

K-12 Computer Science Standards Writing Steering Committee

Claiborne Building | Thomas Jefferson Room 1-136 | 1201 North Third Street, Baton Rouge, LA 70802

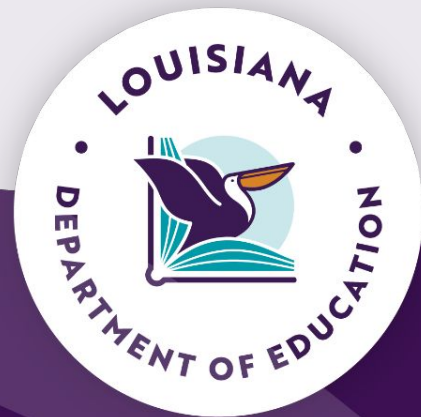


June 7, 2024

Call to Order



Roll Call



Agenda



Agenda

- I. Call to Order
- II. Roll Call
- III. Approval of minutes from the May 7, 2024 meeting
- IV. Consideration of a summary report regarding grade band work group recommendations for computer science content standards on Concept 1: Computing Systems
- V. Consideration of an update on the work of the computer science grade band work groups

Approval of the May 7, 2024 Meeting Minutes



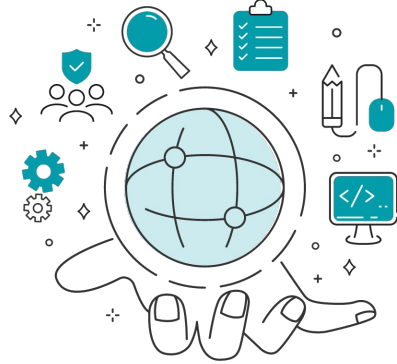
Consideration of a summary report regarding grade band work group recommendations for computer science content standards on Concept 1: Computing Systems



Overarching Themes

All work groups agreed:

- To remove the subconcept of “Devices”,
- To keep the format with a teacher friendly level of readability to account for varied CS content backgrounds,
- To an alignment of the grade bands such that students progress from a broad understanding to an in depth perspective,



Overarching Themes continued...

All work groups agreed:

- To maintain a high level of rigor utilizing higher order thinking verbs,
- To create standards with the mindset that the standards are curriculum agnostic and will be guidance to local school systems as they select curriculum, and
- To utilize a glossary add-on to the standards with key terminology that can be utilized to anchor conversations statewide.



Standards Structure Concept 1

Overview: We interact with a wide variety of computers each day. Computers are devices that can collect, store, analyze, and act upon information in ways that can affect human capabilities both positively and negatively. The physical components (**hardware**) and instructions (**software**) that make up a computer are operated, programmed, and maintained by humans (**users**). Together the hardware, software, and users are collectively referred to as a **computing system**. An understanding of hardware and software are useful to help users solve problems that occur in computing systems (**troubleshooting**).

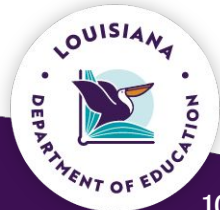
Sub-Concepts

A. Hardware and Software

Computing systems all rely on hardware and software to communicate and process information in a digital form. In early grades students will engage with hardware and software to learn basic knowledge on the features of common computing systems. As students progress through upper grades they will gain a deeper understanding of the interactions between hardware and software at multiple levels in computing, connected systems.

B. Troubleshooting

When computing systems do not work as intended, troubleshooting strategies help users solve the problem. In early grades, students will learn how to locate problems and possible resources to aid in fixing the issue. As students progress through the upper grades, they will learn systematic problem-solving strategies and how to develop their own troubleshooting strategies based upon a deeper understanding of how computing systems work.



Standards Structure Formatting Example

| | |
|--|--|
| Grade Band | |
| Sub-Concept | |
| Standard | |
| Core Practices | |
| Complexity by grade level K-8 OR Levels of complexity 9-12 | |



| | | | | |
|---|---|---|--|--|
| Grade Band | 9-12 | | | |
| Sub-Concept | Hardware/ Software | | | |
| Standard | 1A. Explain how abstractions hide the underlying implementation of details of computing systems embedded in everyday things. | | | |
| Core Practices | 2. Collaborating around computing, 4. Developing and using abstractions, and 7. Communicating about computing | | | |
| Level 1 | Level 2 | Level 3 | Level 4 | |
| Explain what an abstraction is in terms of a computing system and identify how implementation details may be hidden from users. | Analyze an embedded device within an integrated system to identify the data types it accesses or generates. | Given a scenario, design and justify the hardware and software selections needed for a specific data supported outcome. | Investigate and describe how the components of an operating system provide simplifying abstractions for a user or developer. | |

