. My students made a powerpoint presentation about their favorite animal as well as made an oral report in class. | Item B | Writer's Discretion/ Line Edit |
| 542 | 4 | Survey | Page:48 Line #697 1-LS3-1 The fact that assessment boundary doesn't include "inheritance or undergoing metamorphosis." It should be included in the actual standard so teachers won't misinterpret standard. Page: 50 Line #726 It will be a difficult task to have students find similarities between young plants to mature plants because the mature plant looks so much different than the young plant. Students in our communities often times aren't surrounded by plants. | Item B | Writer's Discretion/ Line Edit |
| 543 | 4 | Survey | 424 Vignette:Day 1: Instead of starting with content, students should go outside, and make observations on what they see animals and plants needs and where they live. Instead of a virtual field trip around California, there are different habitats in their own community. Focus on those for stronger contextualization.Day 3: Water in different locations is a better match for 2-ESS2-3 best instead to use the time to observe a local habitat.A wall map of habitats of California is really broad for Kindergarten. Instead, connect to the social studies standards and have a wall map of habitats in their neighborhood.Generally, the analyzing and interpreting data connection here seems pretty weak in this vignette. I had to go back and read a few times to even figure out what true data the students were collecting. 528 Vignette: Two poems in one unit … that is not literacy for science. Instead, students could come outside and find water in their schoolyard (drinking fountain, puddle, dew, etc.) A leaky faucet is not in ks locus of control. Instead the conservation message could be to turn off the faucet. In fact, the majority of Day 4 is developmentally inappropriate for 5 y.o. Please see texts in the fields of conservation psychology and works by David Sobel. Instead, focus conservation actions on what students actually have control over – picking up litter, using less paper, walking on the trail, being kind to animals, using less paper. | Item B | Writer's Discretion/ Line Edit |

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| 544 | 4 | Survey | This unit could be focused on picking up litter and changing their schoolyard (now a known habitat for plants and animals) for the better. They could collect data on this using Litterati or Ocean Swell apps and make posters informing their peers. Then they could see if their posters made a difference in the amount of litter found. 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 like Sea Otters. P. 111 parent volunteers for a schoolyard exploration is not a strong family connection. Please re-read Appendix D Case Study 4 for examplesof family and cultural connections. | Item B | Writer's Discretion/ Line Edit |
| 545 | 5 | CDE | Page 47 Line 1026 Add a row and insert “CA ELD Standards: PI.3.6–7, PI.3.10, PII.3.1–2, PII.3.6–7” | Item C | Writer's Discretion/ Line Edit |
| 546 | 5 | CDE | Page 48 Line1079 Insert the subheading and sentence, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for asking and answering questions, describing relationships, using language that pertains to time, sequence, and effect, and recalling experiences orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 547 | 5 | CDE | Page 55 Line 1216 Insert the subheading and sentence, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for making cause and effect arguments, asking and answering questions, describing weather conditions orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 548 | 5 | CDE | Page 68 Line 1470 Insert the subheading and sentence, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for developing questions, making predictions, making cause and effect arguments, constructing explanations, and describing energy orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 549 | 5 | CDE | Page 83 Line 1802 Insert the subheading and sentence, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for constructing explanations of change over time and comparing possible solutions orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 550 | 5 | CDE | Page 99 Line 2136 Insert “CA ELD Standards: PI.4.10–11, PII.4.1–2, PII.4.6–7, PI.4.9” | Item C | Writer's Discretion/ Line Edit |
| 551 | 5 | CDE | Page 100 Line 2179 Insert the subheading and sentence at the end of the Vignette Debrief, before “Resources for the Vignette”, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for describing plant and animal external structures, constructing an argument about the function of a plant or animal’s external structures, and developing an explanation for how plants and animal structures function orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 552 | 5 | CDE | Page 126 Line 2814 Insert the subheading, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for explaining differences between the structures of solids, liquids, and gases, summarizing information, and describing physical properties of materials and chemical reactions orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 553 | 5 | CDE | Page 141 Line3198 Insert “CA ELD Standards: PI.5.6” | Item C | Writer's Discretion/ Line Edit |
| 554 | 5 | CDE | Page 142 Line 3199 Insert the subheading and sentence at the end of the Vignette Debrief, before “Resources for the Vignette”, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for supporting an argument, explaining, and describing what they see and what is happening in a story orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 555 | 5 | CDE | Page 165 Line 3525 …as well as lessons that look specifically at language features used within informational reports (e.g., subheadings to organize information, present tense, etc.). Suggest: …as well as lessons that look specifically at language features used within informational reports (e.g., subheadings to organize information, present tense, etc.), letter writing, and describing cause and effect. | Item C | Writer's Discretion/ Line Edit |
| 556 | 5 | Comment | Lines 1282-1287: Question: “Generating energy”? is that precise enough? Energy is not generated but transformed from another form? Or what is meant by ‘generating energy’? | D25 | Writer's Discretion/ Line Edit |
| 557 | 5 | Comment | Lines 1296-1297: Question: I don’t understand the statement ‘the more massive object has the motion energy’. If several objects are moving, don’t they all have motion energy? The more massive object would have more? | D25 | Writer's Discretion/ Line Edit |
| 558 | 5 | Comment | Lines 1350-1351: Question: “generating electricity” “to make electricity”? not precise enough, we don’t make electricity but change one form of energy into electrical energy. | D25 | Writer's Discretion/ Line Edit |
| 559 | 5 | Comment | Line 1771: Edit: Forms to “are formed” | D25 | Writer's Discretion/ Line Edit |
| 560 | 5 | Comment | Line 1790: Question: “flow more slowly”, why? Less slope? More friction from sediment on the river bed? Wider to cover more area than at the origin? | D25 | Writer's Discretion/ Line Edit |
| 561 | 5 | Comment | Line 1083: Question: ‘”build groins”? | D25 | Writer's Discretion/ Line Edit |
| 562 | 5 | Comment | Line 2953: Question: “mine the soil for …” Mine seems to active a word and easily confused by EL students with the mining done by humans. “Absorb”, “grow best in soil that contains…”? | D25 | Writer's Discretion/ Line Edit |

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| 563 | 5 | Comment | Line 2967: Question: “to show the condensation”, or to “show the water that leaves the plant…”? | D25 | Writer's Discretion/ Line Edit |
| 564 | 5 | Comment | Line 3D430: Add: “length and direction of shadow” Good time to add in measuring angles and measuring length, looking for patterns of change. | D25 | Writer's Discretion/ Line Edit |
| 565 | 5 | Comment | Line 3475: Add: Or relative position of the sun on the horizon every Monday at the start of school day, can be recorded with photographs taken from the same position each time. Sun appears to move south on the horizon approaching winter, and appears to move northward during spring to summer. | D25 | Writer's Discretion/ Line Edit |
| 566 | 5 | Comment | Can there be another example of bundling - example via cross cutting concepts vs. DCI. Like bundling for teachers, but need to show alternative ways | D6b | Writer's Discretion/ Line Edit |
| 567 | 5 | Comment | P. 58 (for 4th grade): Add a simplified snapshot of what is taught at each grade level according to physical, life, and earth sciences. | D5 | Writer's Discretion/ Line Edit |
| 568 | 5 | Comment | p. 59 (in table): "Reflected light from objects…" Suggested revision: "Reflected light that enters the eye of an animal allows object to be seen." Sentence is a really specific example that doesn’t seem to fit in this place. | D5 | Writer's Discretion/ Line Edit |
| 569 | 5 | Comment | Lines 1271-1273: "What natural resources provide energy and fuels and how do their uses effect the natural environment?" Suggested revision: "What natural resources provide energy? How do their uses effect the natural environment?" Revised to make clearer. | D5 | Writer's Discretion/ Line Edit |
| 570 | 5 | Comment | Line 1280: Discuss misconception that children have regarding energy. (Be more explicit about the misconception students might hold about energy). | D5 | Writer's Discretion/ Line Edit |
| 571 | 5 | Comment | P. 156: ELA/ELD Vignette: Kids allowed to be expert groups (should be in walks and reading, not just reading) | D5 | Writer's Discretion/ Line Edit |
| 572 | 5 | Comment | I am reviewing the Science Framework and I just wanted to let you know how impressed I am with the thoroughness of this document. Although I am not done reviewing the document, I just wanted to let you know that there is a typo in Chapter 5: Grades 3-5. It occurs in line 3423. It currently reads:<br><br>Background for Teacher<br>The sun is only one of the vast numbers of starts in the Milky Way galaxy, which is only one of the vast numbers of galaxies in the universe. The regular patterns of motion of the sun and other stars in the sky (both during the day and night) can be observed from Earth and described. Because these regular patterns can be described, it implies that they can also be predicted.<br><br>The word starts needs to be changed to stars.<br><br>I will continue to review and then I will fill out the survey that you have provided. | D2 | Writer's Discretion/ Line Edit |
| 573 | 5 | Comment | all of the cross-curricular concepts is wonderful, how it is separate from the text, can be used to differentiate instruction | D40 | Writer's Discretion/ Line Edit |
| 574 | 5 | Comment | is it possible to include a chart/diagram/example of thought processes, what a student should be able to know/do by the end of the unit/year? | D40 | Writer's Discretion/ Line Edit |
| 575 | 5 | Comment | P. 2, lines 34-DD36d: huge- engage and hook potential is fantastic | D40 | Writer's Discretion/ Line Edit |
| 576 | 5 | Comment | Line 66: "expanded learning programs." define | D37 | Writer's Discretion/ Line Edit |
| 577 | 5 | Comment | Line 70: check for missing commas; difficult to understand | D37 | Writer's Discretion/ Line Edit |
| 578 | 5 | Comment | P. 5, line 95: taught over the span of a school year, not individual unit- taught in the way it is presented for full coherence | D40 | Writer's Discretion/ Line Edit |
| 579 | 5 | Comment | Instructional segment 3 of table 1: "some not as well, some cannot survive." … some not as well, some adapt, and some cannot survive. | D37 | Writer's Discretion/ Line Edit |
| 580 | 5 | Comment | P. 6, line 104: Suggested text: “Reproduction is essential for the continued existence of every kind of organism." The current wording makes it sound like an individual organism cannot die if it reproduces - which can create misconceptions for children. The revised wording is the same as that used in the instructional segment description on page 28. | D39a | Writer's Discretion/ Line Edit |
| 581 | 5 | Comment | P. 7, lines 106-117: enjoy the “typical” questions and answers for third grade | D40 | Writer's Discretion/ Line Edit |
| 582 | 5 | Comment | P. 8, Grade 3: ETS students need examples | DD36d | Writer's Discretion/ Line Edit |
| 583 | 5 | Comment | P. 9, line 119: enjoy the math connection, but is it possible to add in standard numbers (to be even more specific? Hyperlinks? | D40 | Writer's Discretion/ Line Edit |
| 584 | 5 | Comment | P. 9, line 120: like that it starts with the “Background for Teachers” in common language- could include even more beyond introduction? Books for libraries? | D40 | Writer's Discretion/ Line Edit |
| 585 | 5 | Comment | P. 9, line 141: knowing that it “will go against students’ preconceptions” is helpful | D40 | Writer's Discretion/ Line Edit |
| 586 | 5 | Comment | P. 9, line 145: Suggested text: "One force is perpendicular to the surface (support force)." Keeping in mind that very few third grade teachers have a strong physics background, the use of support rather than normal avoids confusion for both teachers and students that can arise because normal has multiple meanings. | D39a | Writer's Discretion/ Line Edit |

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| 587 | 5 | Comment | P. 10, lines 148-149: Suggested text: "If the object is moving across a surface and for no apparent reason stops moving at some point, another force is present …" added language to clarify the situation | D39a | Writer's Discretion/ Line Edit |
| 588 | 5 | Comment | P. 10, line 163: Add at the end of the paragraph: "Students need to be made aware that on Earth, gravity is always acting on an object, so it's difficult on Earth to demonstrate an object in motion continuing in motion." Clarification statement. | D39a | Writer's Discretion/ Line Edit |
| 589 | 5 | Comment | P. 13, lines 206-208: I applaud introducing the term mass. I don't think there should be such rigid limits to terminology that it can lead to misconceptions. If a teacher does use this Earth/Moon comparison, however, he/she should be prepared to answer the question of why the Moon has less gravity than Earth - because it's smaller is sufficient explanation for grade 3. | D39a | Writer's Discretion/ Line Edit |
| 590 | 5 | Comment | P. 13, line 225: enjoy the engineering connection, and how it correlates | D40 | Writer's Discretion/ Line Edit |
| 591 | 5 | Comment | Line 244, ELA ELD connection boxes:  excellent - more needed. should be included for every instructional segment | D37 | Writer's Discretion/ Line Edit |
| 592 | 5 | Comment | P. 15, Box: ELA ELD Connection: Add: "If a class has a high percentage of ELL's, the definitions may be written in the students' primary language as well as English. Use of multiple pictures as well as multiple sample sentences is also helpful to convey meaning and usage. If the class has only a few ELL's, bilingual partners will help convey meaning to students having difficulty following the lesson." The Frayer Model, used as designed, may cause language overload and lesson tune-out for ELLs. | D39a | Writer's Discretion/ Line Edit |
| 593 | 5 | Comment | P. 20, lines D377-D378: Suggested text: "Students can sprinkle iron filings on a sheet of paper placed over a strong bar magnet to map out the force pattern due to the magnet." Easier language for third grade teachers and students to understand. | D39a | Writer's Discretion/ Line Edit |
| 594 | 5 | Comment | Pp. 21-22, lines D400-D402 and 411: Suggested text: "Design a swing for your playground using magnetic force to keep the swing moving. Materials for each group: 2 ft. length of string, 2 ring or disc magnets, 1 binder clip, 1 classroom chair." This PT is not fully described either in the framework or in the URL, which could lead to teacher and student frustration. Another problem is URLs will not likely survive as long as the framework. | D39a | Writer's Discretion/ Line Edit |
| 595 | 5 | Comment | P. 23, box: Suggested text: "Explain or draw a picture of your thinking." More ELL-friendly | D39a | Writer's Discretion/ Line Edit |
| 596 | 5 | Comment | Line 426: "probe" ? Not all teachers know what a "probe" is meant here. define, clarify | D37 | Writer's Discretion/ Line Edit |
| 597 | 5 | Comment | Line 426: "She lets thinking partners share." provide a ELD framework for building an argument (reference Jeff Zwiers, Stanford) | D37 | Writer's Discretion/ Line Edit |
| 598 | 5 | Comment | Line 521: "most of the calories." delete whole sentence, not related | D37 | Writer's Discretion/ Line Edit |
| 599 | 5 | Comment | P. 28, lines 562-590: Great investigation idea and well presented! | D39a | Writer's Discretion/ Line Edit |
| 600 | 5 | Comment | P. 29, lines 568-570: Students can do more than just answer questions- can they explain? Do a model? Diagram? | D40 | Writer's Discretion/ Line Edit |
| 601 | 5 | Comment | P. 29, lines 568-570: ELD box- omit text-dependent questions- highlighting the wrong part | D40 | Writer's Discretion/ Line Edit |
| 602 | 5 | Comment | Pp. 29-30, lines 593-605: It's not clear here whether parents and children or members of the same species are being referred to. At any rate, pictures of mammals in family groups (parents and children) are easy to find online but not plants. For plants, pictures of different individuals of the same species, especially garden flowers, are the easiest to find and compare. For comparing real plants, whole carrots or other root vegetables that are sold with their stems and leaves attached are probably easiest to acquire and investigate. | D39a | Writer's Discretion/ Line Edit |
| 603 | 5 | Comment | Pp. 30-31, lines 626-629: Suggested text: "… students might conduct a "Battle of the Beak" activity mimicking different bird beaks. They will learn about the adaptive advantage, based on beak function, by simulating birds competing for a variety of foods using various kitchen utensils to try to pick up each food (selective force)." This variation might be easier to prepare for and lead to understanding of the wide variety in bird beaks. | D39a | Writer's Discretion/ Line Edit |
| 604 | 5 | Comment | P. 31, lines 634-6DD36d: Suggested text: "Teachers can provide students with illustrated texts (RI.3.2,4) to investigate how animals that have better camouflage coloration than other animals may be more likely to survive …" More ELL inclusive | D39a | Writer's Discretion/ Line Edit |
| 605 | 5 | Comment | P. 31, lines 645-646: Suggested text: "Students support their findings, referring explicitly to text and/or pictures as the basis for answers." More ELL inclusive | D39a | Writer's Discretion/ Line Edit |
| 606 | 5 | Comment | P. 31, lines 646-647: Suggested text: "… basis for their answers. Ask: What are the animals and plants most often seen in your neighborhood. Why? Students develop the idea that "fitness" is not an absolute quality but rather is defined with respect to survival in a particular environment." This helps students understand that humans are an enormous selective force and have a huge impact on the environment. | D39a | Writer's Discretion/ Line Edit |
| 607 | 5 | Comment | P. 34, lines 687-689: Suggested text: "The new science of epigenetics examines how the environment can induce chemically tagged changes to the expression of genes of an organism that in some cases have been shown to be inherited from one generation to the next." Added words make the statement more accurate and clearer, avoiding the misconception by elementary teachers that genes themselves are changed. | D39a | Writer's Discretion/ Line Edit |

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| 608 | 5 | Comment | P. DD36d, ELA ELD Connection box: Suggested text: "For a collection of free downloadable texts with text-dependent CC questions, some of which are excellent for science reading materials, see<br>www.readworks.org/books/passages<br>For ELLs, materials from grades below their current placement might be initially helpful." Incorrect URL, and on the correct URL, two of the recommended texts have been deleted. What I've recommended is a more easily searchable section of the correct website. | D39a | Writer's Discretion/ Line Edit |
| 609 | 5 | Comment | P. DD36d, lines 741-758, Effects of Environment on Organisms: Suggested text: "Put students in groups of four, and have each group member draw one of four landscapes (such as desert, grassland, woodland, tropical rainforest, salt marsh, ocean, polar, etc.). Then give each group a bag of small plastic animals and plants from the four environments the teacher has chosen to use (and/or small laminated pictures of animals and plants) and ask students to discuss and agree on which environment is "home" for each organism and how that organism is well adapted to that environment. After group members agree, they place each organism in its "home" environment. When all organisms have found a home, the class as a whole shares where their organisms were placed and why. This is an opportunity to highlight the crosscutting nature of cause and effect relationships and helps students start to look for evidence that in a particular habitat, some organisms can survive well, some survive less well, and some cannot survive at all. The key to this activity is not if an answer is right or wrong but rather for the students to engage in arguments from evidence.<br>I have replaced a confusing lesson with a (hopefully) clearer one that I have successfully used several times in both formal and informal education settings. | D39a | Writer's Discretion/ Line Edit |
| 610 | 5 | Comment | P. D37, line 780: Add to end of paragraph: "This can be demonstrated by getting several identical small plants, having students suggest different environments (light, water) within the classroom where individual plants may be placed, observing plants' responses after a week or two, and predicting what would happen to each plant if it continued to stay in the environment where it was placed." This ends an information paragraph with a related concrete activity suggestion. | D39a | Writer's Discretion/ Line Edit |
| 611 | 5 | Comment | P. D37, line 786: Add at end of paragraph: "Ask: What would happen to frogs in a drought? Why?" This ends an information paragraph with a related concrete class discussion suggestion. | D39a | Writer's Discretion/ Line Edit |
| 612 | 5 | Comment | P. 38, line 792: Add at end of paragraph: "Students can look at pictures of plants (eg. pine, cactus, banana tree, etc.) and research and discuss why the plants look the way they do, considering their natural environments." This ends an information paragraph with a related concrete class activity. | D39a | Writer's Discretion/ Line Edit |
| 613 | 5 | Comment | Pp. 38-39, lines 816-820: Suggested text: "Two excellent searchable database of fossils, including fossil sites in California, are: the Fossil Gallery in: http://www.paleoportal.org/index.php?globalnav=fossil_gallery/&sectionnav=main<br>and<br>http://www.conservation.ca.gov/cgs/information/kids_geozone/Pages/kid_links.aspx" The first URL is not user friendly, especially for 3rd grade. The second contains advertising and erroneously labels the Mesozoic as the "Age of Reptiles."<br>The Paleoportal is recommended by the USGS.<br>The second website is from the California Geological Survey and offers an extensive and user (kids and teachers) friendly searchable site about fossils and ancient life. | D39a | Writer's Discretion/ Line Edit |
| 614 | 5 | Comment | P. 39, line 821: it is not possible to cast a fossil within a class period- we can cast an impression, but not an actual fossil | D40 | Writer's Discretion/ Line Edit |
| 615 | 5 | Comment | P. 39, line 827: Suggested text: "… environmental conditions can affect the shape and size of …" I know we're not supposed to correct grammar, but I'm this is a hard distinction for most people to understand, so I'm not sure proofreaders would catch it (although Google's spell check sure did). | D39a | Writer's Discretion/ Line Edit |
| 616 | 5 | Comment | P. 39, lines 838-839: Suggested text: "Students then read informational texts and/or look at pictures (depending on their English abilities) and gather evidence about how a natural habitat has changed as a result of one or more human activities." For ELLs, pictures reduce the language load and increase the science comprehension and thinking. | D39a | Writer's Discretion/ Line Edit |
| 617 | 5 | Comment | P. 54, lines 1164-1165: Suggested text: "Climate … is the range of a region's weather over many years." Climate is the average over 30 years or more, according to NASA. | D39a | Writer's Discretion/ Line Edit |
| 618 | 5 | Comment | P. 54, lines 1168-1169: Suggested text: "These interactions can drive changes that occur over multiple time scales - from hours, days, weeks, months, and years for weather to decades, centuries, and beyond for climate." Climate is the average of over 30 years or more, according to NASA. | D39a | Writer's Discretion/ Line Edit |

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| 619 | 5 | Comment | P. 54, lines 1186-1189: Suggested text: " … as an engineering extension, students could design and build a weather station to collect weather data about their school site. (To assist the teacher in planning an engineering challenge, a publicly available lesson plan offered by NOAA is available at: http://oceanservice.noaa.gov/education/for_fun/BuildyourownWeatherStation.pdf). To be an engineering activity, the NOAA lesson will need to be modified so that students are designing and trying out solutions rather than just following directions in the pdf.)" Following directions is not what the Framework means by engineering. | D39a | Writer's Discretion/ Line Edit |
| 620 | 5 | Comment | P. 54, Box: Suggested text: "ELA ELD Connection<br>For additional background information from different sources, students can investigate the *Climate Kids* website at http://climatekids.nasa.gov that addresses weather and climate issues. Students can also compare important points and details from different informational texts, such as *Climates* by Theresa Alberti and *Climate Maps* by Ian F. Mahaney."<br>NASA just calls it *Climate Kids* .<br>The section is about weather and climate, not climate change - as defined by the 3-ESS2-1 assessment boundary. Besides, if you type the longer URL, you still end up at the *Climate Kids* home page.<br>Much as I just adore Miss Frizzle and her class, the Magic School Bus book is about climate change, which goes beyond the assessment boundary in this section. | D39a | Writer's Discretion/ Line Edit |
| 621 | 5 | Comment | P. 55, lines 1194-1196: Suggested text: "Moving beyond their school site, students can use publicly available sources to investigate weather patterns in other regions of the world using and graphing the same types of data that they used for their local investigation." I hope that my re-wording reflects what the original author was trying to say. | D39a | Writer's Discretion/ Line Edit |
| 622 | 5 | Comment | P. 55, box: Delete or move to Instructional Segment 3.<br>Also correct to: "Students make daily observations of each plant, recording height measurement, number of leaves, and their color as well as sketch or photograph the plant." Instructional Segment 4 is about Weather and Climate. Its math connection is graphing. The plant measurement activity belongs in Instructional Segment 3: : Ecosystems and Interdependence, 3-LS4-3. | D39a | Writer's Discretion/ Line Edit |
| 623 | 5 | Comment | Pp. 61-62, lines 1295-1299: Like that the ideas are separated and “bulleted out”- could be done for all the units? Very handy! | D40 | Writer's Discretion/ Line Edit |
| 624 | 5 | Comment | P. 64, lines 1D353-1DD36d4: Found this explanation about not reinforcing misconceptions very well written. | D39a | Writer's Discretion/ Line Edit |
| 625 | 5 | Comment | Pp. 65-66, lines 1389-1D400: examples are clear, useful. If any of those examples could be used for cross-reference, that would be even better | D40 | Writer's Discretion/ Line Edit |
| 626 | 5 | Comment | P. 74, ELA/ELD connection: Why is this a connection? For the T-chart, what is on the right-hand side? This could be modified to have students choose the type of chart that best fits. Evidence-centered, and write a CER/informational piece/ useful application of research | D40 | Writer's Discretion/ Line Edit |
| 627 | 5 | Comment | P. 77, line 1691: Images are okay, but how does a teacher instruct how to do this? Possible for more background for teachers? Instruction? | D40 | Writer's Discretion/ Line Edit |
| 628 | 5 | Comment | P. 79, lines 1745-1746: Helpful that it references a social studies unit in 4th grade | D40 | Writer's Discretion/ Line Edit |
| 629 | 5 | Comment | P. 82, line 1803: At the end of the Teacher Background section, add:<br>"The US Geological Survey website for teachers and kids has great lesson ideas:<br>http://education.usgs.gov/lessons/schoolyard/index.html" | D39a | Writer's Discretion/ Line Edit |
| 630 | 5 | Comment | P. 83, line 1804, and other places: Please add this introduction and breakdown of segments to the rest of the document. It really helps to orient the reader. | D39a | Writer's Discretion/ Line Edit |
| 631 | 5 | Comment | P. 84, line 1857: Suggested text: "it is important that emphasis is placed on the Earth processes." The passage was garbled. | D39a | Writer's Discretion/ Line Edit |
| 632 | 5 | Comment | P. 89, lines 1922-1923: Suggested text: "for example by deciding where to place a road with regard to local topography and the type of rocks being built over, to build a bridge across a river to connect to lands, or design a dam to provide electrical power." Please consider adding road placement in addition to your other examples. CalTrans must constantly consider geology while planning roads and road modifications. | D39a | Writer's Discretion/ Line Edit |
| 633 | 5 | Comment | P. 93, lines 2007-2010: Suggested text: "Students may be given small plastic animals to help understand structure and function." Students learn better through tactile as well as visual experiences. | D39a | Writer's Discretion/ Line Edit |
| 634 | 5 | Comment | P. 96, lines 2004-2007: Please add, ”Plants should not be harmed as students are studying them, nor should they be pulled out of the ground to bring back to the classroom. Small animals (insects, worms, etc.) should only be brought back to the classroom for short periods of observation, and then released. | D39a | Writer's Discretion/ Line Edit |
| 635 | 5 | Comment | P. 98, PE table: Why are the SEP, DCI, CCC all of a sudden in color? Wonderful- it should all be like that! Consistency | D40 | Writer's Discretion/ Line Edit |
| 636 | 5 | Comment | P. 101, line 2212: Can examples be provided to model the stomach and brain? Perhaps a chemical reaction for the stomach and a computer or smartphone for the brain. | D39a | Writer's Discretion/ Line Edit |

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| 637 | 5 | Comment | P. 103, line 2274: Suggested text: "A drawing showing how we see a person that misses accounting for the light source (sun or light bulb)." Please make it clear that Figure 17 is an example of student work that demonstrates misconceptions. | D39a | Writer's Discretion/ Line Edit |
| 638 | 5 | Comment | P. 104, lines 2282-2293: Add: It is suggested that teachers lower the light in their rooms and experiment with how the different surfaces reflect the flashlight before they conduct this experiment with students. | D39a | Writer's Discretion/ Line Edit |
| 639 | 5 | Comment | P. 110, lines 2445-2447: Suggested text: "Student thinking and experiences demonstrate a stronger understanding of the links between *matter and energy* as it goes from smaller *systems* (molecular level) to larger ones (Earth, Moon, and Sun)." The sun and stars are not a system. | D39a | Writer's Discretion/ Line Edit |
| 640 | 5 | Comment | P. 113-regarding 5-PS1-1: Please clarify if the use of the terms 'atom' and 'molecule' may be used, or must be avoided. It does seem odd that names of rock types (Igneous, etc.) is not discouraged in 4th grade, but "atoms and molecules" seem to be forbidden in 5th! | D39a | Writer's Discretion/ Line Edit |
| 641 | 5 | Comment | P. 113-regarding 5-PS1-1: Another example of evidence is having students wave their hands in the air and feeling the unseen substances hitting the leading edge of their hands. | D39a | Writer's Discretion/ Line Edit |
| 642 | 5 | Comment | P. 114 regarding 5PS1-4: If you suggest baking soda and water as an alternative to sand and water - teacher don't need to get sand. Elementary level prep time is extremely limited, and comparing responses of water and then vinegar to baking soda is enlightening. | D39a | Writer's Discretion/ Line Edit |
| 643 | 5 | Comment | P. 115, lines 2503-2506: Suggested text: "At this grade level, the terms atom and molecule may be familiar and used, but most students do not have a clear model of the distinctions between them. The generic term particle may be used for either." Please give teachers options. There is no reason to make vocabulary in 5th grade simpler than it is in 3rd and 4th. For consistency, particles is useful, but so are the terms atoms and molecules. (It is understood that no teaching of details about atoms and molecules will go on in 5th, but students should be familiar with these fairly simple terms, especially considering that they will come across them in their nonfiction reading.)<br>In addition, while technically particles is a synonym for atoms and molecules, as used in actual science journals the word particles is interchangeable with the longer phrase subatomic particles. It's never used to mean atoms and molecules. | D39a | Writer's Discretion/ Line Edit |
| 644 | 5 | Comment | P. 115, lines 2511-2512: Suggested text: "… but we know it is still there when we weigh or evaporate the resulting solution." gives another option to demonstrate the concept | D39a | Writer's Discretion/ Line Edit |
| 645 | 5 | Comment | P. 117, line 2582: Suggested text: "… model could include: having students wave their hands in the air to feel the air particles on the leading edge of their hands, having students use a closed syringe that is half filled with air …" Hand waving works really well with large groups, is tactile, and requires no special equipment. | D39a | Writer's Discretion/ Line Edit |
| 646 | 5 | Comment | P. 117, lines 2589-2591: Suggest students should be aware that gravity does affect gas particles because Earth's atmosphere is held down by gravity and that atmosphere is thicker at lower elevations, which you can sense as ear popping from pressure equalization while driving in mountains or flying in airplanes. | D39a | Writer's Discretion/ Line Edit |
| 647 | 5 | Comment | P. 120, line 2646: After the section teaching about phase changes, it would be nice to have an engineering connection sidebar noting how transportation engineers must allow for water phase changes when building roads, bridges. (ETS1-3) An experiment could be building a model and putting it in the freezer to see if its integrity holds up. | D39a | Writer's Discretion/ Line Edit |
| 648 | 5 | Comment | P. 121, line 2677: Add baking soda and water as one of the mixtures. | D39a | Writer's Discretion/ Line Edit |
| 649 | 5 | Comment | P. 121, lines 2686-2688: Suggested text: "In addition, students should understand that a mixture can be separated back into the pure substances that composed it, through evaporation, for example." to clarify the procedure for teachers | D39a | Writer's Discretion/ Line Edit |
| 650 | 5 | Comment | P. 125, line 2787: Suggested text: "… air is made of tiny little particles that we can't readily observe with just our senses. -- or -- air is made of tiny particles that we can't see but can feel and smell." This is more honest. We can feel air, smell substances in it, etc. | D39a | Writer's Discretion/ Line Edit |
| 651 | 5 | Comment | P. 127, table: the "science of cooking" is great- shows possible careers, real-life connections | D40 | Writer's Discretion/ Line Edit |
| 652 | 5 | Comment | P. 141: Love the background for teachers, figures /examples/diagrams. Really helpful | D36d | Writer's Discretion/ Line Edit |
| 653 | 5 | Comment | P. 144, example: Inconsistent connection to CCSS, sometimes standards is labeled, sometimes just domain. | D36d | Writer's Discretion/ Line Edit |
| 654 | 5 | Comment | Pp. 33 and 145: Grade 3, instructional segment 2. Needs examples of assessment boundaries in classroom. Great examples of everything but this. | D36d | Writer's Discretion/ Line Edit |
| 655 | 5 | Comment | P. 146, Figure 21: It is cited from Wikipedia- is that the most credible source? Where is the original source? | D40 | Writer's Discretion/ Line Edit |
| 656 | 5 | Comment | P. 151, lines 3412-3416: Suggested text: "… students have developed the understanding that forces that affect their everyday experiences ,... also affect larger systems like the Sun, Earth, and Moon …" The Earth and stars do not form a system. | D39a | Writer's Discretion/ Line Edit |

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| 657 | 5 | Comment | P. 155, lines 3483-3484: Suggested text: "Students can observe the location and phases of the Moon over the course of a month and relate this pattern to the Moon's orbit around Earth. Students should explicitly be made aware that there is no "Dark Side of the Moon," a common misconception. In their observations, they should see that the same side of the Moon always faces Earth, but it gets progressively darker and lighter depending on whether the sun is shining on it or not. The Moon has day and night, just as Earth does, but the Moon's Day/Night cycle is the same time period as a full orbit of Earth. This can be demonstrated by one person orbiting another, keeping the Moon person's face always pointed toward the person representing Earth. Note that the Moon person is rotating even as they orbit. Teachers may also show students a picture of the other side of the Moon, noting that it was not dark when the picture was taken and comparing how different it looks from the Earth-facing side." We public school educators need to nip misconceptions in the bud. It's embarrassing when our former students arrive in college still believing there are hidden bases on the Moon's mysterious "Dark Side." | D39a | Writer's Discretion/ Line Edit |
| 658 | 5 | Comment | P. 155, insert between lines D3504 and D3505: Suggested text: "Other "stars" in the sky.<br>In order to avoid student misunderstandings, it is appropriate to point out that the four brightest lights seen in the sky, besides the Sun and the Moon, are other planets that, like the Earth, orbit the Sun. Like the Moon, they are not always visible in the night sky.<br>Even though they are tiny compared to stars, they appear brighter because they are so much closer to us. Because they are moving around the Sun at different speeds, they constantly change their position in the night sky. Mercury and Venus are closer to the sun than Earth, so you can sometimes see them shining brightly in the direction of the sun before sunrise or after sunset. Jupiter tends to appear much higher in the sky. Mars only gets close enough to see every two years, opposite the direction of the setting or rising Sun.<br>Unlike stars, including our Sun, planets and our moon make no light of their own. The light we see is reflected light. Venus is unusually reflective due to a thick cover of light-colored clouds. The patterns of light and dark on the Moon are due to the differences in reflectivity in its surface materials. When discussing this, or when setting up a lesson, remind students of what they learned about reflectivity in the 4th grade."<br><br>This is to prevent the misunderstanding that all the points of light seen in the night sky are stars. Many members of the general public think the Morning and Evening Stars are actual stars. This misconception needs to be corrected at as young an age as possible for CA students. | D39a | Writer's Discretion/ Line Edit |
| 659 | 5 | Comment | P. 155, line 3493: Suggested text: "*Following a paragraph suggesting that students learn about star movements in simulated night skies* : In winter months, when days are shortest, students could be encouraged to learn to identify the constellation Orion (easy to see and identify even in light polluted skies) and to observe where it is in the sky after sunset and before sunrise. Note that the brightest actual star is Sirius to the left of Orion." Encourage students to have the awesome experience of looking up at an actual night sky to look for patterns. | D39a | Writer's Discretion/ Line Edit |
| 660 | 5 | Comment | Pp. 157-158: Vignette looks very different- layout, font, etc. Boxes within boxes (158) are confusing | D40 | Writer's Discretion/ Line Edit |
| 661 | 5 | Comment | Pp. 157-158, Vignette: can we just re-write the entire thing? :) | D40 | Writer's Discretion/ Line Edit |
| 662 | 5 | Comment | Pp. 157-160: Vignette: Excellent! My only suggestion would be the addition of a class blog as one way students could present their new understandings (p. 158). | D39a | Writer's Discretion/ Line Edit |
| 663 | 5 | Comment | P. 158, Vignette: First time every stating the learning target- could this be included in every vignette? | D40 | Writer's Discretion/ Line Edit |
| 664 | 5 | Comment | P. 160, Expert Group Jigsaw: I suggest being very careful with this technique because in my experience students only learn what they're expert in, so this instructional model is only useful when discussing different examples of the same thing. | D39a | Writer's Discretion/ Line Edit |
| 665 | 5 | Comment | Question: Clarification of Assessment Boundaries…. Vaguely says PE does not have…. Should give an assessment boundary and clarification statement for each unless there is there a reason behind it. If it's not needed, please clearly state. Some are inconsistent/unclear. | D42 | |
| 666 | 5 | Comment | ELA/ELD Connection Boxes: Please reference the appropriate CCSS ELA and ELD standards for each of these boxes to help teachers to see the integration. | D43 | |
| 667 | 5 | Comment | ELA/ELD Connection Boxes: Add back slashes '/' to all ELA ELD Connection boxes so they read 'ELA/ELD Connection ' | D43 | |
| 668 | 5 | Comment | Grade 5: 13 pages of line edits with extensive commentary.<br>beginning in grade 5 but this overview is different from the beginning of the fourth grade piece. Should they not be consistent?<br><br>A pattern seems to be developing where the writers of this document went beyond the assessment boundaries for grade 5 students. | 70h | |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 669 | 5 | Comment | Full chapter, tracked changes: 68 line edits/ with commentary embedded in the text with suggestions for a rewrite of sentences/ charts/ etc. | 70j | |
| 670 | 5 | Comment | Lines 84-85: Where does hypothesis fit in. Should some of those terms from Scientific Method be included here? | D42 | |
| 671 | 5 | Comment | P. 15, first sentence: Replace 'domain specific words and important academic vocabulary' with' domain specific and general academic' vocabulary (match language of ELD Standard ELD Part I. 12 and CCSS ELA L. 6) | D43 | |
| 672 | 5 | Comment | P. 29: First sentence: replace 'The verbal informational' presentations with 'oral' presentations (match language of ELD Standard ELD Part I.9). | D43 | |
| 673 | 5 | Comment | P. 29: Third sentence: revise sentence to say, 'asking and answering questions' (ELD Part I.1 and I.5 ) | D43 | |
| 674 | 5 | Comment | Heather Wygant : Please add the following comment for the Elementary grades 3-5 chapter:<br>P. 110, lines 2440-2441: please add a semicolon after each of the crosscutting concepts. There are three major crosscutting concepts that are being developed in grade five at a deeper level: systems and system models; scale, proportions and quantity; and cause and effect. | 58 | |
| 675 | 5 | Comment | P. 117: One of the assessment boundaries for 5th grade does not include Weight and<br>Mass, but is constantly referred to throughout the standard as a way to provide evidence. Should be included in assessment. Also words like Atom and Molecule are referred to as a Particle, but are looking at elements of the Periodic Table without providing an explanation and thus build context for students as the foundation is built. | D42 | |
| 676 | 5 | Survey | Page 11 of 169 from Chapter 5. Re-word labels in diagram from "Left Force/Right Force" to "Force caused (created) by the people on the right" and "Forced caused (created) by the people on the left". "Right Force" might be misinterpreted and to be more specific. | Item B | Writer's Discretion/ Line Edit |
| 677 | 5 | Survey | Fourth Grade Comments: Segment 2 Electromagnetic Radiation is listed as a DCI. I think it should be with segment 4 instead (like it is in NGSS). Segment 2 is about waves and the assessment boundary specifically states "does not include electromagnetic waves". | Item B | Writer's Discretion/ Line Edit |
| 678 | 5 | Survey | Reviewed 5th grade only: 5th grade Instructional Segment title for #3 is missing from table on page 111/112. It would be helpful to know before beginning the Instructional Segment, what prior knowledge students should have from previous grades. The placement in the document of the Vignettes are confusing. Perhaps place as in another area, so the descriptions of each part is not interrupted. Are there Engineering Connections for each instructional unit? Sequence of units and parts makes sense logically and helps create big picture connections to content. | Item B | Writer's Discretion/ Line Edit |
| 679 | 5 | Survey | The draft provides a strong rational for studying the four sessions and their connections to past learning. The draft is visually overwhelming. It would helpful to have chapters and more headings to easily find the information needed. | Item B | Writer's Discretion/ Line Edit |
| 680 | 5 | Survey | Please delineate the state standards from the national framework standards more clearly. It becomes confusing when reading through with multiple standards being listed and not identified. | Item B | Writer's Discretion/ Line Edit |
| 681 | 5 | Survey | We would like a clearer link between the national disciplinary core ideas in engineering, technology, and the application of science with the California disciplinary core ideas in engineering, technology, and the application of science. | Item B | Writer's Discretion/ Line Edit |
| 682 | 5 | Survey | Most language scholars are in agreement that vocabulary should be taught in context, after students have had experience with the concept and after they have used their own words to make meaning of it. In this vignette, the teacher front loads vocabulary. Talk to Dr. Okhee Lee about this if you have questions. There are very few examples of starting with a phenomenon. This is integral to NGSS. More vignettes should start this way instead of with vocabulary development. The Monterey Bay Aquarium has some examples of pieces of curriculum that do this well. | Item B | Writer's Discretion/ Line Edit |
| 683 | 5 | Survey | The following disciplinary core ideas in Life Science LS1. B: Growth and Development of Organisms, LS3.A: inheritance of Traits and LS1. A: Structure and Function; should be thaught with in the same grade as the connection is greater therefore the concept can go into more debt on how specific traits inherited from an organisms parents will affect the organisms function thus far it's chance for survival. The following disciplinary core ideas should be thaught congruently in the same grade level as LS2.B cycles of matter and energy transfer in Ecosystems and LS2.B: and LS 2. A: interdependence relationship in ecosystem connects much better with the instructional segments Exploring Enegy and Ecosystems and Interdependence as energy is transferred through food webs in ecosystems, as energy travels through food webs in various ecosystems this allows for teaching in more debt. | Item B | Writer's Discretion/ Line Edit |
| 684 | 5 | Survey | My major problems were with science inaccuracies. 3rd grade - Climate refers to average weather changes over several decades, not years. 5th grade - Question use of term "particles" for atoms and molecules when in science particles is often used to refer to sub-atomic phenomena AND question having students learn that the light seen in the sky are Moon, Sun, and stars, leading to the misconception that the brightest lights in the night sky after the Moon are stars when actually they are planets. Also, the Sun, Earth, and Moon form a system, but at this level, the stars are not part of any system the students are learning about. | Item B | Writer's Discretion/ Line Edit |

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| 685 | 5 | Survey | Much the same as K-2. Too much EEI, too much reliance on books, videos, not on hands-on. Show more of what teachers are doing to facilitate student meaning making. Get students outdoors, investigating, and communicating. Show teachers HOW to make this shift from telling students information about content topics, more on how teachers can guide through well crafted questions and investigations and meaning making. 5th grade – missing home to school connection, too much emphasis on individual research, writing. While it is great to connect science more closely with language arts, it is important that the little "hands on" investigation time students currently have is not further eroded with more reading and writing assignments, taking them even further from the actual practices of science and thinking scientifically. Vignettes talk about stuff without doing stuff!! | Item B | Writer's Discretion/ Line Edit |
| 686 | 5 | Survey | Plants and animals have unique and diverse life styles The wording of "life styles" is ambivalent. Instructional Segment 2: Life Cycles and Inheritance of Traits (table 1) | Item B | Writer's Discretion/ Line Edit |
| 687 | 5 | Survey | All - K-5 general comment - Using BOLD type to highlight the CCs and SEPs shows importance All K-5 General Comment - the description of instructional segment and the following vignette is linear; the fear is that we limit creativity appears to be linear and may be scripted as only one pathway, may stifle creativity. All teachers and publishers should be encouraged to create lessons that do not only follow the instructional segments in the Framework; we do want to not see that the format in the vignettes is prescriptive. | Item B | Writer's Discretion/ Line Edit |
| 688 | 5 | Survey | In Section: Grade 3 Instructional segment 2 Life Cycles and Inheritance of Traits, pg. D43, lines 971-973. Teacher was explaining the purpose of the field trip. Please include, " In your science notebook sketch plants, list the type and quantity of animals sited there and what they were doing," Please consider gathering evidence in a science notebook and having students use notes as evidence for claims and arguments. | Item B | Writer's Discretion/ Line Edit |
| 689 | 5 | Survey | On p. 60, Line 4-PS 3-3 there is a clarification needed to determine whether energy is transferred AS sound, heat, light, etc. or BY sound, light. Pages 63-64; Line 1339-1340: When discussing the idea that energy is never "used up", perhaps it would be prudent to mention that the energy is either transferred or distributed within the local environment. The rationale for this is the importance of including the concept of transfer in the discussion. Page 61-64 Line: 1278-1365: When considering the stakeholders who will utilize the "Background for Teachers", the suggestion is to include this information divided into sections immediately before or after the clarification statement and assessment boundary information for each standard. Recommended action: Standard, Clarification, Assessment Boundary, Background. The rationale is that when the information is presented in large sections, it may not be user friendly for all teachers. | Item B | Writer's Discretion/ Line Edit |
| 690 | 5 | Survey | Chapter 5 Introduction Line # 18-22. “While the performance expectations shown in kindergarten through fifth grade couple particular practices with specific disciplinary core ideas,...”. This should include something about Cross Cutting Concepts being included with the SEPs and DCI’s. Starting with the word “couple particular practices with cross-cutting concepts and specific disciplinary core ideas.” Line #58-65: These lines are helpful to educators in understanding that more practices are developed other than those explicitly stated in the PE. Also it demonstrates that it is 3-dimensional as well as emphasizing that investigations are student-centered because they have developed questions from phenomena. Grade 4 Chapter 5 Line #1246-1247: use of the word “deeply”. “Intensely” could be a better synonym to use to describe the kind of investigating the students will be doing. Or reword the phrase to say: “...and participate in an in-depth investigation of the structures and functions of plants and animals.” Line #1269-1273 - Questions - These questions are repeated in the table. This seems redundant. Line #1325: remove period after “structure”. Table in Line # 1332: Helpful visual for educators, and for students, if needed. Line #1D433-1D434: Why can’t students observations be qualitative AND quantitative? In order to support a qualitative observation of a student, it should be backed up with the measurement of the height of the marble, or the car in collisions. | Item B | Writer's Discretion/ Line Edit |
| 691 | 5 | Survey | Pg 63: POE? Not sure if this is meant to be PE. Pg 66, line 67: explain what this means… what is an expanded learning program? an after school program or during the school day? Lines 111 - 118 (comments also apply to each instructional segment): why are these questions different from the ones in the table? what are these questions called? essential questions? guiding questions? maybe provide some identification for the questions in the table so it is clear how they are meant to be used. -maybe the questions in the paragraph are probing questions? these seem more specific than the questions in the table but it is unclear why 120 (background for the teacher): could there potentially be links to videos that provide background information for the teachers so they can watch and/or read? with physical science it can be helpful to have visuals -could use existing videos like Kahn Academy -quick, multimedia videos not meant to replace the text but to supplement -more images 246 (ELD connection): seems to emphasize vocabulary which is important, but we think it should emphasize the fact that current research supports first providing hands-on experience to provide context within which students can develop academic language, rather than front loading vocabulary at the beginning of a unit of study | Item B | Writer's Discretion/ Line Edit |

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| 692 | 5 | Survey | Also, how the object affects the cup could be measured. These quantitative observations can show the cause and effect relationships observed. Line #15D43-1544: doesn't make sense. Instead: "Intensity is one more technical-term that students will need to talk about with respect to light and sound." Line #1747: "amazing" is an opinion, should be replaced. Line #1746-1747: This line is redundant and wordy. Line #1762: "though" should be "through". | Item B | Writer's Discretion/ Line Edit |
| 693 | 5 | Survey | -maybe include links to previous chapters that refer to ELD strategies such as chapter 10 557 (using models): needs some examples of instructional strategies around developing models (teachers can have hard time understanding what models are within the context of the NGSS) -maybe some resources on models could be linked here, or links to previous chapters that define or refer to developing models 492 (table): "Why do organisms grow and develop?" Change "why" to "how" 513: "Most of the calories consumed by people around the world are from seeds and fruits."-seems out of context 489: Question repeated: In what way can variation help or hurt the chance of an organism surviving? | Item B | Writer's Discretion/ Line Edit |
| 694 | 6 | Comment | I was reading the introduction, and I'm confused by the chart at the end of the document. It says that in integrated that heat flow leads to plate tectonics in 6$^{th}$ grade. I don't think that plate tectonics is a DCI in 6$^{th}$ grade. | D1 | Writer's Discretion/ Line Edit |
| 695 | 6 | Comment | Line 307: Change: TAUT not "taught" | D25 | Writer's Discretion/ Line Edit |
| 696 | 6 | Comment | Line 329: Question: Scale and proportion are not taught until the middle of 6th grade, hard to start the science year with this concept. First comes solving equations, computing with rational numbers, geometric measurement. | D25 | Writer's Discretion/ Line Edit |
| 697 | 6 | Comment | Line 444: Question: How did they use string to measure the diameter accurately? | D25 | Writer's Discretion/ Line Edit |
| 698 | 6 | Comment | Line 458: Question: Why the switch to circumference? And then in line 464 back to diameter? | D25 | Writer's Discretion/ Line Edit |
| 699 | 6 | Comment | Line 501: Question: Was there any instruction on the period of the moon's orbit? How many moon cycles in a year? Why does it 'rise' and 'set' at different times? Why is it apparent in the daytime sky on some days? | D25 | Writer's Discretion/ Line Edit |
| 700 | 6 | Comment | Line 701: Question: 6:30 am where? In each time zone? The eastern time zone? Is there cloud coverage over part of the states? | D25 | Writer's Discretion/ Line Edit |
| 701 | 6 | Comment | Line 791: Question: Students will need an understanding of DENSITY to understand these currents. | D25 | Writer's Discretion/ Line Edit |
| 702 | 6 | Comment | Line 807: Question: ??"where water must completely change direction"? I don't understand, does it stop its flow and start moving backwards? | D25 | Writer's Discretion/ Line Edit |
| 703 | 6 | Comment | Line 820: Question: Wind changes direction, it is more complex than that. There are circulating high pressure areas and low pressure areas that we feel only part of. Yes, right around us the wind 'has changed direction', but it is not that the air has stopped moving and then starts moving in a different direction. How could you state this more precisely? How does the change in temperature change the density that causes this motion? | D25 | Writer's Discretion/ Line Edit |
| 704 | 6 | Comment | Lines 1061, 1064: Add: Some information about density, heating increases volume which lessens density, so colder more dense air sinks below the less dense air which causes movement<br>'Rising upward', why? Change in Density. | D25 | Writer's Discretion/ Line Edit |
| 705 | 6 | Comment | Line 1075: Add: "when two air masses collide, one goes up', why, difference in DENSITY, "when an air mass goes up, it cools' why? Becomes more DENSE, and the resulting movement is…?? | D25 | Writer's Discretion/ Line Edit |
| 706 | 6 | Comment | Line 1088: Add: Page number, where should I look for this easily? | D25 | Writer's Discretion/ Line Edit |
| 707 | 6 | Comment | Line 1105: Add: "flows constantly down towards the ocean", pull of gravity | D25 | Writer's Discretion/ Line Edit |
| 708 | 6 | Comment | Line 1133: Question: Where do students learn the special properties of water that give it such amazing properties? The attractive pull between water molecules? Surface tension? The amount of heat energy required to move water from a liquid state to a gas state (latent heat of vaporization) that is released when the air cools and that energy is now transferred to developing hurricanes | D25 | Writer's Discretion/ Line Edit |
| 709 | 6 | Comment | Line 1134: Add: Condensing releases that energy which is transferred into weather and air movement | D25 | Writer's Discretion/ Line Edit |
| 710 | 6 | Comment | Line 1142: Add: How does gravity interact with more dense air/water masses, and less dense air/water masses? | D25 | Writer's Discretion/ Line Edit |
| 711 | 6 | Comment | Lines 1207 on: Add: Understanding the special properties of water will be essential for understanding erosion and deposition. Where do students learn the properties of water? | D25 | Writer's Discretion/ Line Edit |
| 712 | 6 | Comment | Line 1303: Add: The pull of gravity, less resistance on a steep slope. Potential energy in the water at the height of the slope changing to kinetic energy as it is pulled downward by gravity | D25 | Writer's Discretion/ Line Edit |
| 713 | 6 | Comment | Line 1312: Add: Resistance from plant structures such as roots or ground cover to lessen landslide danger, impact after a wild fire where plants are damaged or gone | D25 | Writer's Discretion/ Line Edit |
| 714 | 6 | Comment | Line 1338: Add: More potential energy at the top of the hillside, pull of gravity and little resistance so water can move quickly down the hillside-kinetic energy, slows at a lake or ocean, gravity is still pulling but there is now restricted flow due to physical barriers. | D25 | Writer's Discretion/ Line Edit |
| 715 | 6 | Comment | Line 1539: Add: "one plate sinks down beneath the other" DENSITY? | D25 | Writer's Discretion/ Line Edit |

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| 716 | 6 | Comment | Line 1674: Add: “the faster they erode” why? Gravity, water’s potential energy changing to kinetic energy with little resistance to flow, etc. | D25 | Writer's Discretion/ Line Edit |
| 717 | 6 | Comment | Line 1678: Add: “tends to precipitate” why?...’squeeze moisture out’ means what? What is actually happening. | D25 | Writer's Discretion/ Line Edit |
| 718 | 6 | Comment | Line 3738: Question: Why not connect these concepts to water on a mountaintop, and the resulting energy for erosion and deposition? Rather than a rollercoaster? | D25 | Writer's Discretion/ Line Edit |
| 719 | 6 | Comment | Line 3768: Question: “astrology” ? or astronomy? | D25 | Writer's Discretion/ Line Edit |
| 720 | 6 | Comment | Line 4446: Question: Thermal regulation would be good to add as an example for 7th grade of structure and function, how do living organisms regulate temperature, evaporation of water (sweat), latent heat of vaporization. | D25 | Writer's Discretion/ Line Edit |
| 721 | 6 | Comment | Integrated: P. 18, lines 182-188: water is a good example of how a whole system differs from its parts. It would help to show water as an analogy for a whole system with differing properties. | D6b | Writer's Discretion/ Line Edit |
| 722 | 6 | Comment | P. 212, line 3850: Suggested revision: "... both scientists to answer…" "to it" is not helpful | D16 | Writer's Discretion/ Line Edit |
| 723 | 6 | Comment | P. 221, line 4046: Suggested revision: "... organisms produce far more…" typo, or wrong word | D16 | Writer's Discretion/ Line Edit |
| 724 | 6 | Comment | P. 222, line 4061: Suggested revision: "... reproduce, accumulating over time…" more precise term for process | D16 | Writer's Discretion/ Line Edit |
| 725 | 6 | Comment | P. 222, line 4073: Suggested revision: "... traits happen randomly (unpredictably) and naturally." helpful to reinforce meaning of randomly (commonly misunderstood). | D16 | Writer's Discretion/ Line Edit |
| 726 | 6 | Comment | P. 222, line 4077: Suggested revision: "Teachers and students must use science language carefully…" critically important for this concept | D16 | Writer's Discretion/ Line Edit |
| 727 | 6 | Comment | P. 222, line 4080: Suggested revision: [ Add: For example...] would be helpful to provide an example of math. represent.. | D16 | Writer's Discretion/ Line Edit |
| 728 | 6 | Comment | P. 224, line 4098: Suggested revision: "In artificial selection, humans consciously select specific characteristics over many generations, thereby taking advantage of naturally occurring random variations. Doing this keeps increasing the quantity and quality of a particular trait in a local dog population." Makes for clearer indication of what characterizes artificial selection. | D16 | Writer's Discretion/ Line Edit |
| 729 | 6 | Comment | P. 224, lines 4108-4110: Suggested revision: "In artificial selection, humans consciously select specific characteristics over many generations, thereby taking advantage of naturally occurring random variations. Doing this keeps increasing the quantity and quality of a particular trait in a local dog population." Makes for clearer indication of what characterizes artificial selection. | D16 | Writer's Discretion/ Line Edit |
| 730 | 6 | Comment | P. 228, line 4215: Suggested revision: "... copying the gene during …" The code is not copied. It's the gene that's copied. | D16 | Writer's Discretion/ Line Edit |
| 731 | 6 | Comment | P. 229, line 4251: Suggested revision: "... longer, lighter bones are naturally selected." "must" suggests a *need* sufficient to produce lighter, longer bones. "Need" is teleological, not a feature of natural selection. | D16 | Writer's Discretion/ Line Edit |
| 732 | 6 | Comment | P. 229, line 4252: Suggested revision: "...on four legs have sturdy bones naturally selected for supporting its weight,…" "must" suggests a *need* sufficient to produce sturdier bones. "Need" is teleological, not a feature of natural selection. | D16 | Writer's Discretion/ Line Edit |
| 733 | 6 | Comment | P. 229, line 4253: Suggested revision: "... that walk on two legs tend to have front arms that have been naturally selected for lighter weight-bearing since they aren't supporting the body." suggested wording further reinforces the sense of natural selection. | D16 | Writer's Discretion/ Line Edit |
| 734 | 6 | Comment | Integrated: Need more of - More support for content that is new in that grade level | D5 | Writer's Discretion/ Line Edit |
| 735 | 6 | Comment | Integrated: Need more of - On the charts that identify the storylines (for example pg 4 above line 14), they are organized around DCI, but we want to also see the SEP’s and CCC brought out. This gives the teachers the impression they only have to worry about DCI. | D5 | Writer's Discretion/ Line Edit |
| 736 | 6 | Comment | Integrated: Need more of - We also would like to see where in the progression of the practices the students be at that time in the storyline. | D5 | Writer's Discretion/ Line Edit |
| 737 | 6 | Comment | Integrated: Need more of - Showing process of engineering something, process, feedback… need more engineering and how to make it really fit in the storyline and be meaningful. | D5 | Writer's Discretion/ Line Edit |
| 738 | 6 | Comment | Integrated: Need more of - I could use more help with integration of common core, overall throughout, need more examples - so it’s not just an add-on. | D5 | Writer's Discretion/ Line Edit |
| 739 | 6 | Comment | In the middle school intro: can you add something in that would help teachers feel more comfortable about transition into integrated (not sure what that is, but they need help and need to feel more confident). Should this be emphasized in the instructional strategies when professional support is mentioned? | D5 | Writer's Discretion/ Line Edit |
| 740 | 6 | Comment | Discipline Specific: Line 293: Suggested revision: "Students should be able to apply these models to qualitatively predict the motions of objects." Appositive is not needed. Creates an informal tone and reference. | D5 | Writer's Discretion/ Line Edit |
| 741 | 6 | Comment | Discipline Specific: Footer after line 303: would not connect. http://www.spitzer.caltech.edu/video-audio/62-ask2002-001-Why-Doesn-t-the-Moon-Fall-Down- | D5 | Writer's Discretion/ Line Edit |
| 742 | 6 | Comment | Discipline Specific: Line 699: "(Or, why does Santa wear a big red suit?)" Omit- a cultural reference that may not apply to all students. | D5 | Writer's Discretion/ Line Edit |

