Item 4.A.1.

Attachment 1

Education Technology Committee

July 26, 2018

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# Public Review Comments (July 6, 2018, Draft)

*Draft Computer Science Standards*

This table is a summary list of public comments received during the public review (April 27, 2018, through June 20, 2018). All comments were provided to Commissioners in their original form without editing. Very lengthy comments that did not include specific suggested line edits are only referenced here.

The comments appear in chapter order, with general comments listed first followed by suggestions specific to the text. Where possible, specific suggested line edits have each been given their own entry in the table.

The “CDE Notes” column includes brief clarifying statements where appropriate. **Ø =** No Comment

| **Comment #** | **Chapter** | **Source** | **Comment** | **CDE Note** |
| --- | --- | --- | --- | --- |
| 1 | General | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | The people who wrote this were obviously from high motivation student bodies. That is very definitely not the average student in the state of California. | **Ø** |
| 2 | General | Stuart Ikeda, CSD Teacher, Curriculum Specialist, CTE Teaching Credential | Who can be qualified to teach Computer Science contents? CTE Teaching Credential? Mathematics subject teaching credential? Will there be any shortage for teachers with computer background? | **Ø** |
| 3 | General | Michael Vaganov, Curriculum Specialist, Supplementary Authorization in Computer Science | It would be nice if the standards documentation clearly identified actionable recommendations or rules as opposed to background information or rationale. For example, slightly different color text. | **Ø** |
| 4 | General  | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The Computer Science Standards will be most effective if they are allowed to be used in an Interdisciplinary context and across the ICT Model Curriculum Standards and all other technical pathways where students will attain the most benefit and understand the complexities of computer science in the real-world. | **Ø** |
| 5 | General | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I do like that there are examples for each standard, but the educational value of such activities is questionable. Perhaps more experiences that require both depth and application of understanding? The standards themselves are too specific. They don't get at a "big idea" or move beyond surface level explaining without potential for application of understanding. Instead, they provide discrete tasks that can be completed in a single lesson that requires no creative application of understanding. | **Ø** |
| 6 | General | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I do like that there are examples embedded throughout each standard, but the educational value of such activities is questionable. Perhaps more thought into experiences that require both depth and application of understanding (especially with younger kids)? | **Ø** |
| 7 | General | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I feel as though the elementary standards themselves are way too specific. They don't get at a "big idea" or move beyond surface level explaining without potential for application of understanding. Instead, they provide discrete tasks that can be completed in a single lesson that requires no creative application of understanding. Would you call someone knowledgeable of computer science because they can describe and select hardware/software or work through bugs? Or, would you simply say they have an understanding of computers? | **Ø** |
| 8 | General | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I'm interested in how the 9-12 standards are going to be implemented. I like that the 9-12 progression chart clearly indicates everyone will work on CS standards and some will specialize in other standards. However, the two tracks are not yet clear in the standards document. When reading through that document, I wonder whether the standards will be required for everyone or only in CS courses? If CS courses, how many will be offered? I know the progressions document answers these questions, but you might want to make it more explicit in the standards document. Also, it is a little odd though that the examples don't integrate with nearly any of the other subject areas previously mentioned. Will this change or are we saying CS is it's own thing in high school? Lastly, I think it's a little odd there are not standards in the "specialty" track for three of the subconcepts. For example, couldn't there be a class where students act as the "Geek Squad" or tech support for a school and specialize in learning "computing systems troubleshooting?" | **Ø** |
| 9 | Introduction | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | The entire overview describes a goal far beyond the abilities and available technology of a huge number of California students. "60 % of the population is Latinx or African American only 15 % take AP CS". The technology is not available and is often intentionally disabled by that group of students so they do not have to do anything. I taught at a rural, low-motivation school and they are ill-equiped to follow the designations of the overview since their animosity to education in general is high, and equipment is an easy target to vent that animosity. | **Ø** |