Hardware and Software

| | |
|------|--|
| 9-12 | 1A. Explain how abstractions hide the underlying implementation of details of computing systems embedded in everyday things. |
| 9-12 | 1B. Compare and contrast levels of interactions between an application's software, system's software, and hardware layers. |

Troubleshooting

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|------|---|
| 9-12 | 2. Generate guidelines that convey systematic troubleshooting strategies that other users can utilize to identify and fix errors. |
|------|---|

| | | | |
|-----------------------|--|--|---|
| Grade Band | 6-8 | | |
| Sub-Concept | Hardware/ Software | | |
| Standard | 1A. Analyze the functions and interactions of core components within a computer system. | | |
| Core Practices | 2. Collaborating around computing, 4. Developing and using abstractions, and 7. Communicating about computing | | |
| | 6 | 7 | 8 |
| | Diagram and explain the flow of data through the components of a computing system. | Describe the specific function of each component in processing inputs and outputs. | Explain how changes in specific hardware components impact the performance of a computing system. |

Hardware and Software

| | |
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| 6-8 | 1A. Analyze the functions and interactions of core components within a computer system. |
| 6-8 | 1B. Explain how various hardware and software components work together to perform specific tasks. |

Troubleshooting

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| 6-8 | 2. Evaluate various possible solutions to a hardware or software problem. |
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|---|--|---|--|--|--|--|
| Grade Band | K-5 | | | | | |
| Sub-Concept | Hardware/ Software | | | | | |
| Standard | 1A. Identify and select the appropriate hardware to complete computing tasks. | | | | | |
| Core Practices | 2. Collaborating around computing, 4. Developing and using abstractions, and 7. Communicating about computing | | | | | |
| K | 1 | 2 | 3 | 4 | 5 | |
| Describe the ways people use hardware to perform computing tasks. | Identify the appropriate hardware to complete a given task. | Explain and use the proper hardware to complete a given task. | Compare and contrast the functions and uses of various hardware. | Analyze the capabilities and limitations of hardware for a particular use in a given scenario. | Explain how selected hardware pieces function. | |

Hardware and Software

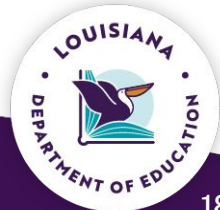
| | |
|-----|--|
| K-5 | 1A. Identify and select the appropriate hardware to complete computing tasks. |
| K-5 | 1B. Identify and select the appropriate software to complete computing tasks. |
| K-5 | 1C. Evaluate hardware and software types to meet users' needs in completing various computing tasks. |

Troubleshooting

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| K-5 | 2. Propose potential ways to address computing problems using appropriate hardware or software. |
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Progression of Concept 1

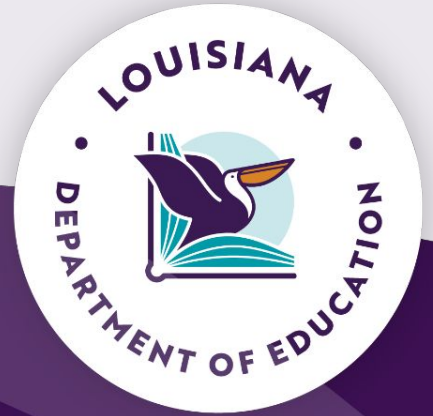
- **Hardware/Software:** This sub-concept develops from simple identification (K-5), to the description and explanation of function of the components (6-8), and concludes with an explanation and discerning of the abstractions of computing systems (9-12).
- **Troubleshooting:** Students engage with problem solving through hardware and software usage in grades K-5. They progress to the evaluation of computing problems in grades 6-8. In high school students generate guidelines that instruct other users in solving computing problems.



Recess



Consideration of an update on the work of the computer science grade band work groups



Schedule of K-12 Computer Science Standards Writing Committee Meetings

| Date and Time | Meeting and Location |
|----------------------------------|---|
| May 7, 2024, 9 a.m. - 4 p.m. | Meeting 1 - Claiborne Building, Baton Rouge |
| June 7, 2024, 9 a.m. - 4 p.m. | Meeting 2 - Claiborne Building, Baton Rouge |
| June 20, 2024, 9 a.m. - 4 p.m. | Meeting 3 - Claiborne Building, Baton Rouge |
| July 11, 2024, 9 a.m. - 4 p.m. | Meeting 4 - Claiborne Building, Baton Rouge |
| July 30, 2024, 9 a.m. - 4 p.m. | Meeting 5 - Claiborne Building, Baton Rouge |
| August 13, 2024, 9 a.m. - 4 p.m. | Meeting 6 - Claiborne Building, Baton Rouge |
| August 27, 2024, 9 a.m. - 4 p.m. | Meeting 7 - Claiborne Building, Baton Rouge |

Please contact STEM@la.gov