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| 743 | 6 | Comment | Discipline Specific: Lines 734-735: "Constructing a dot-plot with average annual temperature versus latitude and temperature spread versus latitude reveals an important pattern." Needs a visual to help clarify the statement. | D5 | Writer's Discretion/ Line Edit |
| 744 | 6 | Comment | Discipline Specific: Lines 797-798: Suggested revision: "Without currents, regional temperatures would be great — extremely hot at the equator and frigid toward the poles—and much less of Earth's land would be habitable." super is too informal. | D5 | Writer's Discretion/ Line Edit |
| 745 | 6 | Comment | Discipline Specific: Lines 886-888: "Air moving from the poles towards the equator is moving slower than the ground underneath it, so it gets 'left behind' and appears to make a turn away from the rotation direction." Very confusing, not easy to visualize. | D5 | Writer's Discretion/ Line Edit |
| 746 | 6 | Comment | Discipline Specific: Lines 2674-2685: "While many of the body systems…" It seems like this entire paragraph is background info that may be unnecessary. | D5 | Writer's Discretion/ Line Edit |
| 747 | 6 | Comment | Discipline Specific: Line 2863: "(e.g.,...)" these examples wouldn't be used in a nature/nurture discussion because they are changes that are intentionally done by the person who is experiencing them. | D5 | Writer's Discretion/ Line Edit |
| 748 | 6 | Comment | Thank you for the opportunity to add some language to the ELL vignette on page 249 of the Draft CA Science Framework: Discipline Specific Course Model Grades 6-8.<br><br>In the Science Frameworks, the ELL vignette guides students in considering what might happen to the body if one of the body's organs were compromised but omits the portion of the Donate Life California-submitted vignette (lines 2572 to 2592) integrating the topic of organ donation into the discussion of the body as a system of interacting sub-systems (MS-LS1-3).<br><br>May we request that these lines (in yellow below) be inserted into the ELL vignette as noted below (on page 249; please note that the lines are not numbered in this vignette) to read as follows [blue is existing text in ELL vignette]?<br><br>[Ed. note: suggested text shown in red below] | D25 | Writer's Discretion/ Line Edit |
| 749 | 6 | Comment | Ms. K leads her students through an analysis of the language they used to make this scientific argument. She draws her students' attention to the causal "if…then" statements and terminology such as "therefore."<br><br>To extend the discussion about how if one of the body's organs are damaged it can affect the interacting sub-systems (organs) in the system (body), Ms. K asks students to consider situations when the body can heal itself, as is the case with the flu or a broken bone. Mrs. K then asks her students to think about times when medical technology or another strategy may be helpful to a person who is deaf or has diabetes. In this example, she prompts her students to think about sign language to help a person who is deaf to communicate or how insulin can do the job of the pancreas.<br>To help her students transition into the concepts of systems being made of sub-systems that can, at times, be replaced, Mrs. K prompts her students to think of other systems they know of where one part of it can be replaced to make the system functional again. If necessary, she guides students to think about replacing a car battery, a bicycle tire, or computer keyboard or mouse. | D23 | Writer's Discretion/ Line Edit |
| 750 | 6 | Comment | Ms. K. takes her students back to the earlier conversation about the kidneys as one as one of the sub-systems of the body. She reminds students that humans have two kidneys and although it is possible to live a healthy life with one. In the case of kidney failure, an individual can have their blood artificially cleansed by a dialysis machine that does the work of the kidneys. In some cases, a person can get a "new" kidney, or a kidney transplant, from a living donor or from someone who died recently, for example in an automobile accident. Ms. K explains the concept of organ transplant and explains that one person can also donate tissues, such as corneas, skin, bones, ligaments and tendons, and up to eight organs—kidneys, lungs, heart, liver, and intestine—upon their death. In this way, she explains, the donated organ replaces the organ that was compromised and the body as a system can again function properly.<br><br>She asks the students if they know anybody who has received a transplant, is waiting for a transplant, or was an organ donor. Ms. K asks if any of the students are comfortable sharing their example and suggests that they discuss this important topic with their parents.<br><br>The next day, it is time for students to begin their individual scientific arguments.<br><br>With a disproportionate number of people of Hispanics/Latinos background on the kidney transplant waiting list, this topic it important to cover. Researchers are discovering that a person on the waiting list is more likely to be a "match" with and receive an organ from someone with a similar ethnic make-up. | D23 | Writer's Discretion/ Line Edit |

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| 751 | 6 | Comment | Pick either integrated or discipline specific, but would be appropriate to have elementary do integrated and once teachers are single-subject credentialed (middle school), move to discipline specific. | D37 | Writer's Discretion/ Line Edit |
| 752 | 6 | Comment | Earthquakes should be in middle school standards again. (on page 2 of 5). Important also because earthquakes happen in California. | D37 | Writer's Discretion/ Line Edit |
| 753 | 6 | Comment | Page 3 of 5: Should include energy of solar system in standard (i.e. potential energies, gravity, and solar system). | D37 | Writer's Discretion/ Line Edit |
| 754 | 6 | Comment | Introduction, Line 75: Should include agricultural and other sciences (CA feeds the nation!) | D37 | Writer's Discretion/ Line Edit |
| 755 | 6 | Comment | Introduction, Line 75: “Linda Darling-Hammond summarizes…” Don’t need to reference author… can just leave in citation | D37 | Writer's Discretion/ Line Edit |
| 756 | 6 | Comment | Integrated: Teaching evolution could cause pushback from parents and students | DD36d | Writer's Discretion/ Line Edit |
| 757 | 6 | Comment | Integrated: MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the distances and masses of interacting objects. | DD36d | Writer's Discretion/ Line Edit |
| 758 | 6 | Comment | Overall, integration focus is placed at the wrong grade level. For example, p67, this genetics concept is beyond the cognitive development of 6th grade students. Pre-1998 integrated model worked on a more practical level. | D39a | Writer's Discretion/ Line Edit |
| 759 | 6 | Comment | Middle school should be conceptual with Earth, Life, and Physical Science while high school should be applied scence with more rigor. Middle School students need a solid foundation of conceptual learning and skill set in order to go deeper in high school. | D39a | Writer's Discretion/ Line Edit |
| 760 | 6 | Comment | Instructional segments too idealistic. Many science classrooms are not fully equipped with sinks, counters, tables, running water, hot water, appropriate electrical outlets, etc | D39a | Writer's Discretion/ Line Edit |
| 761 | 6 | Comment | Integrated middle school: We are skipping forward. we find much of this beyond the grade level of students. The equipment required for many of the suggested investigations goes beyond what is available in non-science rooms where most middle science (6th grade especially) is taught. Lack of true science equipment. Most of the exploratory labs are analogies, simulations for overall concepts, not data driven for analysis. We do not have the equipment for the true investigation style of labs. Hands on explorations and investigations are what the students learn for making the connections. Vs computer generated simulations. | D39a | Writer's Discretion/ Line Edit |
| 762 | 6 | Comment | P. 1, Lines 11-12: This not an accurate statement written to demonstrate the concepts. This is better: Development of organisms structures and behaviors are influenced by climate. | D39a | Writer's Discretion/ Line Edit |
| 763 | 6 | Comment | P. 2, lines 18-25: Too verbose. Please streamline language to something to state that things are whole-part-whole. | D39a | Writer's Discretion/ Line Edit |
| 764 | 6 | Comment | Line 26: Please cross cutting concepts and use teaching terminology such as cause and effect, compare and contrast. Using cross cutting concepts is both redundant and undescriptive. | D39a | Writer's Discretion/ Line Edit |
| 765 | 6 | Comment | Integrated: p. 3, line 29: Why are certain words bolded? | D40 | Writer's Discretion/ Line Edit |
| 766 | 6 | Comment | Line D37: Replace the use of the term phenomena with a more appropriate term such as investigation. | D39a | Writer's Discretion/ Line Edit |
| 767 | 6 | Comment | P. 8, line 67: Students do not have this level of understanding of these concepts for this age level and developmentally cannot understand this to this depth. | D39a | Writer's Discretion/ Line Edit |
| 768 | 6 | Comment | P. 13, line 93: Not all students in 5th grade will have learned these things. Too many assumptions of prior knowledge from elementary level. | D39a | Writer's Discretion/ Line Edit |
| 769 | 6 | Comment | P. 15, lines 144-150: What does this mean? What is the goal of this statement. This makes no sense. It is very confusing. Please be specific. | D39a | Writer's Discretion/ Line Edit |
| 770 | 6 | Comment | Lines 183-188: Incorrect information and use of information. | D39a | Writer's Discretion/ Line Edit |
| 771 | 6 | Comment | Lines 196-203: Poorly stated and needs to be rephrased. Writing is all over the place. This does not make sense. It feels like you are throwing in cross cutting terms to justify the change in standards. | D39a | Writer's Discretion/ Line Edit |
| 772 | 6 | Comment | Lines 213-216: Not age appropriate for middle school students’ cognitive development. Ethically inappropriate for this age level. | D39a | Writer's Discretion/ Line Edit |
| 773 | 6 | Comment | Lines 217-223: What is the agenda of this??? | D39a | Writer's Discretion/ Line Edit |
| 774 | 6 | Comment | Integrated: p. 30, line D406: Graphic is not easy to understand. Is there a better option? | D40 | Writer's Discretion/ Line Edit |
| 775 | 6 | Comment | Integrated: p. 33, line 474: Great placement for the physical science PE comparing land and water heat transfer | D40 | Writer's Discretion/ Line Edit |
| 776 | 6 | Comment | Integrated: p. DD36d, line 550: Good- easy to reference footnotes. | D40 | Writer's Discretion/ Line Edit |
| 777 | 6 | Comment | Line 701: Incorrect use of science concepts This is about energy transfer. The term reservoir is confusing. | D39a | Writer's Discretion/ Line Edit |
| 778 | 6 | Comment | Lines 701-719: What is the purpose of these statements. Is there an agenda here?? | D39a | Writer's Discretion/ Line Edit |
| 779 | 6 | Comment | Line 758: Too much prior knowledge is assumed | D39a | Writer's Discretion/ Line Edit |
| 780 | 6 | Comment | Integrated: p. 49, line 760: Good- Excellent that information is given for what previous grades should have studied. | D40 | Writer's Discretion/ Line Edit |
| 781 | 6 | Comment | Integrated: p. 55, line 868: "identified as a dotted line passing through Mexico" - It is going through South America. Also, there are dotted lines all over, not just there. | D40 | Writer's Discretion/ Line Edit |
| 782 | 6 | Comment | Integrated: p. 58, Table 7: Visuals or diagrams would be great. | D40 | Writer's Discretion/ Line Edit |
| 783 | 6 | Comment | Integrated: p. 64, line 1056: wording of PE MS-LS1-8 - Please add the wording here. | D40 | Writer's Discretion/ Line Edit |

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| 784 | 6 | Comment | Integrated: p. 66, line 1066: Environmental principles and concepts? All of sudden these are referenced in each segment, but we are not familiar. Why is there an emphasis? | D40 | Writer's Discretion/ Line Edit |
| 785 | 6 | Comment | Integrated: p. 67, Fig. 19: This figure is terrible. There has to be something better. confusing and unclear. | D40 | Writer's Discretion/ Line Edit |
| 786 | 6 | Comment | Integrated: p. 69, line 1115: Can we stay away from the term “global warming” it should be climate change. | D40 | Writer's Discretion/ Line Edit |
| 787 | 6 | Comment | Line 1286: This is confusing and that conceptual level is a huge jump from basic understanding to mircroscipic to macroscopic…. | D39a | Writer's Discretion/ Line Edit |
| 788 | 6 | Comment | Integrated: p. 82, line 1345: Summary of DCI, why the specific river example. | D40 | Writer's Discretion/ Line Edit |
| 789 | 6 | Comment | Integrated: p. 86, line 1D354; p. 100, line 1660: Like the tables clarity and guiding questions.<br>Environmental Principles and Concepts seem out of context in this section. Where does this fit into the guiding questions within the instructional segments. | D40 | Writer's Discretion/ Line Edit |
| 790 | 6 | Comment | Line 1476: Where do we have the equipment to provide the opportunity when there are no longer bunsen burners, gas, hot plates, water, sinks, ect… | D39a | Writer's Discretion/ Line Edit |
| 791 | 6 | Comment | Line 1524: We do not understand your choices of examples? This is specific heat and heat capacity concept. This concept is what I believe you are trying to demonstrate. Perhaps a demonstration or heated copper penny in water !! | D39a | Writer's Discretion/ Line Edit |
| 792 | 6 | Comment | Integrated: Starting at line 20D35, Instructional Segment 3 Teacher Background and Instructional Suggestions begins with a very detailed explanation of performance expectation MS-ESS2-3 on the evidence for plate tectonics and Earth’s features that result from these processes (lines 20DD36d-2165). It then segues nicely into how teachers could make connections to MS-ESS3-1, the uneven distribution of resources due to plate tectonics (lines 2167-2203). Then a very weak connection is made between water and natural resources (line 2204) to the ecosystems performance expectation MS-LS2-3, which has to do with the cycling of matter and flow of energy in an ecosystem. There is, however, a nice explanation of this performance expectation and also how it ties in to previous instructional segments (lines 2205-2273). In the final paragraph, a very weak segue/connection is made from MS-LS2-3 into the final performance expectations listed, MS-LS2-1 & MS-LS2-2; with a grand total of 7 lines devoted to the explanation of two fairly complex performance expectations (lines 2275-2281). Consider strengthening the connections between the ESS performance expectations and the LS performance expectations in Instructional Segment 3, since the integration of two seemingly unconnected subjects is unfamiliar territory for many teachers; as well as a more detailed explanation of the PE’s MS-LS2-1 & MS-LS2-2. | D41a | Writer's Discretion/ Line Edit |
| 793 | 6 | Comment | Line 2207: The use of the term Model. The term is confusing for most.. that it does not have to be 3 -dimensional… it can be an illustration, diagram.. that is to be revised. Make them a challenge, What is missing, what can be changed? ect… | D39a | Writer's Discretion/ Line Edit |
| 794 | 6 | Comment | Integrated: p. 163, line 2855: Be more specific. What is the specific connection between motion and fossil record? | D40 | Writer's Discretion/ Line Edit |
| 795 | 6 | Comment | Karen Schmidt provided 12 pages of feedback, attachment 62, on the middle grades courses. | 62 | Writer to review feedback and implement edits at his discretion. |
| 796 | 6 | Comment | Integrated: PS3.c is missing from 8th framework but is assigned to 8th grade LS1.d & PS3.d also missing | D42 | |
| 797 | 6 | Comment | Integrated: Vignettes could be color coded to match SEP, DCI and CCC & specifically address the PEs | D42 | |
| 798 | 6 | Comment | Integrated PFD with Inserted Text notes in the PDF NOT tracked changes: 256 pages/ full chapter | 70k | |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 799 | 6 | Comment | Integrated: Instructional Segment 2 Snapshot 6th grade: Motions and Thermal Energy:<br>Line 239- Needs structured collaborative conversations, needs sentence starters and frames for different proficiency levels. Teacher needs to provide guiding questions<br>Line 240-Needs vocabulary routine of words in bold. T-chart as an example.<br>Line 247-Illustrated one-page handout from 1798 needs a reading routine, collaborative summary modeled, and absolutely not given for homework. What specific scientific paper? Giving a scientific paper as homework for sixth graders is inappropriate. A scaffolded, close read experience would help students understand informational text.<br>Line 258- Explicitly teach Cause/Effect and then ask students to use it. He's using the effect before the cause. Difficult text structure for language.<br>Line 267-No sentence frames or collaborative conversation routines. The groups should be strategically planned with native speakers, different proficiency levels, and this should be explicitly mentioned in the vignette.<br>Line 272- Teacher needs to model a Collaborative Summary with students and then ask them to complete it together. This could be integrated with technology device.<br>Line 282-If this is the first time they are doing Engineering & Design the teacher needs to explicitly teach the vocabulary like constraints, criteria, design, construct and test a device. Show explicitly how the words interrelate. Total Physical Response for each of those design terms.<br>Line 290-What does the project mean? Too vague as a teacher we need something specific examples and then the teacher can modify if they wish. Is the project something written? An experiment? A socratic seminar? Claim poster?<br>ELD Standards do not correspond with this lesson. | D43 | All comments below are refinement of snapshot |
| 800 | 6 | Comment | Instructional Segment 2 Vignette: Interactions of Earth Systems Cause Weather: Lines 319-323- Start the discussion with a think pair share with guiding questions. Label the visuals with the words for the teacher to check that students remember the fifth grade. Some students may have just come from another country and wasn't in school for the fifth grade.<br>Lines 324-333-Do a predict, observe and explain (POE) in their journals to predict through pictures or words what students think might be happening and write observations of what happened and tried to do initial explanations, using sentence frames, for student scaffolding. Throughout the vignette students should refer back to their POE's to revise their explanations based on what they've now learned.<br>Line 332-When the teacher put the dry ice in the surgical glove and tied it off. "That way they could have some carbon dioxide gas to observe as well." Teacher should explain here, explicitly, the life connection.<br>Lines 334-338 Needs explicit teaching about how evidence matches an argument. Should be in partners or in a group with peer-to-peer support. Again, strategic partner planning for sharing<br>Lines339 & 342- POE needed here. Please do a prediction of what you think will happen when its cut. More scaffolding and more discussion.<br>It sounds like the teacher is doing the work and kids are just sitting there in amazement.<br>Lines 3D43-344- Ask students to come up with their own conclusions, not teacher driven, and have them present their ideas using appropriate scaffolding.<br>Line 345- How did students summarize the evidence? What is the process? Assumption made that students understand how to do this.<br>Line 348- What is an intra-group and a cross-group discussion? What does the gradual progression mean here? | D43 | Rest of these comments to Vignette are to improve vignette, writer include as appropriate |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 801 | 6 | Comment | Instructional Segment 2 Vignette: Interactions of Earth Systems Cause Weather:<br>Line 350- All teams should make the modeled drawing not just one.<br>The teacher is doing everything while students watch.<br>Line 359- Where did students note or record their work?<br>Line 358-360- Needs a graphic organizer or something to help with recording.<br>Lines 368-Think-Pair-Share needed here to review their content.<br>Line 365-366-Students should already have been using the Data Table during the teacher's experiment to model how to use it.<br>Line 379-380- Structured interaction necessary here for discussing results as a whole class.<br>Lines 381-384- Explanations need to follow the text structure and language features necessary for writing this piece. This should be modeled explicitly with teacher writing with them in a joint construction before independent writing.<br>Lines 396-397- How did students come to this conclusion? Through teacher led discussion or through their own labs?<br>Lines 411-422-We don't understand the meaning of these lines. Teacher just left the student hanging with their response.<br>Line 445-Needs examples and explicit teaching about what a scientific question is and how to practice using one.<br>Line 447-Sentence frames for questioning presenters and practicing with a partner first before using them.<br>Line451-Needs explicit teaching around cause and effect and how they relate and are used within a text.<br>When do students understand, explicitly, the relationship between temperature change from the first and second learning sets.<br>Line 466-What specific procedures is the teacher talking about?<br>Line 472-What is a written procedure and how does it relate? | D43 | Rest of these comments to Vignette are to improve vignette, writer include as appropriate |
| 802 | 6 | Comment | Instructional Segment 2 Vignette: Interactions of Earth Systems Cause Weather:<br>Lines 479-485 Students need a scaffolded break down of a claim and needs modelling of evidence and how it matches a claim. Teacher should annotate responses and model how to come up with a consensus.<br>Lines 486-490 What type of support/scaffolds can we offer to other groups to reach the same understanding? Often teacher assumes because one group understands that everyone understands the material.<br>Lines 492-495 Equity issue in this classroom. It feels like only a few groups are shining and the rest of the class is left in darkness or following along which limits their opportunity to be able to learn.<br>As sixth grade teachers, these lessons are not friendly or usable without a great level of understanding. We can read this vignette and try to figure it out, but this doesn't make the lesson easy to employ. Too vague. | D43 | Rest of these comments to Vignette are to improve vignette, writer include as appropriate |
| 803 | 6 | Comment | Integrated: P. 90, line 1415: Periodic table should be included in jr. high for students to understand "atomic interactions" | D42 | |
| 804 | 6 | Comment | Integrated: P. 96, line 1575: The pencil graphite examination does not really stand as a strong model for the concept. It's not very engaging. | D42 | |
| 805 | 6 | Comment | Integrated: P. 113, line 1919: Supposed to devise a method to accurately measure calories burned. How are they supposed to figure that out on their own? | D42 | |
| 806 | 6 | Comment | Integrated: P. 171, line 3014: Are teachers supposed to teach students to be able to do the performance expectations? The vignettes do not have them doing hands-on, inquiry-based labs. It's all reading, note-taking, and discussing science concepts with no discovering science in labwork. The framework needs to include laboratory investigations, data collection, and experimental design. Currently, vignettes are based on pen and paper activities, post-it notes, and internet research. Where are the tools of science? It also seems the framework was written for a teacher with a classroom budget of a few dollars. There seems to be too much of "see quote to the side" in the framework… kids reading about and discussing science without doing<br>science… don't we want our students to be doing science not just learning about science? | D42 | discussion about vignettes in general |
| 807 | 6 | Comment | Integrated: P. 2D43, line 4531: Is the interpretation of this graphic correct… it seems to equate amplitude with color… shouldn't this be related to wavelength…. This seems to really be getting into the technical weeds of the idea…. is this appropriate for 8th grade? | D42 | |
| 808 | 6 | Comment | Discipline Specific Model: Lawrence Hall of Science Submitted 32 Edits | 65e | Framework writer to review edits and implement at his discretion. |
| 809 | 6 | Comment | Lawrence Hall of Science Submitted 41 Edits | 65d | Framework writer to review edits and implement at his discretion. |

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| 810 | 6 | survey | I like the grade 6-8 "year at a glance" chart (see line 14 for the 6th grade version) and wish there were consistency of using this format in the other grade levels. I do not like the tables summarizing the instructional segments (see line 62 for 6th grade). It's not helpful to have PE codes. Teachers should not have to look these up to make sense of the table. Also, by always providing summaries of DCIs you're emphasizing content over practices and crosscutting concepts. (This comment applies to all grade level chapters) There should be clear summaries/explanations of all 3 dimensions and how they work together in the instructional sequence. Otherwise do not have the DCI summary at all. Rework it to be an "instructional sequence summary" not a DCI summary. I like providing guiding questions but I don't like the tables like the one at line 224. Keep the original architecture of NGSS for all the other stuff in that type of table. "Highlighted" means what? That it's part of a PE and emphasized? That it's not part of a PE but it supports learning? Both? Keep the original architecture and then make "amendments" if needing to add in related SEPs/CCCs. NGSS connections are formatted differently in snapshots and vignettes yet seem to have the same info. keep consistent formatting. Text between vignettes seems to dictate teacher/student activities (i.e.: it seems like curriculum more than illustrative examples). Keep the illustrative examples to the snapshots/vignettes and keep the text in between focused on how 3D learning unfolds through explanations of the use of guiding questions, general explanations of the types of activities but not so much detailed specifics. | Item B | Writer's Discretion/ Line Edit |
| 811 | 6 | Survey | In the prior grades chapters, the ELA/ELD connections and Math connections are embedded in the text next to the section where they are addressed (CH. 4, K-2 pgs. 30 & 31). For the upper grade levels (6-8 and High School) they are not as clearly identified. It would be useful for teachers to have them stand out similar to the K-2 chapter. The set up of the table outlining the Instructional segments in the K-2 and 3-5 chapters (Chapter 4, page 7) has a nice setup that is easy to read and follow. The tables for the instructional segments in the 6-8 and the High School should be in the same layout. | Item B | Writer's Discretion/ Line Edit |
| 812 | 6 | Survey | It appears to be developmentally appropriate and does align with the math/ELA common core standards. May not always be cognitively age appropriate. The overall storyline through the grades is understandable and sensible. Good incorporation of Performance Expectations. Depth of knowledge seems limited due to sporadic topics. As the framework notes, certain topics become “subsets” and receive less emphasis. Depending on prior science concepts and prior teacher practices is a leap of faith and leads to lots of remedial instruction. Framework quote (p. 158) “The major physical science concepts of Newton’s Law and noncontact forces do not readily integrate with major science concepts of evolution, natural selection, and human impact on Earth systems.” It seems evident the segments that try to integrate these concepts appear forced/strained. It does not flow like the discipline specific story of energy. Example: Segment 1 MSLS4-1 does not lead to force ideas. Electricity and magnetism became superficial subsets. Waves do not fit with biodiversity. | Item B | Writer's Discretion/ Line Edit |
| 813 | 6 | Survey | The storyline within a grade level seems more logical and cohesive, and it allows for greater content depth (ex. Cells with genetics > evolution/ecosystems). The 8th grade energy narrative is pervasive and ties all concepts together throughout the year. It creates a cohesive storyline for the crosscutting concepts of energy flow, cycles, and conservation. Within a district that has junior highs, rather than middle schools, it’s stressful to have to rely upon the 6th grade teachers to teach core concepts, so this would be less of a concern with this model. This model would require less money for lesson resources and teacher training. This model is sequenced like the 6th through 8th 1998 standards, so some teachers may be less likely to change their old ways. | Item B | Writer's Discretion/ Line Edit |
| 814 | 6 | Survey | Chapter 6 Discipline Specific Model - Introduction - Phenomenon (what is phenomenon? - Definition) should be addressed through. Add possible/suggested phenomenon in the tables about the instructional segments. The issue of phenomenon always needs to be highlighted (a guide that shows how the authors/writers that were including suggested phenomenon within segments chose their examples of phenomenon) - suggestion: what was the process in order to design this process. Vignettes: - Weaved through the document and gave a picture of the classroom - Strength: Focus on ELD strategies | Item B | Writer's Discretion/ Line Edit |

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| 815 | 6 | Survey | Chapter 6 - Introduction: - Line 37: Table 1. Comparison of when DCIs are primarily addressed in the two middle school models. No revision - really like. This table is a strength of the introduction of the middle school chapter - IMPORTANT COMMENT/SUGGESTION: Line 93-105: Topic on discipline progressions: - fleshing out the idea that there is a difference between coordinated science and integrated science. We suggest possibly including Robert Sherriff's table in CSTA newsletter that details out the difference between coordinated vs. integrated. (have some type of language that talks about the hybridization of the PE progression (transition) that shows moving away from the old standards to a coordinated and then to an integrated - Line 106: Table 2 is hard to read. For example, the prerequisite Heat flow to Plate tectonics show grade 6 to 6, but it should read grade 6 to grade 7 Chapter 6 Grade 6 Integrated - Line 9-12: "There is no prescription regarding the relative amount of time to be spent on each Instructional Segment. As shown in Figure 1, the overarching guiding concept for the entire year is that, "Climate arises from system interactions and strongly influences organism structures and behaviors." - Bold or emphasize this section! - Line 14: Really like the figure 1 "Integrated Storyline" but it conflicts with the "instructional segments" in Table 1 Line 62. We suggest providing a definition of what an "instructional segment" is and how it is different than a storyline/unit of study. - Page 11, Line 70: Table 2 - Table is a good summary of the segment but it doesn't show the connections to CCSS (we recognize that the connections are shown at the end of the vignettes but it should also be included in the table) | Item B | Writer's Discretion/ Line Edit |
| 816 | 6 | Survey | Chapter 6 - Introduction: - Line 37: Table 1. Comparison of when DCIs are primarily addressed in the two middle school models. No revision - really like. This table is a strength of the introduction of the middle school chapter - IMPORTANT COMMENT/SUGGESTION: Line 93-105: Topic on discipline progressions: - fleshing out the idea that there is a difference between coordinated science and integrated science. We suggest possibly including Robert Sherriff's table in CSTA newsletter that details out the difference between coordinated vs. integrated. (have some type of language that talks about the hybridization of the PE progression (transition) that shows moving away from the old standards to a coordinated and then to an integrated - Line 106: Table 2 is hard to read. For example, the prerequisite Heat flow to Plate tectonics show grade 6 to 6, but it should read grade 6 to grade 7 Chapter 6 Grade 6 Integrated - Line 9-12: "There is no prescription regarding the relative amount of time to be spent on each Instructional Segment. As shown in Figure 1, the overarching guiding concept for the entire year is that, "Climate arises from system interactions and strongly influences organism structures and behaviors." - Bold or emphasize this section! - Line 14: Really like the figure 1 "Integrated Storyline" but it conflicts with the "instructional segments" in Table 1 Line 62. We suggest providing a definition of what an "instructional segment" is and how it is different than a storyline/unit of study. | Item B | Writer's Discretion/ Line Edit |
| 817 | 6 | Survey | - Page 11, Line 70: Table 2 - Table is a good summary of the segment but it doesn't show the connections to CCSS (we recognize that the connections are shown at the end of the vignettes but it should also be included in the table) - Line 72: The Instructional Segment 1 Teacher Background and Instructional Suggestions was beneficial for teachers to see what is need to teach the DCI within the 3 dimensions for the segments. Well done! - Page 89 Line 1398-1408: A very relevant consideration is that CA NGSS also does not mention the periodic table of the elements until high school. This omission represents a very significant departure from most current practices, especially in California where the previous science education standards included the periodic table in grades 3, 5 and 8. May be a good thing, since now less student misconceptions. Students have a better understanding and can build. Will be interesting to see the future with these changes - Page 157 Line 2811: The Storyline doesn't have an explicit theme like the Grade 6 & Grade 7 Vignettes: - Weaved through the document and gave a picture of the classroom - Strength: Focus on ELD strategies | Item B | Writer's Discretion/ Line Edit |

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| 818 | 6 | Survey | 2/37 Good-- great comparison chart for clarity 3/58 Good-- examples of approaches in other countries 3/62 Can you provide a table of exact countries and structures (a visual) will help clarify system 5/106 Table 2 Chart is unclear-- what information is being shown? What is trying to be conveyed is good, but the chart is not reader-friendly 2/14 Good-- table showing the integrated, overall storyline 158/2822 Remove line 158, Keep it positive 78/1268 Good visual, summarizes their storyline well. Is this the suggested storyline for implementation? 3/29 Why are certain words bolded? 82/1345 Summary of DCI, why the specific river example? 163/2855 Be more specific, What is the specific connection between motion and fossil record? 86/1354 and 100/1660 Like the tables clarity and guiding questions 86/1354 Environmental Principles and Concepts seem out of context in this section. Where does this fit into the guiding questions within the instructional segments 5/259 Summary of DCI, The summary does not seem reader friendly. We think it is a formatting issue. Adding bullets rather than narrative with the PE number related to it in parentheses 11/70 Good- offering guiding questions helps to anchor the focus 14/112-120 detailed text with alternative system models based on boundaries, This seems unnecessary and confusing. Teachers need relevant examples they will use 14/121 need examples of individual and group parts of a system. A suggestion: give an example of an assembly line activity-- alone less is accomplished, together more is accomplished, but system can fail without you 18/182-188 This is confusing for teacher and student to understand. I like the simplistic idea of a bicycle parts vs. properties. Parts of the system that work together to have properties of: speed, comfort, safety etc This is a much easier way to explain/understand | Item B | Writer's Discretion/ Line Edit |
| 819 | 6 | Survey | Ch 6 intro below Line 37, Table 1 comparing Integrated and Discipline Specific, the X is missing for Cells and Body Sys. (goes in Gr. 7 column) | Item B | Writer's Discretion/ Line Edit |
| 820 | 6 | Survey | I have only 1 issue with this Model and that is the Life Science of Sexual Vs, Asexual Reproduction. 6th grades, ages 10 - 12 are not developmental ready for discussion in regards to reproductions. Even in 7th grade, many students are embarrassed by the subject matter. I feel this should be kept in 7th grade or placed in the 8th grade model. | Item B | Writer's Discretion/ Line Edit |
| 821 | 6 | Survey | The guiding sentence for the 6th grade Story Line currently reads, "Climate arises from system interactions and strongly influences organism structures and behaviors." I would like to see the focal point of that sentence (and the first words in the sentence) be "system interactions" so that the cross cutting concept is what drives the curricular integration. Perhaps wording like, "System interactions influence climates and together, in turn, organism structures and behaviors." | Item B | Writer's Discretion/ Line Edit |
| 822 | 6 | Survey | Cells and cell function would fit better into 7th grade curriculum. Life Science in 7th grade is based upon and builds from the foundation of cellular biology. National Next Generation Science Standards have it in 7th. Putting cells in 6th is poor correlation with national standards and expectations. | Item B | Writer's Discretion/ Line Edit |
| 823 | 6 | Survey | General Comment: It would be helpful to have ELD Connections boxes similar to what is available in the K-5 sections. Line 66 (Summary of DCI) - This section is very unconnected and choppy. It just appears as if it is a series of cut and pasted sentences with no transitions or connections. Line 68 (Summary of DCI) - Starting with the 11th line from the bottom "Animals engage in characteristic behaviors ..." to the end. Once again, it just appears as if it is a series of cut and pasted sentences with no transitions or connections. These sentences do not contain any references to effectsof Global Warming on Living Systems (the topic for this instructional segment.) Line 173 - It would be helpful to reference the number reference for the EEI Units (i.e 5.3.b is the unit Changing States: Water, Natural Systems ....) Line 669 - same as Line 173 (5.3.c Precipitation, People, and ...) Line 866-868: THIS STATEMENT IS INCORRECT!!!! The equator does not pass through Mexico and a little below Florida :-( This entire paragraph needs to be re-written. Lines 952-954: confusing wording Lines 960-967: confusing wording regarding "features" vs. "traits". Is eye color a "feature" or a "trait"? Is blue eyes a "feature" or a "trait" Line 1016: The Learn Genetics website has been redesigned. The footnoted link does not connect to Sexual vs. Asexual Reproduction. Lines 1142-1146: The two diagrams seem to be at a higher level than 6th grade. Line 1183: is there a source for "computer analyses of business-as-usual climate change scenarios"? Line 1256: same as Line 173 (6.6.a Energy: Its Not All... and 7.3.e. Responding to ...) | Item B | Writer's Discretion/ Line Edit |
| 824 | 6 | Survey | Page 2 Table 1: As each section of Integrated is addressed early in this chapter a column showing PE connections to prior grades, right here, might be helpful. Within this chapter noted limited examples of mathematical and computational opportunities (high school did better) were given, it needs more. This is needed to support departmentalized middle grades to connect science to math. More direct connections to informational text use in grades 6 and 7, seemed OK in grade 8. The idea of connecting engineering to societal challenges could be clarified with a few examples in each of the core discipline areas. | Item B | Writer's Discretion/ Line Edit |

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| 825 | 6 | Survey | Intro to Grades 6-8 p. 4 Line 80: Period should follow citation p.4 4 Line 84: Insert (PCK) after knowledge p. 5 Line 93: Change simple to simpler p. 5 Line 104: Uncapitalize Framework The grade level concepts and subsequent unit level concepts are a welcome method of organizing and sequencing the standards and practices within the integrated model. However, in Grade 6, it may be worth considering a unit sequence that pushes the DCIs related to the brain & nervous system forward to unit 1. Here's why: The growth mindset research by Carolyn Dweck and Jo Boaler is being heavily promoted throughout the state. Promoting student belief in a growth mindset at the beginning of the school year is becoming a popular means of gearing students up for success through the school year. This gives 6th grade teachers a perfect vehicle for for the nervous system science DCIs in their grade level. Also in 6th grade, I believe it will be irresistible to teachers to investigate heat transfer principles (currently in Unit 2) before, or in concert with, the water cycle (which begins in Unit 1), being that heat is the driving force behind the water cycle. p. 15 Line 140- This definition of a system should be called out more explicitly (bold, italics, ...something) Yea for snapshots and vignettes! | Item B | Writer's Discretion/ Line Edit |
| 826 | 6 | Survey | This comment applies to the section entitled: Introduction to Grades Six through Eight. Table 2 is the crux of the argument against the discipline specific model and could make a bigger impact with some additional explanation. I would suggest adding the following sentences after the last sentence just before Table 2: "For example, as can be seen in the first row of Table 2, using the preferred integrated model, students would learn the prerequisite content, gravity and forces, and apply those concepts to astronomy both in the eighth grade. In the discipline specific model, more is expected of the teacher and the student as teachers will be expected to teach and students will be expected to learn content, in this case astronomy, without having been provided with the prerequisite content, gravity and forces until the eighth grade." I would suggest making the formatting of the material presented in this section the same for each grade. There are subtle differences which if corrected would make it easier for the reader to compare the information from grade to grade. Just one example, and I see quite a few others, is that a statement is made in the 7th grade section which draws the reader's attention to the summary sentence for each unit. Such a statement is missing for both the 6th and the 8th grades. | Item B | Writer's Discretion/ Line Edit |
| 827 | 6 | Survey | Intro p 4 ln 83 - More important than university learning within a discipline is the pedagogical content knowledge. pg1 ln3 Inconsistent use of Chapter Title. What is it? pg3 ln 49 Delete "interesting" from all text, not just here. This is a value laden statement. Also P18 ln 189 ALL 6-8 Current format of DCI , PE, etc. are in a non familiar format with colors common to NGSS Make the form look identical to the original NGSS architecture. If teachers, new to NGSS, are given a new format in the learning progression, they will balk at having to learn the different representation. Put all of the things in the same relative places. pg 13 ln 95-98 Delete the word “the” at the beginning of each bullet. p14 ln 121- 1D43 Students need to do more exploring on their own before the teacher provides information,reading, & writing assignmt. Too teacher directed. Where is the guiding question in the instructional sequence? p11 ln 70 Add emphasis or more information in the instructional sequence text. Do teachers know what to do with guiding questions? P26-34 ln 294- Would have been a great opportunity to explain how using science notebooks would be good to add. pg 21 ln227 There is a long vignette for IS 2 - No vignette in IS 1. pg D43 ln 673 performance expectation MS-ESS2-6. Don’t just use codes for PEs. p50 ln 779 "We can safely assume.." Students who live in low altitudes may not know.. Say, "Based on (give ES citation from previous grades)" Don’t assume student knowledge. Students should develop their own models of this phenomena & use that to discuss the topic. Teacher is giving content away. Students are not constructing it on their own. p51 ln 806 Students should investigate first - then teacher if necessary. 55 ln 865 Let students explore temperature, densities before the teacher explains the answers. p56 ln 888-890 include patterns when discussing this. Get students involved before giving right answers. p 57 ln960 Poor writtenly - confusing | Item B | Writer's Discretion/ Line Edit |

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| 828 | 6 | Survey | pp. 87-91 (7th Grade, Unit 1) Comment: Good conceptual background, but there are no suggestions of hands-on activities to teach concepts p. 89 It should be noted that CA NGSS in middle grades includes the first three of these features, but does not refer to the existence of electrical charges within atoms (or use the terms electrons and protons). Clearly, middle grade science teachers should know these atomic electrical charges, but what about middle school students? (Replace this entire example/snapshot with something better.) MS Students are not expected to know about electrons, however the snapshot on pp. 95-96 refers to covalent bonding (see figure 3), and the reading that students are supposed to annotate for hw discusses ions and shows chemical formulas with positive/negative signs. How are students supposed to understand the chemistry if they are not taught about electrons and the periodic table? This example does not seem relevant. p. 129 line 2183 them thar hills “them thar hills” correct punctuation pp. 136-150 Instructional Segment 4 Vignette The vignette is not a helpful example for most middle school teachers who do not have ready access to a nature site. p. 192 lines 3440-3445 Grade 8 IS Vignette #2: The activity described in this vignette entails the use of technology which most MS classrooms do not have. Description of an activity that doesn’t require technology would be more helpful to most MS teachers. p. 220 line 4017 Hyperlink link to HHMI resources Link is to the video, but not to printed resources p. 221 line 4046 organisms produce for more organisms produce far more word choice p. 222 lines 4059-4060 Long periods of time enable a sequence of change at the species level of many small changes, each of which At the species level, long periods of time give rise to many small changes, each of which Clearer wording | Item B | Writer's Discretion/ Line Edit |
| 829 | 6 | Survey | Our school has been using the integrated model this year, and so far it's going okay. I think the progression is good. However I wonder if teaching ecosystems without evolution is wise, as evolution provides a lot of the background information for population changes and how animals relate to their environments. It makes more sense to me to teach evolution with ecosytems. I found myself explaining things about adaptation during the ecosystems lessons. | Item B | Writer's Discretion/ Line Edit |
| 830 | 6 | Survey | The integrated model seems less coherent and grade level appropriate on the whole, when compared to the Discipline Specific model. Prior to the CCSS being adopted, math teachers frequently complained that the spiraling model lead to too little time on each topic. The integrated model does not provide, I think, enough age appropriate continuous time on new concepts such as cell organelles, atoms and subatomic particles, and tectonic plates. Although it's supposed to link related, real world ideas, I think that jumping from ideas such as uneven heating of earth and its relation to weather, to particle movement and kinetic energy, though related, are too disjointed for 6th graders to conceptually master. That being said, some standards like the data-driven such as MS-ESS2-2, easily supported by maps and graphs, are not appropriate for 6th grade math and graphing literacy abilities. Instrucional Segment 2 of 6th grade includes ES-PS3-4 requires an understanding of particles that does not flow conceptually from discussions of heating of Earth and motion of fluids on a large scale. Additionally, may require introduction to atomic structure (overwhelming) IS 1 for both 6th and 7th deal with structure of matter/organisms, and molecular/atomic motion, but the amount of time between those two instructional segments means much of the foundational information will need to be revisited, and likely retaught. I would greatly prefer the Discipline Specific have more age apprporiate data collection expectations. | Item B | Writer's Discretion/ Line Edit |
| 831 | 6 | Survey | 6th Grade Specific Comments: Repeated 6th grade PE’s/ DCI’s ESS2-4 Repeated in Segment 1 and 2 ESS2.D: Weather and climate ESS2-6 Repeated in Segment 1 and 2 and 3 ESS2.C: The Role of Water in Earth’s Surface Processes PS3-4 Repeated in Segment 2 and 3 PS3.B: Conservation of Energy and Energy Transfer LS1-4 (it is not defined at all which DCI this goes with) Repeated in segments 3 and 4 LS1.A: Information Processing (I believe this should be Structure and Function). More clarification on this is needed. I’m not sure this is supposed to be listed here at all. This scope seems to go with LS1.B only. LS1.B: Growth and Development of Organisms *It is unclear as to which DCI is supposed to address LS1-4 as one of these goes with LS1-5. This needs to be stated clearly in the document. LS1-5 (it is not defined at all which DCI this goes with) Repeated in segments 3 and 4 LS1.A: Information Processing (I believe this should be Structure and Function or this should be LS1.D). More clarification on this is needed. *In Segment 3 under the Highlighted DCI they have LS1.A listed as Information Processing when it should be listed as Structure and Function. This is an error in the document. I’m not sure this is supposed to be listed here at all. This scope seems to go with LS1.B only. LS1.B: Growth and Development of Organisms *It is unclear as to which DCI is supposed to address LS1-4 as one of these goes with LS1-5. This needs to be stated clearly in the document. | Item B | Writer's Discretion/ Line Edit |

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| 832 | 6 | Survey | 7th grade specific comments: Repeated 7th Grade PE's/DCI's LS2-1 Repeated in Segment 1 and 4 LS2.A: Interdependent Relationships in Ecosystems ESS3-1 Repeated in Segment 1 and 4 ESS3.A: Earth's Natural Resources PS1-2 Repeated in Segment 2 and 3 PS1A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1-5 Repeated in Segment 2 and 3 PS1.B: Chemical Reactions PS1.B also is used to address PS1-6 ESS3-1 Repeated in Segment 3 and 4 ESS2.A: Earth's Materials and Systems *In 7th grade Segment 4 it has DCI- PS1.B listed as Structure and Properties of Matter, it should be Chemical Reactions, this is an error in the document. It is possibly supposed to be PS1.A instead but it needs to be corrected. 8th Grade specific Comments: In Segment 3 There are two LS3.A's listed. One of them is incorrect. The one that is Variation of Traits should be LS3.B. This is an error in the document. | Item B | Writer's Discretion/ Line Edit |
| 833 | 6 | Survey | 6th Grade Specific Comments: Repeated 6th grade PE's/ DCI's ESS2-4 Repeated in Segment 1 and 2 ESS2.D: Weather and climate ESS2-6 Repeated in Segment 1 and 2 and 3 ESS2.C: The Role of Water in Earth's Surface Processes PS3-4 Repeated in Segment 2 and 3 PS3.B: Conservation of Energy and Energy Transfer LS1-4 (it is not defined at all which DCI this goes with) Repeated in segments 3 and 4 LS1.A: Information Processing (I believe this should be Structure and Function). More clarification on this is needed. I'm not sure this is supposed to be listed here at all. This scope seems to go with LS1.B only. LS1.B: Growth and Development of Organisms *It is unclear as to which DCI is supposed to address LS1-4 as one of these goes with LS1-5. This needs to be stated clearly in the document. LS1-5 (it is not defined at all which DCI this goes with) Repeated in segments 3 and 4 LS1.A: Information Processing (I believe this should be Structure and Function or this should be LS1.D). More clarification on this is needed. *In Segment 3 under the Highlighted DCI they have LS1.A listed as Information Processing when it should be listed as Structure and Function. This is an error in the document. I'm not sure this is supposed to be listed here at all. This scope seems to go with LS1.B only. LS1.B: Growth and Development of Organisms *It is unclear as to which DCI is supposed to address LS1-4 as one of these goes with LS1-5. This needs to be stated clearly in the document. | Item B | Writer's Discretion/ Line Edit |
| 834 | 6 | Survey | 7th grade specific comments: Repeated 7th Grade PE's/DCI's LS2-1 Repeated in Segment 1 and 4 LS2.A: Interdependent Relationships in Ecosystems ESS3-1 Repeated in Segment 1 and 4 ESS3.A: Earth's Natural Resources PS1-2 Repeated in Segment 2 and 3 PS1A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1-5 Repeated in Segment 2 and 3 PS1.B: Chemical Reactions PS1.B also is used to address PS1-6 ESS3-1 Repeated in Segment 3 and 4 ESS2.A: Earth's Materials and Systems *In 7th grade Segment 4 it has DCI- PS1.B listed as Structure and Properties of Matter, it should be Chemical Reactions, this is an error in the document. It is possibly supposed to be PS1.A instead but it needs to be corrected. 8th Grade specific Comments: In Segment 3 There are two LS3.A's listed. One of them is incorrect. The one that is Variation of Traits should be LS3.B. This is an error in the document. | Item B | Writer's Discretion/ Line Edit |
| 835 | 6 | Survey | inconsistent / interchangeable usage of Unit and IS and Unit on Figure 1 for each grade level .... Figure 1 (the Integrated Storyline) for 6th and 7th grades, shows 4 "units" where as in 8th grade, they are identified as "Instructional Segment" or IS. In the other tables for each grade level, is consistently referred to as Instructional Segments. The phrase of "units" is less intimidating. Paging is off in the document... so could not easily provide page number on which each table shows up. I'd add the guiding questions onto the table 1 for each grade level. Reading through almost 300 pages is not a timely event. A lot of work went into all of the samples, however that in itself could be taken and made into a curriculum. The state could save a lot of money by just producing their own curriculum, like we used to do back when my father first started teaching. | Item B | Writer's Discretion/ Line Edit |
| 836 | 6 | Survey | Ch 6 intro below Line 37, Table 1 comparing Integrated and Discipline Specific, the X is missing for Cells and Body Sys. (goes in Gr. 7 column) | Item B | Writer's Discretion/ Line Edit |
| 837 | 6 | Survey | Line 859 Figure 16 Thermal Energy and Wind Convection Cells Drawing is too complex. Use a drawing that includes Hadley cells without tradewinds. Lines 865-872 The description of the drawing is incorrect. It says the equator goes through Mexico just south of Florida, but this is not the equator; it is 30 degrees latitude. The equator is the line going through Brazil labeled 0 degrees Equatorial Low. Line 1221 Change "solar cells" to "solar panels" or "solar modules" or "photovoltaic system." A solar cell supplies only enough power to charge a small battery. Lines 1883-1885 This needs more explanation. How do the students' drawings show that one molecule has more potential energy than another molecule? Maybe show an example of what the drawings would look like. Page 116, Line 3159, Line 3558, Line 4797 Introduction to every "Vignette Debrief" says, "core ideas in space science (Moon phases and the solar system)" but only one of these vignettes is actually about phases of the moon. Lines 2154 and 2156 Change "oceanic crust (lighter green)" and "oceanic crust (labeled number 3) to "continental crust" in both cases. Lines 2822-2825 Cut these two sentences that foreshadow a weak instructional sequence. It may have been a "challenge" but the reader should not be told it is too challenging. Paragraph should start with "As shown in Figure 1, each Grade 8 Instructional Segment tells a coherent story..." Line D4356 Figure 21 Model of a Typical Wave Delete diagonal line running through graph | Item B | Writer's Discretion/ Line Edit |

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| 838 | 6 | Survey | My suggestion is about the use of "direct" vs. "indirect" with respect to the sun's light and how it reaches earth. On line 812 and in the "correct" student response in the diagram directly above it and on lines 853, 4466, and 4467, the term "direct light" is used. The use of the terms "direct" and "indirect" can lead to student misconceptions about how light is transmitted from the sun to the earth. Unless the light from the sun is somehow reflected before it reaches earth (as it is when the reflected light from the moon reaches earth in the form of moonshine), then the light that reaches the earth is reaching it directly. Line 817 correctly uses the term "angle of incidence" when referring to this phenomenon. | Item B | Writer's Discretion/ Line Edit |
| 839 | 6 | Survey | 1930: What would the iterative testing look like in Mr. G's activity? 1951: Table 7 should read Contrasting Minerals and Rocks 2033: Under Guiding Questions: What processes have shaped the distribution of Earth's resources and their availability in ecosystems? 2112-2113: The San Andreas fault does slide, but a bend in the transform boundary does create the San Gabriel Mountains. This could lead to inaccuracies in mountain formation not being found as a result of transform boundaries. 7th Grade Integrated flows well and makes sense. Make 6th and 8th Integrated cohesive like the 7th grade integrated course. | Item B | Writer's Discretion/ Line Edit |
| 840 | 6 | Survey | 1758 Does instructional segment mean unit? 1765 "systems" should be capitalized. 1769 "ecosystems" should be capitalized. 1784 Not all words are visible in the table. 1794 In the first sentence of the summary of DCI there is a comma that can be taken out. 1834 Sentence is not finished, section is not finished. 2085 Crosscutting concepts spelling error | Item B | Writer's Discretion/ Line Edit |
| 841 | 6 | Survey | Here are a few suggested changes: Move ecosystems to 6th grade (or stick with biomes, which fit nicely with climate) and put cellular biology in 7th grade. Each grade should have some physics, which would create a more natural platform for teaching the engineering process (simple machines in 6th grade, Newtonian physics in 7th, circuits, magnets & electronics in 8th grade to blend with the 8th grade study of wave theory). Each grade should also have some chemistry (properties of matter, basic kinetic molecular theory, heat transfer & density in 6th, intro to the periodic table, chemical properties & common, naturally occurring reactions in 7th, electron structures, dealing with temperature & pressure, experiments with predicting chemical reactions and more advanced energy concepts in 8th). Any division will continue to work with human impact & engineering. Middle school students still need plenty of concrete concepts and obvious connections. | Item B | Writer's Discretion/ Line Edit |
| 842 | 6 | Survey | Introduction to 6-8 The footer needs to have "Graes" changed to Grades Line 16: refers to which course should be changed to refers in which course. Lines 18 and 19: The parentheses are not necessary. Recommended text: not the only way to sequence instruction. Lines 22 and 23: End the sentence after year. However, each lesson may… Lines 24 and 25: Suggested text: ...that works best for student learning, available resources, and local context, (Our concern that student learning is deemphasized when considering which progression that works best.) Line 30: Remove specific after specified; it's redundant. Or change to "identified specific PEs" Line 67: The parentheses after structure." should not have the space. Line 80: The citation should be included in the quotations with a period after as in line 97 on page 5. Lines 83 and 84: pedagogical content knowledge should have (PCK) after it since PCK is used in line 85. Line 93: Change simple to simpler Line 104: Should Framework really be capitalized? Line 106: Change Cross disciplinary to Cross-disciplinary | Item B | Writer's Discretion/ Line Edit |
| 843 | 6 | Survey | Comments on 6-8 Intro Lines 10-13 Both integrated and discipline specific models are developmentally appropriate and focus in depth. The current wording makes it sound as though the integrated is developmentally appropriate and the discipline specific has an in-depth focus. Possible rewording: "CA NGSS defines two possible progressions for middle school: the preferred Integrated Model which interweaves science disciplines at each grade level and the Discipline Specific Model where one science discipline of science is taught at a specific grade level. " Lines 28-70 Inclusion of the historical background of the two 6-8 grade models is important to the field. Line 106 Table 2 needs more explanation. Comments on Grade 8 Integrated Line 2805-2806: Delete this comment: "Grade 8 presents the greatest challenge within the three middle school grades with respect to integrating the content throughout the year. The major physical science concepts of Newton's Laws and noncontact forces do not readily integrate with the major life science concepts of evolution, natural selection, and human impacts on Earth systems. It is not necessary for the reader to know that integration is challenging. Line 2819: Omit "flowing" Line 2856: Omit "huge amount of" Lines 2866-2870: Omit tentative language, i.e., "Students can…" " the class could…" Line 2838: Change "bang into each other" with "collide" Line 2885-2889: Delete discussion on vocabulary. "On the other hand…a person's everyday experiences." This discussion is not necessary here. It should be addressed in instructional strategies. Lines 2896-2897: Replace , "in order to use common words about motion" to "in order to develop an understanding of the ways in which objects move." Multiple experiences phenomena are more important than assigning vocabulary to the phenomenon. Lines 2901-2902: Rewrite the first sentence to "This vignette presents an example of how teaching and learning will look in the classroom." | Item B | Writer's Discretion/ Line Edit |