| 10 | Introduction | Bill Patterson, Single Subject Teaching Credential in Business | Microsoft Office is essential for all students to learn I have more alumni come back and thank me for teaching them EXCEL, PowerPoint and Word This should be mentioned in the Introduction | **Ø** |
| 11 | Introduction | Michael Vaganov, Curriculum Specialist, Supplementary Authorization in Computer Science | +line 66:"Computational-Thinking does happen across many disciplines, but the strict-consistency of a computer makes it substantively more rigorous in Computer Science." +line 429:"Students should also be able to identify and explain how user interface ta | **Ø** |
| 12 | Introduction | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The Introduction should also place emphasis on the Designing, Creating, and Developing of programs to help solve real-world problems. And those programs can be implemented across all mobile device platforms and systems. | Submitted survey twice, comments repeated |
| 13 | Introduction | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | Upon review of the introductory section; I believe that it does cover major sections of what I as a parent would hope it should focus on. In regards to computer science; regardless of what occupation an individual eventually pursues. The initial foundations for learning would have been introduced to them at the elemenatary school level. | **Ø** |
| 14 | Introduction | Alvarenga Julio, Single Subject Teaching Credential in Industry and Technology Education | Line 247 introduction. States core practice 7, Developing and using abstractions. It should state, core practice 4, developing and using abstraction | **Ø** |
| 15 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | Vision: Aligned to K12 framework▪K-2, 3-5, 6-8, 9-12 core, and 9-12 specialist courses▪Practices are "the ways in which they apply conceptual knowledge" | **Ø** |
| 16 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | Minor suggestion: Line 105 might say "while the aforementioned metrics highlight" rather than "statistics." It's used more as a measurement of numbers/percentages rather than identifying correlations or engaging in analysis of such metrics. | Completed survey and submitted documents with same text |
| 17 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | ~Lines 141-142 and line 203 mention such standards prepare for college and career, but doesn't mention leisure pursuits. Selling it as focusing on jobs only might turn off people not interested in CS fields of study. | Completed survey and submitted documents with same text |
| 18 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I appreciate the use of Latinx on line 165. | **Ø** |
| 19 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | Wondering whether "African American" (lines 166 and 178-9) is inclusive enough to represent Black Americans with ancestral roots outside of Africa (e.g., Haitian heritage). | Completed survey and submitted documents with same text |
| 20 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | Not sure I understand the ordering of everything from line 214 down. Perhaps explain why there's a deviation from the practices 1-7 ordering?It appears there's a reason for deviating from the practices 1-7 ordering; however, I don't know what that reasoning is. Are they in perceived level of importance? | Completed survey and submitted documents with some text the same |
| 21 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | On lines 217-8, why is "testing & refining computational artifacts" a part of "Creativity" and not a part of "Problem Solving?" I understand the statement on lines 262-4, but why is that not "Problem solving?" | Completed survey and submitted documents with same text |
| 22 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I like that you included a brief explanation of algorithms when the term is first used on line 223. I think this makes it reader friendly for those who are unfamiliar with CS concepts. | **Ø** |
| 23 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | Line 237 could be clearer by explaining what is meant with "varying language registers." | Completed survey and submitted documents with same text |
| 24 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | A little odd that Equity appears last (line 220), but is mentioned before this entire section and not at all in relation K12 framework practices (i.e., in a dedicated paragraph that should have started on line 273). | Completed survey and submitted documents with same text |
| 25 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I think the section of "What is computer science?" (line 273) should appear higher up in the document. Why is the field being defined now after several pages of using the term and discussing computer scientists? | Completed survey and submitted documents with same text |
| 26 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I do appreciate the chart of what computer science IS/IS NOT (between lines 280-281), but I wish it wasn't catered to jobs alone in the third point on the left. The final point is more applicable to a broader audience and might be moved to the top, but it's also a restatement of the ideas in the first and second point.Minor fix: the first word in each point could be capitalized for ease of reading. | Completed survey and submitted documents with same text |
