Approaching the Computer Science Standards

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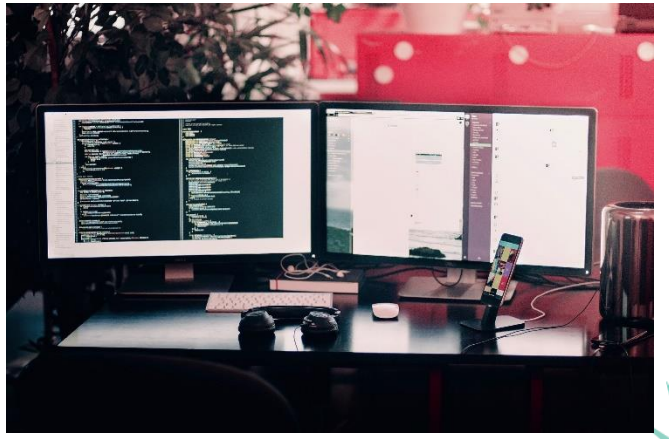
Introductions

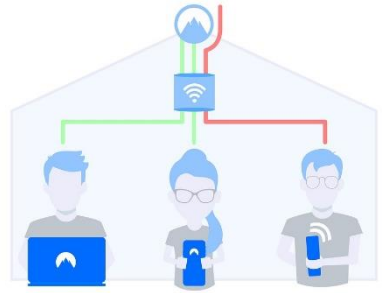
Stephen King, PhD PMP is the Computer Science Education Program Consultant for the Kansas State Department of Education. With a doctorate in education and a masters in telecommunications management, he has over twenty years of experience leading and teaching IT and computer science to high school and college students.

What Will Our Takeaways Be Today?

- Understand the history and importance of the Kansas P-12 Model Computer Science Standards
- Understand the differences between CTE and academic standards
- Become familiar with each topic in the Model Standards



Kansas P-12 Model Standards



- Standards developed 3/2018 – 3/2019
  - 3 committees: writing, revising, and representative
  - Used CSTA standards as base
- Adopted by KS Board of Education April 2019
- Implementation Recommendations approved by KS BoE in February 2020
  1. Create state-wide CS Education position
  2. Recommend each school teach computer science
  3. Make computer science count as a core graduation requirement
  4. Create teacher endorsement in computer science
  5. Fund computer science education professional development

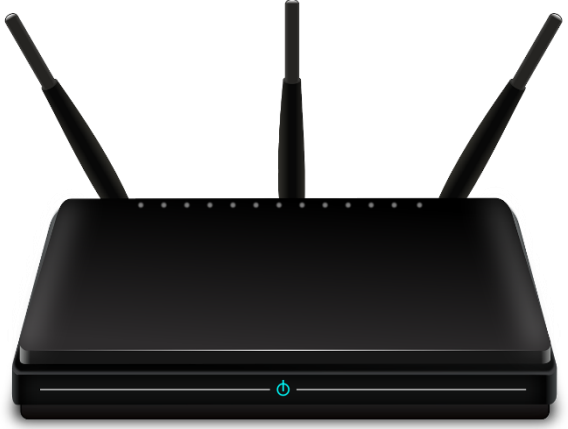
Two Documents

- https://www.ksde.org/Agency/Division-of-Learning-Services/Career-Standards-and-Assessment-Services/Content-Area-A-E/Computer-Science
- Kansas Computer Model Standards with Description, PDF document by grade level
  - Long document, has explanations in italics
- Kansas Computer Model Standards, Excel document
  - Tabs by grade band, and also tab showing overall scaffolding

Topic 1: Computing Systems

- Devices (computers aren't just limited to desktops, laptops, etc.)
- Hardware and Software (understand how hardware and software work together)
- Input and Output (at lower grade levels: keyboarding standards, and across the K-12, understand how different devices are used for input and output for systems)
- Troubleshooting

Topic 2: Network & the Internet



- Network (how are devices connected together? What are protocols and how do they work?)
- Cybersecurity (what are effective password policies? What are the different encryption methods? What are the tradeoffs in effective cybersecurity practices?)

Topic 3: Data Analysis

- Storage (what types of data storage are available? What are tradeoffs for each type?)
- Collection (how is data collected? How do we define “meaningful data”?)
- Visualization and Transformation (how do we transform data in a way to make it meaningful to all users?)
- Inference and Models (how to we develop computational models? How do we refine them?)

Topic 4: Algorithms and Programming

- Algorithms (create, analyze, refine – pseudocode)
- Variables (create, modify, use)
- Control (loops and other control methods)
- Modularity (decomposition of programs)
- Program (create, seek and incorporate user feedback, modify, test and refine, evaluate, document)

Topic 5: Impacts of Computing

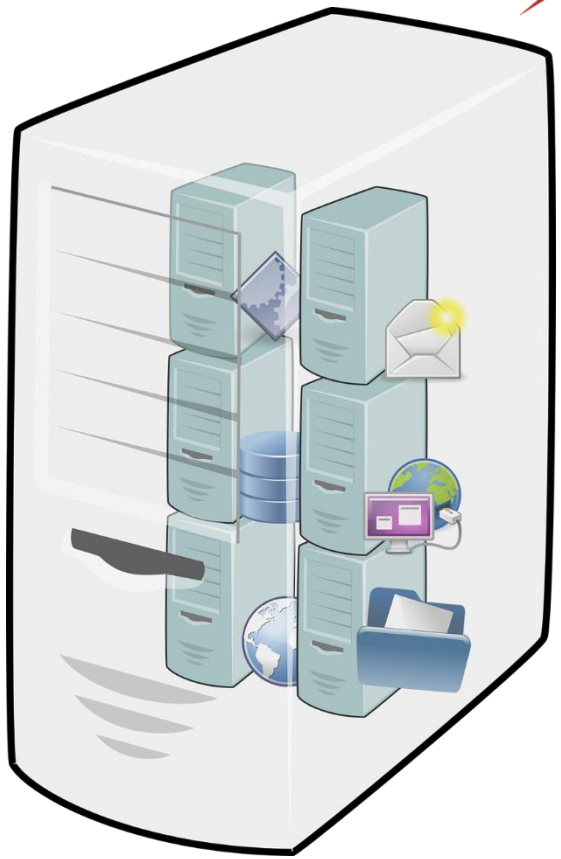
- Culture (evaluate ethical use, trade-offs, diversity, bias issues)
- Social (code of conduct, digital citizenship, ethical participation)
- History (understand how computers have changed the world)
- Safety, Law, & Ethics (ethics, digital property rights, privacy)
- Community (solve local problems)

Implementing CS

- Lower grades: integrate with existing topics
  - Many are already being covered
  - Consider activities with robots, drones, etc.
- Later elementary and middle school
  - Consider STEM activities
  - Project-based activities using Scratch or robotics
- High school
  - L1: all high school students, consider integration with math and science and art
  - L2: career-based, consider implementing IT pathways

Please take a moment and complete an Evaluation:

Let's DO THIS!



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