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| 844 | 6 | Survey | I found the introduction to the rationale behind the preference for the Integrated Model to be compelling and look forward to using the final copy in professional development. This ideas I would like to begin sing immediately because many of my districts are deciding on a model this year. The section is stronger than I expected and therefore more valuable. I appreciate that in every section it is emphasized that the progressions listed are not required, that there are many ways of grouping the PEs. In Grade 6 (table at line 13 and at 66),These are the pieces of the Framework that appeal to me. I can see the big picture, but with just the right amount of detail so I could move forward were I still in the classroom. I thought greater connections could be made between energy and evolution. Much of natural selection is driven by the need to efficiently utilize energy. Energy wasters tend to be less fit. Obtaining food offers energy but also requires energy, so the energy accounting needs to keep the population/organism in the black. | Item B | Writer's Discretion/ Line Edit |
| 845 | 6 | Survey | I like the theory of integrated science, but the implementation worries me. Having taught middle school math and science for 23 years, I like to be very clear about what is the theme of my main units, what are the subunits, and how do subsidiary topics and lessons all fit together. I want them all to flow together nicely. I'm not afraid of change if it's for the better, I just need to be convinced. I'm concerned that some of the NGSS thematic integration statements are misleading and the basis for integration may become disingenuously contrived. Two examples: I. Quote from Public Review Draft Framework: "A primary goal of this section is to provide an example of how to bundle the PEs into integrated groups that can effectively guide instruction in four sequential Instructional Segments. There is no prescription regarding the relative amount of time to be spent on each Instructional Segment. As shown in Figure 1, the overarching guiding concept for the entire year is that, 'Climate arises from system interactions and strongly influences organism structures and behaviors.'" -CA Science Framework Draft Ch. 6 p. 1 My comment: This is an example of the problem I have with the integrated model. Do we really believe that an *entire year's overarching guiding concept* would be that climate strongly influences organism structures and behaviors? Of course climate influences organism structure and behavior, but so do a host of other factors – the needs for locomotion, nutrition, shelter, reproduction affect behavior and structure, while physiological requirements of respiration, excretion, circulation affect structure… Of course all these factors are influenced by the biome (hence climate) but it is misleading to present climate as the major factor, which this statement seems to do as an overarching guiding concept. II. | Item B | Writer's Discretion/ Line Edit |
| 846 | 6 | Survey | Integrated Model Comments: 1, 7: "primary goal is to show a potential way to bundle the PEs" Be even clearer about what you want teachers to do. Should teachers be bundling their own thing or should you follow the bundles that are shown in the framework. Use stronger language like "this shows one of many ways to bundle the PEs" 1, 11 "Climate arises from system interactions and strongly influences organism structures and behaviors" When you approach the cell with the idea of it being a system it makes sense to start with it. 1, 11 What about all the work people have been doing bundling on their own? The framework should provide some guidance for what to do if this possible storyline doesn't align with what they have created? Are there things that we should take into consideration about these possible storylines as we think about changing our existing bundles. Provide guidance on HOW to bundle and how these bundles were created There should be language that encourages teachers to design regional-specific learning line 17-58: The way that the instructional sequences are building on one another is useful. | Item B | Writer's Discretion/ Line Edit |
| 847 | 6 | Survey | p.2 of 259. Instructional Segment 1 is not defined-confusing to the reader. Is this what was commonly referred to a a unit? The graphic has the Word Unit on the left side on Figure 1. p 5 of 249: Summary of DCI needs information about where the DCI summary originated from-primary resource. P 11 of 259: Table 2 needs a title fro the PE's (i.e., PE's addressed). P 15 Figure 3 graphic is hard to see. Line 185 (p.18) move Figure 5 after line 188- easier to follow. Lines 465-485: the strategies being showcased are somewhat repetitive (posters) and no clear strategies for supporting EL's with the language demands. Line 557: stating the students became physical models of all the processes is problematic as we are attempting to support teachers understand what a model is. Line 673-675: Nice way to show coherency and how to build on prior ideas. Line 708-713: add a line about how this supports language learners. Line 795: Figure 13 blurry and hard to read text. Line 875-880: Does this clearly describe the assessment boundary or providing for multiple entry points. Page 77: Easy to make a connection to EEI here. Line 1407: Remove rhetorical questions- Line 1442-3 and then 1447-8 is a weird transition for the reader. Line 1489-1498: Not sure if it conveys the ideas clearly enough? | Item B | Writer's Discretion/ Line Edit |

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| 848 | 6 | Survey | Line 1150 "Global Temperature and Carbon Dioxide Over the Past 1,000 Years" What is the source of this graph? This is basically the same graph used by Al Gore in the movie, Inconvenient Truth. This graph is based on come very biased "science". Craig Loehle and Steve McIntyre have done extensive work showing the "hockey stick" graph was not vetted by the journal, Nature, or the IPCC before widespread dissemination. Michael Mann failed to include all the data which he reported he'd used. A correction of this graph was refused publication in Nature, however was published elsewhere, and is supported by the Wegman Report, et. al. The original data for this graph came from a tree ring study in Yamal, Russia. 34 trees were used in the approx. 2000 year study of temps. Researcher Briffa carefully selected 12 of the 34 tree rings samples (one of which was a radical outlier that transformed the graph) and applied a filter after 1990 to create a false uptick in temperature shift. The framework must be true to science at all costs. Please replace the graph with an accurate one. Here are a couple of resource to consider: http://icecap.us/images/uploads/LoehleHOCKEY.jpg, http://icecap.us/images/uploads/JoanneNovaStick.jpg, http://icecap.us/images/uploads/Joannenovastick2.jpg | Item B | Writer's Discretion/ Line Edit |
| 849 | 6 | Survey | Line 179 investigations are referred to small portions of an investigation but in Line 180 they are defined as instructional segments and as systems of an investigation. Line 207 Definition of a system stated in the framework is not the same as the definition of a model I am knowledge about-specifically the inclusion of lists. Line 240 Disciplinary Core Ideas included in grade 5, but the table displays some ideas addressed in grade 3 & 4. Line 250 Revise 'research in Earth' to research on Earth and in space sciences' Line 255 Revise 'when adapting the CA NGSS to their classroom to 'When adapting the CA NGSS,' Line 272 Capitalization is needed for the Sun Line 273 Last column, under Patterns, delete bullet point Line 273 Consider revising the Summary of DCi. Change 'among' to 'within our.' Change '…condensation and crystallization, and precipitation as well as downhill flows on land.' to 'condensation, crystallization, precipitation and downhill flows on land.' | Item B | Writer's Discretion/ Line Edit |
| 850 | 6 | Survey | General comments regarding the Framework for Grades 6-8 Preferred Integrated Model: 1. In general, this is an informative framework that provides suggestions regarding a reasonable and practical approach to implementing CA NGSS. The storylines and associated vignettes provide a point of reference for teachers to consider when developing and implementing NGSS-aligned curriculum. However, one concern is that the storylines will set precedent as the preferred approach and curriculum will be developed solely based on these storylines. California is on the cutting edge of educational research and implementation, and often serves as a guide for other states. If this Framework is published, it will likely be adopted by other states in the future. Despite the disclaimers that appear at the beginning of each section explaining that the Framework is intended to serve as a guide, it is possible that it could become the ultimate source of how to implement NGSS. In order to honor the integrity and flexibility provided by NGSS, the potential future use of this document should be considered prior to publication. 2. The document reads as if written by multiple authors, which is expected given the size and scope of the document. In order to confirm continuity within the document, we recommend technical editorial review and minor revisions within sections of the document to reflect consistent voice, level of detail, and formatting. For example, in the Grade 6 Introduction, the summary uses bold and italicized formatting to highlight important connections of the storyline to science and engineering practices and cross cutting concepts; however this is not carried through to the Grade 7 or 8 Introductions. Similarly, the acronyms (CCC, SEP, etc.) are not introduced or used uniformly throughout the Grade sections. | Item B | Writer's Discretion/ Line Edit |
| 851 | 6 | Survey | Chapter Number & Title: CHAPTER 6 GRADES 6THROUGH 8, INTRODUCTION Page # Line # Original Text Recommended Text Rationale for change Page 1, lines 24-26 As districts consider the progression that works best for their resources and local context, they should be aware of the historical context, rationale for each model, and potential limitations of each. Add an additional sentence, "Districts may find it useful to develop Science Principles that are agreed-upon goals for science learning in all schools." My district, Pajaro Valley Unified School District in California, created a Science Steering Committee to develop principles for science learning. Participants were volunteer teachers who understood NGSS. These agreed upon principles now serve to guide us in creating our course outlines for middle school integrated courses, and for selecting story lines, curriculum, and projects that connect our students to our local community and geography. Chapter Number & Title: CHAPTER 6 GRADES 6 THROUGH 8, PREFERRED INTEGRATED MODEL Page # Line # Original Text Recommended Text Rationale for change Page 2, Line 14 Grade 6 Integrated Story Line: Climate arises from systems interactions and strongly influences organism structures and behaviors. "Systems on Earth interact to cause climate, which strongly influences organism structures and behaviors." I think that the systems theme is even more important than the climate theme. Also, I like to use active verbs to show cause-effect relationships, so "systems interact" is a better a statement to help us see that relationship. Page 2, Line 14 Unit 1: A cell, a person and planet Earth are each a system made up of subsystems. Unit 1: "Planet Earth, a person, and a cell are each a system made up of subsystems." I would be consistent with the order from largest system to smallest system. That also makes more sense if you end with the idea of "subsystems." You should be getting smaller. | Item B | Writer's Discretion/ Line Edit |

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| 852 | 6 | Survey | Line 2903: Change “them” to “students”. Pronouns are confusing. Line 2910: Change “She” to “the teacher”. Pronouns are confusing. Line 3045:Change “Mrs. V” to “Mrs. Z.” Lines 3146-3147: Change “Just quickly reviewing” to “ A quick review of “ Line 3158: Change “NGSS” to “CA NGSS” Line 3175-76 Important point! Line 3177: Are we using misconception or preconception? Be consistent. Please make sure that only one term is used and defined for the reader (perhaps in a sidebar.) Line: 3268: Add “Newton’s” to Second Law. Line 3292: Delete “bunch.” Replace with “rather than separate and isolated topics.” Line 3326: Needs a transition paragraph for the reader to be reminded of how the instructional segments are integrated with each other, otherwise, this is an example of coordinated science. Lines 332-333: Typo on a hard return Line 3341: CA NGSS Line 3346: Be specific in the vignette when students are developing models and when students are using models. Line 3352-3353: “The vignette presents an example of how teaching and learning may look like in the classroom when the CA NGSS are implemented.” Change to The vignette presents an example of how teaching and learning may appear in the classroom when the CA NGSS are implemented. Line 3402: DELETE! “Ms. O offered extra credit to any team that wanted to…” We do not need to promote poor teaching practices! This is an equity issue-only the overachievers have an opportunity to learn more. Access is for all students. Line 3406: Delete: “While only a few groups started these research projects” We do not need to promote poor teaching practices! This is an equity issue-only the overachievers have an opportunity to learn more. Access is for all students. Line 4179: Delete “bad,” substitute with appropriate language. Line 4189: Change “black” to African American Line 4447: need URL | Item B | Writer's Discretion/ Line Edit |
| 853 | 6 | Survey | The storylines (lines 15-60, for example) will be valuable to some teachers. I found I had already thought through these ideas from considering the table at line 13. The Instructional Segment Tables (e.g. line 64) felt like a rehash of the storylines and/or the standards. I suppose if a teacher is unfamiliar with the standards and is only using the Framework as a resource, the value increases. Can't the storyline and summary of DCI be combined? Table 2 (line 70) also has some redundancy. I struggle getting teachers to read a 10 page document much less this volume. Placing Human Impacts into Unit 4 is interesting. One could argue that Human Impacts belong throughout the year. Also that from a student point of view a complete unit on Human Impacts may be less engaging, particularly if presented in spring. The rationale behind this could be presented more clearly. I think teachers will love the vignettes! | Item B | Writer's Discretion/ Line Edit |
| 854 | 6 | Survey | Quote “Grade 8 – Instructional Segment 4: Sustaining Local and Global Biodiversity Guiding Questions: *What are the characteristic properties and behaviors of waves? *What human activities harm Earth’s biodiversity and what human activites help sustain local and global biodiversity? *How does communication technology encode information and how can digital technologies be used to help sustain biodiversity?” from p. 232 of Draft Science Framework, Table 8 My comment: The instructional segment is on sustaining local and global biodiversity. The first guiding question has very little to do with this topic. Seriously, I’m going to get the students really excited about the theme of biodiversity and then study waves? Please. The second guiding question is GREAT! It makes total sense as a subsection of the Instructional Segment. The third guiding question is one of those I would say is really “stretching” to make a lot of disparate topics fit together. Yes, you can put them together, but is it *truly meaningful* to instruct students that the third major guiding question about how we can save biodiversity is to wonder how analog and digital signals combined with software and circuit boards can help us sustain biodiversity? I’m probably missing something here, but I would think that there would be other, more relevant issues to consider as logical subtopics of “Sustaining local and global biodiversity” – like a study of WHY we’d want to (basically that it takes time to create what Earth had 100 years ago). Subtopics could be: biomass related to diversity (ecological effects), a history of the fossil record diversity, appreciation of the time it takes for such diversity to evolve, a comparison of Archaean vs larger organisms’ genetic diversity and evolution, etc. I would think those subjects would much more closely correlate to the main theme than a contrived discussion of the use of digital technology to sustain biodiversity. | Item B | Writer's Discretion/ Line Edit |
| 855 | 6 | Survey | Grades 6-8 Preferred Integrated Model Line 17 or in general: Figure 1 refers to Unit 1, Unit 2, Unit 3, etc. on Line 17, the wording changes to Instructional Segment 1 but is referring to Unit 1. Please consider using Unit 1 or IS 1, but not both; it’s confusing. Line 32: does causally related need to be in bold. Line 39: does determine need to be in bold. Line 205 to 216: Engineering Connection: I am really struggling with the idea that we would teach 6th grade students about organ and tissue donation. This seems like a very controversial topic that can bring up many feelings and fears for students who are so young. Consider using different Engineering Connection. Line 931: Final Note regarding instead of re | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 856 | 6 | Survey | 1, 26: Helpful that this describes what was done in grade 5. 5, 62: Change the word “unit” in the table to “IS” like it is in the rest of the grades 157: Add a overarching guiding concept for the year for the 8th grade storyline Why are there PEs (like ESS2-4) showing up in more than one instructional sequence in 6th grade (and possibly 7th and 8th grade)? How is a teacher supposed to interpret that? Does this mean that this is a more important PE? Why did they repeat? 5, 62: What is the reason for having Table 1: Summary of the Integrated Grade 6 and Table 2: Grade Instructional Segment 1? We feel like having the two types of tables is redundant. We like everything that is in the Instructional Segment table - the guiding questions, highlighted SEP and CCC. We think that the table 1 and table 2 for each IS should be combined into one type of table. Provide indications to teachers about how to use the guiding questions, highlighted CCC and SEP for each IS. For example, should those be presented to students to guide the learning? D43, 669 and many many more The EEI curriculum was generated prior to the NGSS is and is not three dimensional. The framework makes it seem like teachers are expected to use EEI to teach the NGSS. Not all the investigations in the EEI are three dimensional. It should definitely be listed as a resource but based on the number of references there were to the EEI in this chapter, a teacher would assume that this curriculum is an NGSS exemplar, which is not true. | Item B | Writer's Discretion/ Line Edit |
| 857 | 6 | Survey | L. 1497-1499- awkward. Line 2277: Please remove the question to the reader. Page 167, Line 2920-31. It is unclear who she is in the reading. Move Figure 4 to Line 2959 from2971.Line 3045: "push or pull fro a resolution"- change to reach a consensus. Line 3051- consider adding a suggestion to use a video clip from the movie Gravity as a phenomena for visual learners/language learners. Line 3388: posted students???Line 3417: Sun-centered model is being asked about BUT the lines 3411-12 talk about another model. Confusing. Overall the design of vignettes and snapshots is supportive of building understanding of the shifts. Need more explicit connections to needs of EL's though. Chapter 8 is lacking coherency; using the CCC of Cause and Effect would assist with this issue. The lack of 3-D on the Grade Level Storylines is concerning- teachers may take these graphics out of context and this is one dimensional. Need to label this or add the other 2 D into the graphic. | Item B | Writer's Discretion/ Line Edit |
| 858 | 6 | Survey | pg Line 1073, Earth's Energy Flow Model. Illustration label states, "Greenhouse gases in the atmosphere absorb IR and make the Earth much warmer than it would otherwise be" It would be prudent to add "making life possible" One of the characteristics astronomers are always looking for in exoplanets is the possibility of liquid water. Our greenhouse effect must be celebrated as one of the major catalysts of life here on Earth. It should also be noted that Earth radiates at least an equal if not great amount of energy than it receives from the sun. (if one accounts for the thermal energy generated by radioactive decay.) Line 3068 - FIGURE 7 - The train cars with the little squiggly lines is very unclear. I had to stare at it for a long time and still was not able to fully appreciate the model represented. I think there are plenty of models out there that would be a better representation of this concept. Several colleagues viewed this illustration attempting to show a model of net forces and all of us thought this was horribly confusing and ineffective. Please consider changing this to something more effective. | Item B | Writer's Discretion/ Line Edit |
| 859 | 6 | Survey | Line 285 Revise ‘What causes the patterns and cycles of stars, planets, and the moon? To and the moon’ to ‘What causes the cycles of stars, planets, and moons? Line 307 Revise “I=Once the role is taught’ to ’Once the rope is tight’ Line 315 Consider having two figures rather than one. Line 329 Insert ‘to’ between students and analyze Line 397 Revise ‘multiple days’ to ‘the week’ Line 473 Revise ‘renumber the objects, and write…’ to ‘renumbered the objects, and wrote…’ Line 564 Revise ‘the group believed explained’ to ‘the group explained’ Line 576 Insert a comma after discussed | Item B | Writer's Discretion/ Line Edit |

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| 860 | 6 | Survey | 3. Grade 6 Summary, Line 27, includes a helpful statement of assumptions regarding prior learning and establishes a boundary for future instruction; however the phrase “various Earth systems” is vague. It is assumed that the user of the Framework would concurrently refer to the elementary school standards, so this comment recommends either referring to the elementary framework, or including a brief explanation or definition to clarify this statement of assumptions. 4. Grade 6 Summary, Lines 29-D43 provide a summary of the IS 2 and 3 storylines; however it seems like the point of the summary and the associated vignette is that NGSS provides an opportunity to expand the scope from local to regional to global systems. Recommend simplifying the language. 5. Grade 7 Summary, Lines 1277-1278: “Natural processes and human activities shape Earth’s web of life” is an arbitrary statement. The NGSS PEs and Framework storyline seem to emphasize the concept of cycling of matter and energy. Recommend revising the overarching guiding concept to include cycling of matter and energy. 1. Grade 8 Summary, Figure 1 (pg. 157) row headings are not consistent with Grades 6 and 7 Figures. 2. Grade 8 Summary, Figure 1 (pg. 157) IS4 Title, “Wave-based technologies assist human efforts to sustain biodiversity” is confusing. Additionally, we respectfully disagree that the NGSS PEs require investigation of humans sustaining biodiversity. 3. Grade 8 Summary: Summary should focus more on explaining and justifying the proposed storyline. As currently written, the Grade 8 Summary does not provide a clear technical explanation for the proposed storyline, as is provided in Grades 6 and 7 Summaries. Recommend revising summary such that it provides (a) a clearer connection between the storyline and the specific elements of NGSS; (b) cohesive explanation of how the storyline is intended to fit together; (c) justification for grouping the topics as shown in Figure 1 (p. 157). | Item B | Writer's Discretion/ Line Edit |
| 861 | 6 | Survey | Page 2, Line 14 Unit 2: Weather conditions result from the interactions among different Earth systems. Unit 2: “Systems on Earth interact to create local weather conditions.” Again, I prefer action verbs instead of passive sentences to show cause-effect relationships. Also, using the words “local” and “conditions” emphasizes the difference between weather and climate (spatial and temporal). Page 2, Line 14 Unit 3: The amount of energy transfer needed to change the temperature… Remove this PE from Unit 3 and add it to Unit 2. Energy transfer fits much better with Unit 2 concepts and the engineering PE listed there. Unit 3 is already very packed with life science PEs and climate PEs. Pages 21-25, Lines 227-292 Instructional Segment 2 Snapshot: Motions and Thermal Energy Move Snapshot examples to an Appendix or separate document related to Middle School NGSS Unit Planning Although the snapshot is informative, it disrupts the flow of reading about the overview of Grade 6 units. Pages 26-45, Lines 294-719 Instructional Segment 2 Vignette: Interactions of Earth Systems Cause Weather Move vignettes to an Appendix or separate document related to Middle School NGSS Unit Planning Although the vignette is informative, it disrupts the flow of reading about the overview of Grade 6 units. Teachers would find it difficult to locate this vignette buried in this long document. pp. 61-64, Lines 1003-1065 Instructional Segment 3 Snapshot: Asexual and Sexual Reproduction Move Snapshot examples to an Appendix or separate document related to Middle School NGSS Unit Planning Although the snapshot is informative, it disrupts the flow of reading about the overview of Grade 6 units. Pages 69-73, Lines 1114-1179 Instructional Segment 4 Snapshot 1: Global Warming Move Snapshot examples to an Appendix or separate document related to Middle School NGSS Unit Planning Although the snapshot is informative, it disrupts the flow of reading about the overview of Grade 6 units. | Item B | Writer's Discretion/ Line Edit |
| 862 | 6 | Survey | 4. Grade 8 Summary, Lines 2822-2823: While we agree that the Grade 8 material is difficult to “integrate” in the sense of intertwining a single storyline, the language in this sentence is subjective and does not provide a summary of the content presented below. Suggest deleting sentence. 5. Grade 8 Summary, Lines 2836-2839: Language in this sentence is subjective and does not reflect the technical scientific discourse promoted by NGSS. Suggest simplifying sentence to include only the key objective concepts that are relevant to the Grade 8 standards. | Item B | Writer's Discretion/ Line Edit |

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| 863 | 6 | Survey | Pages 74-77, Lines 1194-12D43 Instructional Segment 4 Snapshot 2: Monitoring and Minimizing Human Environmental Impacts Move Snapshot examples to an Appendix or separate document related to Middle School NGSS Unit Planning Although the snapshot is informative, it disrupts the flow of reading about the overview of Grade 6 units. Page 78, Line 1269 Grade 7 Integrated Story Line Order of units should be changed to 3, 2, 1, 4. The storyline should begin with your Unit 3: Natural processes and human activities have shaped Earth's resources and ecosystems. Follow with your Unit 2: Matter cycles and energy flows in living systems and Earth systems. Then continue with your Unit 1: Living and nonliving things are made of atoms. Finish by tying it all together in your Unit 4: Human activities can help sustain biodiversity and ecosystems services in a changing world. The PEs in Unit 3 fit better with the overall course theme stated for Grade 7: Natural processes and human activities shape Earth's web of life. To meet the coherence principle, I would start the course with those PEs. Also, Unit 3 PEs are the most tangible and familiar to students, and will elicit prior knowledge that can be built upon. The PEs in Units 3 and 2 are the most connected to Grade 6 and should be easy to build upon. Unit 1 PEs are the most abstract and difficult for students to grasp, especially in grade 7, and should not be taught at the beginning of the year. To make the storyline coherent and developmentally appropriate, I would move from the human scale of everyday life (your Unit 3) to the larger scale of cycles and systems (your Unit 2, which is somewhat familiar from Grade 6). Then dive down to the tiny atomic scale (your Unit 1) and finish to up all scales together (your Unit 4). Pages 95-99, Line 1554-1658 Instructional Segment 1 Snapshot: Extended Atomic and Molecular Structures Move Snapshot example to an Appendix or separate document related to Middle School NGSS Unit Planning Although the snapshot is informative, it disrupts the flow of reading about the overview of Grade 7 units. | Item B | Writer's Discretion/ Line Edit |
| 864 | 6 | Survey | Pages 102-117, Lines 1668-1941 Grade 7 Instructional Segment 2 Vignette: Organism Physical and Chemical Changes Move vignettes to an Appendix or separate document related to Middle School NGSS Unit Planning Although the vignette is informative, it disrupts the flow of reading about the overview of Grade 7 units. Teachers would find it difficult to locate this vignette buried in this long document. Pages 137-153, Lines 2286-2685 Grade 7 Instructional Segment 4 Vignette: Ecosystems Services and Biodiversity in California Ecosystems Move vignettes to an Appendix or separate document related to Middle School NGSS Unit Planning Although the vignette is informative, it disrupts the flow of reading about the overview of Grade 7 units. Teachers would find it difficult to locate this vignette buried in this long document. Page 157, Line 2811 Grade 8 Integrated Story Line: MISSING STORYLINE STATEMENT Add overview storyline: "Natural laws that shaped Earth's past operate throughout the universe." Grades 6 and 7 have an overview storyline statement, so one is also needed for grade 8 in order to be consistent and coherent. The suggested storyline should emphasize Scale & Proportion because in Grade 8 the concepts expand student thinking about space and time. Page 157, Line 2811 Grade 8 IS 1: Up close: Objects Move and Collide Make the first Instructional Segment be about Earth's History and Life's Evolution, with topics in the order of: evidence from fossils, geologic time, natural selection, and genetic mutation. IS 1: "How did life arise and change on planet Earth?" I prefer a Driving Question in place of a statement for an instructional sequence because an interesting question better meets Principle 7, Student Motivation and Engagement. A very generalized statement for the unit goal tends to be boring and difficult to grasp. I have found that an opening unit on Fossils is an extremely engaging way to begin the school year. It easily allows the teaching of many SEPs, especially Engaging in Argument from Evidence, and Asking Questions. | Item B | Writer's Discretion/ Line Edit |
| 865 | 6 | Survey | The EEI Curriculum unit 7.4.g called "Extinction: Past and Present" works well here to bring local relevance. Beginning the course with fossils also helps meet Principle 6, Attention to Equity, as all students (including ELs) can easily engage with hands-on experiences using fossils. Page 157, Line 2811 Grade 8 IS 2: Noncontact forces influence phenomena locally and in the Solar System. Make the second Instructional Segment about Human Impacts on Earth, with PEs in the order of: changes to environments can affect probabilities of survival, increases in human population and per capita consumption, and mutations and genetic technologies (MS-LS 4-5). IS 2: How have humans impacted evolution on Earth? This story line is not connected to anything interesting and does not meet Principle 7, Student Motivation and Engagement. Instead, let's continue my suggested Story Line above. After Earth's history and evolution, it makes sense to tackle the human impacts PEs along with some technology PEs. Humans have impacted populations of other species, which is explored well in the EEI curriculum unit 7.3.a called "Shaping Natural Systems through Evolution." The story line is coherent when you connect together the human impacts that influence the evolution of other species on Earth—that is, our use of genetic technologies, selective breeding, and our impact on the climate and habitats on Earth. Page 157, Line 2811 Grade 8: IS 3: Evolution explains life's unity and diversity on Earth. Make Instructional Segment 3 be about worlds beyond Earth and ultimately about, Space Exploration, with PEs: Waves and their applications, Forces, Motion and Stability, Energy, Engineering Design. IS 3: "How do humans explore space and worlds beyond Earth?" After studying Earth's history and current human impacts, it makes sense to move to human exploration beyond Earth. That drives questi | Item B | Writer's Discretion/ Line Edit |

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| 866 | 6 | Survey | Throughout the document i.e., line 1407 -Please remove the questions addressed to the reader throughout the document We recommend that the chart be expanded to include the CCC explicit. We recommend the explicit labeling of the IS as a model in the title. | Item B | Writer's Discretion/ Line Edit |
| 867 | 6 | Survey | The PE's are written out below but the DCI's are never clearly stated. This poses a major problem in clearly understanding what the standard is asking. Just noting the title of the DCI is not going to clarify what the standard is asking to address. The repetition of the PE's causes confusion and needs clarity. If PE's are going to be repeated, it needs to specify in the PE what the focus for that segment is. A great example of where they do this well is in 8th grade ESS1-1. The first time you see that PE it states that the focus is seasons then the next time you see it it states the focus is moon phases. That helps to clarify what to address in each segment. Many PE's are repeated along with the same DCI's. These need to be clearly explained on how to address these differently in each segment. Preferably no PE's or DCI's would be repeated, this would help to eliminate confusion among the teachers. It is also helpful to clarify in the Summary of DCI where the DCI's are being addressed. They do this nicely in most of 7th grade by listing the specific DCI's in the summary with the explanation. 6th and 7th grade need to look more like 8th grade since PEs and identified as being the focus or just applied and the specific DCI of that PE is identified. DCI's that do not seem to be addressed anywhere in middle school: PS3.C: Relationship Between Energy and Forces LS1.D: Information Processing (might be used if the one that is listed in segment 3 is supposed to be LS1.D instead of LS1.A) PS3.D: Energy in Chemical Processes and Everyday Life | Item B | Writer's Discretion/ Line Edit |
| 868 | 6 | Survey | p. 178, Line: paragraph 3, line 2 Really think the storyline for 8th grade is very useful. Could be made more practical if linked to a snapshot or vignette that addressed that concept. Storyline would be EXTREMELY useful if it had a counterpart storyline in English and Math common core standards so that the progression could be adapted across disciplines. p. 186, Paragraph 1 Provide list of content-specific vocabulary or highlight/underline academic words students should be able to use correctly after teaching the segment. For example, mass, velocity (instead of "speed"), collide (instead of "bang"), etc. In order to help relay this to English teachers or math teachers too. | Item B | Writer's Discretion/ Line Edit |
| 869 | 13 | Survey | In Appendix C, Progression of Scientific and Engineering Practice in Grades K-12, Page 5, Using Mathematical and Computational Thinking. In the Middle School (Grades 6-8) column, add something in bullet point 4 about also applying mathematical concepts to unit conversions, which is mentioned in the High School column | Item B | Writer's Discretion/ Line Edit |
| 870 | 7- 4 C Chem | CDE | Page 3 Line 82 A instructional….Suggest: An Instructional | Item C | Writer's Discretion/ Line Edit |
| 871 | 7.1 Intro 4 C Chem | CDE | Page 2 Line 59 That will use to… Suggest: "That they will use to | Item C | Writer's Discretion/ Line Edit |
| 872 | 7.2 - 4 C Chem | CDE | Page 67 Line1372 Figure graphs. Suggest: Figure 18 graphs | Item C | Writer's Discretion/ Line Edit |
| 873 | 7.2 4 C Chem | CDE | Page 3 Line 78 Correspond one to two … Suggest: Correspond to one to two | Item C | Writer's Discretion/ Line Edit |
| 874 | 7.2 4 C Chem | CDE | Page 20 Line 417 Other configurations and.. Suggest: Other configurations, and | Item C | Writer's Discretion/ Line Edit |
| 875 | 7.2- 4 C Chem | CDE | Page 21 Line 420 Of (red) Suggest Of (black) | Item C | Writer's Discretion/ Line Edit |
| 876 | 7.2- 4 C Chem | CDE | Page 39 Line748 *Proust's Law Suggest: Proust's Law | Item C | Writer's Discretion/ Line Edit |
| 877 | 7.3 HS 4 CM-Chemistry | CDE | Page 15 Line 279 Insert the subheading and sentence, "Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for describing (texture, color, physical properties of matter, chemical properties, etc.), cause and effect relationships, asking and answering questions, and using general- and domain-specific academic words orally and in writing." | Item C | Writer's Discretion/ Line Edit |
| 878 | 7.3 HS 4 CM-Chemistry | CDE | Page 23 Line 482 Insert the subheading and sentence, "Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for constructing explanations, predicting, arguing from evidence, explain cause and effect, and asking and answering questions orally and in writing." | Item C | Writer's Discretion/ Line Edit |

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| 879 | 7.3 HS 4 CM-Chemistry | CDE | Page 33 Line 644 Insert the subheading and sentence, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for constructing explanations, describing, predicting, and supporting opinions and persuading others orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 880 | 7.3 HS 4 CM-Chemistry | CDE | Page 60 Line 1215 Insert the subheading and sentence, “Support for English Learners: English learners, particularly at the emerging and expanding proficiency levels, would benefit from instruction focused on language structures for creating scientific explanations, engaging in argument from evidence, using general- and domain-specific academic words orally and in writing.” | Item C | Writer's Discretion/ Line Edit |
| 881 | 7.4 -4C-Bio | CDE | Page 11 Line 104 How do we know that DNA codes for proteins that actually do things in cells? Suggest: How do we know that DNA codes for proteins actually do things in cells? | Item C | Writer's Discretion/ Line Edit |
| 882 | 7.4 -4C-Bio | CDE | Page 11 Line 104 HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure Suggest: How the structure | Item C | Writer's Discretion/ Line Edit |
| 883 | 7.4 -4C-Bio | CDE | Page 1 Line 306 HS-LS1-5 | Item C | Writer's Discretion/ Line Edit |
| 884 | 7.4 -4C-Bio | CDE | Page 22 Line 312 can be rearranged and during Suggest: can be rearranged, and during | Item C | Writer's Discretion/ Line Edit |
| 885 | 7.4 -4C-Bio | CDE | Page 23 Line 331 adenine diphosphate (ADP). | Item C | Writer's Discretion/ Line Edit |
| 886 | 7.4 -4C-Bio | CDE | Page 23 Line 339-340 Some organisms that do not live in oxygen-rich environments (like organisms that live near thermal vents deep in the ocean) and must use a different energy pathway. | Item C | Writer's Discretion/ Line Edit |
| 887 | 7.4 -4C-Bio | CDE | Page 24 Line 345 Remove All Supra circles in the document | Item C | Writer's Discretion/ Line Edit |
| 888 | 7.4 -4C-Bio | CDE | Page 31 line 479 Remove supra circle | Item C | Writer's Discretion/ Line Edit |
| 889 | 7.4 -4C-Bio | CDE | Page 33 Line 513 nitrates into nitrogen though bacteria Suggest: nitrates into nitrogen through bacteria | Item C | Writer's Discretion/ Line Edit |
| 890 | 7.4 -4C-Bio | CDE | Page 47 Line 663 Discussing the scientists themselves science is a human endeavor. Incomplete sentence | Item C | Writer's Discretion/ Line Edit |
| 891 | 7.4 -4C-Bio | CDE | Page 27 Line 666 specific advise for teaching Suggest: specific advice for teaching | Item C | Writer's Discretion/ Line Edit |
| 892 | 7.4 -4C-Bio | CDE | Page 52 Line 762 HS-Ls3-2 Remove supra circle | Item C | Writer's Discretion/ Line Edit |
| 893 | 7.4 -4C-Bio | CDE | Page 57 Line 859 LS4-1 Remove supra circle | Item C | Writer's Discretion/ Line Edit |
| 894 | 7.4 -4C-Bio | CDE | Page 59 Line 906 Some classical examples Suggest: Some classic examples | Item C | Writer's Discretion/ Line Edit |
| 895 | 7.4 -4C-Bio | CDE | Page 65 Line 999 Remove supra circle | Item C | Writer's Discretion/ Line Edit |
| 896 | 7.4 -4C-Bio | CDE | Page 70 Line 1072 Remove supra circle | Item C | Writer's Discretion/ Line Edit |
| 897 | 7.4 -4C-Bio | CDE | Page 75 Line 1167 How obtain raw data Suggest: How to obtain raw data | Item C | Writer's Discretion/ Line Edit |
| 898 | 7.4 -4C-Bio | CDE | Page 67 Line 1190 Remove supra circle | Item C | Writer's Discretion/ Line Edit |
| 899 | 7.4 -4C-Bio | CDE | Page 77 Line 1204 (Day 2 – Student Does): That the Grant’s observed on Suggest: That the Grants observed on | Item C | Writer's Discretion/ Line Edit |
| 900 | 7.5 -4C-ESS | CDE | Page 4 Line 120 In a instructional Suggest: In an instructional | Item C | Writer's Discretion/ Line Edit |

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| 901 | 7.5 -4C-ESS | CDE | Page 14 Line 201-208 Type Font 9 Suggest: Type Font 11 | Item C | Writer's Discretion/ Line Edit |
| 902 | 7.5 -4C-ESS | CDE | Page 34 Line505 Which is expected in CA NGSS- unclear | Item C | Writer's Discretion/ Line Edit |
| 903 | 7.5 -4C-ESS | CDE | Page 46 Line 700 *Not all of California's Suggest: Not all of California's | Item C | Writer's Discretion/ Line Edit |
| 904 | 7.5 -4C-ESS | CDE | Page 57 Line 863 Which is dense, rises up- unclear | Item C | Writer's Discretion/ Line Edit |
| 905 | 7.5 -4C-ESS | CDE | Page 57 Line 871 A instructional Suggest: An instructional | Item C | Writer's Discretion/ Line Edit |
| 906 | 7.5 -4C-ESS | CDE | Page 57 Line 874 A instructional Suggest: An instructional | Item C | Writer's Discretion/ Line Edit |
| 907 | 7.5 -4C-ESS | CDE | Page 59 Line 922 Steeper faster than- unclear | Item C | Writer's Discretion/ Line Edit |
| 908 | 7.5 -4C-ESS | CDE | Page 60 Line 937 A instructional Suggest: An instructional | Item C | Writer's Discretion/ Line Edit |
| 909 | 7.5 -4C-ESS | CDE | Page 63 Line 980 chart aligned right Suggest aligned left. | Item C | Writer's Discretion/ Line Edit |
| 910 | 7.5 -4C-ESS | CDE | Page 65 Line 1036 Different temperature objects Suggest: Different temperatures emit | Item C | Writer's Discretion/ Line Edit |
| 911 | 7.5 -4C-ESS | CDE | Page 69 Line 1123 air conditioning instructional segment- unclear | Item C | Writer's Discretion/ Line Edit |
| 912 | 7.5 -4C-ESS | CDE | Page 84 Line 1D431-1D432 Enough they fuse releasing: Unclear - Collisions can bring their nuclei together so that they fuse? Per Instructional segment of mass? What is that? | Item C | Writer's Discretion/ Line Edit |
| 913 | 7.5 -4C-ESS | CDE | Page 90 Line 1540 Less well understand Suggest: Less well understood | Item C | Writer's Discretion/ Line Edit |
| 914 | 7.5 -4C-ESS | CDE | Page 90 Line 15D43 material the cooler and denser materiaLine. Suggest: The cooler and denser material | Item C | Writer's Discretion/ Line Edit |
| 915 | 7 | Comment | 4 Course Life Science/Bio: P. 14, line 150: "Mutation gene maps…" URL where available? | D16 | Writer's Discretion/ Line Edit |
| 916 | 7 | Comment | 4 Course Life Science/Bio: P. 17, line 225, Box: Suggested revision: "...phases of mitosis…" wrong word in this context | D16 | Writer's Discretion/ Line Edit |
| 917 | 7 | Comment | 4 Course Life Science/Bio: P. 36, line 541, Box: "3rd line: effect populations?" Suggested revision: "affect populations?" wrong word for this | D16 | Writer's Discretion/ Line Edit |
| 918 | 7 | Comment | 4 Course Life Science/Bio: P. 40, Line 627: Suggested revision: "... work together, so they survive and reproduce as a result." original gives impression that they work together *in order to* survive (teleological). | D16 | Writer's Discretion/ Line Edit |
| 919 | 7 | Comment | 4 Course Life Science/Bio: P. 47, Line 663: Suggested revision: "Discussing scientists themselves shows that science is a human endeavor." unconnected phrases. Insert "shows that" | D16 | Writer's Discretion/ Line Edit |
| 920 | 7 | Comment | 4 Course Life Science/Bio: P. 47, Line 666: Suggested revision: "...specific advice for teaching…" verb to noun | D16 | Writer's Discretion/ Line Edit |
| 921 | 7 | Comment | 4 Course Life Science/Bio: P. 49, Line 715: Suggested revision: "... should see that having…" extra "that" | D16 | Writer's Discretion/ Line Edit |
| 922 | 7 | Comment | 4 Course Life Science/Bio: P. 58, Line 887: Suggested revision: "... up the evolutionary tree to…" "ladder" infers outdated linear nature of evolution. See 60/9D43-44. | D16 | Writer's Discretion/ Line Edit |
| 923 | 7 | Comment | 4 Course Life Science/Bio: P. 59, Line 698: ".... organisms that no longer exist." After that sentence, add/insert this sentence: "And organisms living today are not found as fossils as we go further back in time." This is another strong indicator that life has evolved over time. | D16 | Writer's Discretion/ Line Edit |
| 924 | 7 | Comment | 4 Course Life Science/Bio: P. 61, line 967: Suggested revision: "... evolution of hominins. [See <www.indiana.edu/~ensiweb/lessons/hominins.html>]" Hominids replaced with hominins. See also Scientific American for Sep. 2014. The human evol. articles all use hominins, not hominids. | D16 | Writer's Discretion/ Line Edit |
| 925 | 7 | Comment | 4 Course Life Science/Bio: P. 61, lines 967-968: Suggested revision: "... happened between the common ancestor of humans and chimps and leading to modern day humans are.." Changes occurred in the hominin branch, not in the chimp branch. | D16 | Writer's Discretion/ Line Edit |
| 926 | 7 | Comment | 4 Course Life Science/Bio: P. 62, line 972: Suggested revision: (*Homo sapiens*) italicize genus/species | D16 | Writer's Discretion/ Line Edit |

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| 927 | 7 | Comment | 4 Course Life Science/Bio: P. 62, line 976: Suggested revision: "... walking mostly on all fours…" Apes can and do walk on hind legs, but not regularly. | D16 | Writer's Discretion/ Line Edit |
| 928 | 7 | Comment | 4 Course Life Science/Bio: P. 62, line 978: Suggested revision: "... hominin. *Ardipithecus* ,…" it's hominin now; Italicize genus. | D16 | Writer's Discretion/ Line Edit |
| 929 | 7 | Comment | 4 Course Life Science/Bio: P. 62, lines 979, 983: Suggested revision: "... *Australopithecus* …" Italicize genus | D16 | Writer's Discretion/ Line Edit |
| 930 | 7 | Comment | 4 Course Life Science/Bio: P. 62, line 980: Suggested revision: "... was the making of stone tools…" "use" is inferred; pattern- chipped stone is evidence. | D16 | Writer's Discretion/ Line Edit |
| 931 | 7 | Comment | 4 Course Life Science/Bio: P. 62, lines 984, 985: Suggested revision: "... the *Homo* species; ... early *Homo* ." italicize genus names | D16 | Writer's Discretion/ Line Edit |
| 932 | 7 | Comment | 4 Course Life Science/Bio: P. 63, Box line 1: Suggested revision: "... favoring some new traits…" Not adaptations until established in population | D16 | Writer's Discretion/ Line Edit |
| 933 | 7 | Comment | 4 Course Life Science/Bio: P. 63, Box line 2: Suggested revision: "... which new traits or…" Not adaptations until established in population | D16 | Writer's Discretion/ Line Edit |
| 934 | 7 | Comment | 4 Course Life Science/Bio: P. 63, Box line 2: Suggested revision: "... our species, Homo sapiens,…" Genus always capitalized | D16 | Writer's Discretion/ Line Edit |
| 935 | 7 | Comment | 4 Course Life Science/Bio: P. 63, Box line 3: Suggested revision: "... early hominin species…" its hominin, now, not hominid | D16 | Writer's Discretion/ Line Edit |
| 936 | 7 | Comment | 4 Course Life Science/Bio: P. 63, Box line 11: Suggested revision: "... each group is discussing…" should be singular not plural | D16 | Writer's Discretion/ Line Edit |
| 937 | 7 | Comment | 4 Course Life Science/Bio: P. 64, Box line 1: Suggested revision: "... or other species can adapt…" Individuals don't adapt, only populations or species adapt. "Organisms" is too vague. | D16 | Writer's Discretion/ Line Edit |
| 938 | 7 | Comment | 4 Course Life Science/Bio: P. 69, lines 1055-1056: Suggested revision: "The allele frequencies for the "favored" traits are ultimately the changes that are passed on…" More clearly expressed. | D16 | Writer's Discretion/ Line Edit |
| 939 | 7 | Comment | 4 Course Life Science/Bio: P. 69, lines 1059-1060: Suggested revision: "... before any environmental selection can occur." Variation can (and does) occur even when environment does not change. | D16 | Writer's Discretion/ Line Edit |
| 940 | 7 | Comment | 4 Course Life Science/Bio: P. 73, lines 1095-1097: The entire last sentence here. Add sentence: "Teachers must explicitly emphasize this point, in order to repair and prevent common misconception that organisms adapt in order to survive, or so that they will survive." Tendency toward teleological thinking is very strong. People typically make the assumption that everything happens for an end purpose. | D16 | Writer's Discretion/ Line Edit |
| 941 | 7 | Comment | 4 Course Life Science/Bio: P. 73, line 1108: Suggested revision: "... through mutation and recombination…" See 66 Box, ln 1-2: Assessment Boundary explicitly excludes genetic drift. | D16 | Writer's Discretion/ Line Edit |
| 942 | 7 | Comment | 4 Course Life Science/Bio: P. 74, line 1127: Suggested revision: "... and the effect that disruption…" wrong word here. | D16 | Writer's Discretion/ Line Edit |
| 943 | 7 | Comment | 4 Course Life Science/Bio: P. 75, line 1167: Suggested revision: "... know how to obtain raw data…" "to" omitted | D16 | Writer's Discretion/ Line Edit |
| 944 | 7 | Comment | 4 Course Life Science/Bio: Pp. 75-76, lines 1174-1188: All sentences in this paragraph. Add sentence: "Teachers must explicitly emphasize this clarifying paragraph." Dispel Lamarckian tendency for teleological thinking. | D16 | Writer's Discretion/ Line Edit |
| 945 | 7 | Comment | 4 Course Life Science/Bio: P. 75, line 1176-1177: Suggested revision: "... adaptations are not initiated by a change in the environment," Changes in environment do provide the selection pressure for variants to survive or not. | D16 | Writer's Discretion/ Line Edit |
| 946 | 7 | Comment | 4 Course Life Science/Bio: Lines 1176, 1184: Suggested revision: "... organisms can produce new…" avoid terms suggesting religious interpretation. | D16 | Writer's Discretion/ Line Edit |
| 947 | 7 | Comment | 4 Course Life Science/Bio: P. 83, lines 1290-1291: "... asks the students…" [What do they do with the beans they pick out of the bowls? What's the point for students to pick out their beans? | D16 | Writer's Discretion/ Line Edit |
| 948 | 7 | Comment | 4 Course Life Science/Bio: P. 88, line 1442: Suggested revision: "(*Geospiza fortis* )" italicize genus and species | D16 | Writer's Discretion/ Line Edit |
| 949 | 7 | Comment | 4 Course Life Science/Bio: P. 93, line 1580, Box: "Selection Pressure Cards: Need for Energy, Need to Reproduce." Suggested revision: "Getting Energy; Reproduction.<br>Add statement that the "Need" comments are what we see as needs." Avoid (or qualify) use of "need." Otherwise, students tend to think organisms change because they "*need* " to *in order to survive.* | D16 | Writer's Discretion/ Line Edit |
| 950 | 7 | Comment | 4 Course Life Science/Bio: P. 62, line 973: Suggested revision: (*Pan troglodytes* ) italicize genus/species | D16 | Writer's Discretion/ Line Edit |

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| 951 | 7 | Comment | Below are constructive comments and recommendations. Acknowledgement of the many positive Framework points is posted in #19 – Overall Comments.<br><br>1st, the Framework's DCIs are based on the National NGSS, that "all organisms are related by evolution and that evolutionary processes have led to the tremendous diversity of the biosphere." Also, page 58, lines 880-890 state: "[the quote] 'Nothing in Biology makes sense except in the light of evolution'. Keeping this in mind as the following instructional segments are discussed, ties should be made to how evolution shaped life on Earth. Aspects of evolution should have been integrated into the previous instructional segments (1-9)." The CA Framework does not reflect this overarching theme of evolution, and does not clearly show how to incorporate it into the segments prior to #10. Evolution is the primary process that connects ALL the segments, and this must be reflected throughout the entire course. | D33 | Writer's Discretion/ Line Edit |
| 952 | 7 | Comment | 3rd, there are no Model Snapshots provided for Instructional Segments 1-6. | D33 | Writer's Discretion/ Line Edit |
| 953 | 7 | Comment | 4th, Instructional segments 1 (103-222) & 2 (224-302) should flow from evolution of carbon compounds to cells to multicellular organisms (HS-LS1-1), to the growth and reproduction of multicellular organisms (HS-LS1-4 & HS-LS3-1), and to the function and maintenance of multicellular organisms (HS-LS2-1 & HS-LS1-3). | D33 | Writer's Discretion/ Line Edit |
| 954 | 7 | Comment | 5th, Instructional Segment 2 page 17, Line 225, includes both HS-LS1-4 and HS-LS3-1. But, the Background and Instructional suggestions *only* cover mitosis and HS-LS1-4. Nothing is mentioned about meiosis and HS-LS3-1. And, HS-LS3-1 is missing from the Instructional Segment 2 block on Table 1 (page 5, line 83). It should be added after HS-LS1-4, eliminating Instructional Segment 8 (Pages 46-51). | D33 | Writer's Discretion/ Line Edit |
| 955 | 7 | Comment | I sat down with the document: High School Three Course Model – Chemistry in the Earth System: Integrating Chemistry and Earth Science and commented on each part as I read the standards. Clearly, a single pass does not make a very thorough examination, but I did find many aspects that I think deserve comment, and a few ideas that may be helpful in modifying the draft.<br><br>I appreciate the work that you must have done to create the draft in the first place and the fact that you have the advantage of seeing the chemistry component within the larger context of the entire science standards, but I do think there are serious problems with the draft and the direction of that was taken with some of the segments.<br><br>My thoughts:<br><br>1. I am troubled that the Earth Science component is driving the curriculum choices for the state instead of the Chemistry component. Chemistry requires a vocabulary and atomic or mathematical modeling of its own that should be considered when suggesting a curriculum. Focus on chemistry vocabulary, mathematical concepts (like energy in the suggested curriculum), and abstract modeling of submicroscopic particles and their interactions should be a key part of the curriculum. The Introduction to the three course model suggested that chemistry is essential to understanding modern biology, so clearly a deep, understanding of this aspect of chemistry is necessary for further or prior study of biology, as well as preparation for future chemistry classes. | D22 | Writer's Discretion/ Line Edit |

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| 956 | 7 | Comment | 2. Since students have been introduced to the idea of atoms, molecules, and chemical reactions (including balancing) in earlier grades, beginning with an energy concept may be appropriate (although reteaching the idea of atoms and molecules will be necessary in practice).<br>2b. Instructional segment 1: Combustion, is not about combustion, but about conservation of energy. A study of fuels might be a better choice. Calories is an older term and the calorimetry experiments with food are notoriously unreliable. While they give general results the specific results have errors due to changes in food processing and age of food products. A study of candles or alcohols would provide data that is more reproducible. The number of carbon bonds vs joules of energy can be done so that students recognize the increased energy stored in bonds.<br>2c. Specific heat could be used to relate the uneven cooling of water and land at night and day, but I think that the slight differences between salt and fresh water would be difficult to test successfully in a typical high school classroom.<br>2d. A comment here about the engineering component of NGSS. The development of solutions to problems by students can be attained more easily by looking at the chemistry nature of energy rather than the Earth science component. Calculating the amount of energy needed to heat a can of water to a specific temperature is easily done and a good engineering project. Students could estimate the energy released in a gram of isopropanol after conducting studies of methanol and ethanol. Cooking oil carbon content might be calculated by measuring the heat released per gram. Turning the lens on the Earth Science component of climate change/global warming or geothermal processes does not lead to easily developed and assessed engineering projects. | D22 | Writer's Discretion/ Line Edit |
| 957 | 7 | Comment | 2e. WAIT. What happened to the other components of HS-PS1. You can't skip the integral parts of intermolecular and intramolecular forces and energy (how minerals are held together, how they attain their hardness level, why some systems are stable and others are not, why some materials exist as liquids while other are gases and solids, why does salt dissolve but not chalk, what is the difference between ionic and covalent bonding). This is the bulk of chemistry at the high school level along with the topics of reactions: types of reactions, kinetics, thermochemistry, equilibrium, etc.<br>The plan developed by the state must include a mention of these topics if not an outright plan for their inclusion in the instruction to our students. | D22 | Writer's Discretion/ Line Edit |
| 958 | 7 | Comment | 3a. Instructional segment 2, Heat and Energy. I find the topics being suggested to be closer to a physics point of view than a chemistry point of view of energy. Chemistry is the study of matter and its interactions and can easily include the law of conservation of energy (2nd law), but traditionally, chemistry studies the change in energy during a chemical reaction, the transfer of energy using specific heat calculations, the absorbance and emission of energy of atoms and molecules and the relationship this energy has to wavelength and frequency, and aspects of nuclear reactions and the release of energy. Physics has traditionally covered aspects of conduction, convection, and radiation. While teaching these topics is a simple matter, it does not have the same connections to the atomic interactions of matter that is part of a modern chemistry curriculum. | D22 | Writer's Discretion/ Line Edit |
| 959 | 7 | Comment | 3b. To demonstrate convection the topic of density is necessary or that hot material expands and is less dense. Simple and can be related to the definition of temperature and heat which is part of the standards. But you can't teach fluid dynamics except for simply providing examples that can be related to what you want the students to say without them having an understanding of the actual mechanics of the Earth's viscous semi-fluid layers. Then you give them this simplistic mechanism for plate movement that is actually much more complex and frankly needs a difficult earth science course to understand fully. Evidence of plate tectonics does exist and having students analyze this evidence and make conclusions that will lead to suggested paths for further analysis, observation, and experimentation would be a good topic and is often covered today in biology as a corollary to evolution, fossil evidence, and animal migration. | D22 | Writer's Discretion/ Line Edit |
| 960 | 7 | Comment | 3c. Again the section ends without explicit commentary on the connection of heat and temperature at the atomic level and the storing of energy in molecules due to their motion. Moreover a reading of the HS-PS3-1, HS-PS3-2, HS-PS3-4 are much closer to traditional physics or physical science instruction than chemistry. Certainly the references to charged plates and magnetic fields are A traditional chemistry class would be conducting specific heat experiments to demonstrate and use the conservation of energy, as well as, use models of atomic motion to relate temperature, heat and energy. The inclusion of pressure in the release of gas in an endothermic reaction (calcium chloride and a slurry of sodium hydrogen carbonate) could be used to illustrate the connection of thermal, kinetic, gravitational, and chemical energies.<br>3d. Engineering projects where students make a product would be difficult here. I can see them analyzing data and making suggestions for points of high stress or likely to have geothermal energy applications, but these are not connected to chemistry but to physics. | D22 | Writer's Discretion/ Line Edit |