| 27 | Introduction | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | I would suggest explicitly stating when sections were copied directly from the K12 framework as the current approach that suggests viewing the framework to learn more appears to indicate this is your own version/understanding that is based on the framework, rather than a direct lift of the framework. Yes, you state it upfront that you borrow from the framework, but the current document doesn't indicate when you're adding to the discourse and when you're lifting from the framework. | Completed survey and submitted documents with same text |
| 28 | Computing Systems K–2 | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | Most schools do not have technology available to this age group. I have a granddaughter in this age group and the target standards seem far beyond her capability. | **Ø** |
| 29 | Computing Systems K–2 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for the skill level of kindergarten through grade two core. | Submitted survey twice, comments repeated |
| 30 | Computing Systems K–2 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the K-2 grade levels are suitable. Students at this age level are familiar with touch screen devices and will be able to use such devices to complete recognizable projects. | **Ø** |
| 31 | Computing Systems K–2 | Fernando Figueroa, Multiple Subject Credential. CLAD/BCLAD | This is challenging to teach without realia. The concept of a network, how information flows, nodes, servers might be too abstract for students in grades K-2 | **Ø** |
| 32 | Computing Systems K–2 | Christie Darnell, Multiple Subject Credential, Supplementary Authorization in Computer Science | Thank you for sending. In the Newport Mesa Unified School District down in Orange County, CA we would like to try and align the new CA CS standards to our ELA and Math curriculum for K-5. We are trying to find ways for our teachers to integrate computer science into their day while teaching ELA and Math as well. Our current curriculum adoptions for ELA and Math, don’t seem to offer alignment resources for computer science. Do you know of a document or resource that might align the new CS CA standards to the CCSS? I see in the attached Excel file off your website<https://www.cde.ca.gov/be/st/ss/computerscicontentstds.asp>, that you mark in green if a CS standards hits an ELA or Math standard, but it doesn’t specifically say which standard. | **Ø** |
| 33 | Computing Systems K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | ○ K-2.CS.1 The wording "Students select and operate THE appropriate computer device" could benefit from being broader as there are many devices and software that can be appropriate for a given situation: "select AN appropriate" | Completed survey and submitted documents with same text |
| 34 | Computing Systems K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed. | K-2.CS.2 I would be very careful with your examples as having connections with other content areas. Yes, you could draw parts of a computer and label them, or position yourselves like a computer, but that's not a holistic connection that lasts with any depth beyond those simple examples. Such examples might come across as positioning other content areas as subservient to CS. Perhaps instead of using other content areas to demonstrate examples of CS, you might demonstrate how CS would be of use to other content areas. While helpful for people needing ideas, the current examples might insult other subject are experts. | Completed survey and submitted documents with same text |
| 35 | Computing Systems 3–5 | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | My grandson is in this age group, and the targets are ambitious for him and for his peers as a whole. He is in a transitory population (migrant farmworkers and their children) so the school year starts over and over all year long. | **Ø** |
| 36 | Computing Systems 3–5 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for the skill level of grades three through five core. | Submitted survey twice, comments repeated |
| 37 | Computing Systems 3–5 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 3-5 grade levels are suitable. Introduction to abstract thinking will be of great benefit at these grade levels. | **Ø** |
| 38 | Computing Systems 6–8 | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | I do not have knowledge of this age group. | **Ø** |
| 39 | Computing Systems 6–8 | Bill Patterson, Single Subject Teaching Credential in Business | This would be the ideal place to learn the Office Suite Unfortunately all our feeder schools do NOT teach any computer classes Therefore we feel the need to teach it in high school before the students get to college | **Ø** |
| 40 | Computing Systems 6–8 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for the skill level of grades six through eight core. | Submitted survey twice, comments repeated |
| 41 | Computing Systems 6–8 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 6-8 grade levels are suitable. Introduction to computer science concepts and expanding on them by utilzing real world projects will further engage students and will encourage them to continue to learn. | **Ø** |
| 42 | Computing Systems 9–12 | Karen Hardy, Single Subject Math Teacher | Line 76 uses abbreviations (RGB, HEX, HSL, RGBA, HSLA) without defining them. Abbreviations should be written in words with abbreviations after such how API was done in line 115 | Refers to 9–12.DA.18 |