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| 961 | 7 | Comment | 4a. Instructional segment 3: Atoms and Elements, is a traditional chemistry section which is not tied to an earth science component that might obscure the vocabulary and connections of atoms forming structures that have lower energy. That these atoms form new molecules and ions in a systematic way. In fact atoms have patterns of reactivity that are evident in the structure of the periodic table and the family of elements.<br>4b. We could have an earth science component here with understanding why quartz dominates sand composition and what causes the salinity of the ocean or Mono Lake. The durability of chalk formations at the sea, or the sculpting of sandstone formations. Predicting the chemical composition clays using the valences of aluminum, silicon, oxygen, potassium, and sodium???<br>Engineering components even using traditional chemical methods can be hard: determining the density of germanium from the densities of carbon, silicon, tin, and lead and perhaps aluminum, Predicting the reactivity of gallium or germanium components in a transistor given the reactivities of calcium, magnesium, aluminum, and silicon. | D22 | Writer's Discretion/ Line Edit |
| 962 | 7 | Comment | 5a. Instructional segment 4: Chemical Reactions, is again described in a traditional chemistry manner. The inclusion of reading several types of graphs reads like an NGSS strategy and I appreciate this inclusion of an important science skill.<br>5b. I think that a focus on “driving forces” where chemical reactions occur to make more stable types of matter would be a better focus for this section. Inclusion of “progress of the reaction” graphs and energy diagrams similar to Born-Haber cycle diagrams.<br>5c. The return of energy is a nice cycle back and hopefully, the inclusion and understanding of bond energy will make revisiting the combustion reactions memorable and strengthen learning and understanding.<br>5d. Perhaps a focus on biological reactions could be helpful too. Students might want to suggest mechanisms for oxygen poor environments or even the sulfur environments of the ocean vents. Perhaps, comparing the energy output of different sugars or of leaf photosynthesis vs photovoltaic cells | D22 | Writer's Discretion/ Line Edit |
| 963 | 7 | Comment | 6a. Instruction segment 5-Chemistry of Climate Change, there are aspects of chemistry in this that are related to the absorption of energy from infrared radiation by molecules produced by man and his changes to the environment: concrete and cattle for example. Again the radiation, conduction, convection models are usually physical science and physics topics. But the molecular nature of the problem lends itself to chemistry.<br>6b. While mapping out the increased in historical climate warming from the inception of the industrial revolution till present day is informative, I’d suggest investigating the role of methane, fluorocarbons (as a green house gas), and water vs carbon dioxide an important topic for chemistry since it demonstrates the nature of the absorption of energy by different components of a molecular structure. Students could also look at the potential for global warming due to the construction of solar cells. Discussing geochemical methods of stopping global warming (increasing albedo spraying sulfur suspensions) might be interesting as well.<br>6c. This might be a straight earth science topic though if teaching weather vs climate is what is necessary. There might be an interesting tie in to equilibrium that could be used to transition to the last unit. | D22 | Writer's Discretion/ Line Edit |
| 964 | 7 | Comment | 8. Final thoughts. 1. Develop a strong chemistry curricula first before adding the earth science components which integrates the science practices and cross cutting concepts for the new NGSS chemistry performance expectations. Make sure that the basic knowledge is present for each of the main topics the chemistry curricula will develop; for example, the term “mole” is not mentioned in the draft. Discussing the idea of temperature without some introduction to atoms and molecules in an abstract model does not look at temperature and heat from a chemistry point of view. 2. Use chemistry centered concepts to teach earth science. That is chemistry does not discuss convection (unless determining error in measuring a hot crucible) but physics does. Chemistry does have room to introduce the concept of the absorption of light by molecules based on their bonds. So there are aspects of chemistry that can be used in earth science, I feel that plate tectonics is shoe horned into the chemistry discipline when perhaps weather and climate as well as weathering and erosion might make a better fit (although the nuclear reactions at the earth’s core that continue to provide heat may be an avenue for chemistry and tectonics). 3. Develop engineering practices that are part of chemistry or earth science that are meaningful and can be done in the lab. Not every practice needs to be a “wet” lab, but there must be some active investigating that enhances students understanding of chemistry and earth science. 4. Remember that every student is destine to go to a four year college (although many will not) and that having the basic vocabulary of chemistry, the abstract thinking with atomic models, and the manipulation of mathematical models is essential to providing our students with a strong background for chemistry. I realize that having students who can critically think is probably even more important, but I still feel obliged to give students the knowledge of what chemistry “class work” involves. Thank you for your attention and the work that you have already put into the California standards. | D22 | Writer's Discretion/ Line Edit |

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| 965 | 7 | Comment | 7a. Instruction segment 6-Dynamics of Chemical Reactions and Ocean Acidification. I would put this after chemical reactions. Particularly, since rates of reactions is in the standards with reactions. I don't think that the climate change segment is hurt by this change. Bringing energy in at the end is a nice spiral of the curriculum.<br>7b. It seems surprisingly late in the academic year to introduce stoichiometry. Especially, with the statement: " research shows that the more time students spent in high school chemistry on stoichiometry, the greater success they had in college chemistry courses on average" (line 1005). In fact the time devoted to the mole and calculations using the mole is surprisingly small. There is little doubt that without more emphasis on these aspects of chemistry, student preparation for college chemistry will be lacking.<br>7c. Now that stoichiometry has been introduced, there is nothing to do with it. The rate of reaction and using Le Châtelier's principle can both be done by having an intuitive understanding of concentration and the understanding of a balanced chemical equation, without the need for stoichiometric calculations.<br>7d. Given the buffering effect of HCO3– , the pH change in the ocean is small (though significant) and the observable change to shells at these pH's is probably beyond a simple chemistry lab. Perhaps the discussion of acid rain, acid deposition and the solubility and equilibrium of different types of nonmetal oxides could be used to enhance the understanding of acidification. | D22 | Writer's Discretion/ Line Edit |
| 966 | 7 | Comment | 3 Course The Living Earth: P. 33, Line 387, Bullet 4- Guiding Question:<br>Phylogenetic trees are introduced here- students need some genetics and cell background to help their understanding of this concept. This is not referenced until Figure 6 page 45. DNA is not referenced as content until page 49, segment 4. When we talk about evolution without the genetic piece that goes with it students often discount one of the key evidences for evolution. This guiding question perhaps would fit better with segment 4. | D5 | Writer's Discretion/ Line Edit |
| 967 | 7 | Comment | 3 Course The Living Earth: P. 42, Lines 539-540: What type of plants have thorns vs. spines? Need specific examples. | D5 | Writer's Discretion/ Line Edit |
| 968 | 7 | Comment | 3 Course The Living Earth: P. 44, Line 586, Darwin's Four Postulates Chart: Length of wing reference. This is usually referred to as wing shape not length, if fruit flies are being referenced. | D5 | Writer's Discretion/ Line Edit |
| 969 | 7 | Comment | 3 Course Chem + ESS: P. 7, Line 183: Clarify if this means that the 3 year bio, chem, physics with earth space requires a credential allowing teachers to teach integrated science.<br>Does this mean that a teacher must possess a credential to teach an integrated course? Does this mean that a science:biology credential can teach a chemistry with earth space course?<br>Will these be D lab science courses?? people will be concerned. | D5 | Writer's Discretion/ Line Edit |
| 970 | 7 | Comment | 3 Course Chem + ESS: General: Citations are inconsistent. Needs to all be done in a way to create a concise document. | D5 | Writer's Discretion/ Line Edit |
| 971 | 7 | Comment | 3 Course Chem + ESS: P. 2, lines 34-35: "Research on self-efficacy shows that a teacher that is not confident will not teach as effectively, often reverting to tasks with low cognitive demand." Needs a citation | D5 | Writer's Discretion/ Line Edit |
| 972 | 7 | Comment | 3 Course Chem + ESS: P. 3, lines 39-44: Cut. This section belongs in instructional strategies, it is not appropriate here. The last sentences regarding role models is more of an opinion than fact that is supported with evidence. | D5 | Writer's Discretion/ Line Edit |
| 973 | 7 | Comment | 3 Course Chem + ESS: P. 3, lines 64-67: There are words missing somewhere that make this sentence too unclear to suggest an alternative. | D5 | Writer's Discretion/ Line Edit |
| 974 | 7 | Comment | 3 Course Chem + ESS: P. 4, line 98: Diagram is very useful. Should be moved earlier to the first page after the table of contents. This sort of diagram should also be included as part of each course model that is given in the framework.<br><br>This along with the detailed content allows a chemistry teacher with little background in Earth Space to feel confident teaching this integrated model well. | D5 | Writer's Discretion/ Line Edit |
| 975 | 7 | Comment | 3 Course Chem + ESS: P. 5, line 146: "teachers are more comfortable with its earlier placement in the sequence." Can this be backed with evidence. Discussion with our colleagues have indicated that many question if biology is developmentally appropriate for freshmen in high school. | D5 | Writer's Discretion/ Line Edit |

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| 976 | 7 | Comment | 3 Course Chem + ESS: P. 6 and on, lines 115 and on: Suggested revision:<br>Work with a two column system such as:<br><br>Unit # - ___<br>Title - _____<br>Guiding Questions - ___<br>PEs - ____<br>SEPs - _____<br>DCIs - ____<br>CCCs - _____<br>Summary - ____<br><br>Tables are unwieldy and difficult to read. The purpose is useful, however the format gets in the way of understanding the content. The guiding questions from each segment should be combined into this table to avoid redundancy. These tables could be separated per instructional segment. | D5 | Writer's Discretion/ Line Edit |
| 977 | 7 | Comment | 3 Course Chem + ESS: P. 21, line 312: Suggested revision: "This S-wave “shadow” is evidence that supports the presence of a liquid layer within Earth’s core." Evidence supports or refutes a claim. The nature of science does not require certainty such as the use of “must.” | D5 | Writer's Discretion/ Line Edit |
| 978 | 7 | Comment | 3 Course Chem + ESS: P. 28, line 440: Clarification would be helpful regarding which atomic theories, include examples. | D5 | Writer's Discretion/ Line Edit |
| 979 | 7 | Comment | 3 Course Chem + ESS: P. 29, line 445: X axis needs to be labeled as atomic number. The label is missing. | D5 | Writer's Discretion/ Line Edit |
| 980 | 7 | Comment | 3 Course Chem + ESS: P. 38, lines 606: Figure 8 needs to be enlarged and have higher resolution. Too difficult to read. | D5 | Writer's Discretion/ Line Edit |
| 981 | 7 | Comment | 3 Course Chem + ESS: P. 40, line 656: The Snapshot of chemical energetics: Cut. The vignette is much more useful than the snapshot. No need to repeat. | D5 | Writer's Discretion/ Line Edit |
| 982 | 7 | Comment | 3 Course Chem + ESS: P. 44 or so: Homework assignment at the end of day 1: “assigned on online quiz." Have students assigned a new reaction to model for homework. This should be formative and show student thinking. | D5 | Writer's Discretion/ Line Edit |
| 983 | 7 | Comment | 3 Course Chem + ESS: P. 44: The vignette does not break across the page and must be cut and recopied elsewhere in order to be fully read. | D5 | Writer's Discretion/ Line Edit |
| 984 | 7 | Comment | 3 Course Chem + ESS: P. 44 or so: "When writing their lab reports, students apply scientific principles and evidence to construct explanations for the thermal changes that they have observed in each reaction." Clarify what this lab report looks and how it is rigorous either with a rubric or an example. | D5 | Writer's Discretion/ Line Edit |
| 985 | 7 | Comment | 3 Course Chem + ESS: P. 48, line 721: Guiding Questions headings is missing | D5 | Writer's Discretion/ Line Edit |
| 986 | 7 | Comment | 3 Course Chem + ESS: P. 49 on: Instructional Segment 5 and 6: These are very well written. Very clear and helps to visualize what these lessons look like in the classroom. The figures are great and help support the work immensely. | D5 | Writer's Discretion/ Line Edit |
| 987 | 7 | Comment | 3 Course Chem + ESS: P. 77, line 1192: Suggested edit: "Different groups of students investigate different interactions within the bio-geo-chemical system." Missing word hinders understanding. | D5 | Writer's Discretion/ Line Edit |
| 988 | 7 | Comment | 3 Course Chem + ESS: P. 82, line 1308: "Day X." Can a range of possible days within the unit be added here to help teachers understand where they are in the segment? | D5 | Writer's Discretion/ Line Edit |
| 989 | 7 | Comment | 3 Course Chem + ESS: P. 87, line 1407: "This activity sequence is based closely on lessons from Baliga Lab at Institute for Systems Biology 2010. Please refer to them for much greater detail: http://baliga.systemsbiology.net/drupal/education/?q=content/ocean-acidification-systems-approach-global-problem. They provide a recorded webinar walking through the lesson sequence and a number of downloadable resources." Move this to the beginning of the vignette to allow teachers to better concentrate on the vignette while reading instead of wondering where to find this material. | D5 | Writer's Discretion/ Line Edit |
| 990 | 7 | Comment | 3 Course Physics in the Universe: Overall impression - Not specific enough. Hard to find what we are supposed to do. Needs more concrete examples. | D5 | Writer's Discretion/ Line Edit |
| 991 | 7 | Comment | 3 Course Physics in the Universe: Lines 151-155: Line 155 says that the example of Newton’s Laws. The example is all about deformations, where Newton’s laws don’t apply. | D5 | Writer's Discretion/ Line Edit |
| 992 | 7 | Comment | 3 Course Physics in the Universe:  Line 1, Introduction: Examples in introduction seem somewhat elementary. Richer examples (the red shift, earthquakes as examples, balance between gravity and internal processes of a star, convection, heat transfers) might be included to bring out the richness of physics and astronomy. This is also a physics course, not an earth science course. | D5 | Writer's Discretion/ Line Edit |

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| 993 | 7 | Comment | 3 Course Physics in the Universe: Line 155: "do things like." Whole paragraph seems to be written to casually. Should be “predictions utilizing” rather applying. | D5 | Writer's Discretion/ Line Edit |
| 994 | 7 | Comment | 3 Course Physics in the Universe: Line 161: also applies to short time frames or scales. | D5 | Writer's Discretion/ Line Edit |
| 995 | 7 | Comment | 3 Course Physics in the Universe: Line 162: We do not talk about quantum mechanics in high school. | D5 | Writer's Discretion/ Line Edit |
| 996 | 7 | Comment | 3 Course Physics in the Universe: Line 280: Should be average force, not just force. | D5 | Writer's Discretion/ Line Edit |
| 997 | 7 | Comment | 4 Course Bio: Biology and Engineering: Needs better and more examples of how to connect the biology and the engineering. | D5 | Writer's Discretion/ Line Edit |
| 998 | 7 | Comment | 4 Course Bio: Instructional Strategies in Biology: Having at least one example of phenomenon alongside of an engineering project for each Instructional Strategy would be beneficial for teachers. | D5 | Writer's Discretion/ Line Edit |
| 999 | 7 | Comment | 4 Course Bio: In the background and instructional strategies for each section: the guiding question, highlight the phenomenon, the CCC, the SEP, the DCI, etc… (almost use a second voice to show how and where the engagement in these things will take place throughout the lesson/unit) | D5 | Writer's Discretion/ Line Edit |
| 1000 | 7 | Comment | 4 Course Bio: Vignettes, snapshots, and unit vs. the content: less content, more examples. Teachers might open this, see the content, think “I already know my content” and then miss the great vignettes, snapshots, unit examples. | D5 | Writer's Discretion/ Line Edit |
| 1001 | 7 | Comment | 4 Course Bio: For each section: The guiding questions and instructional suggestions don’t really seem to relate to phenomena. In the early chapters (2), there is a strong emphasis on using phenomena as they do in Ambitious Science Teaching (Windschitl), but that doesn’t seem to come through as well in these chapters. | D5 | Writer's Discretion/ Line Edit |
| 1002 | 7 | Comment | 4 Course Bio: For each section: This chapter does not directly help schools decide on the order of courses...we didn’t necessarily think that was the goal, but if the goal is to “gently guide” schools, it probably needs to be more explicit. | D5 | Writer's Discretion/ Line Edit |
| 1003 | 7 | Comment | 4 Course Bio: The example course: Needs to have a better example of how the 3 dimensional teaching is incorporated. Where are the SEPs, CCCs, and DCIs throughout the example course in the chapter. (in some cases it points out the DCIs, but not the SEPs and CCCs). | D5 | Writer's Discretion/ Line Edit |
| 1004 | 7 | Comment | 4 Course Bio: Lines Line 63-66: "Placed in this particular order to match that presented in appendix K." Is this thoughtful and intentional? Could it have been done. DNA in segment 1 then segment 8… how do you know when you have attained ‘mastery’ if the concepts cycle in different Instructional Segments. | D5 | Writer's Discretion/ Line Edit |
| 1005 | 7 | Comment | 4 Course Bio: Line 82: Would “mitigate” be a better word here…I don’t think we can typically fix or undo the damage. | D5 | Writer's Discretion/ Line Edit |
| 1006 | 7 | Comment | 4 Course Bio: Table 1: Despite some details noted other places, table 1 was generally quite useful. | D5 | Writer's Discretion/ Line Edit |
| 1007 | 7 | Comment | 4 Course Bio: Line 96: Table for Instructional Segment 1 “Reference is made to ALS and organ." Are these (ALS and organ donation) mandated or should the verbiage be “Reference could be made to ALS...” | D5 | Writer's Discretion/ Line Edit |
| 1008 | 7 | Comment | 4 Course Bio: Line 104: "HS-LS1-2: Does not include...molecular or chemical reaction level." By selecting this particular PE as an example here there is the suggestion that Biology comes before Chemistry . Would a different PE allow the same focus, but without suggesting that bio needs to come before chem? | D5 | Writer's Discretion/ Line Edit |
| 1009 | 7 | Comment | 4 Course Bio: Line 219: Again, is ALS mandated or is it an example? | D5 | Writer's Discretion/ Line Edit |
| 1010 | 7 | Comment | 4 Course Bio: Line 300, Engineering Connection: Suggested revision: “Students can consider and… brainstorm and evaluate possible solutions." Share any examples | D5 | Writer's Discretion/ Line Edit |
| 1011 | 7 | Comment | 4 Course Bio: Line 322: "The interrelatedness of photosynthesis and cellular respiration is important to keep ATP available and at a relatively constant level in all cells." Remove this sentence. This sentence may also lead to considering photosynthesis and cellular respiration as opposites (or it could also suggest that photosynthesis can occur in all cells). | D5 | Writer's Discretion/ Line Edit |
| 1012 | 7 | Comment | 4 Course Bio: Line 376 (figure 2): This figure is poorly made. There could be a better figure with labels, etc. Figure should have subscripts at the least. | D5 | Writer's Discretion/ Line Edit |
| 1013 | 7 | Comment | 4 Course Bio: Line 463: Some of the examples seem like too low a level (academically). This may be particularly true of technology examples. There are good simulations and maybe a more advanced one could have been highlighted. | D5 | Writer's Discretion/ Line Edit |
| 1014 | 7 | Comment | 4 Course Bio: Line 525: No clear connections between the building block example and the energy and matter cycling. There should be a tighter fit to engineering or remove the section about the blocks. | D5 | Writer's Discretion/ Line Edit |
| 1015 | 7 | Comment | 4 Course Bio: Lines 780 or 795: "proteins that form a channel for movement of particles between cells produces the condition." should be “out of cells” not “between cells” | D5 | Writer's Discretion/ Line Edit |
| 1016 | 7 | Comment | 4 Course Bio: Line 1029, Table 2: Suggested revision: "individuals within a population have the ability to produce more offspring than can survive." | D5 | Writer's Discretion/ Line Edit |
| 1017 | 7 | Comment | 4 Course Chem: P. 9, lines 122-123: Suggested revision: "models about nanoscale objects and forces." The scale at which atoms and molecules exist and interact is not invisible, but only unobservable to the naked eye. | D5 | Writer's Discretion/ Line Edit |

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| 1018 | 7 | Comment | 4 Course Chem: Line 201: "Mendeleev...who didn't even grow up speaking Russian." It is needs to have a citation, there is concern about the accuracy of this claim. If it is accurate articulate the purpose of why it is included in the framework. | D5 | Writer's Discretion/ Line Edit |
| 1019 | 7 | Comment | 4 Course Chem: P. 14, lines 2D43-245: Suggested revision: "Much of this course focuses on the nature of these forces, which govern the structural and electrostatic forces within and amongst atoms and molecules." A range of forces and bond-types "hold" atoms and molecules together. The existing sentence is ambiguous as the force or forces being described. | D5 | Writer's Discretion/ Line Edit |
| 1020 | 7 | Comment | 4 Course Chem: P. 27, lines 544: "… basic properties…" Suggested revision: "… simple chemical properties…" more specificity for clarification. | D5 | Writer's Discretion/ Line Edit |
| 1021 | 7 | Comment | 4 Course Chem: P. 28, lines 585-590: "A simple...(releasing relatively little potential energy)" Suggested revision: "The endothermic dissolution of sodium acetate will demonstrably lower the temperature of water as the ionic bond is broken between the sodium and acetate ions." General clarification is needed here that explicitly matches the preceding sentence depicting bonding energies. | D5 | Writer's Discretion/ Line Edit |
| 1022 | 7 | Comment | 4 Course Chem: P. 30, line 623: "… for understanding bonding." Suggested revision: "… for understanding ionic bonding." Coulomb's Law applies to electrostatic forces between opposite charges. Covalent bonding relies on the stabilization of orbital energies that results from sharing electrons, and must be clarified as a combo of Coulomb's law AND the distance of the outermost orbital from the nucleus. | D5 | Writer's Discretion/ Line Edit |
| 1023 | 7 | Comment | 4 Course Chem: P. 30, lines 623-626: Be careful here!! The nuclei alone do not determine the electronegativity of an atom, but rather a combination of both the nuclear charge and the distance separating the nucleus from the atom's outermost occupied orbital. If the goal here is to discuss covalent bonds, then this sentence is altogether wrong. | D5 | Writer's Discretion/ Line Edit |
| 1024 | 7 | Comment | 4 Course Chem: P. 64, line 1275: "... same intermediate temperature." Suggested revision: "... same intermediate temperature, in accordance with the Second Law of Thermodynamics." Clarify the statement, as it follows discussion of the zeroth law of thermodynamics. | D5 | Writer's Discretion/ Line Edit |
| 1025 | 7 | Comment | 4 Course Physics: In order to teach this course, teachers are going to need to be reminded of prior PEs and DCIs that build the foundation for this course. Is there a way of connecting the foundations of physics that were taught in prior grades without having to go read through every other grade level standard. | D5 | Writer's Discretion/ Line Edit |
| 1026 | 7 | Comment | 4 Course Physics: Example: Forces - students need a foundation in position, velocity, acceleration to understand forces. These ideas are not mentioned in the Framework but need to be. How do teachers know about these otherwise? | D5 | Writer's Discretion/ Line Edit |
| 1027 | 7 | Comment | 4 Course Physics: Line 412, first part of this instructional segment: Did not see this developed earlier. Nothing with field lines. | D5 | Writer's Discretion/ Line Edit |
| 1028 | 7 | Comment | 4 Course Physics: Line D431, Basis for electric motors: This is not the basis. This is part of it, but seems like a leap. | D5 | Writer's Discretion/ Line Edit |
| 1029 | 7 | Comment | 4 Course Physics: Lines 580-581: Is this in a physics course or chemistry course? | D5 | Writer's Discretion/ Line Edit |
| 1030 | 7 | Comment | 4 Course ESS: In general, the writing is not clear. Please ask editor/authors to make the referents of the many of "this", "that", "these" pronouns explicitly. | D5 | Writer's Discretion/ Line Edit |
| 1031 | 7 | Comment | 4 Course ESS: P. 3, line 77: Suggested revision: "The sequence of this model course follows a specific…." Referent for "this" is ambiguous. Refers to the model course suggested, not any course order used by teachers as described in previous sentence. | D5 | Writer's Discretion/ Line Edit |
| 1032 | 7 | Comment | 4 Course ESS: P. 10. line 142: In the table, "where do oil and gas come from?" (Rewrite the question or the paragraph) "How are gas and oil deposits related to carbon cycling and earth systems?"<br>Is instruction related to rock cycle, rock types, etc. implied? Is the discussion extended? | D5 | Writer's Discretion/ Line Edit |
| 1033 | 7 | Comment | 4 Course ESS: P. 11, line 144: "Without energy, California's…" Suggested revision:<br>"Without energy from fossil fuels" or just delete whole sentence. Intro sentence doesn't need to be there. Second is more focused. | D5 | Writer's Discretion/ Line Edit |
| 1034 | 7 | Comment | 4 Course ESS: P. 11, line 152: "When asked what the Earth might have looked…" Delete the entire sentence. Makes it seem like students understand what a fossil is and where they can find them. | D5 | Writer's Discretion/ Line Edit |
| 1035 | 7 | Comment | 4 Course ESS: P. 11, line 161: "…which disassembles CO2 as it forms solid biomass and oxygen gas." Disassembles is an not a science word. | D5 | Writer's Discretion/ Line Edit |
| 1036 | 7 | Comment | 4 Course ESS: P. 14, line 220: "Scientists use complex computer models…" This is a very in depth topic and if it is taught without depth and breadth, students will not retain the understanding. | D5 | Writer's Discretion/ Line Edit |
| 1037 | 7 | Comment | 4 Course ESS: P. 14, line 222: Suggested revision: "The CA NGSS call for students to use simple computer models like the ones scientists use to illustrate." Clarification of the sentence | D5 | Writer's Discretion/ Line Edit |
| 1038 | 7 | Comment | 4 Course ESS: Pp. 14-16, lines 229-248: PE EESS-7 is not strongly supported. "Explicitly how does the development of marine life results in the formation of fossil fuels including connections to the rock cycle." Discussion needs to be better extended to better support ESS2-7. | D5 | Writer's Discretion/ Line Edit |
| 1039 | 7 | Comment | 4 Course ESS: P. 23, line 353: Comparison of "positive feedback' and 'negative feedback' is confusing and inconsistent. | D5 | Writer's Discretion/ Line Edit |
| 1040 | 7 | Comment | 4 Course ESS: P. 24, lines 362-368: Explicitly include the term 'counterbalancing feedback'' in this description. Confusing as written. | D5 | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 1041 | 7 | Comment | 4 Course ESS: P. 26, line 394: “Details of how the isotopic analysis provides a proxy…” Make it a footnote. This is beyond the scope of high school performance expectations. | D5 | Writer's Discretion/ Line Edit |
| 1042 | 7 | Comment | Entire document: Table of contents needed with hyperlinks to help navigate document better. | D39a | Writer's Discretion/ Line Edit |
| 1043 | 7 | Comment | Introduction: p. 1, line 19: Suggested text: "*A Framework for K-12 Science Education*" - consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1044 | 7 | Comment | Introduction: p. 1, line 20: Suggested text: "*Next Generation Science Standards for California Public Schools, Kindergarten through Grade Twelve*" consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1045 | 7 | Comment | Introduction: p. 2, line 38: Suggested text: "course sequence covered" - words don’t make sense in this location | D35 | Writer's Discretion/ Line Edit |
| 1046 | 7 | Comment | 3-Course Model: Throughout the model courses: Suggested text: "This is ONE way, but it is open to the stakeholders to determine what works best for their students." It is important to emphasize that these are suggested models and may not be adopted blindly by any one district or school. What may work for one site / district may not work for all. | D39a | Writer's Discretion/ Line Edit |
| 1047 | 7 | Comment | 3-Course Model: Throughout the model courses - Bolding of words related to CCC’s, SEP’s, and DCI’s e.g. patterns, mathematical models, proportions. Suggested edit: Color coding throughout the document for DCI’s, CCC’s, and SEP’s by appropriate color. Helps with teacher planning, recognition of each three dimension to see how it is woven | D39a | Writer's Discretion/ Line Edit |
| 1048 | 7 | Comment | 3-Course Model: Geology/ESS teachers are VERY uncomfortable with the 3 course model, as ESS will not get fully taught. ESS is again being relegated to the wicked stepchild of science. This model re-emphasizes the “importance” of bio, chem, physics- and ESS as not valuable. This reinforces the stigma AGAINST geo teachers entering the profession. | D39a | Writer's Discretion/ Line Edit |
| 1049 | 7 | Comment | 3-Course Model: from a bio/chem teacher: wish there was more of the ESS out of chem, but integrated into Bio, as there is a better, more natural fit. ESS integrated into Chem feels like it is just squeezed in! | D39a | Writer's Discretion/ Line Edit |
| 1050 | 7 | Comment | 3-Course Model, Introduction: p. 1, line 4: Suggested text: "*A Framework for K-12 Science Education*" - consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1051 | 7 | Comment | 3-Course Model, Introduction: p. 1, line 7: Suggested text: "*Science Framework for California Public Schools: Kindergarten through Grade Twelve*" - consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1052 | 7 | Comment | 3-Course Model, Introduction: p. 1, line 12: Suggested text: "each of the three courses present" - more specific | D35 | Writer's Discretion/ Line Edit |
| 1053 | 7 | Comment | 3-Course Model, Introduction: p. 1, line 14: Suggested text: "with each providing an engaging motivation for and a deeper insight into the other." referred to disciplines in pairs, not more than two | D35 | Writer's Discretion/ Line Edit |
| 1054 | 7 | Comment | 3-Course Model, Introduction: p. 2, line 33: Suggested text: "breadth" - incorrect word | D35 | Writer's Discretion/ Line Edit |
| 1055 | 7 | Comment | 3-Course Model, Introduction: p. 2, line 48: Suggested text: "need of the specific students" - omit repeated words | D35 | Writer's Discretion/ Line Edit |
| 1056 | 7 | Comment | 3-Course Model, Introduction: p. 2, line 58: Suggested text: "*California State Content Standards for Science*" - consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1057 | 7 | Comment | 3-Course Model, Introduction: p. 3, line 63: Suggested text: "conduct…" Need third dot. | D35 | Writer's Discretion/ Line Edit |
| 1058 | 7 | Comment | 3-Course Model, Introduction: p. 3, line 66: Suggested text: "It is critical that teachers" - sentence fragment attached to next sentence | D35 | Writer's Discretion/ Line Edit |
| 1059 | 7 | Comment | 3-Course Model, Introduction: p. 3, line 71: Suggested text: "overview of the pieces" - missing word | D35 | Writer's Discretion/ Line Edit |
| 1060 | 7 | Comment | 3-Course Model, Introduction: p. 3, line 73: All standards, all students (Should insert a space here). maintain consistent document formatting | D35 | Writer's Discretion/ Line Edit |
| 1061 | 7 | Comment | 3-Course Model, Introduction: pp. 4-5, Table 1: Summary Table: Could you please reformat so the sub headers match with the text. easier to follow the information. | D39a | Writer's Discretion/ Line Edit |
| 1062 | 7 | Comment | 3-Course, The Living Earth: The order of instructional segments in this chapter do not follow the same order listed in the “Chapter at a Glance Box” of this chapter<br>Also, in the “Chapter at a Glance Box,” a reference to the page #s of each Instructional Segment would be helpful. | D41a | Writer's Discretion/ Line Edit |
| 1063 | 7 | Comment | 3-Course, The Living Earth: 3 ESS PEs that are currently not in the 3-Course Model.<br><br>ESS3-1 and ESS3-3 – suggested that these are placed in Instructional Segment 6 | D41a | Writer's Discretion/ Line Edit |
| 1064 | 7 | Comment | 3-Course, The Living Earth: In the instruction segments, use more vignettes for showcasing the integration of ESS standards and more snapshots of implementing ETS. | D41a | Writer's Discretion/ Line Edit |
| 1065 | 7 | Comment | 3-Course, The Living Earth: Referencing websites for activities does not seem consistent (page 39). Website references as footnotes throughout the entire chapter for consistency. | D41a | Writer's Discretion/ Line Edit |
| 1066 | 7 | Comment | 3-Course, The Living Earth: Lines 28-41, Table 1: How to teach inheritance before the cell? | DD36d | Writer's Discretion/ Line Edit |
| 1067 | 7 | Comment | 3-Course, The Living Earth: P. 3: "Starting at this intermediate scale, rather than at the cellular or global scale, seems tangible and relevant to students." Keep this idea | DD36d | Writer's Discretion/ Line Edit |

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| 1068 | 7 | Comment | 3-Course, The Living Earth: P. 3, cycle diagram: cycle diagram is misleading- does not show cross interactions, and circular unidirectional model implies a starting point. (for example atmosphere is indicated BEFORE cells- which can lead to issues) | D39a | Writer's Discretion/ Line Edit |
| 1069 | 7 | Comment | 3-Course, The Living Earth: P. 9: Appreciate the guiding questions | DD36d | Writer's Discretion/ Line Edit |
| 1070 | 7 | Comment | 3-Course, The Living Earth: P. 12, footnotes 1/2: Consistent citations across this document and chapter documents. Chapter 10 featured in text citations vs. footnoted citations in the High School 3 year model of Chapter 7 | D39a | Writer's Discretion/ Line Edit |
| 1071 | 7 | Comment | 3-Course, The Living Earth: P. 14, Figure 1, The carbon cycle from abiotic to biotic forms. (Used by permission from Sussman [need year]): Include animals in the image. Animals are also involved in the carbon cycle. Limited model in only showing a few components without explanation or labels. | D39a | Writer's Discretion/ Line Edit |
| 1072 | 7 | Comment | 3-Course, The Living Earth: P. 17, line 199, snapshot: Vignette vs. snapshot? vs. narrative. Different vocabulary used for same story or version of what is happening in the classroom as an example. Simplify and use same word or define the difference between each. | D39a | Writer's Discretion/ Line Edit |
| 1073 | 7 | Comment | 3-Course, The Living Earth: Instructional segments 2 and 4: segment 4 is required to be understood prior to teaching evolution (segment 2) | D39a | Writer's Discretion/ Line Edit |
| 1074 | 7 | Comment | 3-Course, The Living Earth: P. 32: Could use instructional vignette for segment 2 | D36d | Writer's Discretion/ Line Edit |
| 1075 | 7 | Comment | 3-Course, The Living Earth: p. 46, lines 586-587, Table 2: Suggested text: "Living offspring have traits that help them survive and reproduce due to their fit to be selected by the environment." simplify explanation/wording | D39a | Writer's Discretion/ Line Edit |
| 1076 | 7 | Comment | 3-Course, The Living Earth: p. 47, line 644, Isolated Species as Evidence of Plate Tectonics: feel like this a great phenomena / example that links plate tectonics from ESS with biology. Like the focus on evidence | D39a | Writer's Discretion/ Line Edit |
| 1077 | 7 | Comment | 3-Course, The Living Earth: P. 48: Could use instructional vignette for segment 3 | D36d | Writer's Discretion/ Line Edit |
| 1078 | 7 | Comment | 3-Course, The Living Earth: Page 51 bold and use of color that corresponds with the language of the CCC, DCI, and SEP. Page 53 bold but no use of color. The use of the color code is beneficial but should be used consistently | D41a | Writer's Discretion/ Line Edit |
| 1079 | 7 | Comment | 3-Course, The Living Earth: p. 56, line 819: Suggested text: "Students can link Punnett squares, statistical methods, and relate to the process of meiosis." Good suggestion. Also emphasize different methods to get to the same results and conclusions. Different evidence / models that can be evaluated to reach the same idea. It is also a great opportunity to make an additional connection to a tool and what happens in the body. | D39a | Writer's Discretion/ Line Edit |
| 1080 | 7 | Comment | 3-Course, The Living Earth: P. 91: Needs snapshot or vignette | DD36d | Writer's Discretion/ Line Edit |
| 1081 | 7 | Comment | 3-Course, Chemistry: concern that the ESS sections are very abstract, and already is difficult to help kids understand chemistry as it is. (global warming, plate tectonics) | D39a | Writer's Discretion/ Line Edit |
| 1082 | 7 | Comment | 3-Course, Chemistry: p. 2, line 10-26: really like that they infuse higher level earth phenomena that usually is not taught until college | D40 | Writer's Discretion/ Line Edit |
| 1083 | 7 | Comment | 3-Course, Chemistry: p. 2, lines 34-38: This is a concern for integrating content. I appreciated that the comment was in the framework because it will bring attention to the district that professional development is required. This will help to advocate for the teachers that training is a must have! | D40 | Writer's Discretion/ Line Edit |
| 1084 | 7 | Comment | 3-Course, Chemistry: lines 34-DD36d: A citation is needed for the research that is mentioned. | D41a | Writer's Discretion/ Line Edit |
| 1085 | 7 | Comment | 3-Course, Chemistry: lines DD36d-38: We feel that this idea deserves a much greater emphasis. It also needs to be expanded with details and suggestions to achieve the development and collaboration described. | D41a | Writer's Discretion/ Line Edit |
| 1086 | 7 | Comment | 3-Course, Chemistry: lines 73-74: This assertion comes across as a quaint notion. | D41a | Writer's Discretion/ Line Edit |
| 1087 | 7 | Comment | 3-Course, Chemistry: p. 4, line 76: great to connect chemistry to climate change! | D40 | Writer's Discretion/ Line Edit |
| 1088 | 7 | Comment | 3-Course, Chemistry: p. 5, line 98: great diagram to show how the segments are connected! | D40 | Writer's Discretion/ Line Edit |
| 1089 | 7 | Comment | 3-Course, Chemistry: line 98: Beginning with combustion was seen as problematic because, although line 81 indicates that it is initially considered at the macroscopic level, many teachers felt that a bulk level observation was undermined by then describing products that are not discernable at the bulk scale. The figure even illustrates carbon dioxide molecules next to the initial image of combustion. It was felt that this diagram would often be misused by teachers that are skimming the framework for quick pat answers to subtle questions. It was suggested that there would be a temptation to assume that this sequence was being advocated by the framework and adopt the sequence with critically exploring a variety of possible alternatives. | D41a | Writer's Discretion/ Line Edit |
| 1090 | 7 | Comment | 3-Course, Chemistry: Pp. 6-10: instructional segment 3 then 6. this should be first and then second, respectively- as the background and main thrust of chemistry. lots of concern over not being able to fully, adequately teach chemistry, and feel that the ESS component will get a very small portion of the course, if any. | D39a | Writer's Discretion/ Line Edit |
| 1091 | 7 | Comment | 3-Course, Chemistry: p. 10, line 128 (all segments): great that each segment started with guiding questions. This really helps to see the focus of the unit. Also great to see the bundle of SEP and CCC. | D40 | Writer's Discretion/ Line Edit |

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| 1092 | 7 | Comment | 3-Course, Chemistry: p. 12, line 130: Great to start the year off with a phenomena that deals with combustion. This is a great way to hook students and generate interest in the class. Great way to introduce the nature of science by investigating phenomena that can be linked to several topics later on! | D40 | Writer's Discretion/ Line Edit |
| 1093 | 7 | Comment | 3-Course, Chemistry: p. 12, line 149: I understand the statement references “other high calorie snack food” however, the concern is with specifically mentioning “nuts” because of the allergies that many students have. Perhaps a different food, like cheetos, could be used instead as the example. | D40 | Writer's Discretion/ Line Edit |
| 1094 | 7 | Comment | 3-Course, Chemistry: p. 12, line 156, link below: The calorimetry pdf link is misleading and does not seem to align to the vision of ngss. It has very high level math and is in a cookie cutter format. This may send the wrong message to teachers that do not have a good understanding of the vision of ngss that the framework is saying they should use the handout as is. I would suggest that the link be removed or that a statement be made about how the teachers should use this link within the development of this segment. | D40 | Writer's Discretion/ Line Edit |
| 1095 | 7 | Comment | 3-Course, Chemistry: p. 15, line 195: After reading through the segment, I did not see the SEPs defining problems and designing solutions. Either omit these SEPs from the list or explicitly discuss them in the segment. | D40 | Writer's Discretion/ Line Edit |
| 1096 | 7 | Comment | 3-Course, Chemistry: p. 19, line 283 (links below): Thank you for including the links for phet and concord to provide resources for online simulations. | D40 | Writer's Discretion/ Line Edit |
| 1097 | 7 | Comment | 3-Course, Chemistry: pp. 25-34, lines DD36d8-567: The concern with segment 3 is that beyond discussing the SEP’s it reads like a traditional (old style) unit. It is difficult to see how to teach this in an inquiry fashion. I think this segment would benefit greatly by having a snapshot or a vignette to give a closer look at how this is different from the old way of teaching atomic structure. | D40 | Writer's Discretion/ Line Edit |
| 1098 | 7 | Comment | 3-Course, Chemistry: pp. D35-47, lines 568-719: The storyline did not capture the connection to earth science. The vignette focused so much on ELD (which is great) but it would have been nice if the vignette also focused on connecting the earth science to the chemical reactions topic. | D40 | Writer's Discretion/ Line Edit |
| 1099 | 7 | Comment | 3-Course, Chemistry: p. 41 (snapshot): The document cuts off several pages of the snapshot. I had to highlight the table, copy/paste it into word, in order to read the entire snapshot. Please fix the formatting. | D40 | Writer's Discretion/ Line Edit |
| 1100 | 7 | Comment | 3-Course, Chemistry: p. D43 (vignette): The document cuts off several pages of the vignette. I had to highlight the table, copy/paste it into word, in order to read the entire snapshot. Please fix the formatting. | D40 | Writer's Discretion/ Line Edit |
| 1101 | 7 | Comment | 3-Course, Chemistry: line 1144: This figure was seen as overly dense with information. It includes ancillary information that unnecessarily complicates the focus on chemical equilibrium, and it ignores a great deal of prerequisite understanding. | D41a | Writer's Discretion/ Line Edit |
| 1102 | 7 | Comment | 3-Course, Physics: With the addition of ESS standards within physics, the fundamentals need to be the focus with time with examples in ESS. Our concern is that the fundamentals of physics will not have enough project time if too much time is on examples of ESS. | D41a | Writer's Discretion/ Line Edit |
| 1103 | 7 | Comment | 3-Course, Physics: The order of instructional segments in this chapter do not follow the same order listed in the “Chapter at a Glance Box” of this chapter. Also, in the “Chapter at a Glance Box,” a reference to the page #s of each Instructional Segment would be helpful. | D41a | Writer's Discretion/ Line Edit |
| 1104 | 7 | Comment | 3-Course, Physics: 3 ESS PEs that are currently not in the 3-Course Model. ESS3-1 and ESS3-3 – suggested that these are placed in Instructional Segment 6. | D41a | Writer's Discretion/ Line Edit |
| 1105 | 7 | Comment | 3-Course, Physics: In the instruction segments, use more vignettes for showcasing the integration of ESS standards and more snapshots of implementing ETS. | D41a | Writer's Discretion/ Line Edit |
| 1106 | 7 | Comment | 3-Course, Physics: Referencing websites for activities does not seem consistent (page 39). Website references as footnotes throughout the entire chapter for consistency. | D41a | Writer's Discretion/ Line Edit |
| 1107 | 7 | Comment | 3-Course, Physics: Page 51 bold and use of color that corresponds with the language of the CCC, DCI, and SEP. Page 53 bold but no use of color. The use of the color code is beneficial but should be used consistently | D41a | Writer's Discretion/ Line Edit |
| 1108 | 7 | Comment | 4-Course Model, Introduction: p. 1, line 7: Suggested text: "*Science Framework for California Public Schools: Kindergarten through Grade Twelve*" - consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1109 | 7 | Comment | 4-Course Model, Introduction: p. 2, line 39: Suggested text: "need of the specific students" - omit repeated words | D35 | Writer's Discretion/ Line Edit |
| 1110 | 7 | Comment | 4-Course Model, Introduction: p. 2, line 49: Suggested text: "*California State Content Standards for Science*" - consistent title treatment | D35 | Writer's Discretion/ Line Edit |
| 1111 | 7 | Comment | 4-Course Model, Introduction: p. 2, line 57: Suggested text: "It is critical that teachers" - sentence fragment attached to next sentence | D35 | Writer's Discretion/ Line Edit |
| 1112 | 7 | Comment | 4-Course Model, Introduction: p. 3, line 62: Suggested text: "overview of the pieces" - missing word | D35 | Writer's Discretion/ Line Edit |
| 1113 | 7 | Comment | 4-Course Model, Introduction: p. 3, line 64: All standards, all students (Should insert a space here) - maintain consistent document formatting | D35 | Writer's Discretion/ Line Edit |
| 1114 | 7 | Comment | chemistry teachers really like the flow of the chemistry in the 4 course model. biology teachers like the content, but think the flow is out of order in the 4 course model. | D39a | Writer's Discretion/ Line Edit |

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| 1115 | 7 | Comment | 4-Course, Bio: Background Information and Instructional Suggestions are essential to clarifying instructional detail | D36d | Writer's Discretion/ Line Edit |
| 1116 | 7 | Comment | 4-Course, Bio: Need explanation on how to write for the academic language | D36d | Writer's Discretion/ Line Edit |
| 1117 | 7 | Comment | 4-Course, Bio: Framework complements the national frameworks(NGSS), it brings contexts to the NGSS. There's a flow, narrative flow as the vision for NGSS. NOT completely, the example instructional strategies within the document are inconsistent. | D41a | Writer's Discretion/ Line Edit |
| 1118 | 7 | Comment | 4-Course, Bio: There's not enough information to support teachers using the phenomenon to engage students. The specific examples of phenomenon are needed, more than just in the Introduction. Phenomenon is missing (pg. 63), we would need an example of a specific phenomenon. The phenomenon is there but there is little guidance to how to get students to ask questions.(pg. 42) What the frameworks lack is "how" to engage students in questioning other than mentioning phenomenon. There's a wide variety of phenomenon with varied levels of complexity, we would advocate a consistent voice for strategies, definitions, to allow diverse teachers to use them in their practice. | D41a | Writer's Discretion/ Line Edit |
| 1119 | 7 | Comment | 4-Course, Bio: The 3D model of teaching is vague, enough that it is difficult to see how to incorporate all 3 dimensions of the NGSS. Concrete examples of crosscutting concepts would be helpful for each of the 4 big ideas. How is this document different from the national NGSS document? | D41a | Writer's Discretion/ Line Edit |
| 1120 | 7 | Comment | 4-Course, Bio: This document may be used to keep the four year model and keep the different courses separate from each other. This goes against the aim of NGSS to create an integrated interdisciplinary science progression. | D41a | Writer's Discretion/ Line Edit |
| 1121 | 7 | Comment | 4-Course, Bio: Please double check the quality and placement of supporting figures, models, and diagrams within the framework. They seem out of place or simplistic. | D41a | Writer's Discretion/ Line Edit |
| 1122 | 7 | Comment | 4-Course, Bio: P. 19, line 272, "Diagram of cell cycle:" the graph is out of context with line 272, it belongs more appropriately near 252. The graph supports that information more than line 272. | D41a | Writer's Discretion/ Line Edit |
| 1123 | 7 | Comment | 4-Course, Bio: P. 25, line D376, "Figure 2: Model of relationship:" revised pick a more realistic model for high school students. We want our students to model complex processes, this is not a good model. | D41a | Writer's Discretion/ Line Edit |
| 1124 | 7 | Comment | 4-Course, ESS: Line 1: Suggested text:<br>Motion in the Universe<br>Star Stuff<br>Causes and Effects of Earthquakes<br>Water and Farming<br>Mountain, Valleys, and Coasts<br>Climate<br>Oil and Gas<br>Basically, the order should be flipped. Start from space & work to Oil & Gas. This makes more sense because when we get to Geoscience, need to know how covalent & ionic bonding happens to understand the structure of periodic table. | D41a | Writer's Discretion/ Line Edit |
| 1125 | 7 | Comment | 4-Course, ESS: Line 42: ADD non-natural such as desalination, water reclamation, etc. Need to look at all the solutions to this major issue/crisis in California | D41a | Writer's Discretion/ Line Edit |
| 1126 | 7 | Comment | 4-Course, ESS: Lines 44-47: Water quality & pollution MUST be addressed!! Human Impact & pollution. The Central Valley produces food & fiber for the world. Need to have solutions to drought. Desalinization, preventing overdraft, etc. | D41a | Writer's Discretion/ Line Edit |
| 1127 | 7 | Comment | 4-Course, ESS: Line 49, Earthquakes: need to specify what universal scale to measure size & intensity | D41a | Writer's Discretion/ Line Edit |
| 1128 | 7 | Comment | 4-Course, ESS: Lines 51-52, Earthquakes: ADD in localized areas along the California Coast, there is a tsunami risk due to topography of the ocean floor & the nearby subduction zones California. no mention of tsunamis caused by earthquakes -California has a coastal risk | D41a | Writer's Discretion/ Line Edit |
| 1129 | 7 | Comment | 4-Course, ESS: p. 2, line 63: Suggested text: "broader universe" - mass noun not capitalized | D35 | Writer's Discretion/ Line Edit |
| 1130 | 7 | Comment | 4-Course, ESS: p. 3, lines 73-78: Suggested text: "The order of this course follows a specific course design goal described below which may serve as an example to guide teachers and is not meant to be an exhaustive list of what can be taught or how it should be taught. Teachers are free to address the PEs with applications and phenomena that interest them most and present these lessons in the order that makes the most logical and logistical sense to them." - clarify | D35 | Writer's Discretion/ Line Edit |
| 1131 | 7 | Comment | 4-Course, ESS: p. 3, line 80: Suggested text: "universe towards" - no capitalization, clarification | D35 | Writer's Discretion/ Line Edit |
| 1132 | 7 | Comment | 4-Course, ESS: p. 3, line 83: Suggested text: "discovery nor" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1133 | 7 | Comment | 4-Course, ESS: p. 3, line 84: Suggested text: "society" (NGSS Lead States 2013)." - need to close the quotation directly after | D35 | Writer's Discretion/ Line Edit |
| 1134 | 7 | Comment | 4-Course, ESS: p. 3, line 88: Suggested text: "interacting systems" no italics, possibly no bold – inconsistent use | D35 | Writer's Discretion/ Line Edit |

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| 1135 | 7 | Comment | 4-Course, ESS: p. 4, line 95: Suggested text: "between Earth systems" - systems in general | D35 | Writer's Discretion/ Line Edit |
| 1136 | 7 | Comment | 4-Course, ESS: p. 8, line 133, IS6 Summary of DCI: Suggested text: "that are shaped/ urban expansion" - tense agreement/continues flow | D35 | Writer's Discretion/ Line Edit |
| 1137 | 7 | Comment | 4-Course, ESS: p. 9, line 138, IS7 Summary of DCI: delete "more" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1138 | 7 | Comment | 4-Course, ESS: p. 11, line 148: Suggested text: "segment explores" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1139 | 7 | Comment | 4-Course, ESS: p. 11, line 152: Suggested text: "at the time" - too many “when”s | D35 | Writer's Discretion/ Line Edit |
| 1140 | 7 | Comment | 4-Course, ESS: p. 11, line 153: Suggested text: "might be formed" - makes more sense | D35 | Writer's Discretion/ Line Edit |
| 1141 | 7 | Comment | 4-Course, ESS: p. 11, line 154: Suggested text: "sources not be" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1142 | 7 | Comment | 4-Course, ESS: p. 11, line 158: delete "in Earth’s early history" - repetitive | D35 | Writer's Discretion/ Line Edit |
| 1143 | 7 | Comment | 4-Course, ESS: p. 11, line 161: Suggested text: "in forming" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1144 | 7 | Comment | 4-Course, ESS: p. 11, line 166: Suggested text: "Earth systems" - systems in general | D35 | Writer's Discretion/ Line Edit |
| 1145 | 7 | Comment | 4-Course, ESS: p. 13, line 185: Suggested text: replace "leaves" with "left" and "arrives" with "arrived" - tense agreement | D35 | Writer's Discretion/ Line Edit |
| 1146 | 7 | Comment | 4-Course, ESS: p. 13, line 186: Suggested text: replace "is" with "was" - tense agreement | D35 | Writer's Discretion/ Line Edit |
| 1147 | 7 | Comment | 4-Course, ESS: p. 13, line 198: put in the missing year | D35 | Writer's Discretion/ Line Edit |
| 1148 | 7 | Comment | 4-Course, ESS: p. 14, lines 201 -208: reformat – is this a regular text paragraph? | D35 | Writer's Discretion/ Line Edit |
| 1149 | 7 | Comment | 4-Course, ESS: p. 14, line 201: Suggested text: replace "pictures" with "diagrams" - correct word | D35 | Writer's Discretion/ Line Edit |
| 1150 | 7 | Comment | 4-Course, ESS: p. 14, line 205: delete "a plant grows, a candle burns, or" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1151 | 7 | Comment | 4-Course, ESS: p. 14, line 217: Suggested text: "the plankton that form the base of ocean food webs (LS2.A, LS2.B)" - specific plankton, ( in the wrong place, inconsistent labeling of standards | D35 | Writer's Discretion/ Line Edit |
| 1152 | 7 | Comment | 4-Course, ESS: p. 14, line 218: Suggested text: "reefs which host a large portion of the ocean’s biodiversity, both having broad " - correct punctuation, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1153 | 7 | Comment | 4-Course, ESS: p. 20, line 274: Suggested text: "within, and" - missing punctuation | D35 | Writer's Discretion/ Line Edit |
| 1154 | 7 | Comment | 4-Course, ESS: p. 21, line 292: Suggested text: "between what is considered inside the system and what is considered outside" - be consistent in the same sentence | D35 | Writer's Discretion/ Line Edit |
| 1155 | 7 | Comment | 4-Course, ESS: p. 21, line 293: Suggested text: "as one" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1156 | 7 | Comment | 4-Course, ESS: p. 21, line 294: Suggested text: "planet as shown" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1157 | 7 | Comment | 4-Course, ESS: p. 22, line 320: Suggested text: "arrive because there is no line" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1158 | 7 | Comment | 4-Course, ESS: p. 22, line 327: Suggested text: "there is enough" - extraneous word | D35 | Writer's Discretion/ Line Edit |
| 1159 | 7 | Comment | 4-Course, ESS: p. 23, line 331: Suggested text: "arrives, analogous to one of the cars leaving the" - restores flow | D35 | Writer's Discretion/ Line Edit |
| 1160 | 7 | Comment | 4-Course, ESS: p. 23, line 3D40: Suggested text: replace "system" with network? web? - repetitive | D35 | Writer's Discretion/ Line Edit |
| 1161 | 7 | Comment | 4-Course, ESS: p. 23, line 345: Suggested text: "that global warming" - missing word | D35 | Writer's Discretion/ Line Edit |
| 1162 | 7 | Comment | 4-Course, ESS: p. 23, line 349: Suggested text: "this heating causes" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1163 | 7 | Comment | 4-Course, ESS: p. 23, line D350: Suggested text: "amplifies the" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1164 | 7 | Comment | 4-Course, ESS: p. 24, line D357: Suggested text: "reinforcing feedback in Earth's climate system. (delete)" - clarification, in the text you said you wanted to avoid “positive” vs. “negative;” Sentence is better explained in text. | D35 | Writer's Discretion/ Line Edit |
| 1165 | 7 | Comment | 4-Course, ESS: p. 24, line DD36d2: Suggested text: replace "different" with "counterbalancing" - I think you mean to emphasize this aspect | D35 | Writer's Discretion/ Line Edit |
| 1166 | 7 | Comment | 4-Course, ESS: p. 24, line DD36d6: Suggested text: "more cloud formation and reflection" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1167 | 7 | Comment | 4-Course, ESS: p. 24, line DD36d7: Suggested text: "These two examples of feedback balance each other out." - clarification | D35 | Writer's Discretion/ Line Edit |
| 1168 | 7 | Comment | 4-Course, ESS: p. 25, line D371: delete "(‘negative’)" - you wanted to avoid this | D35 | Writer's Discretion/ Line Edit |
| 1169 | 7 | Comment | 4-Course, ESS: p. 25, line D371: Suggested text: "feedback loop amplifying sunlight reflection. Increasing the amount of clouds could reflect more sunlight, thereby causing temperatures to decrease." - clarification | D35 | Writer's Discretion/ Line Edit |
| 1170 | 7 | Comment | 4-Course, ESS: p. 25, line D373: move to 24/end of new sentence two corrections above. - clarification | D35 | Writer's Discretion/ Line Edit |
| 1171 | 7 | Comment | 4-Course, ESS: p. 26, line 392: delete "the" - need to be general, not the only snow ever | D35 | Writer's Discretion/ Line Edit |
| 1172 | 7 | Comment | 4-Course, ESS: p. 26, line D400: vertical axes are missing - add labels | D35 | Writer's Discretion/ Line Edit |
| 1173 | 7 | Comment | 4-Course, ESS: p. 26, line D402: replace "go up and down" with "fluctuate" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1174 | 7 | Comment | 4-Course, ESS: p. 27, line 417: which graph is NASA and which is the Daily Mail? | D35 | Writer's Discretion/ Line Edit |
| 1175 | 7 | Comment | 4-Course, ESS: p. 28, end of top box: "their argument  xxxx" - about what? I’m not sure what you mean. | D35 | Writer's Discretion/ Line Edit |

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| 1176 | 7 | Comment | 4-Course, ESS: p. 29, line D430: Suggested text: "plant growth decreases the impact of global warming. Comparing the predictions of a computer model that allows ice to melt with one in which ice is not allowed to melt is another form" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1177 | 7 | Comment | 4-Course, ESS: p. 29, line D434: "build on" - delete "on" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1178 | 7 | Comment | 4-Course, ESS: p. 29, line 4D40: replace "different" with "various" - more precise | D35 | Writer's Discretion/ Line Edit |
| 1179 | 7 | Comment | 4-Course, ESS: p. 29, line 4D40: Suggested text: "of an Earth" - more precise | D35 | Writer's Discretion/ Line Edit |
| 1180 | 7 | Comment | 4-Course, ESS: p. 30, line 452: Suggested text: "these impacts" - more precise | D35 | Writer's Discretion/ Line Edit |
| 1181 | 7 | Comment | 4-Course, ESS: p. 31, line 473: "complete the project" - what project? | D35 | Writer's Discretion/ Line Edit |
| 1182 | 7 | Comment | 4-Course, ESS: p. 31, line 476: replace "impact" with "effect" - more precise | D35 | Writer's Discretion/ Line Edit |
| 1183 | 7 | Comment | 4-Course, ESS: p. 34, line 490: delete ", or Earth's present-day landscape" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1184 | 7 | Comment | 4-Course, ESS: p. D35, line 508: Suggested text: "material is carved away" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1185 | 7 | Comment | 4-Course, ESS: p. D35, line 514: Suggested text: "and the" - unnecessary word | D35 | Writer's Discretion/ Line Edit |
| 1186 | 7 | Comment | 4-Course, ESS: p. D35, line 521: Suggested text: "ancient lava flows high above valley floors, and named them "Table Mountains" because the flat top of the lava flows resembled" - consistent – all singular or all plural | D35 | Writer's Discretion/ Line Edit |
| 1187 | 7 | Comment | 4-Course, ESS: p. D35, line 523: Suggested text: "Since lava" - unnecessary punctuation | D35 | Writer's Discretion/ Line Edit |
| 1188 | 7 | Comment | 4-Course, ESS: p. D37, line 539: Delete "Le Conte was one of the first faculty at the University of California and a charter member of the Sierra Club. There are several schools in California named after him, including ones in Los Angeles and Berkeley." - extraneous | D35 | Writer's Discretion/ Line Edit |
| 1189 | 7 | Comment | 4-Course, ESS: p. D37, line 544: Suggested text: "California and a charter member of the Sierra Club," - better here | D35 | Writer's Discretion/ Line Edit |
| 1190 | 7 | Comment | 4-Course, ESS: p. 38, line 546: Suggested text: "needed to be tested, so Earth scientists conducted" - tense agreement, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1191 | 7 | Comment | 4-Course, ESS: p. 39, line 567: Suggested text: "feedback loop causes erosion to" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1192 | 7 | Comment | 4-Course, ESS: p. 39, line 579: Suggested text: "they dislodge" - unnecessary word | D35 | Writer's Discretion/ Line Edit |
| 1193 | 7 | Comment | 4-Course, ESS: p. 39, line 580: Suggested text: "flattening them out so erosion slows down (Figure 10). Erosion speeds up when" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1194 | 7 | Comment | 4-Course, ESS: p. 39, line 583: replace "the" with "a" - more than 1 in the entire world | D35 | Writer's Discretion/ Line Edit |
| 1195 | 7 | Comment | 4-Course, ESS: p. 39, line 583: delete "by" - parallel construction | D35 | Writer's Discretion/ Line Edit |
| 1196 | 7 | Comment | 4-Course, ESS: p. D40, line 598: Suggested text: "Pacifica, California, but the oblique aerial photos from Google" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1197 | 7 | Comment | 4-Course, ESS: p. D40, line 604: Suggested text: "those solutions using" - missing referent | D35 | Writer's Discretion/ Line Edit |
| 1198 | 7 | Comment | 4-Course, ESS: p. D40, line 606: delete "in places like Pacifica" - repetitive | D35 | Writer's Discretion/ Line Edit |
| 1199 | 7 | Comment | 4-Course, ESS: p. D40, line 607: Suggested text: "hillside often by" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1200 | 7 | Comment | 4-Course, ESS: p. D40, line 609: Suggested text: "concrete" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1201 | 7 | Comment | 4-Course, ESS: p. D40, line 609: Suggested text: "forces through" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1202 | 7 | Comment | 4-Course, ESS: p. D40, line 611: Suggested text: "slope" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1203 | 7 | Comment | 4-Course, ESS: p. 41, line 619: delete "They go for many years without much erosion and then erode more than a dozen feet in a single year." - extraneous, explained in the text | D35 | Writer's Discretion/ Line Edit |
| 1204 | 7 | Comment | 4-Course, ESS: p. 41, line 630: Suggested text: "surface which" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1205 | 7 | Comment | 4-Course, ESS: p. 44, line 646: "developed/of all consumed water" - Suggested text: "consumed/(delete)" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1206 | 7 | Comment | 4-Course, ESS: p. 44, line 648: "(Legislative Analyst's Office 2010)" - move to end of sentence in line 649. improper location | D35 | Writer's Discretion/ Line Edit |
| 1207 | 7 | Comment | 4-Course, ESS: p. 45, line 671: "This combination of warmth and dryness will cause big changes to the amount of snow in the mountains. The snowpack is important because California" (delete)California - repetitive | D35 | Writer's Discretion/ Line Edit |
| 1208 | 7 | Comment | 4-Course, ESS: p. 45, line 676: replace "the" with "a" - Makes more sense here | D35 | Writer's Discretion/ Line Edit |
| 1209 | 7 | Comment | 4-Course, ESS: p. 45, line 680: replace "snow" with "water" to match figure | D35 | Writer's Discretion/ Line Edit |
| 1210 | 7 | Comment | 4-Course, ESS: p. 45, line 684: Suggested text: "dramatic impact." - delete "on the rainfall from year to year." - unnecessary | D35 | Writer's Discretion/ Line Edit |
| 1211 | 7 | Comment | 4-Course, ESS: p. 47, line 714: delete "will" - parallel construction | D35 | Writer's Discretion/ Line Edit |
| 1212 | 7 | Comment | 4-Course, ESS: p. 47, line 720: Suggested text: "has increasingly competitive" - follows previous construction | D35 | Writer's Discretion/ Line Edit |
| 1213 | 7 | Comment | 4-Course, ESS: p. 48, line 725: Suggested text: "Students may select" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1214 | 7 | Comment | 4-Course, ESS: p. 48, line 730: Suggested text: "change and if the change will increase or decrease productivity." - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1215 | 7 | Comment | 4-Course, ESS: p. 48, line 7D35: replace "will" with "would" - tense agreement | D35 | Writer's Discretion/ Line Edit |
| 1216 | 7 | Comment | 4-Course, ESS: p. 49, line 746: Suggested text: "This framework" - errant punctuation | D35 | Writer's Discretion/ Line Edit |

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| 1217 | 7 | Comment | 4-Course, ESS: p. 50, line750, 1st box: Suggested text: "earthquakes and what is their impact?" I think this is your intention | D35 | Writer's Discretion/ Line Edit |
| 1218 | 7 | Comment | 4-Course, ESS: p. 50, line 750, last box: "HS-ESS3-1." - Omit extra blank line before this | D35 | Writer's Discretion/ Line Edit |
| 1219 | 7 | Comment | 4-Course, ESS: p. 52, line 774: Suggested text: replace "an effect" with "effects" | D35 | Writer's Discretion/ Line Edit |
| 1220 | 7 | Comment | 4-Course, ESS: p. 52, line 779: Suggested text: "a 2003 earthquake in Bam" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1221 | 7 | Comment | 4-Course, ESS: p. 53, line 809: Suggested text: "pattern years" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1222 | 7 | Comment | 4-Course, ESS: p. 55, line 8DD36d: Suggested text: "and extend" - agreement | D35 | Writer's Discretion/ Line Edit |
| 1223 | 7 | Comment | 4-Course, ESS: p. 55, line 8DD36d: Suggested text: "Instructional Segment" - consistent capitalization | D35 | Writer's Discretion/ Line Edit |
| 1224 | 7 | Comment | 4-Course, ESS: p. 55, line 842: Suggested text: "information to explain seafloor age patterns" - no italics or bold, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1225 | 7 | Comment | 4-Course, ESS: p. 55, line 8D43: Suggested text: "up as" - too many “where”s | D35 | Writer's Discretion/ Line Edit |
| 1226 | 7 | Comment | 4-Course, ESS: p. 56, line 867: delete "()" - unnecessary punctuation | D35 | Writer's Discretion/ Line Edit |
| 1227 | 7 | Comment | 4-Course, ESS: p. 57, line 861: Suggested text: make "sink" plural - verb agreement | D35 | Writer's Discretion/ Line Edit |
| 1228 | 7 | Comment | 4-Course, ESS: p. 57, line 866: replace "demos" with "demonstration" - consistent tone | D35 | Writer's Discretion/ Line Edit |
| 1229 | 7 | Comment | 4-Course, ESS: p. 57, line 872: replace "place" with "regional" - more precise | D35 | Writer's Discretion/ Line Edit |
| 1230 | 7 | Comment | 4-Course, ESS: p. 59, lines 889, 890: delete "are" - parallel construction | D35 | Writer's Discretion/ Line Edit |
| 1231 | 7 | Comment | 4-Course, ESS: p. 59, line 892: Suggested text: "Structure and Function" - using this as a name | D35 | Writer's Discretion/ Line Edit |
| 1232 | 7 | Comment | 4-Course, ESS: p. 59, line 893: Suggested text: "from ocean waves" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1233 | 7 | Comment | 4-Course, ESS: p. 59, line 894: Suggested text: "bay." - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1234 | 7 | Comment | 4-Course, ESS: p. 60, line 897: Suggested text: replace "the" with "an" - not the only collision | D35 | Writer's Discretion/ Line Edit |
| 1235 | 7 | Comment | 4-Course, ESS: p. 60, line 907: Suggested text: "Instructional Segment" - consistent capitalization | D35 | Writer's Discretion/ Line Edit |
| 1236 | 7 | Comment | 4-Course, ESS: p. 60, line 914: Suggested text: "can no longer" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1237 | 7 | Comment | 4-Course, ESS: p. 60, line 920: Suggested text: "rich with steep mountains." - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1238 | 7 | Comment | 4-Course, ESS: p. 60, line 920: Suggested text: "housing the majority of the state’s population, runs along a plate boundary where plate motion uplifts mountains, making them steeper faster than erosion and landslides can flatten them" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1239 | 7 | Comment | 4-Course, ESS: p. 61, line 931: delete "so" - reads more smoothly, no previous discussion | D35 | Writer's Discretion/ Line Edit |
| 1240 | 7 | Comment | 4-Course, ESS: p. 61, line 944: Suggested text: "Instructional Segment" - consistent titling | D35 | Writer's Discretion/ Line Edit |
| 1241 | 7 | Comment | 4-Course, ESS: p. 61, line 949: delete "the" - need general, not specific | D35 | Writer's Discretion/ Line Edit |
| 1242 | 7 | Comment | 4-Course, ESS: p. 62, line 955, and throughout this entire example: replace "built" with "man made" - more precise | D35 | Writer's Discretion/ Line Edit |
| 1243 | 7 | Comment | 4-Course, ESS: p. 62, line 955: Suggested text: "retain" - verb agreement | D35 | Writer's Discretion/ Line Edit |
| 1244 | 7 | Comment | 4-Course, ESS: p. 62, line 959: Suggested text: "reflect more light" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1245 | 7 | Comment | 4-Course, ESS: p. 62, line 962: "That water" ? Water - Which ones do you mean – man made or natural? | D35 | Writer's Discretion/ Line Edit |
| 1246 | 7 | Comment | 4-Course, ESS: p. 63, top left box: Suggested text: "these environments and the sun." - more precise | D35 | Writer's Discretion/ Line Edit |
| 1247 | 7 | Comment | 4-Course, ESS: p. 63, line 991: Suggested text: "that over the" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1248 | 7 | Comment | 4-Course, ESS: p. 65, line 1038: Suggested text: "radiation the land emits" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1249 | 7 | Comment | 4-Course, ESS: p. 68, line 1103: delete "Students are asking great questions that will motivate further investigation." - repetitive | D35 | Writer's Discretion/ Line Edit |
| 1250 | 7 | Comment | 4-Course, ESS: p. 68, line 1105: Suggested text: "ideas that will motivate further investigation," - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1251 | 7 | Comment | 4-Course, ESS: p. 69, line 1123: "instructional segment?" what does this mean here? | D35 | Writer's Discretion/ Line Edit |
| 1252 | 7 | Comment | 4-Course, ESS: p. 70, line 1157: delete "when" - awkward word | D35 | Writer's Discretion/ Line Edit |
| 1253 | 7 | Comment | 4-Course, ESS: p. 70, line 1163: replace "will lead" with "led" - tense agreement | D35 | Writer's Discretion/ Line Edit |
| 1254 | 7 | Comment | 4-Course, ESS: p. 70, line 1164: replace "is" with "was" - tense agreement | D35 | Writer's Discretion/ Line Edit |
| 1255 | 7 | Comment | 4-Course, ESS: p. 78, second box: "And will" - (delete) Will - better grammar | D35 | Writer's Discretion/ Line Edit |
| 1256 | 7 | Comment | 4-Course, ESS: p. 79, line 1330: Suggested text: "Instructional Segment" - capitalization of these words is inconsistent, please fix throughout remainder of chapter | D35 | Writer's Discretion/ Line Edit |
| 1257 | 7 | Comment | 4-Course, ESS: p. 82, line 1383: Suggested text: "protons and neutrons help" - continue logic | D35 | Writer's Discretion/ Line Edit |
| 1258 | 7 | Comment | 4-Course, ESS: p. 82, line 1397: Suggested text: "has a unique electron orbital configuration" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1259 | 7 | Comment | 4-Course, ESS: p. 97, line 1674: delete "Despite the fact that Newton’s work was revolutionary, he became so well-known because his book, Principia Mathematica, did such a good job of communicating information." - redundant | D35 | Writer's Discretion/ Line Edit |
| 1260 | 7 | Comment | 4-Course, Chemistry: Lines 322-327: reference to no mention of proton neutron electron in middle school. proton, neutrons and electrons Should be introduced in middle school! how do you effectively teach atomic structure and basic chemistry without the parts of the atom | D39a | Writer's Discretion/ Line Edit |

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| 1261 | 7 | Comment | CTA provided ten suggestions for improvement on pages 4 and 5 of attachment 71. | D71 | Writer will review and implement changes at his discretion. |
| 1262 | 7 | Comment | Full chapter: - How well does the course framework scaffold learning across units or bundles within a year? - How well does the course framework adhere to the intent of the NGSS vision including three-dimensional learning? - How well does the course framework integrate and not just apply Engineering? | D70o | |
| 1263 | 7 | Comment | Physics in the 3-Course and 4-Course models: I did not see the same level of problem, idea or storyline in each of the Instructional Segments that were created in the NGSS Model Content Frameworks. The narratives here are much more like the narratives in the Framework for K-12 Science Education. 4 pages of narrative about how to fix the chapter. | D70s | |
| 1264 | 7 | Comment | 3-Course: Excel sheet with edits | D70w | check list of edits |
| 1265 | 7 | Comment | 3-Course: A majority of the Performance Expectations (PE's) were "one and done" with their inclusion into an Instructional Segment then not used again (with the exception of HS-LS2-8, HS-LS1-4, HS-LS4-2, and HS-LS4-5). Whereas many had application to multiple Instructional Segments. | D70y | |
| 1266 | 7 | Comment | Lines 259-261: Students are not expected to memorize the steps of mitosis: they are expected to understand how the process works and allows cells to make exact copies of themselves.<br>I feel like it's difficult to understand how mitosis works without memorizing the steps. | D74 | |
| 1267 | 7 | Comment | Line 275: Stages of mitosis. The diagram is stages of the cell cycle, not mitosis. | D74 | |
| 1268 | 7 | Comment | 3-Course, Intro: P. 4, lines 107-132 and 144-180: These bullet point lists should be formatted as a single graphical element checklist for educators to reproduce and bring to collaborative meetings in order to make this very important decision. The framework should encourage educators to be thoughtful, and making this list of questions stand out graphically will call attention to their importance as well. | D46 | |
| 1269 | 7 | Comment | 3-Course, Intro: Summary tables should have guiding questions embedded, therefore doing away with the rest of the individual tables for each instructional segment (the ones with the red headings) which have a lot of repeated information. There is worry that the guiding questions may restrict curricular freedom, so I suggest re-labelling them as "Suggested Guiding Questions". They are worth keeping in order to aid in curriculum planning and developing lesson objectives. | D46 | |
| 1270 | 7 | Comment | 3-Course, The Living Earth: Full Document with 225 line edits | D70p | |
| 1271 | 7 | Comment | 3-Course, Chemistry + ESS: This model does an excellent job scaffolding learning throughout the year/<br>While the model references examples and curricular inclusions specific to California, the overall model is not at all limited to relevance in that state. | D70z | |
| 1272 | 7 | Comment | 3-Course, Chemistry + ESS: Instructional Segment 4: Chemical Reactions: "The students work together, consulting science textbooks, articles, and dictionaries in the classroom." Could incorporate primary language resources to accommodate for students at the Emergent level of proficiency. | D43 | |
| 1273 | 7 | Comment | 3-Course, Chemistry + ESS: Instructional Segment 5: Carbon Dioxide and Climate Change:<br>o Lines 1213-1215: writing a journal article is a disciplinary literacy practice for science that is NOT aligned to the task, to talk about what "they think are most important to investigate." This task seems more "opinion" (say, an editorial piece in a science journal) and they do not have the resources to carry out this level of disciplinary writing yet. Perhaps another name for the writing genre, such as "proposal for research program" or similar.<br>o Lines 1270-1273: there a missed opportunity for ELS at the Emerging level of proficiency to receive scaffolding using sentence frames to develop cause/effect questions which they can use in the Summit in Day 11 (line 1352)<br>o Line 1352: the Summit is an excellent opportunity for ELs to develop oral language. However, there is another missed opportunity to scaffold for oral language development (sentence frames related to argument and communicating information | D43 | suggestions are to improve vignette, writer discretion |
| 1274 | 7 | Comment | 3-Course, Physics: This 3-course model is an integration of physics and earth/space science. In fact, it is a very good earth/space science course | D70n | |
| 1275 | 7 | Comment | 3-Course, Physics:<br>o The vignette that starts on line 1127 seems to focus entirely on content. There is no attention to instructional strategies, language demands, and/or literacy connections.<br>o There are mathematical connections but need to be explicitly called out as model for the field. | D43 | suggestions to improve vignette |

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| 1276 | 7 | Comment | 3-Course, Physics: Lawrence Hall of Science Submitted 12 Edits | 65f | Framework writer to review edits and implement at his discretion. |
| 1277 | 7 | Comment | 3-Course, Physics: Very good exposition of NGSS- pleased and provided 2 pages of comments | D70t | |
| 1278 | 7 | Comment | 4-Course: Full text provided feedback and few line edits | D70v | |
| 1279 | 7 | Comment | 4-Course: Excel sheet with edits | 70x | check list of edits |
| 1280 | 7 | Comment | 4-Course, Intro: I am concerned that the model course maps, with exception to Earth and Space Science, are missing . I found these to be incredibly useful in understanding the flow and interconnectedness of units in each of the courses in the three-course model. | D46 | |
| 1281 | 7 | Comment | 4-Course, Bio: Full Document with 130 line edits | 70q | |
| 1282 | 7 | Comment | 4-Course, Bio: This model is developed by the scientist as an explanation of their ideas, not copied from someone else. On numerous occasions throughout the document, students are asked to explain or argue, but rarely is there a description of the evidence students are using in order to complete these tasks.<br>P. 50, lines 747-751: "students can create models using codes that need to be transcribed into making something such as a word code that transcribes into a physical code (colored building blocks) that then is ordered into a structure (for example a building or a bridge). This modeling process can help students grasp how cells go from a written code to protein."<br>Once again, although this process helps students understand this concept, it is actually an analogy, not a model based on evidence that was developed to explain real phenomena.<br>P, 34, Lines 521-524: "Students can develop models on paper, with technology, or as a chemical model using organic chemistry molecule kits. The models show how simple inorganic molecules are made into larger organic molecules and then how they cycle back to the simple inorganic molecules."<br>Once again, there is no description on how the student is building this model – is it based on evidence or are they copying a picture from a textbook? If it is based on evidence, the source and type of that evidence needs to be explicitly stated so that teachers know how to set up this type of learning situation that embeds both the content and the practice. | 44 | |
| 1283 | 7 | Comment | 4-Course, Bio: Background and Instructional suggestions should include ways to teach the content using the practices as described in Chapter 10. That section should not describe <u>extra</u> content and **then** suggest a way of teaching a small piece of this content. In Chapter 10 of this Framework Document, page 6 outlines Instructional Shifts required by the CA NGSS. These shifts are not apparent in the Background and<br>Instructional Suggestions. For example, the shift calls for “More of this” - “Models that **students develop** and use used to **explain phenomena** or solve problems.”<br>For example, to address the use of models in Instructional Segment 3 the following vignette can be described: Students are shown a seed and a log from the tree that the seed comes from. Students are asked, “Where does the mass come from?” and are provided the opportunity to work together and draw an explanatory model of where the mass comes from. This model should include the observable and the unobservable. In addition, it should show changes that occur over time.<br>Having student provide an initial model allows the teacher to access prior knowledge, and make visible any prior conceptions relevant to building understanding. For example, student answers may include that the mass comes from light and/or soil.<br>Over the course of this instructional sequence students will gather evidence that can be used to revise their model. Evidence can be garnered from student’s own<br>experimental activities, such as collecting oxygen from a photosynthesizing plant, as well as from the descriptions of historical experiments. The can include, but are not limited to, von Helmont, John Woodward, Joseph Priestly, Antonie Lavoisier, Jan Ingenhousz, Nicholas de Saussure, Thomas Engelman, Fredrick Blackman, Melvin<br>Calvin. | 44 | |

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| 1284 | 7 | Comment | 4-Course, Bio: The evidence from these experiments can be used by students to revise their model based on the new evidence. We are not describing each instructional strategy used for each of the experiments, but rather the scientific practice of developing a model used for explanation based on evidence, that would eventually have predictive value. For example, students can use their completed explanatory model of photosynthesis to predict the possible effect of increased CO2 concentrations in the atmosphere.<br>The bonus for using a question like “Where does the mass come from?” is that it<br>leads into another phenomena/ question “Where does the mass go?” Upon completion of this sequence students may/will be prepared for the performance expectation HS-LS2-5 Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. | 44 | |
| 1285 | 7 | Comment | 4-Course, Bio: Guiding Questions needing improvement:<br>Page 17, line 225 “What happens after a cell divides?” Not engaging<br>Page 26, line 390 “What happens if a population uses up its resources?” Obvious<br>Page 52, line 762 “What combination of alleles are possible?” Unclear. “Allele”, as<br>vocabulary, is not in the DCIs<br>Page 57, line 859 “How did modern day humans evolve?” Not in the DCIs. This is<br>added new content and should be removed.<br>Page 65, line 999 “What do changes in patterns of phenotypes mean?” Unclear.<br>Implies a “meaning” to phenotypic changes. “Phenotype”, as vocabulary, is not in the DCIs | 44 | |
| 1286 | 7 | Comment | 4-Course, Bio: P. 3, line 52. “or” should be changed to “and” so that 3-D learning is described | 44 | |
| 1287 | 7 | Comment | 4-Course, Bio: P. 4, line 70. “The core of the course is to provide opportunities for students to **brainstorm** on what it means to be living and what characteristics are found in life.” Please eliminate this sentence as it does not give credence to the nature of science and the science practices nor the discipline of biology. | 44 | |
| 1288 | 7 | Comment | 4-Course, Bio: P. 12: "PE LS56" - Does this standard exist? Should it be standard LS46 | D42 | |
| 1289 | 7 | Comment | 4-Course, Bio: P. 18, line 257-263: The instructional suggestion to “model” mitosis will lead teachers to misunderstand the science and engineering practices. The practices outlined by NGSS are supposed to be **scientific** practices, not instructional ones.<br>Students can model the steps of mitotic cell division in a three-dimensional format (using building materials such as clay or pipe cleaners) and then create a video of the steps to show the continuous nature of mitosis. Students are not expected to memorize the steps of mitosis. They are expected to understand how the process works and allows cells to make exact copies of themselves. Models often help scientists visualize processes and concepts that are hard to “see”.<br>What is described in the segment above is not a **scientific** practice, but an instructional practice.<br>This model is developed by the scientist as an explanation of their ideas, not copied<br>from someone else. | 44 | |
| 1290 | 7 | Comment | 4-Course, Bio: Page 23, line 319. Atmospheric carbon dioxide is fixed into a 3-carbon sugar molecule (not glucose). The 3-carbon sugar molecule can be a precursor to a<br>glucose molecule or other organic molecules that the plant needs such as amino acids and lipids. This correction would more directly target HS-LS1-6 | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1291 | 7 | Comment | 4-Course, Bio: Page 23, line 321. Glucose molecules are stored as starch so that there is less impact on the cell’s osmotic balance. (It is not because starch takes up less<br>room than glucose.) | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1292 | 7 | Comment | 4-Course, Bio: Page 24, line 346. Carbon dioxide and water are NOT united through<br>photosynthesis. (Water is split and the oxygen is released. The electrons and<br>protons are used to power carbon fixation.) | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1293 | 7 | Comment | 4-Course, Bio: Page 24, line 369. Energy is not broken down. | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |

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| 1294 | 7 | Comment | 4-Course, Bio: Page 25, lines 371-375. The whole paragraph is confusing. The use of the term “stage” on line 371 and again on line 373 are not consistent. The sentence, “but the whole amount in the ecosystem decreases at each trophic level” does not make sense. | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1295 | 7 | Comment | 4-Course, Bio: Page 25, line 380. Energy does not cycle. Cycling of matter and energy<br>transfer. | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1296 | 7 | Comment | 4-Course, Bio: Page 25, line 385. There is a missed opportunity to talk about the synthesis of other organic molecules besides glucose (as stated in PE HS-LS1-6) | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1297 | 7 | Comment | 4-Course, Bio: Page 32, line 485. “As individual organisms grow more plentiful” – not sure about the implication here, is it the individual growing (as implied), or population growth? | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1298 | 7 | Comment | 4-Course, Bio: Page 39, line 593, Guiding Question. Individual organisms do not have a gene pool. (Change “organisms” to “populations”) | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1299 | 7 | Comment | 4-Course, Bio: Page 40, lines 607-608. “Though they still may not have enough food or safety”. Change “enough” to “ample” | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1300 | 7 | Comment | 4-Course, Bio: Page 40, line 618. Using the word “motivated” creates the misconception that animals are aware of why they are doing this behavior (to allow their genetic code to persist.) | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1301 | 7 | Comment | 4-Course, Bio: P. 53, lines 773-781. This describes another example of students copying someone else’s model. | 44 | |
| 1302 | 7 | Comment | 4-Course, Bio: Pp. 61-62, lines 966-990. This section adds a significant amount of new content in providing specific information on human evolution. Please add the caveat that any set of species can be used to support this Performance Expectation. | 44 | |
| 1303 | 7 | Comment | 4-Course, Bio: Page 63, line 990. Capitalize “*Homo*” | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1304 | 7 | Comment | 4-Course, Bio: Page 73, line 1108. New genes do not arise in a population through drift. Drift has not been referred to previously in this document and is specifically<br>stated as an assessment boundary in HS-LS4-2, [Assessment Boundary: Assessment does not include other mechanisms of evolution, such as genetic drift,<br>gene flow through migration, and co-evolution.] | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1305 | 7 | Comment | 4-Course, Bio: Page 73, line 1122-1123. Immigration, population size, and introduction of new mutations are not selective pressures. | 44 | all the suggested changes relate to clarifying science content - writer's inclusion/decision |
| 1306 | 7 | Comment | 4-Course, Chemistry: line 495: cellular metabolism - make it more clear that this is talking about the connectivity to other concepts (molecular bio is chemistry). unclear that this is a connective concept | D42 | |
| 1307 | 7 | Comment | 4-Course, Chemistry: line 546: “work” - consider saying “to perform processes” instead of “to perform work.” “work” seems more like physics | D42 | |

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| 1308 | 7 | Comment | 4-Course, Chemistry: line 580: “gravity” - consider making the link more explicit<br>to the gravitational concepts of physics. teachers are needing to look up where and when gravity is discussed. | D42 | |
| 1309 | 7 | Comment | 4-Course, Chemistry: Vignette starts on line 767, page 40<br>o Lines 859-864: This segment violates the idea of inquiry and using [mis]conceptions to construct knowledge (constructivist approach); even incorrect models provide opportunities for students to defend, revise and expand their conceptual thinking. We’d like this acknowledged here; this would REALLY ensure “full engagement” by students. See CCSS-ELA RHS Anchor Standard 8<br>o Lines 990-992 showed an instructional strategy with explicit explanation which should be done throughout the whole vignette. Variety of instructional strategies should be explicitly modeled and explained throughout!<br>o Line 1041-1042 mentioned students writing a lab report (also in other parts of this vignette). Will there be an emphasis on using a science notebook for “sense making” as taught in the NGSS rollouts at State level?<br>o Lines 1007-1011 did not exemplify the true “Explain” of the 5Es model. | D43 | comments to improve vignette writers discretion |
| 1310 | 7 | Comment | 4-Course, Chemistry: Lawrence Hall of Science Submitted 12 Edits | 65g | Framework writer to review edits and implement at his discretion. |
| 1311 | 7 | Comment | 4-Course, Physics: Lawrence Hall of Science Submitted 12 Edits | 65h | Framework writer to review edits and implement at his discretion. |
| 1312 | 7 | Comment | 4-Course, Physics: High School Four Course Model – Physics 15 line edits | 70r | |
| 1313 | 7 | Comment | 4-Course, Physics: Provided his Resume/ The CA-NGSS standards in physics are essentially NGSS elements with additional help for teachers. Some of the content help borrows heavily from the Framework for NGSS though there are some content additions that I would challenge. | 70m | |
| 1314 | 7 | Comment | 4-Course, Physics: Very good exposition of NGSS- pleased and provided 2 pages of comments | 70u | |
| 1315 | 7 | Comment | 4-Course, Physics:<br>o Line 756 exemplified the “Explain” component of the 5Es model. However, scaffolding for students with different proficiency levels is not addressed.<br>o Line 770 provided no specific strategies for observing and analyzing. | D43 | comments to improve vignette |
| 1316 | 7 | Comment | Santa Clara County Office of Education provided line edits for the 6-12 grade span. | 52a | Writer to review and implement at his discretion |
| 1317 | 7 | Comment | 6-12 Task features don’t match writing genres | D43 | |
| 1318 | 7 | Survey | In the Earth and Space Sciences document, page 1 line 16-17, I understand the title of Segment 7 is Star Stuff but it sounds weak. Yes Star stuff is a great line from a Carl Sagan quote but not for a title of a segment please change it to Star Matter or The Matter of Stars. I | Item B | Writer's Discretion/ Line Edit |
| 1319 | 7 | Survey | Less of focus on content – need more on how to put it together. HS teachers generally have strong content knowledge, but will benefit from clarity about how to make this shift in teaching practice. As with the other grade specific sections, the high school sections should be more focused on how to engage students in the NGSS practices, how to use the cross cutting concepts as lenses for exploring phenomena. More clear examples of this -- what it looks like in a classroom, what STUDENTS are doing and saying (not just what teachers are doing and saying). | Item B | Writer's Discretion/ Line Edit |

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| 1320 | 7 | Survey | 50 “This is a good way to put life science standards in the context of an Earth science problem..." This segment is positioned at the end of the year as an application of life science DCIs in the context of more sophisticated problems and positioned within earth science standards. Presumes that this course comes before a physical science course. 85-87 “Density independent factors often relate to interactions with other earth systems, such as weather pattern changes or catastrophic events, like hurricanes, floods, earthquakes, and volcanoes.” 94 “EPCs II and IV” Define EPCs in this segment 110-116 Simulations can demonstrate the effect of resource availability on populations. Graphs from simulations or activities can be used to help illustrate different population growth patterns, such as exponential or logistic growth, and allow students to estimate carrying capacity. This entire section needs reworking. Is the focus on simulations or graphs? What trends are we looking for? Why is “N” mentioned without explanation or definition? 151 “Students can develop models on paper, with technology, or use organic chemistry molecule kits to show how simple inorganic molecules are made into larger organic molecules, and how they cycle back to simple inorganic molecules. Grammar 175-198 I disagree with the focus of organized, group behavior on altruism. Altruism is an acceptable example, but there is far too much emphasis in the storyline on that one example. 271- 286 I question the necessity of having a discussion of carbon atoms and covalent bonds (bonding in general), or creating structural models of glucose from carbon dioxide and water. 694-695 Discussing the scientists themselves science is a human endeavor. Sentence fragment- not entirely sure what the author is trying to say here. 744-745 Again, helping them make predictions of the effect of mutations. Sentence fragment and awkward sentence | Item B | Writer's Discretion/ Line Edit |
| 1321 | 7 | Survey | Lack explicit instructional strategies and connections to literacy instruction to scaffold for ELs and special needs students. | Item B | Writer's Discretion/ Line Edit |
| 1322 | 7 | Survey | Chemistry teachers suggest moving plate tectonics out of the Chemistry course. Physics teachers see a better fit in the Physics course. Chemistry teachers feel that teaching plate tectonics during the heat unit is a stretch. Chemistry teachers expressed concern with the sequencing of topics in the 3-year model – topics like calorimetry early in the year require math that students may not be ready for. In general, the sequencing of topics in the 3-course model Chemistry seems very disjointed. There is confusion about the credentialing chart for Integrated Science; It suggests that teaching science is a “free for all” and that all science teachers are eligible to teach all branches of science, regardless of credential. Please clarify. It seems that by adopting a 3-course model and integrating earth science, teachers would be encouraged (required!) to really change their teaching to meet NGSS practices. The design of the Biology course integrates the best with Earth Science. Physics integration works, although is not ideal. Chemistry teachers are struggling with integration of topics, particularly plate tectonics. Teachers are generally concerned about the apparent lower rigor in the 3-course model (fewer math-related topics in chemistry and physics, less cell and molecular biology in life science). In addition, teachers are concerned about whether the 3-course model courses are truly college prep and will meet UC Regents admission standards. | Item B | Writer's Discretion/ Line Edit |
| 1323 | 7 | Survey | Intro: overall, really appreciate the level of detail within each course map. (intro) 4/105-180 really appreciate having guiding questions to consider as districts have discussions about how to create courses and pathways. (intro) 7/182-191 If a teacher has a “science: geoscience” credential, can this teacher teach the courses in the 3yr model with earth science embed throughout biology, chemistry, and physics? For example, if the class is called biology, can the geoscience credentialed teacher teach the course since earth science is embedded? whole document: 106 pages that are mostly text are overwhelming. Can it be more concise? Vignettes as a sidebar? 11/73-76 We like knowing what middle school students have already learned. whole document: The level of detail for a teacher who says “just tell me what to do” is appreciated. It’s a good starting point.Suggestion regarding vignettes: have more examples, but present them as summaries with links to the full sequence. This may smooth out the reading while also providing specific teaching exemplars. We like the storyline and the teaching level. Can some of the exemplars/5E models be shorter? These don’t always HAVE to be multiple days to be effective 5E lessons. 1615 onward: There is a lot of detail in the background section. Who is the intended audience? Is this more for textbook developers? Administrators? Is this a suggestion for professional development? Chemistry: 2/10-26 really like that they infuse higher level earth phenomena that usually is not taught until college 2/34-38 This is a concern for integrating content. I appreciated that the comment was in the framework because it will bring attention to the district that professional development is required. This will help to advocate for the teachers that training is a must have! The additional comments will be e-mailed since they will not fit in this box. | Item B | Writer's Discretion/ Line Edit |
| 1324 | 7 | Survey | It would be helpful if that within the narrative in the introduction to the model there was a graphic showing the ESS PE's distributed in the three courses. Examples of incorporating the Earth Science into the biology, chemistry, and physics is well done. Biology: The examples within the "model" curriculum outline is very good. In the chemistry section lines 724-731 do a good job of connecting the story lines for segments; the vignettes are good with helpful graphics; like the idea that the implementation strategy serves as a starting point; like the connections to common core and crosscutting concepts. Chemistry concern revolves around a lack of credentialed chemistry and physics teachers if the three course model is chosen by our district. We are also concerned about our Earth Science colleagues that do not have additional authorizations on their credentials. | Item B | Writer's Discretion/ Line Edit |

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| 1325 | 7 | Survey | Integrating Life: Line 356: Table 1 should be attributed to: From Dr. Art Sussman, courtesy of WestEd. Line 1696: Sussman (not Sussmann) Line 1722: attribution should be Figure by Dr. Art Sussman, courtesy of WestEd. Line 1821-1822: Citation should be: PBS LearningMedia. 2015. Carbon Dioxide and the Carbon Cycle. Arlington, VA. http://www.pbslearningmedia.org/resource/pcep14.sci.ess.co2cycle/carbon-dioxide-carbon-cycle/ Integrating Chemistry: Line 804-805: attribution should be: Figure by Dr. Art Sussman, courtesy of WestEd. Line 970: attribution should be: Figure by Dr. Art Sussman, courtesy of WestEd. Integrating Physics: Line 1702: add the word "stars" | Item B | Writer's Discretion/ Line Edit |
| 1326 | 7 | Survey | All courses: The Summary of DCIs is good; the start of each segment with the guiding questions, SEPs, CCs, prior to the explanation of the instructional story line is very helpful in keeping the 3D perspective focused and up front. Example instructional scenarios and graphics are very helpful. Lab suggestions are useful. Physics: It would be helpful if there were more examples and diagrams of what is meant by computational modeling. Chemistry: Like the inclusion of classic experiments and timing for instructional segments makes sense. Do have a concern regarding alignment with expectations of UCs; because of past practice, it is difficult for High School teachers to trust or depend on the lower grades to have provided the type of instruction for lower grades to have mastered underlying concepts. | Item B | Writer's Discretion/ Line Edit |
| 1327 | 7 | Survey | Earth and Space Science Line 212: attribution should be: Figure by Dr. Art Sussman, courtesy of WestEd. Line 241: Table 1 should be attributed to: Table by Dr. Art Sussman, courtesy of WestEd. Line 310-311: attribution should be: Figure by Dr. Art Sussman, courtesy of WestEd. Line 478: attribution should be: Figure by Dr. Art Sussman, courtesy of WestEd. Line 1908-1909: Citation should be: PBS LearningMedia. 2015. Carbon Dioxide and the Carbon Cycle. Arlington, VA. http://www.pbslearningmedia.org/resource/pcep14.sci.ess.co2cycle/carbon-dioxide-carbon-cycle/ | Item B | Writer's Discretion/ Line Edit |
| 1328 | 7 | Survey | For Physics, KQED has a collection of media resources that would enhance the vignette on page 48. This could be added around line 831: "Mr. H presents a video (http://ww2.kqed.org/quest/2014/11/20/darfur-stoves-project/) of a similar real-world design challenge that a UC Berkeley engineering physicist and mechanical engineer faced. They were tasked with designing a more efficient wood-burning cookstove for families in Darfur. Students watched the video and read more about the story in the related e-book (http://learning.kqed.org/ebook/cookstoves). Students took notes on the engineering design process, including the criteria and constraints of the project, the different iterations of the cookstove's design and the final design solution. They referenced their notes and applied the ideas as they were completing the Solar Cooker Engineering Challenge." The end of the video mentioned above, "Darfur Stoves Project," discusses how approx. 4 million people die every year from diseases related to smoke inhalation from cooking fires. The challenge proposed in this vignette could focus on the need for a clean-burning solar stove in order to reduce these deaths. The entire "Engineering Is Saving the World with Cookstoves" media collection can be found at http://ww2.kqed.org/quest/collections/engineering-is-cookstoves/ | Item B | Writer's Discretion/ Line Edit |
| 1329 | 7 | Survey | The Living Earth Line 36 instead of saying "zooms in more" and having to explain what that means, use the words in parentheses. I liked how important vocabulary was bold and italicized Was nice to see the gray boxed scenarios. Those could be used as lessons. Line 254 Change ending with a "." after "work" start new sentence with "Therefore," End of line 265 start of 266 No need for "The Matter" Line 741 Effect not Affect | Item B | Writer's Discretion/ Line Edit |
| 1330 | 7 | Survey | Line 18: "teaching a course" is missing the word "of". Line 46: "Need to zoom down in" doesn't need the word "down". Line 75: "(MS-LS2-3) analyzed" needs a comma separating them. Line 180: "not all need too" requires the proper "to". Line 200: "how they sound alarms to protect their family instructional segments against snakes". This sentence is awkward and needs revision. Line 200: "The group instructional segments now randomly wander". Awkward sentence and needs revision. Line 200: "water buffalo as group counter attack lions". Change to "water buffalo, as a group, counter attack lions" Line 211: "'undisturbed' Students" needs a period between them. | Item B | Writer's Discretion/ Line Edit |
| 1331 | 7 | Survey | Modifications to Instructional segment tables for each unit: (Please email me for example of table format. jhaut@tusd.net) 1) Add the guiding questions in the instructional segment tables in the unit descriptions beginning on line 55 to Table 1 Summary table of the units. Put guiding questions after performance expectations row and before the 3 dimensions in the table. 2) Keep the format of the 3 columns for the highlighted SEP, DCI, and CCC, but add color to the 3 dimensions to coordinate with the NGSS standards. | Item B | Writer's Discretion/ Line Edit |
| 1332 | 7 | Survey | pg 47 line 657-658: Acknowledges that instructional segment 8 is linked with instructional segment 1 on line 658, but they insert ecology instead. There is a lack of continuity/sequence in inserting segments 5, 6 and 7 before segment 8. The order should be segments: 1, 8, 2, 9, 10, 11, 7, 4, 3, 5, 6. Seg 1, 8 - DNA Seg 2, 9 - Genetics Seg 10, 11, 7 - Evolution Seg 4, 3, 5, 6 - Ecology | Item B | Writer's Discretion/ Line Edit |

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| 1333 | 7 | Survey | A weakness is that segment 1 is starting with combustion which requires scaffolding. The teacher must know the background of the student before teaching the course. A strength of this segment is that energy is a very important disciplinary core idea. The atomic theory is something students cannot see or experience. The Chemistry in the Earth System makes strong connections of what the students have heard regarding global climate change, ocean temperatures, and nuclear processes in the core of the Earth. | Item B | Writer's Discretion/ Line Edit |
| 1334 | 7 | Survey | In working with teacher leaders, all were overwhelmed by this model. The sequence and examples are well laid out, but combining earth science into the other three subjects seems cumbersome. Concerns were also brought up that this doesn't do justice to earth science and thereby doesn't reflect the bold move made in the national NGSS to highlight earth science so prominently. Could this be addressed in the introduction with explanation given for how to fully honor earth science content within the other disciplines? | Item B | Writer's Discretion/ Line Edit |
| 1335 | 7 | Survey | Same general concerns as the 4 course. The continuity between disciplines is lacking and will be confusing for teachers. In some of them the Instructional Segments have the same DCIs and PEs, but different SEPs and CCCs, for example: Physics - Instructional Segments 1, 2, 3, 5 are the same DCIs and PEs as the 4 course however they have listed different Science and Engineering Principles, Cross Cutting Concepts and DCI Summaries. I think these need to be consistent. | Item B | Writer's Discretion/ Line Edit |
| 1336 | 7 | Survey | Life Science/Biology: Line 84 - Instructional segment 10/11/12: Natural Selection: The Highlighted DCI should probably include "Stability and Change." In Instructional Segment 11: The Summary of DCI only focuses on Darwin's contribution to the theory of evolution. Shouldn't other scientists, especially more current ones, be included in addition to Darwin? | Item B | Writer's Discretion/ Line Edit |
| 1337 | 7 | Survey | Biology - Their segments are straight from NGSS DCIs, they did not group anything. They added specific examples NOT originally in the DCI in the DCI Summary. I do not think these belong here and should be listed later in the Instructional Segment overview. Chemistry - There are 3 PEs that are repeated in Physics HS-PS3-5, HS-PS3-4, HS-PS-3-3. They list DCI content that is aligned to PEs that they do not have listed - biggest example is HS-PS3-2. They also list PEs and then not all attached DCIs. They have ESS DCIs listed in Segment 5. They list Electrical 'stuff' DCIs in Segment 2 DCI Summary, but then list the PEs in Segment 3 (but do not summarize the DCIs here). The whole addition of these DCIs is interesting as well - not sure they really want them here, they just want something like it. Physics - This one was done the best in my opinion and I would like to see the others done more like Physics. No issues other than the 3 PEs that are repeated in Chemistry HS-PS3-5, HS-PS3-4, HS-PS-3-3. ESS - The DCI summaries are extremely short. They also list DCI highlighted that are not aligned to the PEs and then do not list the DCIs that are aligned to the PEs. Example: Instructional Segment 1: HS-ESS2-6 and HS-ESS2-7 are only aligned to DCIs in the ESS2.D: Weather and Climate and ESS2.E: Biogeology DCIs and only the ESS2.E DCI is listed. The other DCIs listed ESS2.A and ESS3.A are not aligned with the PEs listed. I feel that these Instructional Segments were created around pre existing units of study and not the standards themselves, because of this they repeat PEs in Instructional Segments. Specifically with PEs HS-ESS 3-1 (repeated in 4 segments) and HS-ESS 3-5 (repeated in 3 segments) they need to be aligned with at most 2 Instructional Segments, or clarify which part of the PE is to be taught in each segment. | Item B | Writer's Discretion/ Line Edit |
| 1338 | 7 | Survey | Review of The Living Earth only. -Summary Table - Segment order does not match diagram nor the contents of the rest of the document. - In the high school model, evolution is taught before DNA, mutation, genetics, etc. In middle school, genetics is taught prior to evolution, which seems like a more natural progression. It would be difficult to talk about basic principles of evolution (gene shuffling, genetic drift, mutation, etc.) without a background in DNA and genetics. -Why is segment 6 placed after cells? This unit seems to fit with segment 1. - This is what we feel would be an ideal order… 1. segment 1 2. segment 6 3. segment 2 4. segment 5 5. segment 4 6. segment 3 | Item B | Writer's Discretion/ Line Edit |
| 1339 | 7 | Survey | This is an interesting model that provides some specific details about subject specific material while still allowing for integration of subjects. I find this model effective and the course description gives detailed examples. This allowed me to fully grasp what was being asked of both the teacher and the student. I also feel that this model allows teachers to stay in their preferred subjects a larger percentage of the time. Since most high school teachers have subject specific educations this model seems to be more effective. The Chemistry in the Earth System course guideline was specific, however I am concerned that there is too much material to teach an in depth course around. The Ocean Acidification unit covers the dynamics of reactions. This includes the entirety of a current second semester Chemsitry course. Perhaps combining Segments 1 and 5 (both heavy in combustion reactions) would allow for more time in this section. To fully understand the Chemistry concepts involved, students will need to study more than one chemical system. The ocean environment allows for many reactions to be studied with considerable subject integration. However, to achieve the goal of in depth problem solving and revision, this section of the course should be allocated a larger portion of time. | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 1340 | 7 | Survey | For the Chemistry Model in the 3 Course Model, lines 34-35 discuss the fact that teachers who are not confident in a subject area will not teach effectively, this seems to be an argument for not integrating multiple science subjects together, because the teachers will ultimately be teaching out of their comfort zone and therefore not be effective. This sounds like it will do more harm than good, and it is interesting to note that this fact was not mentioned in the other models that were discussed. I am also uncomfortable with the fact that likes 39-44 are basically justifying the fact that it is okay for a teacher to walk into a classroom without a solid understanding of the material that they are expecting their students to learn.This paragraph does not entice me to the NGSS, it scares me for what teaching science will turn into, and it sounds like a "blind leading the blind" type of scenario. For lines 51-53, I do like the fact that it appears that you are trying to give districts options and flexibility for sequencing, and there has been an effort to create multiple ways of approaching teaching science. I also appreciate the attempt to connect the subject matter to relevant concerns and issues that our society is facing, while also making an effort to interest the students with the various course offerings. However, as a Chemistry teacher, the the subjects you are asking them to understand by the end of this course are extremely difficult, and the one chemistry description could take more than one year to teach in the way that it is being described. For example, lines 91-93 discuss applying equilibrium, which is an extremely hard concept to grasp for a high school student, and in my experience, even college students! My other concern is the availability and access to the AP curriculum with these models. When do students take AP? What about the students who want take multiple AP science classes? THey won't have the time with these models as they are suggested! | Item B | Writer's Discretion/ Line Edit |
| 1341 | 7 | Survey | CHEMISTRY FRAMEWORK: Line D43 - 61: NGSS leaves implementation of curriculum to individual teachers, districts, states, etc. I worry about the consistency of basic information students are learning with such a broad brushstroke. Though I believe in teacher individuality and tailoring to students' needs but will students be college ready for a college level Chemistry course? This is an overarching concern I have about science education in general. Line 96 & 97: Raoult's Law IS important to cover as a principle that aligns with the idea that sum of the whole is equal to the sum of its parts. This principle can be found in many examples in nature, math and other branches of science. Covering it in Chem would be a good way to bring in interdisciplinary concepts. This allows students to notice patterns and consistency in all subjects that is critical to creating their OWN patterns. Line 320 - 327: Students SHOULD and NEED to be introduced to terms such a proton, neutron and electron as early as elementary school but DEFINITELY in middle school. Waiting until high school to even HEAR these words is setting them up for an uphill battle when we have topics that assume their basic knowledge of subatomic particles. NOT a good idea to wait until students are "developmentally ready". | Item B | Writer's Discretion/ Line Edit |
| 1342 | 7 | Survey | High school Life Science lines 1D43-157: This section discusses protein synthesis and it appears that there is a contradiction each in wanting students to know the process but not focus on details. Yet, later it asks for students to know the micro level of the process. line 196: Why perform investigation on mutants? Line 225: Guiding question why is fidelity is being used to describe cell function-how are cells faithful? line:357 it unclear if students need to know the process of light independent/dependent reactions or just overall process. line 565-575: Shouldn't there be more engineering involved, not only a report line 823-825: what statistical math should be used? Seems like Hardy-Weinberg should be taught but it's not clear. Further clarification needed on the math. line 871: what concepts of probability are being referred to here? | Item B | Writer's Discretion/ Line Edit |
| 1343 | 7 | Survey | line 82: term "Fidelity" in the summary of DCI for instructional segment 2 seems like an awkward choice of word to use and the meaning is not clear as written. Line 84: Mathematical and computational thinking of carrying capacity…what is meant for the calculation. Line 1D43-157: this section discusses protein synthesis and it appears that they need to know details of the process, including how to use the codon chart. But starting on line 157 it says that it is not necessary to provide the details of translation process or have them memorize the codon chart. So it appears contradictory. Do they or do they not need to be given information on the process and do they need to still be able to "use" the codon chart, without memorizing it. Line 225: Guiding question uses the term "fidelity". What is meant by this term again? Line 357: It is unclear if students need to know that the process is broken down into the two steps of light independent and dependent or if they just need to know the process overall?Line 569-575: Wasn't this section supposed to be the big "engineering" component to life science? There should be more engineering involved in this component, and it doesn't seem like there is much engineering. | Item B | Writer's Discretion/ Line Edit |
| 1344 | 7 | Survey | Line172-179: the phrase says develop a model,but they are using a model that already exist,not developing their own Line 521: again students are using a model not developing a model. Line 711: students are being encouraged to use a model but the standard doesnt ask them to use or develop a model. 747: being asked to use a model but the standard doesn't reference using a model. 823-825: is the statistical analysis being referred to Punnett Squares? 825: discusses frequency of distribution of traits(Hardy Weinburg)but the clarification statement says students wont be tested on Hardy Weinburg. Line 825 implies they need to know it,so it is confusing. The math being asked for is unclear. 871: What concepts of probability are being referred to here? Life Science | Item B | Writer's Discretion/ Line Edit |

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| 1345 | 7 | Survey | Line 219-221 Starting with “Teachers’ can highlight, and ending with save lives.” students need to know the structure and organs if they are going to expand this activity to include the importance of organ transplants and how the organs work to save a life. However, there is no standard in the high school CA NGSS that allows the students to learn this information. Please include the body systems into the CA NGSS, it is vitally important the students have a better understanding of how their body works. Line 225 LS3-1 Why don’t students need to know the steps of mi | Item B | Writer's Discretion/ Line Edit |
| 1346 | 7 | Survey | Line 219-221 Starting with “Teachers’ can highlight, and ending with save lives.” students need to know the structure and organs if they are going to expand this activity to include the importance of organ transplants and how the organs work to save a life. However, there is no standard in the high school CA NGSS that allows the students to learn this information. Please include the body systems into the CA NGSS, it is vitally important the students have a better understanding of how their body works. Line 225 LS3-1 Why don’t students need to know the steps of mitosis? They need them to help understand meiosis. | Item B | Writer's Discretion/ Line Edit |
| 1347 | 7 | Survey | • line 49: – CCC and SEP should be Crosscutting Concepts (CCC)… • line 63 – 76: I feel May 2015 draft, lines 61-83 provides clearer explanation for this section. • line 77-78: there should definitely be a time frame (i.e. % wise) for how much time to spend with each section. (This is included in May 2015 draft, line 85). The following is all from line 81, Table 1: overall Table is good, easy to understand, but following I feel needs addressing: • in Instructional Segment 2: Highlighted CCC: Systems and Models should be bulleted. Also, not sure of the use of the word “fidelity”. • in Segment 6:in Summary of DCI, last sentence, replace “others” with “humans”, or replace “others have” with “that have been”. • Segment 7:in Highlighted SEP, un-italicize “Engaging…” . Also, Summary of DCI wording seems off…”ability for gene pools in populations to be passed on…” • Segment 8: Summary of DCI’s – wording seems off, perhaps it should say “The history that led to the understanding of the structure of DNA.” Also, perhaps “Students will learn that DNA provides the instructions, in the form of a code, and how that code is transcribed into mRNA and then translated into protein.” something like that. | Item B | Writer's Discretion/ Line Edit |
| 1348 | 7 | Survey | • line 90: Segment 10 – Summary – “commonalities”?, should include “similarities in DNA sequences”, also “and is discussed…” is redundant. • Segment 11: in Summary – “is addressed” should be “are addressed”? • Segment 12: Summary is run on sentence, should be made into at least two. • line 104: in Table HS-LS1-3 “those” should be “that” • line 108 – lines 118 fix spacing, too close together • line 1036: “skulls or beaks or shells…” change to “skulls, beaks, or shells…” • line 1040: “environment. For” • | Item B | Writer's Discretion/ Line Edit |
| 1349 | 7 | Survey | On page 52 (and others), under the Clarification and Assessment Boundary must be in red to be consistent with the NGSS standards released previously. In addition, all Science and Engineering Practices should be green, DCI's in orange, and the CCC's in green to be consistent with the NGSS standards released. | Item B | Writer's Discretion/ Line Edit |
| 1350 | 7 | Survey | 3 Course Physics in the Universe: There is a typo in the chart below line 102. The document refers to the history of Planet Earth as PS1.C. In actuality it is ESS1.C. | Item B | Writer's Discretion/ Line Edit |
| 1351 | 7 | Survey | In the High School 3-Course Physics with Earth and Space Science Integrated chapter I have the following comments: 1. Unit 1 seems to skip over some concepts that are fundamental to the Newton's 2nd Law performance expectation such as: Free body diagrams, acceleration, vectors, velocity and other motion concepts. 2. The snapshot on line 276 dives into Earth Science concepts (geomorphic features) without leading up to them or reviewing them in the framework before the snapshot. 3. There is a general concern that earth science concepts need to be emphasized more in the framework due to the fact that many physics teacher are unfamiliar with them and will need to understand them in order to teach them. 4. There could be more mention of math and ELA/ELD standards throughout the document to make connections with other subjects. | Item B | Writer's Discretion/ Line Edit |
| 1352 | 7 | Survey | As an earth scientist that teaches, I find lines 20-46 in the physics/universe model extremely offensive. Amazing teaching starts with amazing content knowledge from which stories can be told and curiosities piqued. "Learning with the students" will fail miserably and I am flabbergasted such language was included. It seems to completely dismiss that actual content experts exist in their fields and that they are beneficial to the teaching profession. | Item B | Writer's Discretion/ Line Edit |