| 43 | Computing Systems 9–12 | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | I taught this age group for 38 years. My school was unmotivated, high minority, suburban/rural, and had an animosity for education as a whole. They liked computer class, and we required a freshman computer course, but all we could require was simply being able to use the software (which is mentioned in the introduction as NOT being Computer Science), because they went to the computers and refused to do anything they were told but instead used the computers for whatever they wanted, and the teachers were denied any method of disciplining the students like suspensions, and calling home usually resulted in a response like "He's your problem during the day; I already have him all night. Don't come crying to me with your problems". | **Ø** |
| 44 | Computing Systems 9–12 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for the skill level of grades nine through twelve core. Emphasis should be placed on the interdisciplinary design and connections. And how this design cross over pathways in the ICT Model Curriculum Standards and must be applied to other Technical Pathways. | Submitted survey twice, comments repeated |
| 45 | Computing Systems 9–12 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels are suitable. Introduction to computer science concepts and expanding on them by utilzing real world projects will further engage students to continue to learn. Understanding key computer technology hardware and software, cybersecurity, Introduction to Computer Science and AP Computer Science prepartion will benefit students as they prepare for college or career. | **Ø** |
| 46 | Computing Systems 9–12 Specialty | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | There are a small but motivated group of students who could meet any standard and who could take an AP CS class, I would guess 30 to 40 students out of a student body of 1200. | **Ø** |
| 47 | Computing Systems 9–12 Specialty | Bill Patterson, Single Subject Teaching Credential in Business | Again, where else will the students learn the basics of the Office Suite | **Ø** |
| 48 | Computing Systems 9–12 Specialty | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | Again, Emphasis should be placed on the interdisciplinary design and connections. And how this design cross over pathways in the ICT Model Curriculum Standards and must be applied to other Technical Pathways. The skill sets of information technology is used in every discipline and there for cannot be limited to a single pathway ICT-CS skills must be integrated in all pathways to be most effective in helping the future workforce to be more than adequately prepared and make great contributions to a much needed workforce. | Submitted survey twice, comments repeated |
| 49 | Computing Systems 9–12 Specialty | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels are suitable. In regards to interdisclinary and collaborative projects, as long ICT teachers continue to apply their skills and knowledge to challenging projects and to determine how each set of students will focus on a portion of the project as they work toward a collaborative end goal; we should have success here. Use of advanced technology to connect classes and students will be of benefit to our ICT student population as well. | **Ø** |
| 50 | Networks & The Internet K–2 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for kindergarten through two core. | Submitted survey twice, comments repeated |
| 51 | Networks & The Internet K–2 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the K-2 grade levels are suitable. | **Ø** |
| 52 | Networks & The Internet K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | ~K-2.NI.5 This standard can be completed in under a few minutes. I would kindly suggest spending some time reading curricular scholarship on standards as being more than discrete tasks. Standards like this are so narrow and require low-level thinking (at best). Elliott Eisner, a curriculum scholar, suggests standards are useful when they are a flexible representation of collective values and general goals, if used as a source for curricular discourse or inquiry, and if used to suggest criteria for judging effectiveness. A big point in his scholarship is that standards should not be contracts or prescriptions. When reading through standards like this, I can't help but get the impression these standards are blindly adopting a Tylerian model of curricula, which was developed in 1949 (a lot has changed on our understanding of learning since then). | Completed survey and submitted documents with same text |
| 53 | Networks & The Internet K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.NI.6 A little narrow, but this standard actually asks kids to do something beyond explaining or describing. I would like to see more standards with application through creation. I like the musical example as it's essentially asking kids to create their own music literacy; however, such an activity could be done without any connections to cybersecurity. | **Ø** |
| 54 | Networks & The Internet 3–5 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for three through five core. | Submitted survey twice, comments repeated |
| 55 | Networks & The Internet 3–5 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 3-5 grade levels are suitable. | **Ø** |