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| 1353 | 7 | Survey | Overall comment: Please re-define acronyms at the beginning of each chapter. (e.g. DCI, PE). 4, 70: potential "storyline" seems to weaken the strength of the narrative. This is not a story. Instead, use narrative. Science is not a "story." 8, 120: "Forecasts" should be "forecast" 4, 77: "It begins with a tangible example of combustion and food calorimetry, and indeed the combustion of fossil fuels and release of heat, carbon dioxide, and water is a fundamental thread that ties together most of the sections of the course and ensures that chemistry concepts are able to be placed in the context of Earth's systems." Why climate change with food calorimetry? Seems a bit out there and advanced problem and a deep way to start off the course. This is something that is usually done later in the academic year (beginning of Spring in a traditional chemistry course). Usually with a formal discussion of energy. 17, 213: The Zeroth Law of Thermodynamics states that two systems that are in thermodynamic equilibrium have the same temperature and will not exchange heat with each other. This law is not normally discussed within a chemistry course. Description of law doesn't coincide with resources visited. 13, 191: Legitimate safety concern with calorimetry lab and cooking oil in the aluminum can. Could have an oil fire. Please remove oil as an option. | Item B | Writer's Discretion/ Line Edit |
| 1354 | 7 | Survey | Below are constructive comments and recommendations. Acknowledgement of the many positive Framework points is posted in #19 – Overall Comments. 1st, the Framework's DCIs are based on the National NGSS, that "all organisms are related by evolution and that evolutionary processes have led to the tremendous diversity of the biosphere." Also, page 58, lines 880-890 state: "[the quote] 'Nothing in Biology makes sense except in the light of evolution'. Keeping this in mind as the following instructional segments are discussed, ties should be made to how evolution shaped life on Earth. Aspects of evolution should have been integrated into the previous instructional segments (1-9)." The CA Framework does not reflect this overarching theme of evolution, and does not clearly show how to incorporate it into the segments prior to #10. Evolution is the primary process that connects ALL the segments, and this must be reflected throughout the entire course. 2nd, many of the instructional models suggested are neither practical nor achievable for our public high school students who are at very low-learning levels, and, contrary to what the framework states, come to us with little or no former middle school science knowledge and skills. Many models involve technology we do not have and/or require expensive lab supplies for which we have NO funds (Lines 169-170, 162, 197-198, 259, 262-263, 442-445). | Item B | Writer's Discretion/ Line Edit |
| 1355 | 7 | Survey | Line 41-45 The body systems have been taken out of the standards. I agree that is what the students are most interested in. However since they are not in the standards it does not make sense to extend lessons to include it since there are so many other topics that we are required to cover. Line 49-52 In relation to "They should make sure that the selected topic is deeply linked to the CA NGSS so that students utilize their knowledge of the DCI and crosscutting concept (CCC) to understand the topic or use the scientific and engineering practices (SEP) to learn about the topic." This contradicts what is written in lines 41-41 (giving examples of organ and tissue donation, diseases, etc. The body systems and viruses have been taken out of the standards (with the exception of the circulatory system). Therefore, they are not "deeply linked to the CA NGSS". Either bring back the body systems into the standards, or take out the examples of linking to body systems since they are not deeply linked to the CA NGSS. Personally, and from experience teaching in the classroom, students LOVE the body system units. I do not understand why they have been taken out of the high school standards. This is what interests students the most, and you have taken it away. Line 82 Reference is made to ALS and organ donations. These are not deeply linked to the CA NGSS standards. | Item B | Writer's Discretion/ Line Edit |
| 1356 | 7 | Survey | Line 1710: States: "Figure 12. Comparison between the color spectra of six different." This sentence is incomplete as is. Add "elements" at the end. D43, 570: " … are MORE able to reproduce". Not all organisms that meet their survival needs can and will reproduce. 45: It is great to see that phylogeny and scientific names have returned to the standards along with the tree of life overall: comment on evolution - it seems like much of the evidence for common ancestry may rely on a previous introduction of DNA and heredity. pg 45 line 610 - 611 pg 46 line 618 | Item B | Writer's Discretion/ Line Edit |
| 1357 | 7 | Survey | What is needed for most of us CA public high school science teachers are practical instructional examples we can use with our current students and current supplies. 3rd, there are no Model Snapshots provided for Instructional Segments 1-6. 4th, Instructional segments 1 (103-222) & 2 (224-302) should flow from evolution of carbon compounds to cells to multicellular organisms (HS-LS1-1), to the growth and reproduction of multicellular organisms (HS-LS1-4 & HS-LS3-1), and to the function and maintenance of multicellular organisms (HS-LS2-1 & HS-LS1-3). 5th, Instructional Segment 2 page 17, Line 225, includes both HS-LS1-4 and HS-LS3-1. But, the Background and Instructional suggestions only cover mitosis and HS-LS1-4. Nothing is mentioned about meiosis and HS-LS3-1. And, HS-LS3-1 is missing from the Instructional Segment 2 block on Table 1 (page 5, line 83). It should be added after HS-LS1-4, eliminating Instructional Segment 8 (Pages 46-51). | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 1358 | 7 | Survey | Line 104 HS-LS1-3 typo…stomate…should be stomata Line 117 are called out as eliminate the word "out as", not necessary. Line 124-132 Starting at "For example, and ending at organisms had in common." Should be indented since it's an example. Line 162 The note attached to superscript 2, quick growing plants . Please provide the exact links of the companies that maintain normal and mutant seeds. Line 176-179 An example of using the respiratory system is mentioned, the respiratory system is not "deeply linked to the CA NGSS standards and should not be used as an example as stated in lines 49-52. Please choose an example that is deeply linked to the CA NGSS standards. | Item B | Writer's Discretion/ Line Edit |
| 1359 | 7 | Survey, Admin | Would like acronyms to be written out for first draft. Difficult for teachers to understand, helps make it easier to read - lower cognitive load Chapter 7: Grades Nine Through Twelve - What would you title the courses in transcripts? Would it still be | Item B | Writer's Discretion/ Line Edit |
| 1360 | 7 | Survey, Admin | The 4-course model appears to have more rigor than the 3-course model. In integrating Earth Science, it takes away from some of the specialized content that makes each course unique and interesting Teachers are concerned that science electives, and possibly career pathway courses, will be difficult to place using a 4-course model. When will students have the opportunity to take these specialized courses? How can a 4-course model truly prepare a student for a standardized NGSS exam in their third year of high school? It is understood that 4-course does not mean 4 year, but courses that are shortened (or even integrated as the 3-course model proposes) will be lighter, perhaps on content and practice, than a traditional full year science course. Teachers are generally concerned about how 4-course model courses will align to UC Regents admission standards. | Item B | Writer's Discretion/ Line Edit |
| 1361 | 7 | Comment | 3-Course, The Living Earth: Concern: The depth of the ESS Framework is lost in this 3 course model. | DD42 | |
| 1362 | 7 | Survey, Admin | 4 Course model looks traditional - Storylines seemed slapped together - Bio Started with LS-1, but not the most logical - Sequencing has rationale for ESS, but did not needed to be taught that way Vignettes: - Weaved through the document and gave a p | Item B | Writer's Discretion/ Line Edit |
| 1363 | 8 | CDE | Page 41 Line 1012-1013 To collaborate with teachers, specialists, school administrators, and other stakeholders Suggest: To collaborate with teachers, specialists, school administrators, early childhood and expanded learning staff, and other stakeholders | Item C | Writer's Discretion/ Line Edit |
| 1364 | 8 | CDE | Page 68 Line 1485 General guidelines for establishing learning environments that are Suggest: General guidelines for establishing learning environments during the school day and out-of-school-time that are… | Item C | Writer's Discretion/ Line Edit |
| 1365 | 8 | CDE | Page 16 Line 237 Achieve has listed evidence statements Suggest: Achieve, (explain the nature of the group- it seems to be just stuck in here) | Item C | Writer's Discretion/ Line Edit |
| 1366 | 8 | CDE | Page 23 Line 392-93 use their white boards and to write two statements about examples of systems in which energy is transferred Suggest: use their white boards or accessible devices, and to write two statements about examples of systems in which energy is transferred | Item C | Writer's Discretion/ Line Edit |
| 1367 | 8 | CDE | Page 31 Line 567 write Suggest: enter | Item C | Writer's Discretion/ Line Edit |
| 1368 | 8 | CDE | Page 37 Line 669..computer-based Technology-Enhanced Simulation Suggest: ..computer-based Technology-Enhanced Simulation with captions and described video, | Item C | Writer's Discretion/ Line Edit |
| 1369 | 8 | CDE | Page 45 Line 803-04 What gaps in student learning are evident in student work? Suggestion: What gaps in student learning are evident in student work? Which accommodations are helping students and what else needs to be added for greater understanding? | Item C | Writer's Discretion/ Line Edit |
| 1370 | 8 | CDE | Page 53 Line 1019-21 The tasks may involve hands-on work, investigation using simulations, or analysis of data produced by others. Suggest: The tasks may involve hands-on work, investigation using simulations, or analysis of data produced by others. Careful planning to accommodate students with disabilities is needed between the general and special education teachers. | Item C | Writer's Discretion/ Line Edit |
| 1371 | 8 | CDE | Page 54 Line 1062 A science notebook…. Suggest: A science notebook, digital or hard-copy,…. | Item C | Writer's Discretion/ Line Edit |
| 1372 | 8 | CDE | Page 55 Line 1091 Whiteboards…. Suggest: Whiteboards, or the digital equivalent, …. | Item C | Writer's Discretion/ Line Edit |
| 1373 | 8 | CDE | Page 11 Line 183 – 187 In the drawing on the left, Student 1's model is complete showing the plates moving across the hot spots using arrows to show movement. Student 1 also labeled all of the part of their modeLine In the drawing at the right, Student 2's model is incomplete. It does not model the plates moving across the hot spot. Suggest: In the drawing at the right, Student 2's model is incomplete. It does not model the plates moving across the hot spot. In the drawing on the left, Student 1's model is complete showing the plates moving across the hot spots using arrows to show movement. Student 1 also labeled all of the part of their modeLine | Item C | Writer's Discretion/ Line Edit |
| 1374 | 8 | CDE | Page 30 Line 531-541 Suggest: Page 60/104 includes Figure 11 that correlates to the ice cube example. | Item C | Writer's Discretion/ Line Edit |
| 1375 | 8 | CDE | Page 84 Formative Assessment Tasks, Instructions: Once you have formed your team, your teacher will assign your team to a zone in the schoolyard. Your job is to go outside and spend approx. 40 minutes observing and recording all of the animals and signs of animals that you see in your schoolyard zone ..etc. Suggest: Either change this observation to types of blacktop, types of vegetation, or types of insects. | Item C | Writer's Discretion/ Line Edit |
| 1376 | 8 | Comment | Lines 5-17: Keep: Reference to three-dimensional assessment | D25 | Writer's Discretion/ Line Edit |

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| 1377 | 8 | Comment | Line 79: Keep. Assessment for learning, important focus for this assessment, who is understanding, who needs immediate intervention? | D25 | Writer's Discretion/ Line Edit |
| 1378 | 8 | Comment | Line 220: Question: The ECD table only references knowledge. What about CCC and processes? Should there be an example for the other 2 dimensions? If the example does include the other 2 dimensions, please make them more explicit. | D25 | Writer's Discretion/ Line Edit |
| 1379 | 8 | Comment | Lines 264-284: Keep. Thank you for this section on pre-assessing student readiness. Teachers should know what concepts and misconceptions students are bringing into the learning opportunities, not just assume "if I haven't taught it to them, they don't know anything about it." This is one piece of knowing your individual students, very important to shaping the learning opportunities. | D25 | Writer's Discretion/ Line Edit |
| 1380 | 8 | Comment | Line 421: Keep and add. Appreciate the variety of assessment strategies listed: observe, question, listen, AND provide feedback, not just a quiz or looking at student work or a quiz. After reading the whole section, please add a detail about positive specific feedback ("The illustrations you included show a lot of detail and are well labeled.") , and example questions that keep the thinking in the student and move them closer to the goal ("This page has a lot of detailed information but as a reader I am not sure where to start and where to go next. How could you reorganize the information or label a sequence to help me as a reader?"). | D25 | Writer's Discretion/ Line Edit |
| 1381 | 8 | Comment | Lines 482 on: Keep. Thank you for specific grade level examples | D25 | Writer's Discretion/ Line Edit |
| 1382 | 8 | Comment | Lines 640-675: Keep. Greatly appreciate placing the assessments within the 5E structure with specific examples | D25 | Writer's Discretion/ Line Edit |
| 1383 | 8 | Comment | Line 690: Add: The results from formative assessments are used to PROVIDE IMMEDICATE FEEDBACK TO STUDENTS, to closely monitor…<br>The feedback should include positive specific information and questions (that keep the thinking in the student: not "Can you…" but "How could you…." )to move students forward. | D25 | Writer's Discretion/ Line Edit |
| 1384 | 8 | Comment | Line 693: Question: How do ACT and ECD work together? Since they are separated by many pages, and ACT does not seem to reference ECD it feels like 2 separate things rather than working together. | D25 | Writer's Discretion/ Line Edit |
| 1385 | 8 | Comment | Lines 800-801: Add: "Refinement describes….student work can be used to: PROVIDE IMMEDIATE OR TIMELY FEEDBACK TO STUDENTS, to monitor…." | D25 | Writer's Discretion/ Line Edit |
| 1386 | 8 | Comment | Line 822: Question: Should there be a reference or link to where a teacher could learn more about or be reminded about the process for developing a Conceptual Flow? ("See page or section…" | D25 | Writer's Discretion/ Line Edit |
| 1387 | 8 | Comment | Lines 842-846: Question: Should readers be reminded here of the need and challenge to assess English language learners taking into consideration the dense language load in science? Both vocabulary and sentence structure? | D25 | Writer's Discretion/ Line Edit |
| 1388 | 8 | Comment | Lines 1208-1288: Question: Should you include with "feedback to students" the OPPORTUNITY TO REVISE TO MORE CLOSELY MEET THE SCORING CRITEREA?<br>Should it be made explicit that the teacher should preview the scoring rubric before students begin the task(s) so they understand what is expected to what level? And then provide specific feedback both positive and next step, with the opportunity to revise? | D25 | Writer's Discretion/ Line Edit |
| 1389 | 8 | Comment | Line 1401: Add: This section is very important. When students understand the criteria that will be used to evaluate their level of learning and application, they should have the opportunity to self-assess and revise and refine their work, peer feedback, before teacher evaluation, with several opportunities to revise and refine. | D25 | Writer's Discretion/ Line Edit |
| 1390 | 8 | Comment | P. 1, Text box: Organization of material in "Introduction" and order of information. Put the vocabulary introductions - Introduction of new terminology. | D31 | Writer's Discretion/ Line Edit |
| 1391 | 8 | Comment | P. 2-3, lines 2, 55-63; p. 16, line 254 (Table 4): Revised Text: "Medium Cycle - Diagnostic/Benchmark/Interim Assessments." The categories of assessments in the text box at line 2 do not match the categories of assessment listed below. This makes it very confusing when referring to the varying types of assessments. Maintain uniformity throughout the assessment terminology.<br><br>Descriptions of short-cycle, medium-cycle, and long-cycle assessments are not clear or organizationally logical. | D31 | Writer's Discretion/ Line Edit |
| 1392 | 8 | Comment | P. 3, lines 55-62: "short-cycle," "medium-cycle," "long-cycle" Request rationale for these terms. Up to this point they appear to be un-introduced, and thus unexplained. It is confusing to see a new term with no apparent reason for this term. | D31 | Writer's Discretion/ Line Edit |
| 1393 | 8 | Comment | P. 4, Figure 1: Opening the document in various formats (ie Google Docs vs. Microsoft Word) creates variation in the text-box lines in the figure. This causes confusion over the intended time-cycle for the three types of assessments. E.g. the Interim Benchmark line appears to align with unit/quarterly when opened in one format, while it appears to align with weekly/unit/quarterly when opened in another format. | D31 | Writer's Discretion/ Line Edit |

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| 1394 | 8 | Comment | Pp. 9-11, beg line 123: Clarify and detail the purpose and application of Performance Expectations in lesson planning and assessing student knowledge/skills. The language in the “NGSS Structure” linked here http://www.nextgenscience.org/sites/ngss/files/How%20to%20Read%20NGSS%20-%20Final%2008.19.13.pdf and the language in the framework appear to be contradictory, and at the very least, incredibly confusing. The purpose of Performance Expectations (PE) as assessments vs. assessment guides and tasks is unclear. If this is unclear to us, then it will likely be even more unclear to those less familiar with the NGSS. If the purpose of PEs is unclear, the curriculum developed will not properly reference the various materials and PEs. | D31 | Writer's Discretion/ Line Edit |
| 1395 | 8 | Comment | P. 12, Figure 3: Student Examples are limited and VERY low quality. Include a variety of appropriate student examples (low, med, high) for proper reference. People and companies need to have a realistic idea of what can/should be expected of students, and what students are capable of. The examples shown here are incredibly low-level, and do not reflect what students should actually be able to do according to this performance expectation. | D31 | Writer's Discretion/ Line Edit |
| 1396 | 8 | Comment | Pp. 15-16, Table 2: Table does not open correctly on chromebooks. In ensuring the table formatting is consistent, it facilitates ease of use and understanding. | D31 | Writer's Discretion/ Line Edit |
| 1397 | 8 | Comment | Pp. 16-40, Lines 251-675: No need to include overly-detailed descriptions of the various strategies. This information can be found all across the internet from a plethora of sources. | D31 | Writer's Discretion/ Line Edit |
| 1398 | 8 | Comment | Pp. 16-40, Lines 251-675: Strategy examples seem superficial and inapplicable to assessments of three-dimensional learning. Explain how the various assessment strategies meet each of the three dimensions of this new approach to learning. Include for high school examples especially. 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 no more useful than finding their descriptions on Wikipedia. | D31 | Writer's Discretion/ Line Edit |
| 1399 | 8 | Comment | P. 19, Line 292, Table 5: KWL - Use a newer strategy. Use newer, current strategies to demonstrate the application of the assessments. KWL is a very old strategy that seems a little too antiquated and limited to be using as an example here. | D31 | Writer's Discretion/ Line Edit |
| 1400 | 8 | Comment | P. 20, Lines 336, 339: Probes are listed only as a formative assessment, and they are described in a very specific manner. “Each probe consists of…” Please explain that the various assessments can be adapted for use across the assessment types and grade levels. “An example of a probe consists of…” Probes are incredibly applicable for determining both prior knowledge, as well as diagnosing student progress as a formative assessment. Additionally, probes can vary in response type (multiple choice, short answer, etc.) and<br>By categorizing assessment strategies by type and/or grade-level can be incredibly limiting, especially for those less experienced or unfamiliar with the classroom environment. | D31 | Writer's Discretion/ Line Edit |
| 1401 | 8 | Comment | P. 22, lines 363-375: “A middle school science teacher…” Align example of implementation to the example provided, Figure 6. In aligning the example to Figure 6, as opposed to a probe that is not presented, it will clarify the directions in how to implement a probe effectively in your classroom. | D31 | Writer's Discretion/ Line Edit |
| 1402 | 8 | Comment | Pp. 23-24, Lines 400-413: Text does not summarize what a diagnostic assessment is or used for. Rather, the text states how teachers should use assessments to inform their instruction, mentioning diagnostic assessments only in the last line of the paragraph. A summary should recap what the previous section was about and highlight the important points. | D31 | Writer's Discretion/ Line Edit |
| 1403 | 8 | Comment | P. 28, Lines 483-495: The description of the teacher walking around and checking notebooks does not describe how the teacher uses them as a formative assessment. Be more specific and detailed in how the teacher uses this tool to understand how/what students are learning. Without understanding and detailing how these strategies are used to assess student understanding, the descriptions of the strategies are uninformative and not helpful. | D31 | Writer's Discretion/ Line Edit |
| 1404 | 8 | Comment | Pp. 49-50, Lines 926-957: Formative assessments should lead to and support summative assessments. The formative assessments for the example summative assessment are not supporting student ability to complete the summative assessment task. This gives an incomplete idea of how these tools should work together to lead teachers in their understanding of student acquisition of knowledge and skills. | D31 | Writer's Discretion/ Line Edit |
| 1405 | 8 | Comment | P. 50, Lines 949-964: Include a reference and description of the evidence statements of the students. Examples of these evidence statements will help teachers and publishers understand the application of evidence statements and their appropriate use in assessments. | D31 | Writer's Discretion/ Line Edit |
| 1406 | 8 | Comment | P. 52, Lines 1015-1040: Be more succinct and direct in this description: “multiple choice tests are not going to be effective or enough to test student skills and knowledge." Using an entire page of text to say “multiple choice tests are not going to be effective or enough to test student skills and knowledge” is dangerous and confusing. This leaves area for interpretation and thus misinterpretation. | D31 | Writer's Discretion/ Line Edit |

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| 1407 | 8 | Comment | P. 11., Lines 175-187: (revised text in bold) Figure 2 highlights the difference between a sample single item used to measure past California standards and a multi-component task that could be used to assess NGSS (Pellegrino 2014). The task is from an assessment that was developed as part of a large-scale evaluation study of project-based science learning (Harris, Penuel, D'Angelo, DeBarger, Gallagher, Kennedy, Cheng, & Krajcik, 2015). The assessment designers aimed to create tasks to measure the three dimensions of core ideas, science practices, and crosscutting concepts (DeBarger, Penuel, Harris, & Kennedy, 2015). (Note: full references provided in attachment) | D18 | Writer's Discretion/ Line Edit |
| 1408 | 8 | Comment | P. 59, Lines 1187-1200: Revised paragraph:<br>The Next Generation Science Assessment (NGSA) project is a National Science Foundation supported effort (Grants DRL-1316874, DRL-1316903, DRL-1316908) to design, develop, test, and validate sets of technology-enhanced three-dimensional assessment tasks for teachers to use formatively to gain insights into their students' progress toward achieving the NGSS performance expectations for middle school physical science. The project team is addressing the physical science topics of Matter and Its Interactions and Energy by using an evidence-centered design approach to create classroom-based, instructionally supportive assessment tasks with accompanying rubrics that integrate the NGSS dimensions (Harris, McElhaney, D'Angelo, Krajcik, Dahsah, Lee, Pellegrino, DiBello, Gane, & Damelin, 2015). Several examples of items follow–note that these items are undergoing validation and are subject to possible revision. NGSA is a multi-institutional research and development collaboration among SRI International, Michigan State University, University of Illinois Chicago, and the Concord Consortium. Their ongoing work to create exemplary tasks in physical science and other domains is described on the project website: http://nextgenscienceassessment.org/. (Note: full references provided in attachment) | D19 | Writer's Discretion/ Line Edit |
| 1409 | 8 | Comment | It needs to mention administration's role in assessment since they plan for district benchmarks, etc. | D17 | Writer's Discretion/ Line Edit |
| 1410 | 8 | Comment | There should be guidelines for creating/conducting group assessments | D17 | Writer's Discretion/ Line Edit |
| 1411 | 8 | Comment | We liked the menu of strategies, but think it could save time if when they are referenced they could just be footnoted for those that don't know what the strategy is instead of sort of explaining them in one section and then explaining them again in another section of the same chapter or in a different chapter. | D17 | Writer's Discretion/ Line Edit |
| 1412 | 8 | Comment | Line 47: Add stronger wording like: When we assess we want to augment the overall education. We must avoid toxic testing; we must avoid making assessment scores the goal. The goal must remain education of the student. In total, formal assessment (e.g. interim benchmarks and summative assessment) ideally would never exceed 10% of instructional time. Formative assessment must be understood by administrators as something that will serve for the next year iteration as well as any immediate use. Authentic assessment should be the focus of student evidence of mastery. | D17 | Writer's Discretion/ Line Edit |
| 1413 | 8 | Comment | Pg.7 Interim/ Benchmark table: after "Test" add e.g. echo wording line 127-129 | D17 | Writer's Discretion/ Line Edit |
| 1414 | 8 | Comment | Pg.7 & 8 Annual table: "Professional learning prioritization" either more information or reference Chpt. 11 | D17 | Writer's Discretion/ Line Edit |
| 1415 | 8 | Comment | Pg. 10 Line 151: Move paragraph 151-157 to between line 123 and 124 | D17 | Writer's Discretion/ Line Edit |
| 1416 | 8 | Comment | Line 198: Great dramatic representation of the changes for NGSS | D17 | Writer's Discretion/ Line Edit |
| 1417 | 8 | Comment | Line 250: Add: Administrators should ensure an adequate supply of materials and equipment availability within a single period of broken/ misplaced equipment need for assessments, for district or state level common assessment. | D17 | Writer's Discretion/ Line Edit |
| 1418 | 8 | Comment | Pg. 17 Table 4: "Examples of Strategies" replaced with "Some Examples Might Include" | D17 | Writer's Discretion/ Line Edit |
| 1419 | 8 | Comment | Pg. 20 Line 334-338: Strengthen lines explaining the why and reduce the surface explanation of the strategies (i.e. What a Quick write is, KWL, etc) | D17 | Writer's Discretion/ Line Edit |
| 1420 | 8 | Comment | Line 401-411: Remove | D17 | Writer's Discretion/ Line Edit |
| 1421 | 8 | Comment | Line 411-413: Strengthen this line and add that they guide instruction and assist teachers in scaffolding instruction | D17 | Writer's Discretion/ Line Edit |
| 1422 | 8 | Comment | Move lines 453-472 to before 416 | D17 | Writer's Discretion/ Line Edit |
| 1423 | 8 | Comment | Line 483: Make a reference to where to find the formal structure for the science and engineering notebooks that are age appropriate | D17 | Writer's Discretion/ Line Edit |
| 1424 | 8 | Comment | Line 578: What is the "Sticky Bars" strategy? | D17 | Writer's Discretion/ Line Edit |
| 1425 | 8 | Comment | Pg. 38: Teacher utilizes guiding questions to direct students understanding of the use of the technology enhanced simulation (Questions Bolded and Italicized) | D17 | Writer's Discretion/ Line Edit |
| 1426 | 8 | Comment | Pg. 39 Line 673: "The teacher utilizes a summative assessment in the form of a culminating activity. Students are asked to…" | D17 | Writer's Discretion/ Line Edit |
| 1427 | 8 | Comment | Like: "Using what they learned…" | D17 | Writer's Discretion/ Line Edit |
| 1428 | 8 | Comment | Pg 41-47, Line 693- 859: Replace with shorter clearer statement for teachers like: "Make your assessments valid and reliable." ACT framework may be better placed in an appendix | D17 | Writer's Discretion/ Line Edit |
| 1429 | 8 | Comment | *Foot note ALL strategies refer to pages like pages 51-65 | D17 | Writer's Discretion/ Line Edit |

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| 1430 | 8 | Comment | Pg 51-65 Previous time investment seems redundant. We like these pages but the focus on the strategies here and footnote to this section in the previous examples. | D17 | Writer's Discretion/ Line Edit |
| 1431 | 8 | Comment | Line 117: Omit the sentence. Do you actually need it? The statement repeats the previous paragraphs ideas and seems more transitional. The rest of the paragraph focuses on technological equity rather than the broader issue in the previous paragraph. | D5 | Writer's Discretion/ Line Edit |
| 1432 | 8 | Comment | P. 11, Figure 2: qcss00251 item 39 on earth: this item is bad! | D5 | Writer's Discretion/ Line Edit |
| 1433 | 8 | Comment | Lines 209-212: Unclear who is going through the process-students vs teachers? Who is the designer of the argument? Students should be making the argument. The teachers would be designing the problem not the argument. | D5 | Writer's Discretion/ Line Edit |
| 1434 | 8 | Comment | Lines 248-249: Link states that there is a virus if you open.<br>Others were sent to NGSS but the page was not found. | D5 | Writer's Discretion/ Line Edit |
| 1435 | 8 | Comment | Lines 286-398: Do not need to be grade level specific as all the strategies are applicable to all grades. Specifically as well, white boards are inappropriate for a diagnostic assessment in grades 9-12. In addition, later in the frameworks, white boards are mentioned in 4th grade. How it is currently referred to in the frameworks seems to imply that these strategies are exclusive for those particular grade level bands. | D5 | Writer's Discretion/ Line Edit |
| 1436 | 8 | Comment | Lines 445-446: Confusing structure. Perhaps a reversed structure will be an improvement: "formative assessment combines instruction and assessment." | D5 | Writer's Discretion/ Line Edit |
| 1437 | 8 | Comment | Line 514: Change "exit cards" to "exit slips" | D5 | Writer's Discretion/ Line Edit |
| 1438 | 8 | Comment | Line 534: mass is not introduced until 6th grade. Weight is used in lieu of mass. Change to: Probe to predict and explain whether the weight of an ice cube in a sealed Ziploc bag will increase, decrease, or stay the same after it melts." | D5 | Writer's Discretion/ Line Edit |
| 1439 | 8 | Comment | Line 536: What is a "human scatterplot?" | D5 | Writer's Discretion/ Line Edit |
| 1440 | 8 | Comment | Line 554: What is "scientist ideas comparison?" | D5 | Writer's Discretion/ Line Edit |
| 1441 | 8 | Comment | Line 576: What is "familiar phenomenon probe?" | D5 | Writer's Discretion/ Line Edit |
| 1442 | 8 | Comment | Line 578: What is "sticky bars?" | D5 | Writer's Discretion/ Line Edit |
| 1443 | 8 | Comment | Line 704-714: Line 707 mentions this other triangle, please show it:<br><br>Also provide the Assessment Knowledge Triangle<br><br>In line 714: The direction of the arrows within the assessment cycle do not imply a specific direction around the triangle, but rather the continuity of the cycle. | D5 | Writer's Discretion/ Line Edit |
| 1444 | 8 | Comment | Line 846: Follow with an example like: For example, teachers should select representative members from populations such as EL, GATE, etc and study them to determine the effectiveness of the assessment. | D5 | Writer's Discretion/ Line Edit |
| 1445 | 8 | Comment | Line 1216: Change to: "Cannot accurately be captured by single multiple choice items consisting of a short stem and a set of answer choices." Seems to contradict itself: says m/c is bad, then defends it. | D5 | Writer's Discretion/ Line Edit |
| 1446 | 8 | Comment | Lines 1245-1247: Change to: "There has been a concerted effort over the last decade to create higher level level multiple choice."<br>test developers have been trying to do | D5 | Writer's Discretion/ Line Edit |
| 1447 | 8 | Comment | This chapter should include an appeal for or reference to where there is an appeal for resources necessary to administer tests that are performance based (e.g., lab equipment, consumables, etc) | D17 | Writer's Discretion/ Line Edit |
| 1448 | 8 | Comment | Greater focus on the most recent innovations in assessment is needed. | D41a | Writer's Discretion/ Line Edit |
| 1449 | 8 | Comment | Embed links to citations in the body of the document. | D41a | Writer's Discretion/ Line Edit |
| 1450 | 8 | Comment | Needs more instructive guidance for teachers to develop systems to facilitate the grading of large sets of assessments and still provide timely feedback to students. | D41a | Writer's Discretion/ Line Edit |
| 1451 | 8 | Comment | A progression that shows how implementation can develop gradually would help teachers make incremental changes toward implementation. | D41a | Writer's Discretion/ Line Edit |
| 1452 | 8 | Comment | Document is very dense, potentially overwhelming, and difficult to read for immediate implementation. Needs table of contents and a better heading system. | D41a | Writer's Discretion/ Line Edit |
| 1453 | 8 | Comment | How is the section on international assess relevant to this document? | D41a | Writer's Discretion/ Line Edit |
| 1454 | 8 | Comment | Doc is helpful for schools that have already begun altering assessments toward NGSS implementation and are looking to confirm or reject their changes | D41a | Writer's Discretion/ Line Edit |
| 1455 | 8 | Comment | P. 2, line 21: (addition) "that assist students in learning and mastery as well as inform teachers of." Let us know up front examples of conceptual shifts. | D37 | Writer's Discretion/ Line Edit |

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| 1456 | 8 | Comment | P. 9, line 112: There should be parameters to phasing in new systems, so that changes are made in a timely manner. Formative assessments can occur as instruction is given and so should immediately be part of methodology in any curriculum. In other words, don't wait to implement the CA NGSS because the tests aren't being given. | D37 | Writer's Discretion/ Line Edit |
| 1457 | 8 | Comment | P. 9, line 130: It will be helpful here to include a graphic. | D37 | Writer's Discretion/ Line Edit |
| 1458 | 8 | Comment | Pp. 10-11: The target audience for this section seems to be test and curriculum developers. This could be written in a way to assist teachers in designing assessments as well. | D37 | Writer's Discretion/ Line Edit |
| 1459 | 8 | Comment | P. 18, lines 279-282: Remove: "may be as easy as...a simple yet…" With kids, nothing is ever easy or as simple as. | D37 | Writer's Discretion/ Line Edit |
| 1460 | 8 | Comment | P. 47: Samples of student work to accompany rubrics would be helpful | D41a | Writer's Discretion/ Line Edit |
| 1461 | 8 | Comment | P. 4, line 74: Suggested text: "about adjusting instruction to meet students' specific needs and ensure progress. This type of assessment is referred to as assessment for learning and provides both students and teachers with information about progress toward learning goals. Short-cycle assessment serves a formative purpose because it occurs in real time, during instruction, while student learning is under way." - clarification, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1462 | 8 | Comment | P. 18, line 270: Suggested text: "The purpose of the assessment of students' prior understanding is to determine their initial knowledge and abilities (Popham 2003). What skills and strategies do students have? Do they already know some of the material to be taught? What pre-conceptions do they have about the material being taught?" | D35 | Writer's Discretion/ Line Edit |
| 1463 | 8 | Comment | P. 18, line 280: Suggested text: "asking students a simple yet well-crafted set of questions about the key concepts and ideas of an instructional segment (Keeley, Eberle, and Farrin 2005)." | D35 | Writer's Discretion/ Line Edit |
| 1464 | 8 | Comment | P. 41, line 707: delete: "The triangle represents the assessment knowledge to strengthen in teachers." | D35 | Writer's Discretion/ Line Edit |
| 1465 | 8 | Comment | P. 45, line 820: Suggested text: "In creating a Conceptual Flow flow (DiRanna 1989; DiRanna and Topps 2004),teachers analyze" | D35 | Writer's Discretion/ Line Edit |
| 1466 | 8 | Comment | P. 49, line 9D37: delete "of be converted into some other substance such as plant matter. They generate data to test their ideas about what phenomena may occur in this natural setting and to describe ways that they might estimate the role played by the various not directly observed mechanisms by which water might leave the system." - clarification | D35 | Writer's Discretion/ Line Edit |
| 1467 | 8 | Comment | Line 960: too slight, does not address one teachers' challenge in grading assessments | D41a | Writer's Discretion/ Line Edit |
| 1468 | 8 | Comment | Line 966: needs explanation of how readiness might be determined. How are the assessments to be differentiated? | D41a | Writer's Discretion/ Line Edit |
| 1469 | 8 | Comment | P. 57, lines 1141, 1145: replace "situations" with "systems in the natural and/or engineered world" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1470 | 8 | Comment | P. 57, line 1144: delete "Computer simulations can present students with rich, interactive assessments using simulations that model" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1471 | 8 | Comment | Lines 1170-71: out dated link | D41a | Writer's Discretion/ Line Edit |
| 1472 | 8 | Comment | P. 59, line 1194: Suggested text: "The materials are undergoing further evaluation and are subject to possible revision. The materials are the product of a multi-institution research collaboration led by Dan Damelin, Concord Consortium, Christopher Harris, SRI International, Joseph Krajcik, Michigan State University, and Jim Pellegrino, University of Illinois at Chicago and based upon work supported by the National Science Foundation under Grant Numbers DRL- 1316903, 1316908, and 1316874. No endorsement by NSF should be assumed." | D35 | Writer's Discretion/ Line Edit |
| 1473 | 8 | Comment | Line 1510: Example has a narrow context may not be familiar to some demographic groups. | D41a | Writer's Discretion/ Line Edit |
| 1474 | 8 | Comment | P. 75, line 1518: move to end of the paragraph at line 1531 – add changes below<br><br>"Each test was designed to serve a different purpose based on a separate and unique premise and set of assessment questions although content areas assessed and ages and grade levels of students are significantly similar." | D35 | Writer's Discretion/ Line Edit |
| 1475 | 8 | Comment | P. 94, line 16D43: Suggested text: "before, at 1 minute intervals for 5 minutes, and then, while allowing to cool down, at 1 minute intervals for 5 minutes." | D35 | Writer's Discretion/ Line Edit |
| 1476 | 8 | Comment | Deborah Tucker submitted 35 edits for the assessment chapter. Framework writer will review tracked changes word document and use edits at his discretion. | 49 | |
| 1477 | 8 | Comment | Santa Clara County Office of Education provided 22 comments/line edits | 52c | Writer to review and implement edits at his discretion |
| 1478 | 8 | Comment | Lawrence Hall of Science Submitted 49 Edits | 65i | Framework writer to review edits and implement at his discretion. |

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| 1479 | 8 | Comment | P. 3-4, lines 55-62 It is not until further reading that I understand what short cycle etc. means, which means I have to go back and re-read the list beginning at line 55 to check my understanding. Even then, I am still uncertain what the language “Short Cycle - Formative Assessment - short cycle” implies (line 55-56). Does it mean a learning cycle happens, an assessment is given and then another learning cycle occurs? This needs to be explained. Same for medium and long cycles. | D46 | |
| 1480 | 8 | Comment | P. 9, lines 123-157 It is crucial to highlight the difference between NGSS and traditional assessments of the past in order to help educators identify their old assessment habits so that they can get over them. Rather than the giant NRC quote, please refer to Figure 2 (p.11 l. 198) to show an example of a shift. Talk about the need for modeling in assessments, and what sort of resources students will need to have available for completing performance tasks, because educators are used to closed-book tests. Give a nod to the shifting roles of teachers in assessment, further detailed at line 1341 . | D46 | |
| 1481 | 8 | Comment | P. 13, line 207 Title this “Developing Assessment Tasks using ECD” because I would normally just skip right over this not knowing what ECD is and that it can help me design assessment tasks. On line 228 I appreciate the example of how to use the ECD Process. | D46 | |
| 1482 | 8 | Comment | P. 47, lines 877-879 This seems more like a diagnostic assessment than summative. | D46 | |
| 1483 | 8 | Comment | P. 50, lines 965-1332 This section contain many redundant items that have already been discussed, such as whiteboards, and could be absorbed into previous sections on formative and summative assessments. Expand Table 6 at line D430 to include all assessment strategies, add a fourth column which indicates if the strategy is appropriate for summative, formative, diagnostic, or benchmark assessments. | D46 | |
| 1484 | 8 | Comment | P. 65 line 1256-1332 In my experience heading PLCs and presenting at PD sessions, scoring rubric development is very difficult for educators, so the information here is deserving its own section titled “Assessment Evaluation Tools,” never mind that it is incorrectly placed as an “additional assessment.” | D46 | |
| 1485 | 8 | Survey | Intro: Introduction is repetitive: We understand this might be necessary to reach all readers; however, perhaps another edit would allow this section to read more cohesively and coherently. Page 3 Line 7-12 - Great explanation of 3D learning. DON’T Delete! Page 4 Line 67 - Figure 1: Continuum Assessment Graphic...GREAT! Page 4 Line 78 - This type of assessment is intended to assist learning and is referred to as assessment for learning. - All assessments are intended to assist learning. In fact, this type of assessment is intended to evaluate instruction and the help the teacher pace, reteach or amend instruction in immediacy. Page 5 Line 55 - End-of-course tests are used... - There is a little confusion about the tenses. Sometimes “are used” is used and at other times “can be” or “should be.” Page 5 Line 108 - This is a comment on the “expansion” of assessments: - Another way to look at the assessments in short term = as Individual assessment; for the medium cycle = is individual as well as collective students over concepts; and summative is = individual, and collective classwork, over concepts and units and the entire year’s content. - The summative assessments should also reflect application: therefore the three levels of assessments should be viewed as following: understanding a concept; internalizing a topic and its related concepts; and then finally the ability to apply the knowledge and concepts. As the introduction is written, there is no change in the definitions of assessments and how they currently look. Page 8 Line D43-47 - The intent is to allow everyone within the educational system to make informed decisions regarding improved student learning, teacher development, instructional program modifications, and changes in policy [NP1] (Popham 2000). - How is this different from current assessment non-NGSS systems? IMPORTANT COMMENT/SUGGESTION Page 9 Line 132 - Performance expectations are statements about what students should know, be] able to do and understand by the end of each grade level. | Item B | Writer's Discretion/ Line Edit |

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| 1486 | 8 | Survey | - Rephrase order: Performance expectations are statements about what students should know, understand, be able to do by the end of each grade level. For logical progression. Page 13 Line 220 - Evidence-centered design process: Awesome! IMPORTANT COMMENT/SUGGESTION Page 16 Line 237 - Evidence statements: Tying the evidence statement into the evidence design process. How can the evidence statements be used as part of the evidence based design process? A pathway to use these evidence statements beyond the information listed here. IMPORTANT COMMENT/SUGGESTION Page 17, Line 260: - Instead of giving specific strategies for specific grade levels, provide ALL the strategies and then demonstrate what the various levels would look like. “Here are some examples of strategies” and then stating what the strategies would look like in the lower levels and upper levels (ie. science notebooks) - When giving examples of strategies, they gave examples of strategies by grade span. However, the strategies are excellent strategies for all grade levels and the framework has limited themselves by doing that. The strategies that they have put, the framework had left out verbal assessments and other types of assessments. They have given a limited Page 17 Line 260 (Table): - Diagnostic assessments: add non verbal indicators, hand signaling, and partner talk. Summative assessments: None of the assessments provide the opportunity to define, design, create and present tasks. Page 17, Line 260 (Table 4) - Strategies: It is not a complete list. We can add so much more and it probably belongs in a separate document or appendix. Add a statement: suggestions made are not intended to limit. - Classroom assessments: on the right side of the table, they list examples of strategies (exit cards, KWL charts, notebookings). Be explicit: “assessment strategy” and not just strategy. Remove grade levels because there is no point in making it grade-level specific. Page 19 Line 292 - KWL Chart - Should be What I think I know Chart | Item B | Writer's Discretion/ Line Edit |
| 1487 | 8 | Survey | - This is actually mentioned in a later part of the document. “What I know” is dated and currently, it is recognized that since student prior knowledge may actually be erroneous, it is important to acknowledge that all prior knowledge may not necessarily be exact. There are numerous references to be found online from numerous organizations. Page 22 - Enjoyed the examples of the formative assessment probe. Liked the fact that they had “what is the bubbles” examples probe Page 24-25 Line D431 - Rather than checking all correct answers and putting a check next to incorrect ones, the teacher tells a student, “three of your answers are incorrect; find them and fix them.” - The problem with that is that the students have it wrong because they do not know that it is not right. A better way might be to work in tandem, compare their answers and see if they can come up with which ones are wrong. - And/or they can provide the opportunity to explain their answers (opportunity for discourse) Page 31 Line 553 - A Think, Pair, Share - Think, Ink, Pair, Share - Again this is dated. The strategy should be Think, Ink, Pair Share. Often students get distracted or side swiped as one person takes over the conversation of the other person has such an overwhelming forcefulness or idea that they forget their own point of conversation. Page 34 - Examples of formative assessments and 5E lesson sequence: It should be outlined with diagnostic and summative rather than trying to fit into one FA box. Page 59 - Spelling error: “Glaciers (PhET Interactice Simulations 2015)” should be “Glaciers (PhET Interactive Simulations 2015)” Page 69 Line 1356 - Role of teacher vs. Role of student: It’s about the way you ask the questions. You can ask the same question a different way to give you more. GREAT!! IMPORTANT COMMENT/SUGGESTION Page 70 Line 1398 - Table 7: Teachers are going to need examples. Teachers will need specific examples of what each of these elements will look like in the classroom. Either a vignette or add on to the table. | Item B | Writer's Discretion/ Line Edit |
| 1488 | 8 | Survey | IMPORTANT COMMENT/SUGGESTION Page 75 - Computer information: Very impressed with how you plan. Very good example. NAEP (4th and 8th grade ELA and Math) gives the students the ability to experience, manipulate and investigate and think critically. | Item B | Writer's Discretion/ Line Edit |
| 1489 | 8 | Survey | The Figure X.X on pages 6-8 is excellent. The evidence Centered Design Process on page 13 is a great graphic to help in constructing assessment tasks followed by a specific example is great. The research based examples of formative assessments is well done and provide teachers a really strong resource. We are encouraged to know that there is a return to an emphasis on multiple types of assessment. It is very difficult to not dwell on the uncertainty of the nature of the "big" test and the degree to which the State test will place pressure on teachers and students, as past experience weighs heavy on many. So the vagueness (while we do understand why it is vague) in this chapter relating to that piece, is unsettling. | Item B | Writer's Discretion/ Line Edit |
| 1490 | 8 | Survey | F=MA, Fd=fD, p=mV, F=-kx, V=IR, etc. The introduction of simple formulas, like these, should be introduced as soon a children learn to multiply. More importantly, we are doing them an injustice if we do not share basic principles such as these to them when involved in experimentation. As a result, the understanding, usage and application of simple physics/engineering math should be a prescribed part of assessment at each grade level. | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 1491 | 8 | Survey | Line 8: Redefine three-dimensional learning. Line 41: I do not believe that the assessments give the policy makers a true picture of the effectiveness of the policy. If there is a breakdown in either the teachers or students then the policy, is not being reflected accurately. Line 55-56: Why no mention of Diagnostic Assessments? Line 55-56: Why the mention of Short Cycle twice? Seems redundant. Line 94-102: Indicates that the only summative assessment is the state test. Line 118-119: Does state provide for the cost of technology? Line 294: It states that KWL charts can be used at any grade level but it is continually referenced for K-2nd Grade (Line 286 and 298). I understand that this is an example but it is slightly confusing. Line 312: Sentence structure error … where have students two to five… | Item B | Writer's Discretion/ Line Edit |
| 1492 | 8 | Survey | Line 357: It says Figure 4 but the actual figure is labeled as Figure 6 Line 417-419: By your own definition, why is diagnostic assessment part of formal assessment? Assessment becomes formative only when either the teacher or the student uses that information to inform teaching and/or to influence learning (NRC 2014; Shepard 2005; Wiliam 2007). Figure 6: Key Strategies and Example Techniques… - The whiteboard provides another example of the confusion between diagnostic assessment and formative assessment. Line 836-841: Why the use of different terms? Instead of summative as mentioned earlier, it is referred to as post-assessment. Pre-assessment is used instead of diagnostic assessment. | Item B | Writer's Discretion/ Line Edit |
| 1493 | 8 | Survey | Assessment Chapter Lines 5-17 The phrase "three-dimensional" seems to be redundant. It would be helpful to provide concrete examples. Lines 55-62 It is helpful that short cycle, medium cycle, and long cycle is defined. Since three dimensional assessments are stressed, it would be helpful to provide a concrete example of what this assessment would look like in a short cycle, medium cycle, and long cycle here. Lines 160-197 It was helpful to have figures to reference as concrete examples of sample student responses. Perhaps, we could have extra samples illustrating different levels of student work ranging from high to low achieving. General Statement about Formative Assessments - The detailed breakdown of giving formative assessments was helpful. It would be helpful to include suggestions for reteaching concepts with these examples for the students who are struggling to understand the material. Perhaps it would be helpful to include this information in the assessment-centered teaching (ACT) portion of the text around line 715. Lines 742-761 When referencing quality tools for measuring student learning, is this the same thing as a rubric for measuring student progress on a standardized assessment? | Item B | Writer's Discretion/ Line Edit |
| 1494 | 8 | Survey | Lines 763-776 When referencing quality use, it may be clear to state it as data analysis of the quality tool or rubric. Lines 778-788 When using the phrase sound interpretation, this sounds like a process of self reflection by using the data collected from the assessment. General statement about refinement - Incorporating some new strategies should we use to reinforce the three dimensional aspect of our assessment. The strategies listed are strategies that are already in place. I anticipate that there will be struggles with the incorporation of the new parts of the assessment process using these strategies as they are the same ones already in place. | Item B | Writer's Discretion/ Line Edit |
| 1495 | 8 | Survey | Relevant page/line number 96: Increase references to the three dimensionality in all assessments. 94-103: Remove references to end of course exams, since it will be impossible to test the entire range of DCIs, SEPs, and CCCs in a single administration. 99: Orignal Text “State standards”;Revised text “Performance Expectations”; Determine the language we will use to describe the new CA NGSS and consistently use that language throughout. Condense the document and provide a 5 page or less executive summary for use by administrators. 194:All examples should be 3-dimensional, not 1-D or 2-D and should also provide example scoring guides. | Item B | Writer's Discretion/ Line Edit |
| 1496 | 8 | Survey | overall: good to see that assessments range from formative to anecdotal (during class time to see progress in student learning) to summative pg. 7, figure x.x -reference to short, medium, and long cycle was an interesting way of thinking about assessment -shows trajectory of assessment 251-260, table 4 -liked section that calls out examples of different kinds of formative assessment -criticism: should the document primarily cite Page Keeley? she’s going to make a lot of money because it’s a commercial product. Possible to use materials that are not associated with a specific author? there are other strong examples out there -maybe include ideas of how a teacher might create a probe in general sheds light on interdisciplinary assessments, how to assess three dimensions simultaneously very focused on performance assessment, good that assessments involve multiple modalities for various types of learners evidence centered design process is interesting, presented very clearly 175 - 187 volcano assessment example is confusing, not clear how these models are different -it should be more clear which student work sample is correct vs. incorrect -section is confusing in general -example only shows one component of the multiple component assessment suggestion: present with a rubric showing four levels of proficiency with the concept it would be nice to see examples or vignettes or snapshots of what some of the different assessment strategies look like in the classroom 578 examples such as sticky bar strategy should be hyperlinked to an explanation of what they are | Item B | Writer's Discretion/ Line Edit |

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| 1497 | 8 | Survey | Line 55-56: “Assessments designed to inform day to day teaching (Short Cycle - Formative Assessment – short cycle)” The phrase, “short cycle” seems redundant. Short cycle assessment discussion is useful. Line 109: Figure X.X: Types and Uses of Assessments Within Assessment Cycles. The weekly, benchmark and annual assessment rows need to be completed. Line 177: Add a PE to make the CA NGSS multi-component task more specific, e.g., MS-ESS2-2. The PE focuses on construct an explanation, so using a model to explain will work in this case. Line 224: Add a PE to make this example more specific, e.g., MS-PS2-1. Line 298: Add a PE, e.g., K-LS1-1. Make this discussion more three-dimensional by having the teacher ask about how students know (by making observations, which is the SEP) and what do they see when they make observation (pattern, which is the SEP). Line 324: Add a PE, e.g., 4-PS3-2. Make this discussion more three-dimensional by having the teacher ask about how students know (by making observations, which is the SEP). Line 295: Add examples of questions related to the CCC of energy and matter from http://crosscutsymbols.weebly.com/: Where does the energy for this system come from? Where does it go? What does energy do in the system? How is it changed? What is the role of matter in this system? How does it change? How does it enter and exit the system? Is the role of energy and matter in this system similar to other systems I have learned about? How is it different? Engineering(energy)- How can we improve the energy efficiency of this system? Engineering(matter)- If we change the materials, does that improve the system? How do the energy and matter in this system relate to other crosscutting concepts? | Item B | Writer's Discretion/ Line Edit |
| 1498 | 8 | Survey | Line 260, Table 4, Diagnostic/Formative Assessments Row, Examples of Strategies Column. The Individual Whiteboards strategy should be connected with Grades 9-12, and the Formative Assessment Probes connected with Grades 6-8. Otherwise the chapter is well written. | Item B | Writer's Discretion/ Line Edit |
| 1499 | 8 | Survey | ASSESSMENT CHAPTER Line 109. Examples of assessments. What about daily or weekly “openers”? What about daily or weekly quizzes? These are more “traditional” methods that are still effective in the classroom. Line 292. A KWL chart is shown but it would be helpful if you provide an example of a filled-out KWL chart. Line 535-537 “Using the Human Scatterplots technique, the teacher quickly sees that students differ in their predictions and confidence in their answer.” Please briefly explain the Human Scatterplots technique. Line 577-580 “Using the Sticky Bars strategy to anonymously display students’ ideas, the teacher and the class could instantly see that most students believed the phases of the moon were caused by the shadow of the Earth on the moon.” What is the Sticky Bars strategy? Line 1113-1114. Indentation error? Line 1170-1171. Link does not work. Line 1215-1216 “Student understanding of the disciplinary core ideas, scientific and engineering practices, and crosscutting concepts defined in the CA NGSS cannot be captured in a simple set of multiple-choice questions.” The word “cannot” is too strong. Although this statement is later qualified, introducing this section with that sentence is misleading. Some multiple-choice questions are thought-provoking and challenging. Perhaps this sentence is not even necessary. It is an opinion. | Item B | Writer's Discretion/ Line Edit |
| 1500 | 8 | Survey | Line 1225-1226 “The information would be presented in a series of tabs that the student would click on.” Sentences should not end in a preposition. Line 1291. Although holistic and analytical rubrics are explained, please provide an example of a holistic rubric and an analytical rubric. What are the categories of assessment in each rubric type? Line 1576. The instructions are to use an Apple iPod to collect data. Are there iPods still? Perhaps an iPad or iPhone are more current tools. What about Android devices? Line 1598. Are there student examples of the Mars habitat lab? I would like to see pictures of student work. | Item B | Writer's Discretion/ Line Edit |
| 1501 | 9 | CDE | Page 18 Line 414-417…found to correspond with the NGSS and the CCSS for Mathematics, and at the same time as this science framework was being developed, materials that augment the CA ELD Standards in ways that support their use in mathematics and science were also developed. Suggest: …found to correspond with the NGSS and the CCSS for Mathematics, materials that augment the CA ELD Standards in ways that support their use in mathematics and science have been developed. | Item C | Writer's Discretion/ Line Edit |
| 1502 | 9 | CDE | Page 2 Line 40 members of multiple groups. Suggest: members of multiple groups. Add: Struggling students may be unidentified students with disabilities and benefit from differentiated instruction. | Item C | Writer's Discretion/ Line Edit |
| 1503 | 9 | CDE | Page 6 Line 122 real materials Suggest: real materials, assistive technology, | Item C | Writer's Discretion/ Line Edit |
| 1504 | 9 | CDE | Page 33 Line 850 equitable access to the curriculum. Suggest equitable access to the curriculum, Add: and honor the IEP or Section 504 for the individual student. | Item C | Writer's Discretion/ Line Edit |
| 1505 | 9 | CDE | Page 37 Line 931-32 Classroom access to laboratory equipment may be limited by reach or vision… Suggest: Classroom access to laboratory equipment may be limited by reach or vision. Add: Many lab equipment items can be found that speak (e.g., talking thermometers) and other assistive technology devices. | Item C | Writer's Discretion/ Line Edit |

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| 1506 | 9 | CDE | Page 72 Line 1589 Other support elements include adequate time, space and resources (e.g., equipment and consumable materials) devoted to science in all schools, public-private-community partnerships to support student science learning in and out of school time….. Suggest: Other support elements include safe and appropriately designed facilities, adequate time, space and resources (e.g., equipment and consumable materials) devoted to science in all schools, public-private-community partnerships to support student science learning in and out of school time….. Or Replace with Other support elements include adequate time, safe and appropriately designed facilities, and resources (e.g., equipment and consumable materials) devoted to science in all schools, public-private-community partnerships to support student science learning in and out of school time….. | Item C | Writer's Discretion/ Line Edit |
| 1507 | 9 | CDE | Page 47 Line 1598 Should we add the Science Safety Handbook 2014 to "Works Cited"? I know the handbook is referenced in footnotes but we may want to put it under works cited as welLine | Item C | Writer's Discretion/ Line Edit |
| 1508 | 9 | CDE | Line 531-564 http://www.cde.ca.gov/ls/fa/re/ " In regards to our conversation regarding lines 531-564, if you feel there is a need for a citation or a reference about research on school facilities and student achievement, you may want to consider including our school facilities research web page, specifically the summary of research PDF, "School Facilities Improve Learning". | Item C | Writer's Discretion/ Line Edit |
| 1509 | 9 | Comment | Line 91: Add: Please provide some resources to begin incorporating art into STEM, or at least have some in the resources section of this chapter. Where and how can I start to incorporate art??? | D25 | Writer's Discretion/ Line Edit |
| 1510 | 9 | Comment | Lines 320-324: Keep, highlight: This is a key idea, can it be highlighted or put in a focus box?<br>"Teachers should view the language their students bring to the classroom as valuable assets for learning and not as deficits that hinder learning." | D25 | Writer's Discretion/ Line Edit |
| 1511 | 9 | Comment | Lines 345-348: Keep. Another reason to pre-assess without a heavy language load: "…all students have a wealth of scientific ideas and explanations to contribute…" also an asset to the community of learners | D25 | Writer's Discretion/ Line Edit |
| 1512 | 9 | Comment | Line 383: Keep. Thank you for including the stages of ELD in this document, much more likely to be implemented than if teachers needed to go looking for it. | D25 | Writer's Discretion/ Line Edit |
| 1513 | 9 | Comment | Line 780: Expand: We had challenges in our district with getting EL students identified as gifted since the assessments were only in English. It was difficult for the teachers to identify the science/math understandings of the students with the need to assess and get past the language challenges. Then it was a challenge for the teachers working with the identified gifted and talented students to include EL when the teachers were not proficient in the variety of languages we needed to support in the learning opportunities. | D25 | Writer's Discretion/ Line Edit |
| 1514 | 9 | Comment | Line 1501: Question: "Ideally, students complete the primary grades with…" Our district was challenged with many newcomer students who had serious gaps in their education due to war, refuge camps, and travel through several countries under difficult circumstances. | D25 | Writer's Discretion/ Line Edit |
| 1515 | 9 | Comment | Line 1527: Enhance: The idea of task-specific feedback could be enhanced or made more explicit. Help teacher see the power of specific feedback with the opportunity to revise. | D25 | Writer's Discretion/ Line Edit |
| 1516 | 9 | Comment | This chapter should be earlier in the framework. The reviewers thought the information was so important in relation to "All Standards, All Students". | D5 | Writer's Discretion/ Line Edit |
| 1517 | 9 | Comment | Add a subtitle such as Access and Equity: Knowing your Students as Individual Learners | D5 | Writer's Discretion/ Line Edit |
| 1518 | 9 | Comment | All the hyperlinks need to be accessible online. | D5 | Writer's Discretion/ Line Edit |
| 1519 | 9 | Comment | In final draft, perhaps hyperlink Chapter at a Glance so that readers can click on section of interest and go right to that page | D5 | Writer's Discretion/ Line Edit |
| 1520 | 9 | Comment | Perhaps add an additional section that looks at stem careers with gender bias (for example some health careers or life science professions have a lower percentage of males employed) | D5 | Writer's Discretion/ Line Edit |
| 1521 | 9 | Comment | The group discussed the idea of reordering the subgroups so the groups that are often not highlighted come before groups that teachers are more aware of. | D5 | Writer's Discretion/ Line Edit |
| 1522 | 9 | Comment | Overall, the group thought the chapter was very strong and clear. The group thought the chapter was so important to the key idea of "All Standards, All Students" that the suggestion was made to move the chapter to an earlier place in the Framework, possibly chapter 3. | D5 | Writer's Discretion/ Line Edit |
| 1523 | 9 | Comment | Explain ELD designated vs ELD integrated earlier in the subgroup section. Emphasize that all science teachers are ELD integrated teachers earlier as well. | D5 | Writer's Discretion/ Line Edit |
| 1524 | 9 | Comment | Within poverty of somewhere else, 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. | D5 | Writer's Discretion/ Line Edit |
| 1525 | 9 | Comment | P. 4, Line 88: link should be hyperlinked so people can click on it | D5 | Writer's Discretion/ Line Edit |
| 1526 | 9 | Comment | P. D43, Line 1088: link should be hyperlinked so people can click on it | D5 | Writer's Discretion/ Line Edit |

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| 1527 | 9 | Comment | P. 61, Line 1428: text is fine, but could be moved earlier in EL discussion.<br>Readers may not be familiar with difference between ELD designated and integrated; clarifying this earlier on in the ELD document would help those readers. | D5 | Writer's Discretion/ Line Edit |
| 1528 | 9 | Comment | P. 3, line 57; p. 4, line 90: STEAM needs to move to Planning for and Supporting a Range of Learners after culturally and Linguistically Responsive… as it is a strategy, connects well with Culturally and Linguistically Responsive…. doesn't fit in current placement | D7 | Writer's Discretion/ Line Edit |
| 1529 | 9 | Comment | P. 5, line 107: "become a science literate member of society.." Links need to be added to guides for (ocean literacy, climate literacy, earth science literacy links, and energy literacy). to provide easier access http://oceanservice.noaa.gov/education/literacy/ocean_literacy.pdf<br>http://oceanservice.noaa.gov/education/literacy/climate_literacy.pdf<br>http://energy.gov/eere/education/downloads/get-free-copy-energy-literacy-framework<br>http://www.earthscienceliteracy.org/es_literacy_6may10_.pdf | D7 | Writer's Discretion/ Line Edit |
| 1530 | 9 | Comment | Pp. 6-7, table: add bullet under Maintain Appropriate Physical Resources and Program that reads: "all programs include rich and diverse experiences at nonformal science education centers, field experiences and community based science"<br>Under establish Positive, Bias-free Learning Environments add:<br>"provide mentors and examples of scientists and engineers who reflect student diversity and cultural backgrounds." Ensuring Equity in Science and Engineering: Critical Actions | D7 | Writer's Discretion/ Line Edit |
| 1531 | 9 | Comment | P. 7, in table 1st bullet point: "recognizes…..in." Suggested revision: "recognize and address biases and inequities and provide support for students to do the same." "in" doesn't have a reference as to in what? | D7 | Writer's Discretion/ Line Edit |
| 1532 | 9 | Comment | P. 7, in table second bullet from bottom: "integrate culturally and linguistically responsive pedagogy and promote an "additive stance" toward diversity." "additive stance" is mentioned again page 45; needs to be referenced or explained here since first use or replaced with a more well understood term. | D7 | Writer's Discretion/ Line Edit |
| 1533 | 9 | Comment | P. 7, table Implement Equity Focused Practices: Suggested revision: "including field-based, engaging products and hands on experiences beyond the classroom space." | D7 | Writer's Discretion/ Line Edit |
| 1534 | 9 | Comment | P. 8, begins line 161: defines term "Standard English" and qualify it but that there is no universally accepted definition - - need to clarify if this definition what is being used for the framework and if it is fluid, how do teachers define standard english for themselves and their students | D7 | Writer's Discretion/ Line Edit |
| 1535 | 9 | Comment | P. 8, begins line 161: first half SEL/EL sections are not as strong as poverty and girls/women, foster and special education sections These gave specific tips to recognize and cited research that really helped to clarify why it is a problem) is the research lacking or…. | D7 | Writer's Discretion/ Line Edit |
| 1536 | 9 | Comment | P. 12, lines 270-272: "leveraged for further learning." needs an example to clarify; explanation of a term helps broaden understanding - for example students exploring genetics using the word 'kin' means "related family members" not everyone would understand unless the student is from the south - how does leveraging look?? | D7 | Writer's Discretion/ Line Edit |
| 1537 | 9 | Comment | P. 12, lines 281-283: "it developed independently after a period of time and began to distinguish itself from the inter-language of Spanish-speaking English learners." needs clarificaton or example to understand; better to clarify then use label "inter-language" | D7 | Writer's Discretion/ Line Edit |
| 1538 | 9 | Comment | P. 15, beginning line 358: Lacking an ELD coordinator at a school means teachers will not have the skills/training to implement. Figure 5 is very simplified; should be replaced with chart CDE http://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf , page 20 - 22, broken down by grade level in the document | D7 | Writer's Discretion/ Line Edit |
| 1539 | 9 | Comment | P. 19, line 444: ethnically diverse learner section: need to address stereotypical biases that impact student opportunity and learning - "all asians are good in math; girls can't do math and science, calling more on boys because more hands are raised, etc.) | D7 | Writer's Discretion/ Line Edit |
| 1540 | 9 | Comment | Pps. 19 & 20, lines 4-8: add important to. as in page 29 (does not address the importance of looking at family influence on stem field choices within culture or ethnicity yet families play a tremendous influence. | D7 | Writer's Discretion/ Line Edit |
| 1541 | 9 | Comment | P. 20, line 471: Suggested revision: "Accordingly, the design of science and engineering curriculum." otherwise looks like a specific type of engineering | D7 | Writer's Discretion/ Line Edit |
| 1542 | 9 | Comment | P. 23, lines 581-84: "In addition, students in foster care have the highest dropout rates and lowest graduation rates, and only about half of students in foster care passed California's high school exit exam in grade 10 in the 2009-10 school year (Barrat and Berliner 2013)." exit exam is no longer being offered; eliminated this year; better to replace with a relevant example. | D7 | Writer's Discretion/ Line Edit |
| 1543 | 9 | Comment | P. 25, line 641: An article to reference in this area which affects hand raising to answer questions, taking on leadership roles and participating group projects http://driftingthrough.com/2015/11/20/the-thing-all-women-do-that-you-dont-know-about/ | D7 | Writer's Discretion/ Line Edit |
| 1544 | 9 | Comment | P. 41, line 1009: multi-tiered system of support is critical for school wide support, for example bringing in RTI2 tier 1, 2 and 3 | D7 | Writer's Discretion/ Line Edit |

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| 1545 | 9 | Comment | Pp. 68-71 and 72: refers to CA-ELD framework and it would be better to provide the url that people can select (click on) to provide quicker access | D7 | Writer's Discretion/ Line Edit |
| 1546 | 9 | Comment | P. 20, lines 494-496: add "These experiences must include rich opportunities beyond the limits of poverty such as field trips into the natural world, access to multiple labs, equipment and materials, enrichment experiences and higher level instruction such as AP classes." circumstances don't allow for rich, engaging experiences for many students who deal with poverty.<br>NOTE: very concerned about limited lab resources within inner city urban schools, when rich standards for all students yet looking at funding allocated to science there is great disparity - how is this being addressed?? | D7 | Writer's Discretion/ Line Edit |
| 1547 | 9 | Comment | It would be helpful to connect ELD science framework to the science framework through specific vignettes. | DD36d | Writer's Discretion/ Line Edit |
| 1548 | 9 | Comment | Have references secondary and elementary in the snapshots. | DD36d | Writer's Discretion/ Line Edit |
| 1549 | 9 | Comment | Concern: document addresses literacy needs as an equity issue but not mathematical skills. Rec: add guidance around pre-requisites for high school science courses, specific to math | D41a | Writer's Discretion/ Line Edit |
| 1550 | 9 | Comment | Comment: Please include geographic location within the state when thinking about access of resources. Ex: teacher professional development, student programs seem bias towards San Joaquin Valley- various student programs and services don't meet the needs of students or educators in our region) | D41a | Writer's Discretion/ Line Edit |
| 1551 | 9 | Comment | Do we change everything throughout the framework from STEM to STEAM inclusively? | D39a | Writer's Discretion/ Line Edit |
| 1552 | 9 | Comment | All throughout this chapter it needs to address males as a sub population not just females. | D39a | Writer's Discretion/ Line Edit |
| 1553 | 9 | Comment | To be useful and purposeful to all education stakeholders involved this document needs to be consistent, concise and not overly verbose as is currently. | D39a | Writer's Discretion/ Line Edit |
| 1554 | 9 | Comment | Needs to be appropriately organized with clearly defined sections such as:<br><br>Populations Identified/Defined<br>Implementation of Equity<br>Strategies<br>Evidence and Data - Put all literature, data, references at the end.<br>STEM & STEAM<br>Etc…<br><br>Another suggestion would be to have these sections hyperlinked to allow readers to go directly to the section they would like to visit. | D39a | Writer's Discretion/ Line Edit |
| 1555 | 9 | Comment | Feels like an argumentative versus informational and instructive document for equity. It feels like it is trying to validate equity rather than help educators utilize | D39a | Writer's Discretion/ Line Edit |
| 1556 | 9 | Comment | "All K-12 teachers who teach science and engineering to ELs should ensure that ELs have full access to a robust science curriculum and develop advanced levels of English in science in a timely manner." Consider writing a section that includes | D39a | Writer's Discretion/ Line Edit |
| 1557 | 9 | Comment | P. 2, Line 16: "Students living in poverty." Suggested text: "Low Socio-economic Learners." low socio-economic describes a broader representation of students who are experiencing an environment hindered by any level of poverty. Poverty alone emphasizes only severe economic situations. *This should be changed throughout the document. | D39a | Writer's Discretion/ Line Edit |
| 1558 | 9 | Comment | P. 3, Line 1: "Girls and young women (gender equity)." Suggested text: "Gender Equity." Males should not be left out of the gender equity considerations as many of them, specifically of ethnic background | D39a | Writer's Discretion/ Line Edit |
| 1559 | 9 | Comment | P. 3, Lines 45-46: Figure 1 - Equity and the NGSS: A shared responsibility. Referring to the Fig. 1 paragraph - well said! | D39a | Writer's Discretion/ Line Edit |
| 1560 | 9 | Comment | P. 3, Line 47: Suggested text: "A major goal of this Science Framework is to mitigate the inequities that have prevented a large number of California's children and youth from excelling in science and engineering." Be realistic! The only way to eliminate inequality is to eliminate Homo sapiens. Not recommended. | D39a | Writer's Discretion/ Line Edit |
| 1561 | 9 | Comment | P. 3, Line 61, footnote: Suggested text: "Appendix K of the NGSS discusses the equity-oriented stance taken when developing these standards and presents a set of middle and high school classroom vignettes …" Clarifies target population | D39a | Writer's Discretion/ Line Edit |
| 1562 | 9 | Comment | P. 6, Line 142: "Figure X …." Suggested text: "Figure 2" | D39a | Writer's Discretion/ Line Edit |
| 1563 | 9 | Comment | P. 7: The paragraph on Dweck's research is great and is good for data and evidence supporting equity implementation. However, where it is placed doesn't flow or do its purpose justice. | D39a | Writer's Discretion/ Line Edit |

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| 1564 | 9 | Comment | P. 7, Figure 2: Add at the end of sub-head Establish Positive, Bias-free Learning Environments:<br>● Initiate respectful interactions with students' parents and guardians and inspire families to visualize their children as successful scientists and engineers.<br><br>Get the parents on board! And in elementary grades, parents just love to hear how bright their children are, and they listen attentively to suggestions about what great opportunities are in store for their kids (broadening the parents' horizons) and what they can do to further their kids' opportunities outside of school. Never forget about the parents. They're part of your education team! | D39a | Writer's Discretion/ Line Edit |
| 1565 | 9 | Comment | Figure 2- Ensuring Equity Critical Actions: Concern: non Title 1 high school, thus lacks additional funding to support students without access (ex: tech)<br>Rec: accountability to bullet point 2 (Maintain Appropriate Physical Resources and Programs)<br>Rec: distinguish between a science classroom and a science laboratory for the sake of manageable<br>class sizes to ensure lab safety and equal access (student to teacher ratio to support students)<br>Rec: although CA only financially supports and mandates 2 years of lab science in high school, consider adding a suggestion of more than 2 years lab science to high school course sequencing (Figure 2 on pages 6&7)<br>Rec: add a section that specifically addresses facility needs that should occur in order to support equitable learning<br>Add: address the need for teacher professional development in working with ELD students and students who speak different dialects outside of the English language | D41a | Writer's Discretion/ Line Edit |
| 1566 | 9 | Comment | Pp. 8-18, Lines 153-417: Standard English Learners: This section talks about speakers of various English dialects and the need to be respectful of those dialects. I heartily approve of that attitude. BUT students need to learn early on that there is a different sort of English used in school when at all possible. So there is a "home English" or another home language and "school English." This is not judgmental but rather is necessary so that everyone can communicate with each other with an agreed-upon language. If you do not emphasize this, if for reasons of political correctness you do not teach students the language they need to succeed, then they will stay in a linguistic ghetto and fail because employers expect standard (ie school) English. Nearly everyone needs to learn this because nearly all Californians speak at least some non-standard English, for example beginning sentences with "Like" and using "You guys" for a second person plural. (Like, what's up with you guys?)<br>The need for Standard/School English is brought up on pgs. 45-46, but it's buried too deeply in the document, I think. We need a common language in order to communicate. | D39a | Writer's Discretion/ Line Edit |
| 1567 | 9 | Comment | P. 9, lines 195-200: reference to Beck. She's not even in references | DD36d | Writer's Discretion/ Line Edit |
| 1568 | 9 | Comment | Pp. 21-22, Lines 521-523: Figure 4 is missing. It is very important, and every effort should be made to locate it and include it.<br><br>Also suggest *their* be replaced with *poverty's* effects. | D39a | Writer's Discretion/ Line Edit |
| 1569 | 9 | Comment | P. 22: Where's figure 4? Figure numbers don't correspond to reference point | DD36d | Writer's Discretion/ Line Edit |
| 1570 | 9 | Comment | P. 23: "Children and Youth." Suggested text: "Students." Be consistent in identifying as student, youth, learners, children etc. Choose one and use throughout, highly suggesting "students". | D39a | Writer's Discretion/ Line Edit |
| 1571 | 9 | Comment | P. 25, lines 613-614: "Note: Future 7 to be reformatted and permission to be sought from the authors - Wiegmann et al. 2014. In published version spell out SES as socioeconomic status." I assume this refers to Figure 16 on pg. 24. This step has not been done yet. | D39a | Writer's Discretion/ Line Edit |
| 1572 | 9 | Comment | P. 26, line 644: "(See Figure X, US Department of Commerce 2011)" This refers to Fig. 1 between lives 656 and 657. It hasn't yet been re-numbered. | D39a | Writer's Discretion/ Line Edit |
| 1573 | 9 | Comment | Line 800: Rec: "opportunities to socialize and learn with peers with similar [and different] abilities" | D41a | Writer's Discretion/ Line Edit |
| 1574 | 9 | Comment | P. 32, line 818: "… chapter XX (Instructional Strategies)" Suggested text: "… Chapter X (Instructional Strategies)" | D39a | Writer's Discretion/ Line Edit |
| 1575 | 9 | Comment | P. 34, lines 866-870: Suggested text: "A 504 plan refers to Section 504 of The … schooling. Students with mild disabilities may not qualify for Special Education services, but they still have a right to an IEP, under Section 504, to anticipate and accommodate their special needs. These IEP's are often called "504 Plans" to distinguish them from Special Education IEP's." This clarifies that Section 504 covers more than just students enrolled in Special Education programs. | D39a | Writer's Discretion/ Line Edit |
| 1576 | 9 | Comment | P. D35, Line 887: "See Figure X." Probably refers to the figure that starts on line 902. | D39a | Writer's Discretion/ Line Edit |
| 1577 | 9 | Comment | Lines 952-955: need info on how to correlate math and science | DD36d | Writer's Discretion/ Line Edit |
| 1578 | 9 | Comment | Line 952: Rec: don't emphasize literacy over science in a science classroom | D41a | Writer's Discretion/ Line Edit |

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| 1579 | 9 | Comment | P. 39, lines 984-985: Suggested text: "Universal Design for Learning is a framework for guiding educational practice. (See www.udlcenter.org)." Science educators, more than others, should be skeptical of claims that a methodology is “research based,” when practically the only offered evidence is by the same organization that is pushing that methodology. UDL seems like a great methodology and builds on the insights of generations of educators, but rigorous research (double blind, or independent attempts to duplicate results) has not really be done on it by independent investigators. | D39a | Writer's Discretion/ Line Edit |
| 1580 | 9 | Comment | Line 1003, Students with Disabilities, Snapshot: Rec: add the use of closed captioning to tech tools to the snapshot | D41a | Writer's Discretion/ Line Edit |
| 1581 | 9 | Comment | P. 41, line 1013: Suggested text: "… it is a shared responsibility to collaborate with teachers, specialists, school administrators, parents, and other stakeholders to provide the most appropriate support …" Parents are a super important part of the team when dealing with students with special needs. | D39a | Writer's Discretion/ Line Edit |
| 1582 | 9 | Comment | P. 41, line 1029: Suggested text: "Differentiated instruction is the use of a variety of effective instructional approaches …" I think differentiated instruction is terrific, but unless it has been demonstrated to make a measurable difference in student achievement by several independent researchers, the phrase “evidence based” should be avoided because it implies scientific research that may or may not have occurred. | D39a | Writer's Discretion/ Line Edit |
| 1583 | 9 | Comment | p. 42, lines 1039-1042: "Tier 1 instruction should result in no less than 80% of students achieving grade-level expectations. If less than 80% of do not succeed in Tier 1 instruction, schools should engage in close examination of the curriculum and teaching practices and make appropriate adjustments." Note the highlighted part: It needs to be “If less than 80% of students succeed…”<br><br>The larger problem, however, is the absolutist nature of this statement. It ignores influences beyond the school control. What has happened as a result of such demands is that administrators of self-contained classroom schools with low ELA and Math test scores forbid the teaching of science because those scores “don’t count.” That’s because one of the most basic accommodations needed for struggling students is more time. Finding more time is very hard. Drastically narrowing the curriculum is one accommodation. Another, used in other states, has been to drastically lower what is meant by grade-level or proficient. Neither of these serves our students well. | D39a | Writer's Discretion/ Line Edit |
| 1584 | 9 | Comment | P. 42, lines 1051-1053: Suggested text: "At the elementary level, Tier 2 support might entail targeted instruction as needed for mastery to small groups …" Too rigid and prescriptive. Flexible groupings work much better. Do just enough to achieve mastery, and move on. Also, these small groups should be in the classroom in coordination with the rest of the teacher’s schedule or after school or some other time. They should not be pull-outs because then these most vulnerable students miss out on classroom instruction and fall still farther behind. | D39a | Writer's Discretion/ Line Edit |
| 1585 | 9 | Comment | P. D43, lines 1063-1067: Suggested text: "Tier 3 … intensive intervention … is necessary for … students who … have not benefitted … from … Tier 2 supplemental instruction they received after they have been evaluated to determine what is impeding their learning and developing a responsive intervention plan." If something hasn’t worked twice, you’d better take a hard look at it before going further. | D39a | Writer's Discretion/ Line Edit |
| 1586 | 9 | Comment | P. D43, lines 1067-1073: When, exactly, does this intensive and lengthy intervention take place? After school? Saturdays? Summer school? Or are students excused from whatever instruction they missed in their regular classroom? (Doubtful). That’s the problem. They need more time. The issue is where to get that time. | D39a | Writer's Discretion/ Line Edit |
| 1587 | 9 | Comment | P. D43, line 1076: Suggested text: "… the instructional goal is to provide intervention more often …" In my experience, the terms “research-based” and “evidence-based” are often used to shut down questions and doubts expressed by practicing teachers about specific programs and approaches, especially programs that don’t stand up to scrutiny because their research design was poor. So it’s better to leave this terminology out of the framework. | D39a | Writer's Discretion/ Line Edit |
| 1588 | 9 | Comment | P. 44, line 1093: "Figure X." Suggested text: "Figure 8." | D39a | Writer's Discretion/ Line Edit |
| 1589 | 9 | Comment | P. 44, Figure 9: Suggested text: "Value language diversity and address language status: …In addition, teachers should make transparent for their students, in developmentally appropriate ways, that while standard English is the type of English privileged in school and necessary to learn for expanded opportunities in life and to communicate in public with members of diverse language communities, bilingualism and bidialectism … are highly valued assets." Being able to communicate with everyone at school is the ELL student’s most immediate concern. | D39a | Writer's Discretion/ Line Edit |
| 1590 | 9 | Comment | P. 51, line 1211: "Figure X." Suggested text: "Figure 11." | D39a | Writer's Discretion/ Line Edit |
| 1591 | 9 | Comment | P. 51, line 1213: Figure 11 - Integrated and Designated ELD - This discussion addresses an important equity issue. In order to carve out more time for ELD/ELA, science instruction has been severely curtailed in schools struggling to score better on ELA and Math standardized tests. | D39a | Writer's Discretion/ Line Edit |

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| 1592 | 9 | Comment | P. 53, line 1259: Suggested text: "Add: Over the course of the instructional year, in response to formative evaluations of student progress, frame blanks should gradually transition to having ever longer gaps between supplied words and supplied words becoming fewer and fewer as students develop increasing independence in performance." | D39a | Writer's Discretion/ Line Edit |
| 1593 | 9 | Comment | P. 53, line 1263: "Figure X." Suggested text: "Figure 12." | D39a | Writer's Discretion/ Line Edit |
| 1594 | 9 | Comment | Pp. 56-60, Scaffolding: Rec: define scaffolding vs. rescuing (use non-examples of scaffolding to further illustrate what scaffolding is and is not)- could add to Figure 14 on pg. 58 | D41a | Writer's Discretion/ Line Edit |
| 1595 | 9 | Comment | P. 60, lines 1418-1425: "Concern is expressed in these lines about the harm that might come to overburdened student translators." On the other hand, the peer tutor's responsibilities can sharpen his or her own attention and comprehension. | D39a | Writer's Discretion/ Line Edit |
| 1596 | 9 | Comment | P. 67, line 1463: Suggested text: "In this section, guidance is provided regarding instruction …" Argh! Among other things, has this "research" been done in settings like those that prevail in CA classrooms with their 30 plus low socioeconomic students from multiple cultural and language backgrounds? | D39a | Writer's Discretion/ Line Edit |
| 1597 | 9 | Comment | P. 68, line 1484: "Figure X." Suggested text: "Figure 15." | D39a | Writer's Discretion/ Line Edit |
| 1598 | 9 | Survey | The chapter on learning strategies is filled with many great resources and background research, but overlooks the importance of informal learning environments outside of the school as a crucial resource for teachers and students. As stated in Line 1063 "Learning is maximized when students actively apply new ideas after being introduced to them." Informal learning environments like museums, nature/science centers, and even local parks and trails are filled with ways to explore the phenomenon that are introduced in the classroom. In particular, these informal learning environments are crucial to the learning cycle as they provide opportunities to "expand on the new learning via experiences in which they apply their knowledge and skills in new contexts, ranging from hands-on investigations to engineering challenges" (Line 1101). Museums, in particular, have been leading the way in inquiry-based learning. For instance, visual thinking strategies (VTS) have long been in the toolbox of museum educators leading field trips. "Learning by doing" is at the core of this strategy document and informal learning environments are packed with opportunities to learn by doing. I highly encourage you to explicitly call out in this document the value of informal learning environments and field trips in extending learning outside of the classroom. California abounds with opportunities in nature and museums to provide students with those "significant life events" that many scientists point back to as the tipping points that launched them into a career in STEM. This document should point the way to increasing the chances for students to find these both in and outside of the classroom. | Item B | Writer's Discretion/ Line Edit |
| 1599 | 9 | Survey | "ELA/ELD Connection" boxes (e.g. page 15 or 169) I would recommend that you use the term "Equity & Access Strategy" to prevent a misconception that the identified strategy is only appropriate for a class with ELD students. These recommended strategies to support implementation of NGSS are great and are appropriate for all learners. | Item B | Writer's Discretion/ Line Edit |
| 1600 | 9 | Survey | Same as above: One's personal connection to the living world is based in direct experience with living systems, especially in a relevant, place-based context. Students in low-income urban neighborhoods do not generally have this experience, and unless financial resources are specifically set aside to enable the vast % of California's students that live in these neighborhoods to have these experiences as part of their schooling (professional development, program coordination, field study trips, project-based learning, supplies/materials, etc.), the enormous effort that went into creating the framework can only be viewed as incomplete and inadequate. | Item B | Writer's Discretion/ Line Edit |
| 1601 | 9 | Survey | In the snapshot Snapshot: Learning about Earthquakes in the Seventh Grade Integrated and Designated ELD in Earth Science, there is little guidance for a science teacher on integrated ELD. The majority of the snapshot is about how the ELD teacher uses the science content in designated ELD time. While this is very beneficial for an ELD teacher to see, this document will be more highly read by science teachers from the middle grades. I encourage you to rewrite the integrated section to include how the science teacher clarified intended language and content targets, activated prior knowledge, explicitly taught vocabulary, planned for collaborative conversations that had students use the language of science and used scaffolds to support the learners in reading and writing. | Item B | Writer's Discretion/ Line Edit |
| 1602 | 9 | Survey | I focused my attention specifically on the Students with Disabilities section of the chapter. The format of this section, along with the example lessons help SPED instructors develop clear and concise lesson's to help the students reach their academic potential. Most of what this section discussed is currently considered best practice among the SPED community.. | Item B | Writer's Discretion/ Line Edit |
| 1603 | 9 | Survey | In order for all students to have an enriched STEAM education, the integration of subjects can be more inclusive. Flexibility offered teachers is commendable when teachers have the awareness and training to combine elementary disciplines in meaningful ways to address their goals is laudable. My concern is that without greater examples of how this is accomplished, students who come to school with disadvantaged vocabularies and experiences are likely to find science an "add on, " thus short-circuiting their deep understanding of principles and vocabulary with which to describe them. | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

**Science SMC Meeting- February 19, 2016**

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| 1604 | 9 | Survey | relevant page/line number app. 1055-3 Tiered Intervention- Teachers/schools need more support to assure that tier 1 instruction is high quality General-Need more specific strategies and tools that teachers can use to implement the vision in the framework General-Use technology in framework document to make tools and strategies "come alive" for users. For example; video of teachers implementing strategies General-Bilingual Language support is not addressed at all | Item B | Writer's Discretion/ Line Edit |
| 1605 | 10 | CDE | Page 16 Line3D43 write Suggest: (delete write) complete | Item C | Writer's Discretion/ Line Edit |
| 1606 | 10 | CDE | Page 44 Line 1032 experiences they had before coming to a class.. Suggest: experiences they had before coming to a class. Insert: Using these experiences of students to discuss their prior knowledge provides leadership opportunities, and allows for more than the teacher to share knowledge. | Item C | Writer's Discretion/ Line Edit |
| 1607 | 10 | CDE | Page 82 Line1936 Supracircle | Item C | Writer's Discretion/ Line Edit |
| 1608 | 10 | CDE | Page 5 114-116 In overall lab safety… Suggest: To also use safe overall lab strategies | Item C | Writer's Discretion/ Line Edit |
| 1609 | 10 | CDE | Page 6 Line 140 Models that students develop… Suggest: Students develop models and use them | Item C | Writer's Discretion/ Line Edit |
| 1610 | 10 | CDE | Page 7 Line 1D43 Whole section reads like a literature review of a resource… Suggest: Start with line 171 and then back up with the research as needed. | Item C | Writer's Discretion/ Line Edit |
| 1611 | 10 | CDE | Page 9 Line 183 Add in "further detail can be found in grade level chapters" | Item C | Writer's Discretion/ Line Edit |
| 1612 | 10 | CDE | Page 9 Line195 Beginning of paragraph Suggest: Add in " As described in chapter two, | Item C | Writer's Discretion/ Line Edit |
| 1613 | 10 | CDE | Page 9 Line 195 Is the phrase the science education community uses when discussing suggest: refers to | Item C | Writer's Discretion/ Line Edit |
| 1614 | 10 | CDE | Page 9-14 General comment on section… Suggest: This feels too long and the vignette covers much of the same information. I would cut out a lot of this | Item C | Writer's Discretion/ Line Edit |
| 1615 | 10 | CDE | Page 24 Line 580 Vignette is a bit confusing how it is written… Suggest: It needs to follow the same pattern as the previous vignettes. | Item C | Writer's Discretion/ Line Edit |
| 1616 | 10 | CDE | Page 29 Line 688 Figure 3 needs to move down below line 693.. Suggest: Provide lines 691-693 as intro to the figure | Item C | Writer's Discretion/ Line Edit |
| 1617 | 10 | CDE | Page 35 Line 863 problem.. Suggest: Solution | Item C | Writer's Discretion/ Line Edit |
| 1618 | 10 | CDE | Page 36 Line 897 Vignette needs to better describe how the instruction and student learning happens… Suggest: It would help to see one activity broken down and described thoroughly | Item C | Writer's Discretion/ Line Edit |
| 1619 | 10 | CDE | Page 37 Line 935 Two related crosscutting concepts… Suggest: The CCCs need to be clarified | Item C | Writer's Discretion/ Line Edit |
| 1620 | 10 | CDE | Page 39 Line 954 Links and general comment on section Suggest: Remove | Item C | Writer's Discretion/ Line Edit |
| 1621 | 10 | CDE | Page 42 Line 970 Whole paragraph is very important and should somehow be highlighted – maybe move to line 968 before the chart? | Item C | Writer's Discretion/ Line Edit |
| 1622 | 10 | CDE | Page 48 Line 1127 We may want to be more clear that this is how science used to be taught and we can do better. | Item C | Writer's Discretion/ Line Edit |
| 1623 | 10 | CDE | Page 49 Line 1145 For this entire section add in the 5E headings to clarify what each paragraph is focusing on. | Item C | Writer's Discretion/ Line Edit |
| 1624 | 10 | CDE | Page 52 Line 1230 The educational support personnel in Expanded learning… Suggest: I would not include this here | Item C | Writer's Discretion/ Line Edit |
| 1625 | 10 | CDE | Page 53 Line 1375 Deeper meaning… Suggest: Add in depth of knowledge (DOK) to the first paragraph in front of or after deeper meaning if that makes sense. | Item C | Writer's Discretion/ Line Edit |
| 1626 | 10 | CDE | Page 60 Line 1415 Further definitions.. Suggest: Delete further definitions | Item C | Writer's Discretion/ Line Edit |
| 1627 | 10 | CDE | Page 5 Line 116 Please add a footnote for the Science Safety Handbook after this sentence: Instructing students to use particular equipment and in overall laboratory safety strategies is an essential element of CA NGSS instruction. | Item C | Writer's Discretion/ Line Edit |
| 1628 | 10 | Comment | Question: Lines 1-8 did not show up in my online version | D25 | Writer's Discretion/ Line Edit |
| 1629 | 10 | Comment | Lines 82-92: Keep. Thanks for the explicit connection to CaCCSSM and ELA with discourse and argument | D25 | Writer's Discretion/ Line Edit |
| 1630 | 10 | Comment | Line 140: Keep and add: Thank you for the table 1, clear goals to aim for. Add a specific row for mathematics?<br>More: Students use mathematical understanding to model relationships or change, with explicit understanding of assumptions and limitations, and the approximations in measurement-margin of error, measured to what unit of measure (cm, mm) (Math practice 4: Model with mathematics: apply math to solve problems, identify important quantities is a situations, map their relationships using tools such as diagrams, tables, graphs, formulas, analyze those relationships mathematically, draw conclusions, interpret results in the context of the situation (select, apply, translate among math representations to solve problems).<br>Less: Apply a formula given by the teacher, assume measurement is exact, teacher directs what type of graph, | D25 | Writer's Discretion/ Line Edit |
| 1631 | 10 | Comment | Line 182: Add: "diagrams, equations, TABLES, GRAPHS, computer simulations…" | D25 | Writer's Discretion/ Line Edit |

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| 1632 | 10 | Comment | Line 267: Add: To 3, the book Destiny of the Republic, Millard, tells the story of the assassination of President Garfield, it was not the bullet that killed him but the US doctors not valuing or applying the European sterilization techniques. The reference to the US Centennial Exhibition 1876, a World Fair , showcased the emerging technology: internal combustion engine, Remington's typewriter, Edison's automatic telegraph system, . Bell's telephone, Lister's process of antisepsis, Palmer's artificial limbs for Civil War amputees. Then Bell built on and refined an earlier tool that became X-ray technology which could have located the bullet in Garfield without the introduction of all the germs on the probes and fingers that actually killed Garfield. | D25 | Writer's Discretion/ Line Edit |
| 1633 | 10 | Comment | Lines 523, 564: Question: Where in the document do you define inquiry? There are different meanings used in teacher resources. Here you use the term 'guided inquiry'. Where is that defined, explained? Or reference an appropriate resource on Inquiry learning opportunities.<br>Inquiry-based lab, where is this defined, explained as a learning strategy? | D25 | Writer's Discretion/ Line Edit |
| 1634 | 10 | Comment | Lines 1255 on: Add: Please differentiate between problem-based learning and project-based learning. Many teacher resources use the terms interchangeably but there is a difference. In our grant we define problem-based as solving a problem such as getting cars and trucks from one hill to another. The solution could be a bridge-which type? Or a road, how steep a grade down, how steep a slope up? Project-based constrains the product to 'design a bridge' that will get cars and trucks from one hill to another.<br>Does PBL signal Problem-based (more open) or Project-based (more focused)? | D25 | Writer's Discretion/ Line Edit |
| 1635 | 10 | Comment | Line 1373: Add: Please at least reference or provjde a link to Hess's matrix that includes Math/Science details. We have found it very useful in both our math CaMSP grant and now our Science CaMSP grant for helping teachers move the learning opportunities up at least one level. | D25 | Writer's Discretion/ Line Edit |
| 1636 | 10 | Comment | Line 1494: Add: One way to motivate students is to connect to their lives and wonderings. Start wall charts with "I wonder…" or "A problem I would like to solve is…" This is a good connection to Student-directed Inquiry learning. Choose wonderings or problems that can be tackled with science practices. | D25 | Writer's Discretion/ Line Edit |
| 1637 | 10 | Comment | Line 1532: Change: "Good questioning" to "More effective questioning", good is too vague, what makes a question good? | D25 | Writer's Discretion/ Line Edit |
| 1638 | 10 | Comment | Line 1552: Change: Many questions literally require a response of yes/no or me/not me. Questions need to explicitly ask for the response required.<br>Examples"<br>2 "Can you repeat…" should be answered yes/no<br>change to Please repeat in your own words<br>4 "Would someone like to…" should be answered yes/no<br>change to "What can be added on to (name's) statement?" | D25 | Writer's Discretion/ Line Edit |
| 1639 | 10 | Comment | Line 1562: Change: In our CaMSP grant we have changed the title "accountable talk" which is not explicit or easily understood by the teachers to "productive talk" | D25 | Writer's Discretion/ Line Edit |
| 1640 | 10 | Comment | Line 1594: Add: For EL students, we have found it more effective to provide time to access what you know independently, share with a peer and refine/revise, share with a small group and refine/revise, then share with whole class when fully prepared and confident. | D25 | Writer's Discretion/ Line Edit |
| 1641 | 10 | Comment | Line 2005: Add: One of the challenges are the polysemous words, multi-meaning, such as degree (temperature, angle measure, to what degree?, 3rd degree, document earned after a course of study), or base, or congruent shapes compared to congruent meaning (as used in this document). Teachers need to be explicit about words that have different meanings in different contexts, and which meaning is being used in this learning opportunity. | D25 | Writer's Discretion/ Line Edit |
| 1642 | 10 | Comment | Line 2208: Add: Table of science practices and math practices from our CaMSP grant | D25 | Writer's Discretion/ Line Edit |
| 1643 | 10 | Comment | RECOMMENDATION FOR READABILITY (beyond shortening the chapter)<br>• Have some sort of graphic organizer for the chapter<br>• Have graphic organizer for how lessons were revised<br>• Provide a three page abstract of the chapter which highlights the key points.<br>• Give more written markers which help us identify where the SEP/DCI/CCC/PE/phenomenon/ instructional strategies are being used. Otherwise things get lost in the ocean of words. | D25 | Writer's Discretion/ Line Edit |
| 1644 | 10 | Comment | There are 10 or 11 strategies listed in this chapter. One reader thought it might be more useful to read 10 or 11 NSTA article - one article per strategy. | D32 | Writer's Discretion/ Line Edit |
| 1645 | 10 | Comment | Every example should include a paragraph that describes how each lesson/vignette addresses the SEP/DCI/CCC or PE – make the connections explicit. For each strategy, make the connections as explicit. | D32 | Writer's Discretion/ Line Edit |

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| 1646 | 10 | Comment | The nature of science (NOS) vignette did a relatively good job of making teaching decisions/rationale clear but it was uneven. The list of things teachers can do (bulleted list starting on 448) was helpful – need to see more of that sort of guidance. Even more specific guidance/concrete applications would help. For example line 451-452 prompt discussion among small groups…. Might help to have question stems that could be used as prompts.<br>This gives us what teachers have been asking for – explicit examples, shows how things go from non-NGSS to NGSS, how to make the transition. That said, there wasn't enough that was NGSS specific (i.e. there were sections that didn't even mention NGSS)<br>• Like how it shows what teachers do and what students do<br>• Like the links – not just a list at the end but links where you need it (embedded in the text) | D32 | Writer's Discretion/ Line Edit |
| 1647 | 10 | Comment | Assessment and measurability of the PEs not clear – maybe the authors need to be clearer about links to the assessment chapter | D32 | Writer's Discretion/ Line Edit |
| 1648 | 10 | Comment | Perhaps reorganize the chapter so that the strategies were ordered in a way that matches how we'd advocate doing instruction (either from Prof Learning environment or class environment). | D32 | Writer's Discretion/ Line Edit |
| 1649 | 10 | Comment | We asked participants if they felt that the chapter provided guidance for making a 3D lesson/unit. They felt that the links were helpful but that the chapter did not really provide help for how to knit together different resources to make it 3D. The chapter provides some links or resources (like case studies) but no real suggestions about how to do it, how to put it all together. The chapter provides the pieces but not enough help on how to put them together. In some ways the chapter goes against the philosophy of NGSS – it is trying to make us understand 3D nature via written word only. Maybe we need some links to classroom examples or lesson plans/units which show what it looks like. Maybe concrete examples of how to use phenomena to start a lesson, but what comes next. More examples (vignettes and snapshots) with teacher thinking as part of the description. Not strong enough emphasis of phenomena or how to use them. Teaching starting with phenomena that students could explore is an important component of NGSS – need more about this. (how to select criteria, how to use them, what comes next). | D32 | Writer's Discretion/ Line Edit |
| 1650 | 10 | Comment | Integration of different science disciplines is a challenge for teachers. How to do this is not really included in this chapter. | D32 | Writer's Discretion/ Line Edit |
| 1651 | 10 | Comment | We did not get a sense of what a big shift NGSS is from current instructional strategies by reading this chapter. The chapter did an adequate job linking instructional strategies to CCSS but it didn't seem to do as good a job to linking to the 3Ds of NGSS. | D32 | Writer's Discretion/ Line Edit |
| 1652 | 10 | Comment | In examples – would have been nice to have more "markers" – bold or highlight the three dimensions so it pops out easier. This would be especially helpful when showing examples of how to shift from 1D or 2D to 3D. Give more written markers which help us identify where the SEP/DCI/CCC/PE/phenomenon/strategies are being used. Otherwise things get lost in the ocean of words. | D32 | Writer's Discretion/ Line Edit |
| 1653 | 10 | Comment | It would be helpful to have an example of an old model lesson plan and an NGSS lesson plan for the same topic. Give a concrete example of how to shift instructional planning practices. [note from Henriques & Grace – NGSS Rollout III is at the point of tackling this issue, we weren't there yet as a state when this was written. Perhaps some of the ideas from Rollout III could be included in this chapter.] | D32 | Writer's Discretion/ Line Edit |
| 1654 | 10 | Comment | Not sure what grade level snapshot 10.5 is for. Please note that. | D32 | Writer's Discretion/ Line Edit |
| 1655 | 10 | Comment | There was concern about inclusion of the DOK levels – this is not an instructional strategy… it's a way of classifying levels of knowledge or thinking. We were not sure why this is here – unless it's a way to make the argument to administrators or link to CCSS. Could this be cut or relocated or at least pointed out that DOK is *not* a strategy? | D32 | Writer's Discretion/ Line Edit |
| 1656 | 10 | Comment | P21 coalition discussion seems out of place as well (like DOK). Not sure that it's an instructional strategy. | D32 | Writer's Discretion/ Line Edit |
| 1657 | 10 | Comment | Maybe start with a list of 5-10 bullets of what an NGSS lesson needs to include. Then everything in the chapter relates back to these 5-10 bullets which are the 3D aspects of the lesson. | D32 | Writer's Discretion/ Line Edit |
| 1658 | 10 | Comment | Include some examples of how to change from old to new – give teachers the tool about how to make the lessons more inquiry based. (reference Colburn's article on how to make lessons more open ended.<br>http://inquiryteaching.weebly.com/uploads/1/0/3/3/10332398/how_to_make_lab_activities_more_open_ended.pdf | D32 | Writer's Discretion/ Line Edit |
| 1659 | 10 | Comment | Formatting issues: remove the gray-scale from vignettes and snap shots - replace by a "box" outline (better for printing and note-taking). | D32 | Writer's Discretion/ Line Edit |
| 1660 | 10 | Comment | Line 140, Table: Nothing is mentioned about the nature of science even though that is a key aspect of what's going on here. Models and modeling are part of SEPs but they are also part of conceptual change teaching. They have a place in helping teachers understand student thinking. This should be explicit. | D32 | Writer's Discretion/ Line Edit |
| 1661 | 10 | Comment | Lines 148-191: It's important to note that one needs to use the SEPs to be successful doing ambitious science teaching. Also… a link is mentioned but not provided. | D32 | Writer's Discretion/ Line Edit |
| 1662 | 10 | Comment | Line 686: Something got cut off… this ends mid sentence | D32 | Writer's Discretion/ Line Edit |

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| 1663 | 10 | Comment | Snapshot 10.2: Suggest that the lesson continue with students comparing their design to nature's design. (Could even start this with a phenomena/problem). Then connect back to DCI/PEs. If this is related to soil erosion that's one DCI/PE if it's plant structure/function that's another DCI/PE | D32 | Writer's Discretion/ Line Edit |
| 1664 | 10 | Comment | Section which ends on line 1371: Students design a cat feeder – there is no link between this and anything in NGSS. If writers can't make connections between engineering examples to NGSS then we are in big trouble. | D32 | Writer's Discretion/ Line Edit |
| 1665 | 10 | Comment | P. 23, line 555: Suggested revision: "She gives examples…" word omitted | D16 | Writer's Discretion/ Line Edit |
| 1666 | 10 | Comment | Cut: citations, links, ELD specific information, common core. Some of this might be more useful in an appendix. This may be too dense to be useful to teachers. Can it be shortened / made more concise to better help teachers? | D5 | Writer's Discretion/ Line Edit |
| 1667 | 10 | Comment | Nature of Science: call out more that this is the traditional way--de-emphasize - for those that skim… | D5 | Writer's Discretion/ Line Edit |
| 1668 | 10 | Comment | P. 2, Line 13: This section defeats the purpose of a chapter about instructional strategies. Just cut this line to change the sentence to: It suggests appropriate . . .<br>or cut "It does not prescribe the use of any specific instructional strategy or practice, but " and start the sentence with "This chapter suggests appropriate…" | D5 | Writer's Discretion/ Line Edit |
| 1669 | 10 | Comment | Line 13: Practice - Use of this word is not described in any detail. Makes me wonder if it refers to SEP or something else. If not SEPs, then what practices are being referred to | D5 | Writer's Discretion/ Line Edit |
| 1670 | 10 | Comment | P. 2, Lines 32-48: Cut. No need to repeat what the table of contents already says. | D5 | Writer's Discretion/ Line Edit |
| 1671 | 10 | Comment | Pp. 3-5: Cut or shorten beyond the 1st 2 paragraphs. Repeats chapter 2 of the framework. | D5 | Writer's Discretion/ Line Edit |
| 1672 | 10 | Comment | Line 67: Student Ideas---needs to be reiterated elsewhere | D5 | Writer's Discretion/ Line Edit |
| 1673 | 10 | Comment | P. 5: Can we add something about when to use certain instructional strategies (chart or table). How does direct instruction look differently? | D5 | Writer's Discretion/ Line Edit |
| 1674 | 10 | Comment | Line 107: Not just computers. Add or change "developing mathematical models through the use of technology or traditional means as appropriate to the task" | D5 | Writer's Discretion/ Line Edit |
| 1675 | 10 | Comment | Lines 107-116: "supported by budgets, etc.:" Useful, but is this in the correct place? It is only a sentence or two. Possibly move to Instructional Resources. | D5 | Writer's Discretion/ Line Edit |
| 1676 | 10 | Comment | P. 5, Lines 111-113: Needs to be strengthened to ensure that districts are able to support students across the state in an equitable way in regards to instructional materials. | D5 | Writer's Discretion/ Line Edit |
| 1677 | 10 | Comment | Lines 128-133: redundant from line 57? | D5 | Writer's Discretion/ Line Edit |
| 1678 | 10 | Comment | P. 6: Chart is useful, but needs to address what instructional strategies a teacher uses to get there. | D5 | Writer's Discretion/ Line Edit |
| 1679 | 10 | Comment | Line 164: "build models" - clarify to include conceptual and mental models | D5 | Writer's Discretion/ Line Edit |
| 1680 | 10 | Comment | Line 185: Include link to Ambitious Teaching | D5 | Writer's Discretion/ Line Edit |
| 1681 | 10 | Comment | P. 11: more modern examples as well as "traditional models." Current students were born after year 2000. | D5 | Writer's Discretion/ Line Edit |
| 1682 | 10 | Comment | Line 267, Table 2: Need a more diverse (gender, cultural) listing of scientists to connect the history of science to. | D5 | Writer's Discretion/ Line Edit |
| 1683 | 10 | Comment | P. 12: flesh out the role models to include their struggles/process, etc. Real people and nature of science | D5 | Writer's Discretion/ Line Edit |
| 1684 | 10 | Comment | Line 295: unclear or confusing. Clarify or use table/formatting to clearly indicate she is working in Pre NGSS mode in example 1. | D5 | Writer's Discretion/ Line Edit |
| 1685 | 10 | Comment | P. 16, Lines 349-356: Cut. This is unnecessary. | D5 | Writer's Discretion/ Line Edit |
| 1686 | 10 | Comment | P. 17, Line 362: Is teaching "the" scientific method the best way to help students engage? We should be modeling how we want teachers to work with students. | D5 | Writer's Discretion/ Line Edit |
| 1687 | 10 | Comment | P. 17, Line 369-377: Change the paragraph to: John Snow did not follow the scientific method in any specific order. | D5 | Writer's Discretion/ Line Edit |
| 1688 | 10 | Comment | P. 17, Line 372: Add a definition of hypothesis. | D5 | Writer's Discretion/ Line Edit |
| 1689 | 10 | Comment | P. 17, Line 379-388: Cut. This is basically a repeat of Teaching the Nature of Science. (lines 207-214) | D5 | Writer's Discretion/ Line Edit |
| 1690 | 10 | Comment | Line 685: Move right from one engineering design cycle to figure three. Move the figure down to separate. Or both cycles can be figures that are referred to. | D5 | Writer's Discretion/ Line Edit |
| 1691 | 10 | Comment | Line 688: Is this the "NGSS process." if so call it out | D5 | Writer's Discretion/ Line Edit |
| 1692 | 10 | Comment | P. 29, Line 693-695: Confusing. Change to: "As students go through the process they may develop ideas for other solutions and go back and revise." | D5 | Writer's Discretion/ Line Edit |
| 1693 | 10 | Comment | P. 30, Line 740: Add progressions of engineering or clarify within the snapshots how this relates to the engineering progression. The examples are not clear regarding differentiation for grade level and the progressions. In the example, it was not clear that students had to define the problem. | D5 | Writer's Discretion/ Line Edit |
| 1694 | 10 | Comment | Line 951: maybe replace the "Steps" with an arrow or something. presentation is a little too linear? | D5 | Writer's Discretion/ Line Edit |

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| 1695 | 10 | Comment | Line 968: Chart not very teacher friendly. Chart is not super helpful, lots of engineer talk “design brief”, etc. Restructure so that teachers can see their role more clearly marked. Maybe split it into practice and strategy columns. | D5 | Writer's Discretion/ Line Edit |
| 1696 | 10 | Comment | Line 968: Table 4, Practice 1. “avoid premature decisions…” add “about solutions until.” | D5 | Writer's Discretion/ Line Edit |
| 1697 | 10 | Comment | Line 969: switch to Instructional Strategies needs to be more obvious - sort of flows into I.S. from chart. | D5 | Writer's Discretion/ Line Edit |
| 1698 | 10 | Comment | Lines 1006-1014: too many lists. turn it into a sentence or bullets. | D5 | Writer's Discretion/ Line Edit |
| 1699 | 10 | Comment | Line 1078: 5E: the 5E instructional cycle should go before engineering information. It helps to provide context for when engineering might exist within a learning sequence | D5 | Writer's Discretion/ Line Edit |
| 1700 | 10 | Comment | P. 46, Line 1079: Keep the section on the 5E instructional cycle because many elementary teachers are not familiar with it. | D5 | Writer's Discretion/ Line Edit |
| 1701 | 10 | Comment | Line 1086: 5E: Talked about in paragraphs and then in a table. Are both needed? The table provides more information. Can the paragraph be incorporated into the table. | D5 | Writer's Discretion/ Line Edit |
| 1702 | 10 | Comment | Line 1086: 5E: The table should include information on what teachers do and students as is commonly seen in a table like this. | D5 | Writer's Discretion/ Line Edit |
| 1703 | 10 | Comment | Line 1102: When mentioning engineering, refer to the other sections of this chapter which give more information on engineering. | D5 | Writer's Discretion/ Line Edit |
| 1704 | 10 | Comment | Line 1225: PBL - Use of the abbreviation to be either problem or project based learning (line 1229). The section focuses on problem based learning but BIE is about Project based learning. Are these two to be considered the same thing or different things? | D5 | Writer's Discretion/ Line Edit |
| 1705 | 10 | Comment | P. 52, Lines 1228-1230: Do the authors intend to use problem based and project based learning interchangeably. Perhaps they need to be defined or explained. | D5 | Writer's Discretion/ Line Edit |
| 1706 | 10 | Comment | P. 55: clarify the section on math activities. unclear how they relate.<br>Math connection needs clarification, feels kind of tacked on? to what degree are science teachers responsible for mat instruction | D5 | Writer's Discretion/ Line Edit |
| 1707 | 10 | Comment | P. 55: mention of decision matrix chart - more info on how to use, or background of its origin. new to teachers since it is engineering lingo. | D5 | Writer's Discretion/ Line Edit |
| 1708 | 10 | Comment | Pp. 58-59, Lines 1390-1401: Redundancy. Identify listed instructional strategies as science practice. | D5 | Writer's Discretion/ Line Edit |
| 1709 | 10 | Comment | Line 1409: DOK chart is useful and teacher friendly. streamline the wordiness after the chart---maybe another chart or bullets - very wordy and less useful--could be a little redundant. | D5 | Writer's Discretion/ Line Edit |
| 1710 | 10 | Comment | P. 63, Line 1496: motivate and engage students - Needs to be expanded or clarified as the lead in to the next paragraphs sections. confusing and if we are actually addressing motivation and engagement--it needs to be expanded greatly and discuss the shift from teacher to student centered. | D5 | Writer's Discretion/ Line Edit |
| 1711 | 10 | Comment | Line 1512: questioning and instructional strategies - needs to address the concept that these things are planned for; spontaneous questions are less useful | D5 | Writer's Discretion/ Line Edit |
| 1712 | 10 | Comment | P. 64, Line 1532-1533: Change to: "structure questions around information that is critical to the topic." The last section is unnecessary. | D5 | Writer's Discretion/ Line Edit |
| 1713 | 10 | Comment | Line 1604: notebooks section useful - needs to address technology aspect - many teachers use them | D5 | Writer's Discretion/ Line Edit |
| 1714 | 10 | Comment | Line 1667: science and engineering notebooks - is the framework implying that there are separate science and engineering notebooks? we are developing kids that can think, etc. and engineering is supposed to be integrated into science instruction. Should clearly indicate one notebook? | D5 | Writer's Discretion/ Line Edit |
| 1715 | 10 | Comment | P. 82, Line 1932: Cut. Too fluffy. | D5 | Writer's Discretion/ Line Edit |
| 1716 | 10 | Comment | P. 82, Lines 1936-1942: Cut. | D5 | Writer's Discretion/ Line Edit |
| 1717 | 10 | Comment | P. 82, Lines 1947-1948: Cut. Too fluffy. | D5 | Writer's Discretion/ Line Edit |
| 1718 | 10 | Comment | P. 83, Line 1957: Adding pictures or diagrams to clearly explain. Or reference the chapter with the example of the specific use of this technology. | D5 | Writer's Discretion/ Line Edit |