| 56 | Networks & The Internet 3–5 | Fernando Figueroa, Multiple Subject Credential. CLAD/BCLAD | Standard 3-5 NI.6 is unrealistic in terms of logistics and its connection with other subject. Although important, its applicability would be more time consuming than what its worth. | **Ø** |
| 57 | Networks & The Internet 6–8 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for six through eight core. | Submitted survey twice, comments repeated |
| 58 | Networks & The Internet 6–8 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 6-8 grade levels are suitable. | **Ø** |
| 59 | Networks & The Internet 9–12 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 60 | Networks & The Internet 9–12 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels are suitable. | **Ø** |
| 61 | Networks & The Internet 9–12 Specialty | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 62 | Networks & The Internet 9–12 Specialty | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels (Specialty) are suitable. | **Ø** |
| 63 | Networks & The Internet 9–12 Specialty | Alvarenga Julio, Single Subject Teaching Credential in Industry and Technology Education | Students should have a full understanding of computer network for home, office and small network setting, including: LAN, WAN, Routers, Switches, Workstations, Servers, etc. | **Ø** |
| 64 | Data & Analysis K–2 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for kindergarten through two core. | Submitted survey twice, comments repeated |
| 65 | Data & Analysis K–2 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the K-2 grade levels are suitable. | **Ø** |
| 66 | Data & Analysis K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.DA.7 The music example has potential to be an interesting experience, but why would a music educator want to do this in their class? What's the musical purpose for such an example? I'm not trying to be rude with these questions (or any of my feedback), but trying to get at a larger issue that I don't think you should present examples like these without briefly explaining the value for the other content areas to make such connections. | Completed survey and submitted documents with same text |
| 67 | Data & Analysis K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.DA.8 The writing stories that include different temperatures is a stretch for an example (i.e., not a great connection). If a student wrote a story that included the word "algorithm," would you consider that an interdisciplinary connection with computer science? The second example about ice cream flavors is better. | Completed survey and submitted documents with same text |
| 68 | Data & Analysis K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | Continued from previous: K-2.DA.9 Is the first example a computer science example or simply math? I do like the example, but I fail to see how what's stated is an example of CS. Yes, I see how it could become a CS example, but the current example isn't directly connected to CS (yet). The second example is more closely related to CS than the first. | Completed survey and submitted documents with same text |
| 69 | Data & Analysis 3–5 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for three through five core. | Submitted survey twice, comments repeated |
| 70 | Data & Analysis 3–5 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 3-5 grade levels are suitable. | **Ø** |
| 71 | Data & Analysis 6–8 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for six through eight core. | Submitted survey twice, comments repeated |
| 72 | Data & Analysis 6–8 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 6-8 grade levels are suitable. | **Ø** |
| 73 | Data & Analysis 9–12 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 74 | Data & Analysis 9–12 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels are suitable. | **Ø** |
| 75 | Data & Analysis 9–12 Specialty | Bill Patterson, Single Subject Teaching Credential in Business | Office Suite would be ideal to help with data and analysis | **Ø** |
| 76 | Data & Analysis 9–12 Specialty | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 77 | Data & Analysis 9–12 Specialty | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels (Specialty) are suitable. | **Ø** |
| 78 | Algorithms & Programming K–2 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for kindergarten through two core. | Submitted survey twice, comments repeated |
| 79 | Algorithms & Programming K–2 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the K-2 grade levels are suitable. | **Ø** |
| 80 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.10 I think the map example is the best of the examples provided; however, I would encourage creating an example where kids actually create an algorithm with code rather than directions. I understand that CT researchers/practitioners are trying to bring CS discourse into other subject areas and everyday life, but I respectfully disagree that there is value added when we swap labels for concepts without consideration of context. For example, wouldn't we refer to the step-by-step processes as "directions" for navigating an environment and a "recipe" for cooking pasta rather than an "algorithm?" I understand that semantically they can generally mean the same thing depending on their situated use; however, the difference between social (i.e., vernacular) and specialized (i.e., math, cooking, navigating, and CS) discourses they draw from are very different. Just because we can call something