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| 1719 | 10 | Comment | P. 90, Line 2155: Change to:<br>Teaching the use of mathematics is the essence of scientific endeavors at all grade levels. It is through the use of numbers that we establish quantitative relationships. Gardens and the environment in general can be used to teach all these concepts with items that all students can relate to regardless of their grade level.<br><br>Imagine a young student that measures plants in a garden for height while exposing different sets of the plants to various levels of fertilizer. Similarly a student can measure the circumference of a tree on their campus and monitor changes over the course of the year. Depending on grade level students could be asked to consider everything from what a “control” is to how we measure and systematic error at the higher grade levels.<br>To achieve this, students do not need any graphing calculators, but will learn more by making the graphs by hand so that they learn the importance of “scale” to making graphical representations. It is important to note that the fact that computers “can” do many mathematical functions for us, students learn more from doing these task by hand so that they understand the underlying issues behind what “the machine” was able to perform. By understanding what computers do “for us” they can then hone their skills at becoming proficient in the use of the computer as another “tool” in their box of skills. | D5 | Writer's Discretion/ Line Edit |
| 1720 | 10 | Comment | The whole document needs to be more clear, concise, and to the point. There are too many words not enough descriptive language on what we should specifically DO! | D39a | Writer's Discretion/ Line Edit |
| 1721 | 10 | Comment | Increase Pd support for instructional strategies | D39a | Writer's Discretion/ Line Edit |
| 1722 | 10 | Comment | P. 3, Figure 1: Content: Suggested text: "Core Ideas." To be more specific. Content can be applied to practices and crosscutting. Core Ideas emphasizes DCI. | D39a | Writer's Discretion/ Line Edit |
| 1723 | 10 | Comment | P. 6, Table1: Instructional Shifts Required by the CA NGSS: We like having the table to organize the ideas and break up the monotony of pure text. What about the idea of including additional images? | D39a | Writer's Discretion/ Line Edit |
| 1724 | 10 | Comment | Pp. 7-8, lines 144-158, 166-169 “Ambitious Practices:” Suggested text: "Ambitious Science Teaching." We would like to maintain consistency in calling “Ambitious Science Teaching” (Lines 144-158) when referencing (Lines 166-167). | D39a | Writer's Discretion/ Line Edit |
| 1725 | 10 | Comment | P. 8, line 164: Suggested text: "Teachers need to develop instructional units around a big idea of science. Then, teachers must elicit students’ emerging ideas in a constructive way. In the classroom, Ambitious Science Teaching instructional practices ask students to build models to explain phenomena associated with disciplinary core ideas (Ambitious Practices #1 and #4). The scientific model must provide a causal explanation of why something happens (Ambitious Practice #3). Teachers should use questioning strategies to engage students in classroom talk that becomes an opportunity for students to refine their conceptual models (Ambitious Practice #2). Teacher questioning strategies are discussed later in this chapter." | D35 | Writer's Discretion/ Line Edit |
| 1726 | 10 | Comment | Pp. 11-12, Table 2: Examples of historical case studies related to specific learning contexts: Remove the numbering in column 1 from the left. Numbering can indicated priority of importance in the historical examples. | D39a | Writer's Discretion/ Line Edit |
| 1727 | 10 | Comment | P. 12, Resources after Table 2 of Historical perspectives in Science: No changes, just great resource in what teachers can actually use immediately. If you were to create another document that is more concise with direct resources / strategies, this would be great. Maybe this can be called “NGGS Resources” If you this was to be made, they can hyperlink the reasoning Chapter 10 or rollover. | D39a | Writer's Discretion/ Line Edit |
| 1728 | 10 | Comment | P. 31, line 757: "In the next lesson, the students put on a play to learn about the ways that different insects can both harm and help farmers and the important roles played by agricultural engineers to solve problems that farmers encounter." ? Isn’t connected to the rest of the paragraph, delete? | D35 | Writer's Discretion/ Line Edit |
| 1729 | 10 | Comment | P. 41, third box: Suggested text: "There may be more opportunities to apply mathematics to concrete situations and computational thinking in engineering such as maximizing the area enclosed by a fence and varying parameters in a simulated solution." - clarification, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1730 | 10 | Comment | P. 41, fourth box: Suggested text: "encouraging students to generate many ideas before deciding on the best idea results in better ideas and helps students" - clarification, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1731 | 10 | Comment | P. 58, line 1D408, table 7: future formatting might consider making one page or two pages pull out for important tables. Easier for teachers to see and pull out as separate handouts. Make formatting easier to say | D39a | Writer's Discretion/ Line Edit |
| 1732 | 10 | Comment | P. 47, Line 1116, Right after insert: In order for this to be successful, teachers need professional development and support. This is a fairly new skill for most teachers, and emphasis it isn’t easy, but support is needed to accomplish supporting the multiple facets of instruction as a facilitator. | D39a | Writer's Discretion/ Line Edit |

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| 1733 | 10 | Comment | P. 52, line 1260: Suggested text: "In collaboration with the classroom teacher, expanded learning programs can provide students with additional opportunities to solve problems. The educational support personnel in expanded learning programs generally have experience in project-based learning." - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1734 | 10 | Comment | P. 53, line 1331: Suggested text: "with a criterion or constraints listed at the start of each row, and a possible solution at the head of each column. Students indicate a point value for each criterion to" - Makes it sound like all are in one row, one column | D35 | Writer's Discretion/ Line Edit |
| 1735 | 10 | Comment | P. 82, line 1950: move "Below are some examples of how technology may be used to support student learning:" to end of sentence line 1948 - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1736 | 10 | Comment | P. 90, line 2145: Suggested text: "They use diagrams to develop a model but also words to label features that are important. When they present their idea to their working group, they find they must express it precisely in order for others to understand what they are thinking. Thus, the language and the modes of presenting information become more natural to students. As students refine their thinking, they develop the language to express their thoughts more clearly so there is a deep interplay between science learning and the language and literacy development that occurs in science classrooms." - repetitive, clarification | D35 | Writer's Discretion/ Line Edit |
| 1737 | 10 | Comment | P. 6, Box item: Add additional sentence: "CAUTION HERE, especially for evolution, which is not purposeful (no conscious end result expected)." Engineering is generally done for practical purposes (goals), but evolution does not happen with any specific goal, although many have that misconception. | D51 | |
| 1738 | 10 | Comment | P. 19, line 373: --**a hypothesis is not a prediction**... [Boldface, capitalize, or print it in red] Probably one of the most mis-used words in the processes of science, so emphasize that phrase any way possible. | D51 | |
| 1739 | 10 | Comment | P. 34, line 772: Suppose you are an agricultural engineer. [or "... engineering student."] typo: poor syntax | D51 | |
| 1740 | 10 | Comment | P. 35, line 824: Add sentence: "Grasses could be uprooted by cattle grazing, too." [just another cause that might be mentioned]. | D51 | |
| 1741 | 10 | Comment | P. 47, line 1049: Add a link to source of the *Debunking Handbook* , with its researched pedagogy on effective debunking: http://www.skepticalscience.com/Debunking-Handbook-now-freely-available-download.html. Effective, tested strategy does exist for helping students to correct their misconceptions: The Debunking Handbook, by Cook & Lewandowsky 2011. | D51 | |
| 1742 | 10 | Comment | P. 49, line 1121: [Insert " and 3) pique the curiosity of students. Research shows us that curiosity motivates us to find out more and helps our brains remember what we discover. | D51 | |
| 1743 | 10 | Comment | P. 81, line 1838: "... what was going on in the demonstration., ..." typo: "in" omitted. | D51 | |
| 1744 | 10 | Comment | P. 93, line 2172: ... may be required to encode an algorithm… typo: omit "do" | DD51 | |
| 1745 | 10 | Comment | P. 94, line2204: ... mathematics of high school science. This is an excellent place to introduce dimensional analysis, a system for resolving dimensional units to those needed to solve a problem. Insert "This is an excellent place..." sentence here. | DD51 | |
| 1746 | 10 | Survey | Teachers should be encouraged to use field trips to museums and other community to reinforce classroom lessons. Inquiry-based learning is essential to nurture critical thinking skills. | Item B | Writer's Discretion/ Line Edit |
| 1747 | 10 | Survey | Lines 8-10 Go back to introductory paragraph from Draft 4. This version makes no sense. Line 267 Table 2: Examples of historical case studies #3 Change "contagious illnesses described at the beginning of this chapter" to "contagious illnesses described later in this chapter." Lines 924-926 Either add to this paragraph to show another good example of engineering in HS or cut this paragraph. Lines 929-930 After cutting lines 924-926, cut these lines, too. | Item B | Writer's Discretion/ Line Edit |
| 1748 | 10 | Survey | Chapter 10: Instructional Strategies for the NGSS. I appreciate and feel strongly in favor that the CA Science Framework select only 3 instructional strategies in this chapter. This sends the message that we should focus on understanding and implementing well an instructional strategy rather than exploring multiple strategies in the hope that the next one will be "better". However, I am wondering why CGI was identified as one of the three instructional strategies? PBL and 5E both have evidence/data that they improve student achievement in science. CGI has evidence for improving math achievement, but I don't believe there is enough data to suggest that it crosses over and is effective in delivering high quality NGSS science instruction. In fact, CGI is less of a strategy but a philosophical approach to guiding learning in mathematics that may have benefits in science but it has not been documented (proven) well yet. As a CDE document that will be reaching teachers across the State I would be cautious to cite this philosophical approach as being 3 dimensional before having more confidence that it. As an alternative, I would recommend that CGI be replaced with another research-based science instructional strategy like the Content-Understanding-Environment (CUE) model from "Designing Effective Science Instruction: What Works in Science Classrooms" by Anne Tweed. In addition, I would like to see more emphasis on the importance of literacy and recommendations on how to implement literacy strategies. Literacy is an enormous shift in implementing NGSS successfully. I would recommend that a literacy framework be provided in the instructional strategies chapter in order to address the important conceptual shift number 6: The NGSS and Common Core State Standards (English Language Arts and Mathematics) are Aligned. | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

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| 1749 | 10 | Survey | The 'More of this-less of that' graphic was really all I needed. The rest is just repetitive. | Item B | Writer's Discretion/ Line Edit |
| 1750 | 10 | Survey | Provides guidelines for teaching NGSS hand in hand with Common Core concepts | Item B | Writer's Discretion/ Line Edit |
| 1751 | 10 | Survey | 1. Using historical case studies LINE 295-Ms. A-The scientific method. You gave an example of what Ms. A was doing with regards to the scientific method, then explained that it can be better by implementing new strategies by listing them on LINE 448. It would be nice if you expanded on this idea by then giving an example of Ms. A's improved lesson plan of the scientific method using the suggestion on LINES 448-458 and then lead into Ms. B's and Mr. C's approach to the scientific method. -By redoing Ms. A's lesson with the appropriate strategies, it allows us educators to look at our current activities and find ways to improve on it. -It would also be nice if at the end of the lesson or throughout the lesson, references to the historical case studies, scie & eng practices and crosscutting conepts, 4 core instruction prac, or the instructional shifts req by CA NGSS is cited. TO BE CONTINUED on scienceframework@cde.ca.gov | Item B | Writer's Discretion/ Line Edit |
| 1752 | 10 | Survey | Line 15-17. Consider revising the sentence, possibly separate into two separate sentences Line 36. Change motive to motivate Line 76. Omit “to” Table 1. Less of this….box 1 – consider using a more common synonym for rote Table 1. More of this…box 2 – omit “used” Line 185-187. Consider providing the website link for those interested in seeing the tools Line 245-252: This is a great inclusion and something many science teachers need to read. Table 2: A great inclusion, this piece will work great to help science teachers realize that science does not work in isolation of other school subjects. Line 418: change “separates” to “separate” Line 628-630: Change to, “Useful resources for educators, which are related to understanding how science works and how it is done, are available at the “Understanding Science” Web site at the University of California, Berkeley. Line 696: Change beginning of sentence to: Or, a prototype…. Line 704-706: Very good point, same can be said for teacher created lessons. Line 939-940: Consider revising sentence. Confusing in structure | Item B | Writer's Discretion/ Line Edit |
| 1753 | 10 | Survey | Chapter 10 – Comments Line 36- change the word “motive” to motivate Line 69- should read “use those ideas” | Item B | Writer's Discretion/ Line Edit |
| 1754 | 10 | Survey | Ch. 10: Excellent, especially details for explicitly integrating NOS elements throughout every science course, and at every level, K-12. | Item B | Writer's Discretion/ Line Edit |
| 1755 | 10 | Survey | Chapter 10- Instructional Strategies line number suggestion 193 keep in this section 267 table 2 3. Providing Developmental Themes and Story lines: " explanation of contagious... at the beginning of chapter" should be after this table 401 This example is very general and might need a more specific example 419 keep in this statement D434-D438 keep in this 817 keep in this snapshot 1078 keep in this section on 5E 1216 keep in this resourse 1347 keep in this table 1408 keep in this table 1552 keep in these examples 1560 keep in resource 1604 there isn't anything in this section on the 'essences of notebooks" ask Kathy DiRanna or Jo Topps 1633 keep table 9 1641 keep resource 2102 keep in this statement | Item B | Writer's Discretion/ Line Edit |
| 1756 | 10 | Survey | Lines 1225-1279 I wish they gave concrete, real-lfe examples of how project-based learning can teach different topics instead of giving no examples. Lines 1458-1492 There should be more concrete examples of levels 3 and 4 for Webb's DoK. | Item B | Writer's Discretion/ Line Edit |
| 1757 | General | Public Comment, Mulholland-Beahrs | Jenny Mulholland-Beahrs provided 3 pages of comments for Chapters 2 and Chapter 10. | D66 | Writer will review and implement changes per his discretion. |
| 1758 | 11 | CDE | Page 30 Line 748-49 collegiality with other teachers Suggest: collegiality with other teachers including specialists for English learners and those supporting students with disabilities… | Item C | Writer's Discretion/ Line Edit |
| 1759 | 11 | CDE | Page 41 Line 1064 equitable science opportunities Suggest: equitable science opportunities, including assistive devices and applications, | Item C | Writer's Discretion/ Line Edit |
| 1760 | 11 | CDE | Page 46 Line 1222 representing all grade levels... Suggest: representing all grade levels, as well as specialists, | Item C | Writer's Discretion/ Line Edit |
| 1761 | 11 | CDE | Page 50 Line 1346 Professional organizations … Suggest: Professional organizations, including those dedicated to specific physical, emotional, and social disabilities…. | Item C | Writer's Discretion/ Line Edit |
| 1762 | 11 | CDE | Page 12 Line 259 Parents, guardians, families, and community… Suggest: Parents, guardians, families, early learning and out-of-school time educators, and community | Item C | Writer's Discretion/ Line Edit |
| 1763 | 11 | CDE | Page 48 Line 1273 Guardians, and community members can be active players in... Suggest: Guardians, early childhood and expanded learning educators, and community members can be active players | Item C | Writer's Discretion/ Line Edit |
| 1764 | 11 | CDE | Page 40 Line 1026 Add an additional bullet to list, after line 1027.Read and understand the CA Model School Library Standards and the role the integration of these standards play in preparing student for college and careen readiness. | Item C | Writer's Discretion/ Line Edit |
| 1765 | 11 | CDE | Page 50 Line 1331 guardians, families… Suggest: guardians, families | Item C | Writer's Discretion/ Line Edit |
| 1766 | 11 | Comment | P. 5: liked how the stages are defined and bullet points describing the activities | D6b | Writer's Discretion/ Line Edit |
| 1767 | 11 | Comment | P. 5: Instead of bullet points with lots of text, add bullet point with links for more information | D6b | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

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| 1768 | 11 | Comment | P. 19: Recognize need of elementary teachers - keep and emphasize | D6b | Writer's Discretion/ Line Edit |
| 1769 | 11 | Comment | P. 32, line 815: Suggested text: "A progression from a basic structure for initial learning through, several overlapping structures might be needed to fully reach the intended outcome. Another multiple-day institute may have as its end goal using" - clarification | D35 | Writer's Discretion/ Line Edit |
| 1770 | 11 | Comment | P. D35, line 883: Suggested text: "In other words, every teacher" - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1771 | 11 | Comment | P. 45, line 1184: Suggested text: "aligns and integrates curriculum, instruction, and assessments effectively." - clarification, reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1772 | 11 | Comment | P. 46, line 1230: Good-- inclusion of paraprofessionals | D40 | Writer's Discretion/ Line Edit |
| 1773 | 11 | Comment | P. 53, line 1417: Suggested text: "who are practicing, refining, and integrating three dimensional learning into their instruction. One example is Project GUTS, a middle grade program that integrates computer modeling and simulation of community issues as complex systems phenomena. It has been used in after-school spaces as a “sandbox” for teachers to experiment with new pedagogy, content, and practices. In this project, middle grade science teachers are mentored by master teachers and STEM professionals serving as facilitators during professional development workshops and after-school club meetings which also provide a venue for teachers to observe and understand student learning and engagement." - reads more smoothly | D35 | Writer's Discretion/ Line Edit |
| 1774 | 11 | Comment | P. 57, line 1534: change to a title without the term ecosystem? Ecosystem in title? It seems off topic | D40 | Writer's Discretion/ Line Edit |
| 1775 | 11 | Comment | Brett provides three segments in his comments:<br><br>Commendations<br>Deficiencies and Recommendations<br>Some of the reviewer’s rationale for key recommendations | D70z3 | |
| 1776 | 11 | Comment | Provided full text tracked changes. 70 Line edits | D70z4 | |
| 1777 | 11 | Survey | With the inclusion of Earth science into the traditional high school courses, provide vetted resources and examples for how to build content knowledge. | Item B | Writer's Discretion/ Line Edit |
| 1778 | 11 | Survey | 5/115 Add one for admin (see p39,1,000: can this be used for admin?), Good continuum for teachers to self assess. 8/156 There is a concern about how the shift will apply to college admissions for students-- there is a gap in transition from high 12/ 263 Offer a pathway/continuum for administrators., How can administration be supported? Can there be clear suggestions? 14/319 Moving from…”People’s”-- who are “people’s?” Reconsider specific titles. Is this a reference to the 7 conceptual shifts from Chapter 1? If so, can it just be referenced? Can examples be provided for each shift? 18/414 Induction for New Teachers, Should say: Induction for teachers (new to science, California, content change), Good-- The inclusion of induction is important, 17/400 Why is this a table and not a narrative or bulleted list? Reduce statements for what coursework needs to include. 22/522 Good-- Collaborative practice of teachers working together 25/594 Fig. 3 Is this the best graphic to use? Can you provide an example/snapshot/vignette of how you would use this as a tool? 27/645 CSTA, emphasize the importance of belonging to professional organizations, and furthering professional knowledge-- staying current and aware (resources, collaboration etc...) 27/663 Although not included in innovate, omit, Good-- promotion of lifelong learning in content 27/666 add data 30/746 Good-- the inclusion of professional collaborations 34/882 Good-- Continuous improvement -- inclusion of quotations 35/892 Good-- practices and exemplars table D43-44/1138 Good-- provides tools for implementations and resources 45/1187 we like the stress that doing science requires space and equipment and the need for consumables that are readily available 46/1218 Good-consumables are mentioned as a critical component in the science classroom 46/1205 Observable features of our natural??? | Item B | Writer's Discretion/ Line Edit |
| 1779 | 11 | Survey | Line 85: The acronym LEA is used for the first time and is not explained. What does it stand for? Line 189: why is this a paragraph with only one sentence. Maybe a bit more explaining what we would find when we click the link. Line 221: Who are the people? “the people in them” This implies the people in the policies. Specifically state who. Line 244: this is another short 2 sentence paragraph. It is vague Line 251; is the paradigm you speak of the principles. You should address this explicitly. The paragraph goes to talk about the teachers. Maybe explicitly state, principals must be able to effectively evaluate teachers therefore should be well versed in NGSS. Line 262: What section are you referring to? If it is a new section maybe a heading is useful. If it is just this chapter of the document maybe select a different word Line 370: where is the said table Line 520: Please explain why this key. You simply give an example with no further explanation. Line 522: if this is a new paragraph, indent. Line 549: Why? What is so good about it? Line 642: Indent new paragraph Line 961: This is the only line of this list with punctuation at the end. Line 1250: Indent Line 1370: Indent Line 1390: Indent Line 1332: needs a space between guardians,families | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

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| 1780 | 11 | Survey | There were no line numbers on this document so I will refer to page numbers. This too may be a problem since the pages were numbered correctly through page 20. Then I got references like Pg 23 of 20. I'll do my best given these constraints. Page 2: new curriculum materials could read a new curriculum. Page 4: "the QPLS identify" should read "identified" Page 9: should be punctuated local, regional contexts Page 33: should be punctuated continuously, collaboratively Page 38: should read this section discusses Page 42: should read particularly effective practices Page 45: the comma after brain development should be removed Page 48: the word extendedday should be hyphenated or split into two words | Item B | Writer's Discretion/ Line Edit |
| 1781 | 11 | Survey | Overall comment - Some orgs, projs, resources mentioned no longer exist, or will not exist, when this publishs - Ex. CSLNet. Needs to be addressed. Perhaps needs to be noted that this doc was published in 20… & edu. is an ever changing field. p2 ln 30 " The core message is that a change ....realize the vision of the CA NGSS." Needs to be more prominently displayed P5 ln 101 Need link to where graphic came from p 5 ln 101 Fig 1 & Fig 2 figures should be stacked. Possible link to CDE graphic. Problem with CDE dates? pg14-15 Table 1 Swap the two columns. Focus on what we should be doing not what we are not supposed to be doing pg10 ln 210 "The confluence of three educational ....student learning" .. highlight or box this. VERY important p16 ln 370 "Bybee developed following table" p 17 ln 398 References a table. What table? Need Table # or ref. or eliminate this ref. Table needs to be near the ref. p 27 ln 655 New text -"1) For example, teachers in out of school programs can coordinate with the regular school-day program teachers to participate in and/or provide professional learning." p 30 ln 740 How might teachers learn how to use tools and processes to help organize student exploration? Delete lines 740-744 (questions Already covered in Chapter 12. Don't leave readers with unanswered ques. p39 ln 1001 There is nothing about what the administrators need to know to support teachers.There should also be something describing that there is risk involved in changing to this new curriculum. Clarity is needed. pg 40 1018- Should ask them to read the NGSS or the framework also. pg 39 ln 1000 To enable administrators to become competent with the CA NGSS, district and school administrators should: To enable administrators to become leaders in the implementation of and competent with the CA NGSS, district and school administrators should: pg49 ln 1296 Delete this sentence. This is the first time they tell us what comes next. pg 52 ln 1395 Delete examples | Item B | Writer's Discretion/ Line Edit |
| 1782 | 11 | Survey | pg 6 ln 115 Graphic needs open end. Add text to indicate there is no real end to this implementation process. pg 17-18 Table 3 box 2 missing CCCs. Need to be inserted. Supports 3-D teaching p 21 ln 483 "disciplinary core ideas through the science and engineering practices...." Need to add ccc otherwise it's not 3-D p 24 ln 578 "How can…County Office of Education". Combine sentences 1 & 2 and eliminate the use of a question to start a paragraph pg 29 ln 730 Delete 'CA NGSS' from the end of the sentence -We haven't been teaching NGSS long enough to say 'Often'. p39 ln 1011 Change tp "..instruction that support student and teacher learning." So it addresses both learners P 39 Ln1042 learning aligned with the CA NGSS.learning aligned with the CA NGSS with the understanding that a productive struggle for teachers and students will be inherent in the process. NGSS will not look like the old standards. Students and teachers will both have learning curve as they explore the 3D of NGSS | Item B | Writer's Discretion/ Line Edit |
| 1783 | 11 | Survey | Museums, aquariums, and science centers are listed as partners for teachers and students on the path to science literacy. As purveyors of high-quality environmental science education, NatureBridge feels that additional phrasing including field-based environmental (science) education is worth including in the Framework. Our field-based environmental science activities are designed to support the dimensions of NGSS. We feel strongly that specific mention of these opportunities highlights the value of these experiences, and will lend administrative and district-level support for teachers seeking deep and immersive learning opportunities for their students. Suggested Alterations to Chapter 11: • Page 2, Lines 16-17: "Students will engage in deeper and more meaningful ways, ask more questions, and experience science through investigations [add] in their community, classrooms, and in outdoor and field-based settings." • Page 9, Lines 162-164: "formal and informal leaning environments that include museums, science centers [add] environmental education providers, and other opportunities are fully engaged…" • Page 27, Lines 650-652: "2) Participate … (e.g., county offices of education, and informal science sites such as zoos, aquariums, museums, [add] and field-based environmental education providers.)" • Page 46, Lines 1205-1209: "Remember that … natural [add] world. Throughout the course of instruction, students will complete numerous hands-on investigations and engineering challenges [add] in their community, classrooms, and in outdoor and field-based settings, including teacher and student-designed experiments as they explore science concepts related to a specific phenomenon." • Page 48-49, Line 1289: "…museums, science centers, [add] and field-based environmental education campuses, not only…" • Page 56, Lines 1510-1511: "…offered by science centers, museums, [add] field-based environmental education organizations, libraries, parks, and community-based organizations…" | Item B | Writer's Discretion/ Line Edit |

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| 1784 | 11 | Survey | Chapter 11 - Professional Development line number suggestion 27-28 chapter moves from theoretical to more specific points for implementation. At this point, we suggest adding a sentence stating " More specific items to be considered for district implementation will be presented later in this chapter". 60 and 62 when using the word "implementation" change to "implementation and sustainability" 111 thus (written twice) 112-113 This advice is helpful to all readers. 158 D) repeated twice 262 are there 5 or 6 subsections 599 for the first three factors of figure 3, need more details on how to promote a chared vision, plan short and long term and set goals before proceeding w/strategies starting on line 628. line 610 cautions against starting with strategies but a large section on strategies follows. 611 when speaking about the use of data, should refer to Needs assessment and give examples. 711 "as well as" 798 CA CCSSM 841 refer to Figure 3 to help readers make the connection with components 1067 is rubric available on this site? not able to find. 1124 heading "critical issues" is confusing because it is the same term used in figure 3 but is used for a different purpose. Perhaps heading should read "Issues for Program Success" | Item B | Writer's Discretion/ Line Edit |
| 1785 | 11 | Survey | 1124-1186 whole section is a bit choppy, moving from large to small grain size and back. 1128 should "scaling up" be defined here. 1189-90 remove 1st "necessary" in the sentence 1205 add "world" to the end of the sentence. 1254 change "is" to "are" 1283 space between "extended" and "day" 1283 "programs" plural or possessive? 1287 space between "after" and "school" 1331 space between "guardians, families" 1355 delete word "include" 1384 should network be plural? | Item B | Writer's Discretion/ Line Edit |
| 1786 | 12 | Comment | Line D433: "components" - suggested revision: "materials."<br>What is meant by the components? Unclear if this is materials, resources, or parts of NGSS architecture | D5 | CDE Discretion/ Line Edit |
| 1787 | 12 | Comment | Lines 25-32: Please specify what an LEA is other than what the acronym stands for. Please identify if this is this district-level or school-level, not all readers will know? | D5 | CDE Discretion/ Line Edit |
| 1788 | 12 | Comment | Line 118: long term English learners - this is not a familiar term - does this refer to students that should be redesignated but have not yet reached that level of english proficiency? | D5 | CDE Discretion/ Line Edit |
| 1789 | 12 | Comment | Line 446: Suggested revision: "on explaining these objectives to parents, school administration, & community members." By adding administrators and community members, this more explicitly supports the ways that teachers would have to back their curriculum. It will not JUST be parents. | D5 | CDE Discretion/ Line Edit |
| 1790 | 12 | Comment | Lines 447-452: Suggested revision: "While teacher materials will clearly state the learning goals, student resources should build towards these goals, but not reveal the learning goal upfront. This means that in most cases, student resources should not begin by stating the expected learning prior to instruction, as this would interfere with three-dimensional learning." The original text it too wordy and detracts from the overarching message of this line. The new line is more streamlined, but still communicates the goal of this line. | D5 | CDE Discretion/ Line Edit |
| 1791 | 12 | Comment | Line 208: Suggested revision: "and to incorporate the multiple elements." incorporate = integration of these desired elements | D5 | CDE Discretion/ Line Edit |
| 1792 | 12 | Comment | Line 252: "science content incorporating" - remove. content or dci is a dimension of 3-d learning, this seems redundant | D5 | CDE Discretion/ Line Edit |
| 1793 | 12 | Comment | Lines 46-50: Does this imply a difference between the 3 course and 4 course models? What's trying to be said here? If we are interpreting this correctly; we recommend this language: recognizing that not all standards may be taught in a particular course model | D5 | CDE Discretion/ Line Edit |
| 1794 | 12 | Comment | Santa Clara County Office of Education provided line edits | D52D | CDE Discretion/ Line Edit |
| 1795 | 12 | Comment | Overall, Chapter 12 is very well-written and already contains the most important content necessary for its intended purpose. The majority of the comments below are relatively minor critiques to help ensure the final draft meets its intended purpose. | D70z5 | CDE Discretion/ Line Edit |
| 1796 | 12 | Comment | 59 line edits but need to examine in-depth because it is the criteria and may change what the publishers need to produce. | D70z6 | CDE Discretion/ Line Edit |
| 1797 | 12 | Survey | Suggestion: Additional sentence: "In addition, educational materials should include supplementary material to bridge student understanding, skills, and processes from prior to CA science standards." - Need to emphasize the importance of the transition period between students moving their way through NGSS from K-12. It should not be an instant -- students know something and move from there -- but moving from where students currently are in terms of skills, understanding, and processes. | Item B | CDE Discretion/ Line Edit |
| 1798 | 12 | Survey | IMPORTANT COMMENT/ SUGGESTION: Page 15 Lines 447 - 452 - Excerpt: "While learning goals may be explicitly stated in the teacher materials, student resources will provide experiences that clearly build to the development of those learning goals without explicitly stating those goals prior to the instruction. In most cases student resources will not begin by stating the expected learning prior to instruction because this interferes with instructional strategies for three-dimensional learning." - Suggestion: "…In most cases student resources will not begin by stating the expected learning prior to instruction because this interferes with instructional strategies for three-dimensional learning, but should include an engagement or essential question to drive student learning." - Strength: Important that the learning goals are not shown to students as they work towards changing their own understanding. - | Item B | CDE Discretion/ Line Edit |

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| 1799 | 12 | Survey | Strength: Important that the learning goals are not shown to students as they work towards changing their own understanding. Modification: However, there should still be a focus question / essential question that students are exploring and attempting to explain and elaborate on Page 18 Line 541 - 545 - "Having selected instructional resources or developing a curriculum plan districts and schools will need to ensure that every classroom has access to the necessary equipment and expendable materials and provides the necessary work-space and infrastructure (e.g. access to a sink, or power outlets) to teach the curriculum as designed" | Item B | CDE Discretion/ Line Edit |
| 1800 | 12 | Survey | Page 1, Line 21 - 24 - "Alignment is not a superficial matching of topics covered to those mentioned in the CA NGSS. The concept of three-dimensional learning is defined and explained in the Overview chapter of the CA Science Framework and is a critical element of the vision." - Strength: Liked how it emphasized the 3 Dimensions and summarized the major changes IMPORTANT COMMENT/ SUGGESTION: Page 5 Line 128 - 130 - Resources that fail to meet the criteria in Category 1: Science Content/Alignment with the Standards, will not be considered suitable for adoption. - Organize Lines 97 - 126 and move to before Line 68 - Either remove from introduction in Page 3 Lines 69 - 70 - Why repeated twice? Seems redundant to emphasize category 1. Reorganize to understand importance of categories Page 8, Lines 233 - 237 - 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. - Strength: Liked how this is one of the components instructional resources need to include for teachers. - Emphasis on obtaining and recycling materials, not just using them IMPORTANT COMMENT/ SUGGESTION: Page 9 Line 263 - 265 - Excerpt: "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." - Suggestion: "…180 days including time for assessment, remediation, extension… estimate of necessary instructional time to include time for student mastery." - Do 180 days include testing? remediation? extension? 180 days seems like a pacing guide, where it will prevent student opportunities to grow, learn, and re-teach. More flexibility needed to include time for student mastery | Item B | CDE Discretion/ Line Edit |
| 1801 | 12 | Survey | IMPORTANT COMMENT/ SUGGESTION: Page 13 Line 402 - 408 - Excerpt: "Teacher resources supply a differentiated path for all students. In particular, instructional resources should provide guidance to support students with special needs, including standard English learners, English learners, long term English learners, students living in poverty, foster youth, girls and young women, advanced learners, students with disabilities and students below grade level in science skills, three-dimensional learning, literacy skills or mathematics skills." - | Item B | CDE Discretion/ Line Edit |
| 1802 | 12 | Survey | Strengthen safety language - including safety certification? - Needs rationale to follow the safety handbook - Is there legal language to ensure districts to consider safety in budgets? Should the entire part (safety, computers, equipment, renewables, material) be done by districts? OK to be redundant here | Item B | CDE Discretion/ Line Edit |
| 1803 | 12 | Survey | Although this is about curriculum, the instructional resources section must also include the notion that in science, instructional resources include up-to-date laboratory equipment. Many school districts serving lower-income students have adequate instructional resources for science when you count only textbooks as instructional resources, but they have terrible or nonexistent lab facilities. You need to include the kinds of resources in this chapter that actually make teaching science work; you do not need to say what an Erlenmeyer flask has to be in order to be adopted, but you must strongly state that local education agencies MUST fund such resources in order to be in moral compliance with the notion of actually teaching science. | Item B | CDE Discretion/ Line Edit |
| 1804 | 12 | Survey | Could be a good chapter to provide live links to quality resources such a NSTA in addition to NRC, etc. | Item B | CDE Discretion/ Line Edit |
| 1805 | 12 | Survey | Lines 22-23: three-dimensional learning – Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas Line 74: "on balance" reads strange Line 247: "incorporating the three dimensions of the CA NGSS" does not flow with the rest of the sentence Line 304: suggested student assessment tasks Line 377: as described in Line 476: and provide guidance to help Line 563: ad hoc Line 594: remove "and resources" Line 601: remove "and remove" and replace with ", be reviewed…" | Item B | CDE Discretion/ Line Edit |
| 1806 | 12 | Survey | IMPORTANT COMMENT/ SUGGESTION: Page 18, Line 549 - Excerpt: "Budgeting for science equipment, materials and renewables must be considered as an element in district plans." - Suggestion: "Budgeting for science equipment, materials and renewables AND CONSUMABLES must be considered as an element in district plans, such as in the LCAP." - Are renewables the same as consumables? If not, they should be defined. Are both used by students and replaced every year? | Item B | CDE Discretion/ Line Edit |
| 1807 | 12 | Survey | PBS LearningMedia would be a great site to add to the OERs on page 21, line 616: http://www.ca.pbslearningmedia.org/ | Item B | CDE Discretion/ Line Edit |
| 1808 | 12 | | Framework provides guidance on how instruction will look inside a classroom, how to use assessment strategies to promote student learning, how technology can be integrated for engagement and learning, and how to support all students . Recommended Text: framework provides examples of how instruction might look inside a classroom, how to use assessment strategies to promote student learning, how technology might be employed for engagement and learning, and how to support all students | D65K | CDE Discretion/ Line Edit |

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| 1809 | 12 | | 108-109- design of the program; chapter, unit, and lesson overviews; glossaries. design of the program. Delete the chapter, unit, and lesson overviews; and glossaries. (textbook-centered terms) | D65K | CDE Discretion/ Line Edit |
| 1810 | 12 | | 153-153 For this reason, some units of the Discipline Specific Course model contain supplemental Disciplinary Core Ideas from other domains. Recommended edit: For this reason, some units of the Discipline Specific Course model should contain supplemental Disciplinary Core Ideas from other domains | D65K | CDE Discretion/ Line Edit |
| 1811 | 12 | | 175-178 (9.)Instructional resources focus on the application of science to be learned (e.g., medicine, engineering, environmental science) using authentic and meaningful real-world applications and scenarios that are California specific when appropriate. Recommended Edit 9. Instructional resources focus on the application of science to be learned (e.g., medicine, engineering, environmental science) using authentic and meaningful real-world applications and scenarios that might include some California examples. | D65K | CDE Discretion/ Line Edit |
| 1812 | 12 | | 190-191 Resources emphasize the importance of science education to all members of our society in a way that is culturally and socially authentic. Edit: add example/clarification? | D65K | CDE Discretion/ Line Edit |
| 1813 | 12 | | 239-241 (20.) Instructional resources include opportunities for reflection on the nature and history of science and on their science learning as indicated in the CA Science Framework. Edit: clarify where in the Framework | D65K | CDE Discretion/ Line Edit |
| 1814 | 12 | | 276-279 (8.)Topics selected for in-depth study are developed through their role in explaining selected phenomena, chosen to support students in building the knowledge and abilities | D65K | CDE Discretion/ Line Edit |
| 1815 | 12 | | 296-297 Ancillary and support resources are an integral part of the instructional program and are clearly aligned with the CA NGSS. | D65K | CDE Discretion/ Line Edit |
| 1816 | 12 | | 321-323 Entry-level assessments for each unit are provided to help teachers elicit student prior knowledge and preconceptions and gauge their facility for using the Science and Engineering Practices and Crosscutting Concepts. | D65K | CDE Discretion/ Line Edit |
| 1817 | 12 | | 337-338 These strategies are to be differentiated for different age levels. . | D65K | CDE Discretion/ Line Edit |
| 1818 | 12 | | 341-344 (6.) Teacher resources supply a differentiated path for diverse students to build toward the Performance Expectations of the CA NGSS. In particular, formative assessment tasks are designed to support teachers in collecting and analyzing data about student conceptual understanding. Suggest deleting first sentence and keep only second sentence. Add that materials should provide opportunities for everyone to learn. Or delete 6 entirely as No. 5 is the same thing. | D65K | CDE Discretion/ Line Edit |
| 1819 | 12 | | 400-401 (3.) Instructional resources incorporate instructional strategies to address the needs of students with disabilities in lessons, assessments, and teacher resources, as appropriate, at every grade level. | D65K | CDE Discretion/ Line Edit |
| 1820 | 12 | | 417-419 (1.) Program resources include a curriculum guide for the academic instructional year for teachers to follow when planning for 180 days of instruction. | D65K | CDE Discretion/ Line Edit |
| 1821 | 12 | | 423-425 (3.) The teacher resources provide guidance in daily lessons and units of instruction with appropriate opportunities for checking for understanding and adjusting lessons if necessary to ensure three-dimensional learning.\ | D65K | CDE Discretion/ Line Edit |
| 1822 | 12 | | 438 Assessment keys and rubrics are provided. | D65K | CDE Discretion/ Line Edit |
| 1823 | 12 | | 453-456 (11.) Lessons include instructional strategies aligned to the CA NGSS, the CA Science Framework and based on current and confirmed research (e.g., teacher facilitated student-led conversations, as well as hands-on activities and laboratories | D65K | CDE Discretion/ Line Edit |
| 1824 | 12 | | 487 (19.) Resources provide teachers with instructions on how outside resources | D65K | CDE Discretion/ Line Edit |
| 1825 | Apx | CDE | Page 2 Resources Section This section includes resource descriptions that differ in format – some are full sentences, and some are clauses that begin with verbs or adjectives. They should be consistent. | Item C | Writer's Discretion/ Line Edit |
| 1826 | Apx | CDE | Please add Science Safety Handbook to appendices. | Item C | Writer's Discretion/ Line Edit |
| 1827 | Apx | Comment | Appendix A: Showcase some of these literature resources within the chapters of the framework (snapshots and/or vignettes) to show integration of literature into lessons, especially at the middle school and high school level. | D41a | Writer's Discretion/ Line Edit |
| 1828 | Apx | Comment | Appendix A: What are students doing with the literature? | D41a | Writer's Discretion/ Line Edit |
| 1829 | Apx | Comment | Appendix A: Vignettes in the framework chapters are shaded but there is no shading in Appendix A | D41a | Writer's Discretion/ Line Edit |
| 1830 | Apx | Comment | Appendix A: Include lexile or reading level in charts, Discuss how the text needs to follow developmental phonics | D37 | Writer's Discretion/ Line Edit |
| 1831 | Apx | Comment | Appendix A: Reference “Habits of Mind” like critical thinking, asking for evidence, etc. Deborah Meiers | D37 | Writer's Discretion/ Line Edit |
| 1832 | Apx | Comment | Appendix A: Put case study in vignette box | D37 | Writer's Discretion/ Line Edit |
| 1833 | Apx | Comment | Appendix A: Be careful about referencing name-brand products, it sounds like an ad and it might be outdated some day. (Like on line 273) | D37 | Writer's Discretion/ Line Edit |
| 1834 | Apx | Comment | Appendix A: Make the vignette more student-led with teacher guidelines | D37 | Writer's Discretion/ Line Edit |
| 1835 | Apx | Comment | Appendix A: More instruction on how to pick outstanding trade books at different levels, link any orgs that have done that | D37 | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

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| 1836 | Apx | Comment | Appendix A: The integration of reading within the unit is well done - the vignettes in the grade level chapters need to model this practice (they don't currently) | D37 | Writer's Discretion/ Line Edit |
| 1837 | Apx | Comment | Appendix A: In the booklist, nonfiction and fiction should be denoted and how to use fiction effectively in the classroom | D37 | Writer's Discretion/ Line Edit |
| 1838 | Apx | Comment | Appendix A: Teacher oriented synopsis/nav tool | D37 | Writer's Discretion/ Line Edit |
| 1839 | Apx | Comment | Appendix A: p. 1, lines 30-31: "provide teachers with examples regarding a variety of literature resources that might stimulate students' minds and deepen understanding . . ." Framework should include science fiction literature and non-expository literature for middle/high school levels - examples and how to use them | D41a | Writer's Discretion/ Line Edit |
| 1840 | Apx | Comment | Appendix A: Line 34: Make this paragraph into three bullet points to stand out and make it more concise | D37 | Writer's Discretion/ Line Edit |
| 1841 | Apx | Comment | Appendix A: Line 57: Delete "is wonderful" - unnecessary | D37 | Writer's Discretion/ Line Edit |
| 1842 | Apx | Comment | Appendix A: Line 59: Kindle only book. If the framework is going to reference specific books, explain why you are recommending this over other books. Maybe add a link to a list of books. | D37 | Writer's Discretion/ Line Edit |
| 1843 | Apx | Comment | Appendix A: Line 152: Include how Mrs. B came up with her questions or reference/resource. Explain why Mrs. B choose this challenge so teachers can mirror this process. Add more emphasis on the children asking questions (not just the teacher). | D37 | Writer's Discretion/ Line Edit |
| 1844 | Apx | Comment | Appendix A: Line 250: Great addition of examples of differentiation | D37 | Writer's Discretion/ Line Edit |
| 1845 | Apx | Comment | Appendix A: Line 268: Awkward, rephrase | D37 | Writer's Discretion/ Line Edit |
| 1846 | Apx | Comment | Appendix A: p. 11, lines 308-314: need to be modified to reflect the goals outlined in lines 21-32 (page 1-2). How can middle school/high school teachers use other types of literature beyond the textbook | D41a | Writer's Discretion/ Line Edit |
| 1847 | Apx | Comment | Appendix A: Line 3DD36d: Suggested text: "Literature used in a school is determined by the district and must include teachers." | D37 | Writer's Discretion/ Line Edit |
| 1848 | Apx | Comment | Appendix A: Line 3D37: confusing, but the triangle is nice | D37 | Writer's Discretion/ Line Edit |
| 1849 | Apx | Comment | Appendix A: Line D379: add verb like "has" or "contain" or "offers" | D37 | Writer's Discretion/ Line Edit |
| 1850 | Apx | Comment | Appendix A: Lines 382-392: Include lexile or reading level also include that information in the charts | D37 | Writer's Discretion/ Line Edit |
| 1851 | Apx | Comment | Appendix A: Line D433: Yay! | D37 | Writer's Discretion/ Line Edit |
| 1852 | Apx | Comment | Appendix B: Add some sort of explanation at the top. | D37 | Writer's Discretion/ Line Edit |
| 1853 | Apx | Comment | Appendix B: Do we need these? If so, what about the Ocean Literacy principles (68% of students live on the coast)? | D37 | Writer's Discretion/ Line Edit |
| 1854 | Apx | Comment | Appendix B: Align EEI to NGSS | D37 | Writer's Discretion/ Line Edit |
| 1855 | Apx | Comment | Appendix B: If you're going to use EEI - be sure to connect it to CCSS | D37 | Writer's Discretion/ Line Edit |
| 1856 | Apx | Comment | Appendix D: We are having trouble understanding why the integrated model is an appendix and/or why include it at all? How are we supposed to use this model? Can there be an introduction added to the appendix for the rational as to how districts should use this information, why the integrated model is not fully developed, who is the target audience for this model. | D40 | Writer's Discretion/ Line Edit |
| 1857 | Apx | Comment | Appendix D: pp. 1-2, lines 26-58: interesting to consider as talking points for conceptual courses… more engaging to focus on cross cutting concepts and allows for an opportunity to motivate more students to take science. | D40 | Writer's Discretion/ Line Edit |
| 1858 | Apx | Comment | Appendix D: p. 2, lines DD36d-38: good that it mandates the sequence so you have access to content that if fundamental first | D40 | Writer's Discretion/ Line Edit |
| 1859 | Apx | Comment | Appendix D: p. 2, lines 38-41: Nice how they talk about fundamental concepts that are transferrable…. but you can go more indepth if you specialize | D40 | Writer's Discretion/ Line Edit |
| 1860 | Apx | Comment | Appendix D: p. 3, lines 59-71: Give us the data that is being referenced here… provide a table with the countries and how they set the education program (who goes on to high school and who goes on to technical… are they tracked and if so what are those tracks). This will give us a better picture of the global world. | D40 | Writer's Discretion/ Line Edit |
| 1861 | Apx | Comment | Appendix D: p. 7, line 174: This statement should be in the beginning of each course model for high school. | D40 | Writer's Discretion/ Line Edit |
| 1862 | Apx | Comment | Appendix D: p. 9, lines 196-198: This statement contradicts the all standards all students. The way this statement is interpreted is that the PE in course 3 are not needed for the assessment. Does this mean the assessment will only cover PE in the first 2 courses? Does this mean the assessment will be in 10th grade? What message are you trying to convey here? If districts choose the 4yr model and the 3yr model (discipline specific) will they be adequately prepared for the assessment after 2 years? | D40 | Writer's Discretion/ Line Edit |
| 1863 | Apx | Comment | Appendix D: p. 10, lines 205-214: Give more detail about the what each credential entails. How will teachers be given opportunities to get the credential they need? Some of our teachers have life science credentials… what does that enable them to teach? | D40 | Writer's Discretion/ Line Edit |

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| 1864 | Apx | Comment | P. 4, line 93: Suggested text: "Three-dimensional learning requires that students develop their own models to represent how the world works. Three-dimensional learning requires that students plan and conduct investigations, analyze and interpret the data, and use mathematics and computational thinking to describe what they find. It is no longer sufficient to simply memorize the models developed by scientists and engineers or study the investigations of famous researchers. Three-dimensional learning requires students to construct explanations and design solutions, to defend such explanations and designs using evidence, and to evaluate and communicate their ideas to others." | D35 | Writer's Discretion/ Line Edit |
| 1865 | Apx | Comment | P. 4, line 103: Suggested text: "Students who think like scientists and engineers realize that patterns in data suggest underlying causes. Earthquakes and volcanoes are not randomly distributed around the world, but appear in specific groupings that suggest common underlying causes. These students will be better able to recognize patterns in species distribution within an ecosystem. Organisms are not randomly distributed in an ecosystem, but found in distributions determined by such underlying causes as microclimate and soil type. Three-dimensional learners understand that concepts such as scale, proportion and quantity are helpful for understanding disciplinary core ideas in biology, chemistry, physics, and earth and space science. Concepts such as energy, structure and function, and stability and change can be used in all science disciplines, allowing their newly acquired analytical skill to simplify the learning of new material." | D35 | Writer's Discretion/ Line Edit |
| 1866 | Apx | Survey | Instructional Sequence (IS) Define IS in glossary PCK to glossary - referenced Intro of 6-8 Integrated -p 4 ln 83 Glossary In CA Framework it appears to be a laundry list of acronyms. For instance ELA/ELD glossary actually added important terms and definitions. Add TOSA add IHE Add EQuIP Quality Professional Learning Standards (QPLS). | Item B | Writer's Discretion/ Line Edit |
| 1867 | Apx | Survey | Appendix A, bottom of page 16- Please amend the information for QUEST to read as follows: KQED QUEST http://www.kqed.org/quest QUEST provides relevant science and engineering multimedia resources for MS and HS students, educators and lifelong learners. | Item B | Writer's Discretion/ Line Edit |
| 1868 | Apx | Survey | Appendix D 10/205-214 Give more detail about the what each credential entails. How will teachers be given opportunities to get the credential they need? Some of our teachers have life science credentials… what does that enable them to teach? 9/196-198 This statement contradicts the all standards all students. The way this statement is interpreted is that the PE in course 3 are not needed for the assessment. Does this mean the assessment will only cover PE in the first 2 courses? Does this mean the assessment will be in 10th grade? What message are you trying to convey here? If districts choose the 4yr model and the 3yr model (discipline specific) will they be adequately prepared for the assessment after 2 years? 7/174 This statement should be in the beginning of each course model for high school. Entire Appendix We are having trouble understanding why the integrated model is an appendix and/or why include it at all? How are we supposed to use this model? Can there be an introduction added to the appendix for the rational as to how districts should use this information, why the integrated model is not fully developed, who is the target audience for this model, 3/59-71 Give us the data that is being referenced here… provide a table with the countries and how they set the education program (who goes on to high school and who goes on to technical… are they tracked and if so what are those tracks). This will give us a better picture of the global world. 1-2/26-58 interesting to consider as talking points for conceptual courses… more engaging to focus on cross cutting concepts and allows for an opportunity to motivate more students to take science. 2/36-38 good that it mandates the sequence so you have access to content that if fundamental first 2/38-41 Nice how they talk about fundamental concepts that are transferrable…. but you can go more in depth if you specialize | Item B | Writer's Discretion/ Line Edit |
| 1869 | Apx | Survey | Spell out the acronyms every time that they are used at the beginning of each chapter. You cannot be assuming that teachers will be reading the previous chapters of this large documents. We can imagine printing out and handing out this chapter in isolation to our teachers but without that information they may get lost right off the bat. | Item B | Writer's Discretion/ Line Edit |
| 1870 | Apx | Survey | Overall: The writing of this appendix does not seem to flow. There is not a natural flow or organization of the ideas. It seems like a bunch of different ideas in different paragraphs being forced together. Overall: This whole section needs more proof reading and grammar support. Line 34: Trade books? This needs to be explained better or defined. Line 40: A resource was not provided about but rather an idea. This is the only resource presented so far. Change the word “another”. Line 45: “Tradebooks” is two words. Line 103-104: Great point; same point that is needed to be expressed above more strongly. Line 242: Wrong word choice: Extended or extends Line 337: Extra space Line 379: Missing a word; maybe “has” Resources Table by line 426: Newsela needs a better description about it being real-time news topics that can be searched by topics and have flexible changing lexiles. Table 1 on Line 445: Table is not formatted in a friendly manner. Recommend making a sub-heading for “grade span: K-2” and then listing all of the books and their information below it in alphabetical order. --- OR dividing the table by grade level topics or DCIs rather than grade spans. As an educator or administrator it takes a lot of searching to figure out which texts apply to your topics. Table 2 on Line 451: Same concern as Table 1. As well as moving the “text” type to be in the column with the actual text. | Item B | Writer's Discretion/ Line Edit |

# Item A2: Master List of Line Edits

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| 1871 | Apx | Survey | Appendix A - Recommended Literature for Science Classrooms This is really well written and cited. The case study and pattern of instruction are research-based and demonstrate the best of NGSS implementation. Unfortunately, the vignettes in the grade band chapters DO NOT model the important notes in this appendix, making it virtually useless. Please rewrite the vignettes so that reading does not come first as described in lines 103-109 of Appendix A - rather integrated within the unit as recommended in Appendix A. Here are the page numbers of the vignettes that do not subscribe to the requirements of Appendix A: K-2: 22,33,65,69,92. 3-5: 41 | Item B | Writer's Discretion/ Line Edit |
| 1872 | Apx | Survey | Appendix A: Overall: The writing of this appendix does not seem to flow. There is not a natural flow or organization of the ideas. It seems like a bunch of different ideas in different paragraphs being forced together. Overall: This whole section needs more proof reading and grammar support. Line 34: Trade books? This needs to be explained better or defined. Line 40: A resource was not provided about but rather an idea. This is the only resource presented so far. Change the word “another”. Line 45: “Tradebooks” is two words. Line 103-104: Great point; same point that is needed to be expressed above more strongly. Line 242: Wrong word choice: Extended or extends Line 337: Extra space Line 379: Missing a word; maybe “has” Resources Table by line 426: Newsela needs a better description about it being real-time news topics that can be searched by topics and have flexible changing lexiles. Table 1 on Line 445: Table is not formatted in a friendly manner. Recommend making a sub-heading for “grade span: K-2” and then listing all of the books and their information below it in alphabetical order. --- OR dividing the table by grade level topics or DCIs rather than grade spans. As an educator or administrator it takes a lot of searching to figure out which texts apply to your topics. Table 2 on Line 451: Same concern as Table 1. As well as moving the “text” type to be in the column with the actual text. | Item B | Writer's Discretion/ Line Edit |
| 1873 | Apx | Survey | Regarding Appendix A: Recommended Literature starting at page 25 -29 ... Lists stories and the DCI strand that they match. Took me FOREVER to go back and look and start finding the actual stories themselves within the http://www.californiaeei.org/curriculum/ resource because the units on the curriculum website from EEI do not have direct link nor do they organize based on the story titles. To find the story, had to open a unit that I thought might match the topic, and look at their list of all the components. Then once found a story with title that matches at listed in the Appendix A draft, I opened a story to find it was not in a format that I could just print (due to maps that spread across 2 separate pages. Did find if I applied for a password and looked at the Teacher Edition for the unit, the story was in there, with the page spreads put together in a way that I could print and use in class. The beige background though will cause a ton of printer and copier toner to be used though. Would be VERY useful if in the final version of pages 25-29 included the actual name of the unit that each story is part of, and a note that the "teacher edition" for the unit has the best layout to actually use if needing to self-print it for use in the classroom. The link to the actual curriculum units should also be included ... http://www.californiaeei.org/curriculum/ | Item B | Writer's Discretion/ Line Edit |
| 1874 | Gen. | | We would like to suggest the development of a simplified Interim Framework Instructional Document, based on a few selected Essential NGSS Learnings, to get us through this period until we actually receive students that engaged in, learned, and studied the middle school NGSS, and who do have the prior knowledge and skills necessary to learn and perform the high school NGSS. | D55 | Do not recommend, this does not align with SBE approved Schedule of Significant Events and will not comply with current statute. |