the same thing, it doesn't mean we should in all cases.For example, if we flip the CT narrative and started calling lines of code "recipes" or "scores" (if borrowing from Western European classical music discourse), I would argue this is using a label out of its proper context. I agree that kindergartners follow a sequence of step-by-step instructions/processes throughout their day; however, I see "algorithm" as having a more specialized discursive use than the vernacular use of "directions." For me, I might say an "algorithm" is like "directions," which is like a "recipe," but they are utilized in different contexts to mean similar, but slightly different, things. For example, recipes are a step-by-step set of instructions for preparing food, which is different than directions being step-by- step set of instructions for navigating an environment, which is different than algorithms being step-by-step lines of code for a computer processor to execute, which is different than an algorithm being a step-by-step sequence of mathematical symbols and numbers to represent an object in motion. | Completed survey and submitted documents with same text |
| 81 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.11 I don't see how the two examples demonstrate storage. They're examples of symbolic representation. Also, the music example is a bit confusing. I see what you're getting at; however, it doesn't make sense the way it's currently stated. I say this as a former elementary music teacher and someone with multiple degrees in music education. | Completed survey and submitted documents with same text |
| 82 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.13 The first example is the best example I've seen so far. More like this! | Completed survey and submitted documents with same text |
| 83 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.14 I appreciate the storyboarding example. | Completed survey and submitted documents with same text |
| 84 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.15 Glad you pointed out the credit can be given orally at this age. Many platforms for K-2 don't have the ability to give credit for appropriations, so this is a good example. | Completed survey and submitted documents with same text |
| 85 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.16 I'm not sure I would consider the first example an explicit example of debugging with the way it's currently worded. In particular, the "step-by-step commands" make it sound like an "algorithms" example rather than debugging. The second example is more closely focused on debugging (which I appreciate). Although I love combining standards/practices/concepts in classroom settings, I think the examples in this document should clearly demonstrate the standard alone, use parenthesis when making connections to other standards, or have an appendix that demonstrates how they work together. | Completed survey and submitted documents with same text |
| 86 | Algorithms & Programming K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K-2.AP.17 Depending on the hardware/software, the example might be a bit complicated for a Kindergartener. Also, you might include a discussion on how this standard is similar and different from K-2.AP.14 | Completed survey and submitted documents with same text |
| 87 | Algorithms & Programming 3–5 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for three through five core. | Submitted survey twice, comments repeated |
| 88 | Algorithms & Programming 3–5 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 3-5 grade levels are suitable. | **Ø** |
| 89 | Algorithms & Programming 3–5 | Fernando Figueroa, Multiple Subject Credential. CLAD/BCLAD | The professional development demands on this will incredibly demanding for teachers grades 3-5 (Standard 3-5.AP.17). Standards that connect with more than one subject should have more relevance than those who only address one subject. | **Ø** |
| 90 | Algorithms & Programming 6–8 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for six through eight core. | Submitted survey twice, comments repeated |
| 91 | Algorithms & Programming 6–8 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 6-8 grade levels are suitable. | **Ø** |
| 92 | Algorithms & Programming 9–12 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 93 | Algorithms & Programming 9–12 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels are suitable. | **Ø** |
| 94 | Algorithms & Programming 9–12 Specialty | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 95 | Algorithms & Programming 9–12 Specialty | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels (Specialty) are suitable. | **Ø** |
| 96 | Algorithms & Programming 9–12 Specialty | Alvarenga Julio, Single Subject Teaching Credential in Industry and Technology Education | Students should be able to create programs in a specific language, and apply it to specific applications, such as web page, robot control, financial, etc. | **Ø** |
| 97 | Impacts of Computing K–2 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for kindergarten through two core. | Submitted survey twice, comments repeated |
| 98 | Impacts of Computing K–2 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the K-2 grade levels (Core) are suitable. | **Ø** |
| 99 | Impacts of Computing K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | K.2.IC.18 The first example might be a bit complicated for a Kindergartener, but the second example would be an interesting discussion. Might it be problematic to word technology as having a binary affect on culture?  | Completed survey and submitted documents with same text |
| 100 | Impacts of Computing K–2 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | ~K-2.IC.20 This is another very specific standard that could be broadened. The second example runs into many of the problems I've already outlined. | Completed survey and submitted documents with same text |
| 101 | Impacts of Computing 3–5 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for three through five core. | Submitted survey twice, comments repeated |
| 102 | Impacts of Computing 3–5 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 3-5 grade levels (Core) are suitable. | **Ø** |
| 103 | Impacts of Computing 3–5 | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | I'm going to stop providing specific feedback. What I've already outlined applies to the other grade bands; i.e., the standards are often too specific or positioned as a simple task, lack creativity or application (i.e., describing and explaining are not creative processes or applications of understanding), and the examples are often "one-off" lessons are not situated in actual practices outside of school settings (for example, why would someone put notes from a diatonic scale in an envelope?). I want to reiterate that I like having multiple examples of these concepts in action (especially in relation to other subject areas), I am simply suggesting the quality of such examples needs improvement. | Completed survey and submitted documents with same text |
| 104 | Impacts of Computing 6–8 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for six through eight core. | Submitted survey twice, comments repeated |
| 105 | Impacts of Computing 6–8 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 6-8 grade levels (Core) are suitable. | **Ø** |
| 106 | Impacts of Computing 9–12 | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 107 | Impacts of Computing 9–12 | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels (Core) are suitable. | **Ø** |
| 108 | Impacts of Computing 9–12 | Trish Boyd Williams, State Board of Education Member | Add a standard to 9-12 Impacts of Computing: Study, discuss, and think critically about the potential impacts and implications of evolving and exploding technology on larger social, economic, and political structures, with examples from articles and the news. | Discussion with Stephanie Gregson, and Tom Adams |
| 109 | Impacts of Computing 9–12 Specialty | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The standards presented are adequate for nine through twelve core. | Submitted survey twice, comments repeated |
| 110 | Impacts of Computing 9–12 Specialty | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | The proposed standards for the 9-12 grade levels (Specialty) are suitable. | **Ø** |
| 111 | Appendix – Guide for Leadership  | Michael Vaganov, Curriculum Specialist, Supplementary Authorization in Computer Science | +line 128: "\* H Credit: Computer Science needs to be given it's own credit in the "California A-G Requirements". Every effort should be made to create a "Computer Science / Engineering" as H credit. This will formalize the importance of Computer Science i | **Ø** |
| 112 | Appendix – Guide for Leadership | Fernando Figueroa, Multiple Subject Credential. CLAD/BCLAD | A small item: Hardware that is used in the classroom and by students should considered a material. This is not mentioned anywhere in the document. Software is considered a material. Why? When budgets are being done this is one area where inequities happen. Yes...the standards are written in the spirit of inclusion, but they fail to address the point that not all districts have a baseline of hardware (students with devices) for students which will allow for an equitable implementation of the standards. | **Ø** |
| 113 | Appendix – Guide for Flexible Implementation | Fernando Figueroa, Multiple Subject Credential. CLAD/BCLAD | A small item: Hardware that is used in the classroom and by students should considered a material. This is not mentioned anywhere in the document. Software is considered a material. Why? When budgets are being done this is one area where inequities happen. Yes...the standards are written in the spirit of inclusion, but they fail to address the point that not all districts have a baseline of hardware (social inequity of students without devices) for students which will allow for an equitable implementation of the standards. | **Ø** |
| 114 | Appendix – Interdisciplinary Connections | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | Emphasis should be placed on the interdisciplinary design and connections. And how this design cross over pathways in the ICT Model Curriculum Standards and must be applied to other Technical Pathways. The skill sets of information technology is used in every discipline and there for cannot be limited to a single pathway ICT-CS skills must be integrated in all pathways to be most effective in helping the future workforce to be more than adequately prepared and make great contributions to a much needed workforce. | Submitted survey twice, comments repeated |
| 115 | Appendix – Career Technical Education (CTE) Connections | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | Emphasis should be placed on the interdisciplinary design and connections. And how this design cross over pathways in the ICT Model Curriculum Standards and must be applied to other Technical Pathways. The skill sets of information technology is used in every discipline and there for cannot be limited to a single pathway ICT-CS skills must be integrated in all pathways to be most effective in helping the future workforce to be more than adequately prepared and make great contributions to a much needed workforce. | Submitted survey twice, comments repeated |
| 116 | Appendix – Career Technical Education (CTE) Connections | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | In preparation for Postsecondary Education and preparation for a career, students will benefit from these standards because ICT does cross all curriculum. Teachers/Students focusing on real world technology and design applications will indeed "support positive developments in society, economy and/or culture." | **Ø** |
| 117 | Appendix – Connections to Postsecondary Education  | Michael Vaganov, Curriculum Specialist, Supplementary Authorization in Computer Science | +line 500: "\* H Credit: Rather than having Computer Science jump through hoops for academic credit, the discipline should be given the dignity of it's own credit in the graduation requirements system. Every effort should be made to create a "Computer Scie | **Ø** |
| 118 | Appendix – Connections to Postsecondary Education | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | In preparation for Postsecondary Education and preparation for a career, students will benefit from these standards because ICT does cross all curriculum. Teachers/Students focusing on real world technology and design applications will indeed "support positive developments in society, economy and/or culture." | **Ø** |
| 119 | Computer Science Standards K–12 Progression | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | I like that the 9-12 progression chart clearly indicates everyone will work on CS standards and some will specialize in other standards. However, the two tracks are not yet clear in the standards document. When reading through that document, I wonder whether the standards will be required for everyone or only in CS courses? If CS courses, how many will be offered? I know the progressions document answers these questions, but you might want to make it more explicit in the standards document. Also, it is a little odd though that the examples don't integrate with nearly any of the other subject areas previously mentioned. Will this change or are we saying CS is it's own thing in high school? Lastly, I think it's a little odd there are not standards in the "specialty" track for three of the subconcepts. For example, couldn't there be a class where students act as the "Geek Squad" or tech support for a school and specialize in learning "computing systems troubleshooting?" | **Ø** |
| 120 | Overall Evaluation | Karen Hardy, Single Subject Math Teacher | Standards overall: ExcellentFormat and clarity: Excellent | **Ø** |
| 121 | Overall Evaluation | Michael Myers, Math teacher, Supplementary Authorization in Computer Science, Life Science, Physical Science, Comm. College Comp | Standards overall: PoorFormat and clarity: ExcellentFacilitating teaching and learning of computer science: Poor | **Ø** |
| 122 | Overall Evaluation | Bill Patterson, Single Subject Teaching Credential in Business | Standards overall: GoodFormat and clarity: GoodFacilitating teaching and learning of computer science: Good | **Ø** |
| 123 | Overall Evaluation | Eduardo Zurita, Single Subject Teaching Credential in ELA | Standards overall: ExcellentFormat and clarity: ExcellentFacilitating teaching and learning of computer science: Excellent | **Ø** |
| 124 | Overall Evaluation | Michael Vaganov, Curriculum Specialist, Supplementary Authorization in Computer Science | Standards overall: ExcellentFormat and clarity: FairFacilitating teaching and learning of computer science: Excellent | **Ø** |
| 125 | Overall Evaluation | Walter Hamilton, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | Standards overall: ExcellentFormat and clarity: ExcellentFacilitating teaching and learning of computer science: Good | Submitted survey twice, comments repeated |
| 126 | Overall Evaluation | Dilano Vasquez, LAUSD – ROP, Single Subject Teaching Credential in Industry and Technology Education | Standards overall: ExcellentFormat and clarity: GoodFacilitating teaching and learning of computer science: Excellent | **Ø** |
| 127 | Overall Evaluation | Jared O’Leary, BootUp PD, Curriculum Specialist, Credentials in AZ for elementary and secondary ed | Standards overall: PoorFormat and clarity: FairFacilitating teaching and learning of computer science: Fair | **Ø** |
| 128 | Overall Evaluation | Fernando Figueroa, Multiple Subject Credential. CLAD/BCLAD | Standards overall: GoodFormat and clarity: GoodFacilitating teaching and learning of computer science: Fair | **Ø** |
| 129 | Overall Evaluation | Alvarenga Julio, Single Subject Teaching Credential in Industry and Technology Education | Standards overall: GoodFormat and clarity: GoodFacilitating teaching and learning of computer science: Good | **Ø** |
| 130 | Overall Evaluation | Eduardo Veliz, LAUSD – ROP, Single Subject CTE Information and Communications | Standards overall: FairFormat and clarity: FairFacilitating teaching and learning of computer science: Fair | **Ø** |

California Department of Education, July 2018