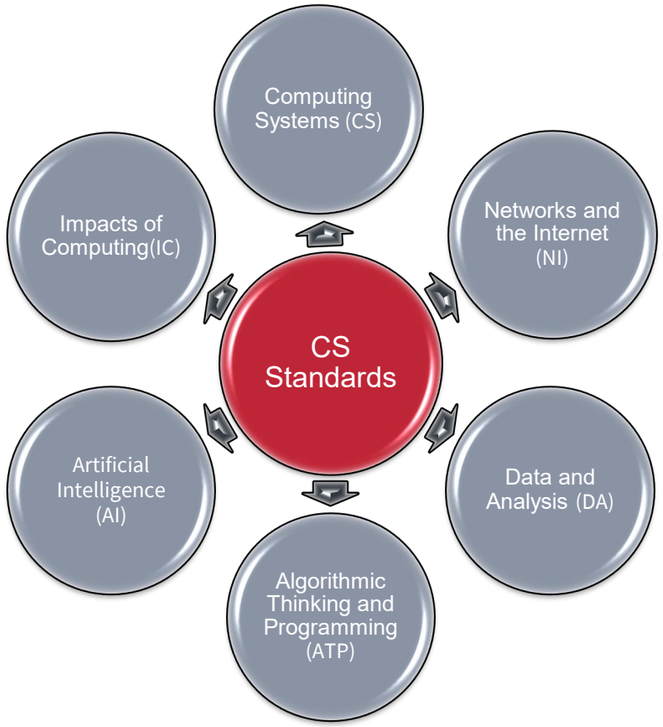
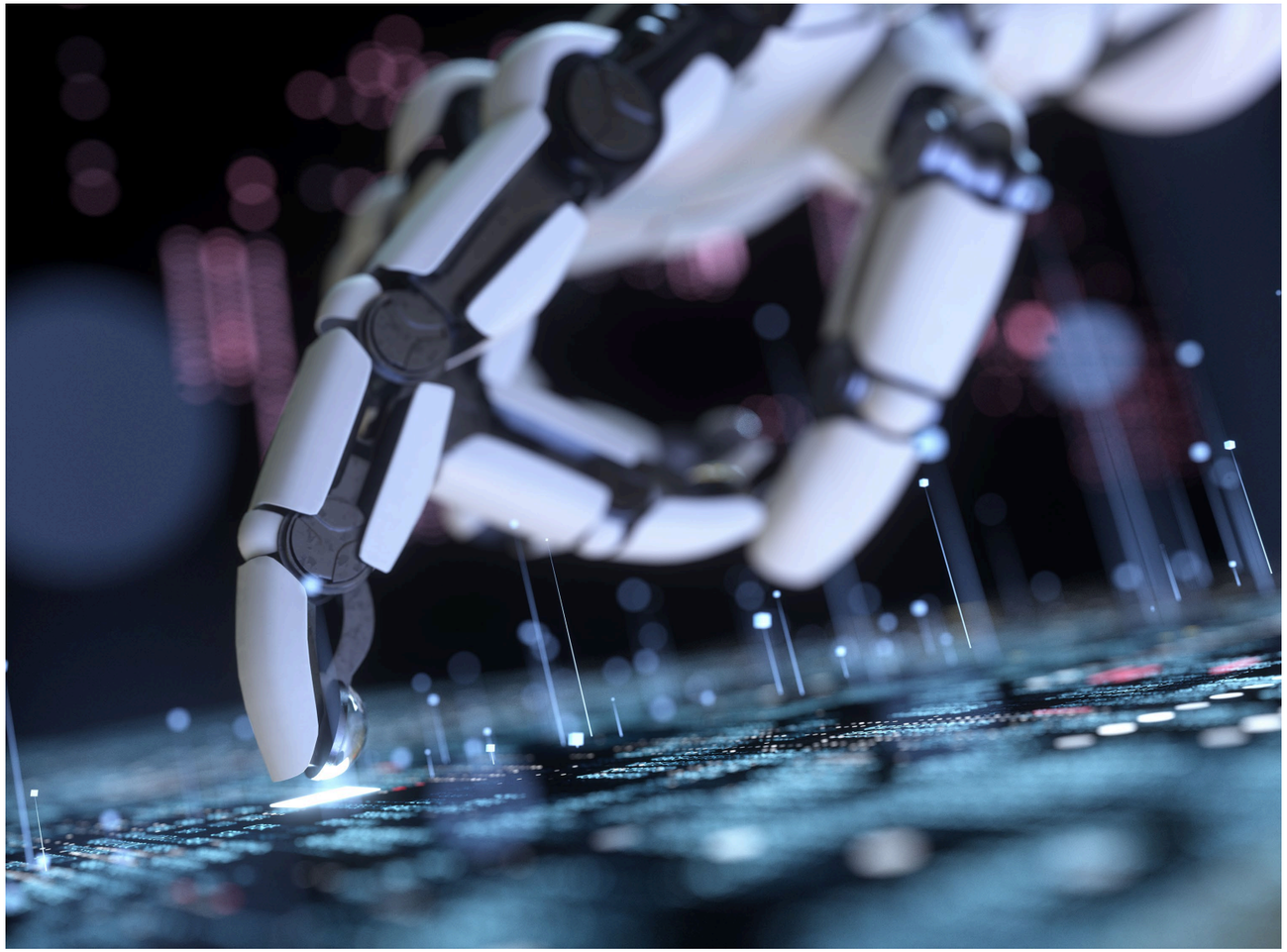
Unlocking Ohio's Learning Standards for Computer Science

Department of Education & Workforce

Connections Before Content

- Which Computer Science strand does this remind you of?
- Why did you say that?





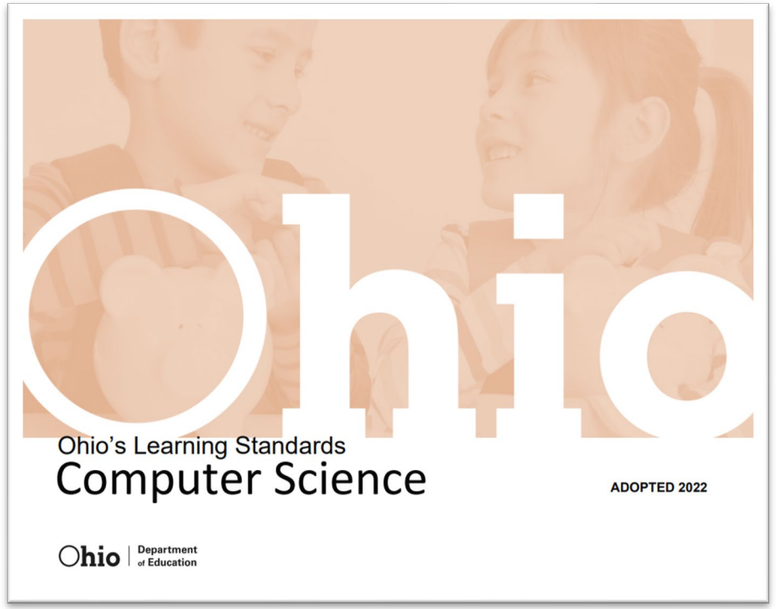
Purpose:

- To gain a deeper understanding of Ohio's Learning Standards for Computer Science.
- To break down strands and indicators into actionable steps.
- To explore strategies for aligning instruction with the Computer Standards.
- To collaborate and share practical applications.

Computer Science Standards

Strands

- Computing Systems
- Networks and Internet
- Algorithmic Thinking and Programming
- Data and Analysis
- **Artificial Intelligence**
- Impacts of Computing

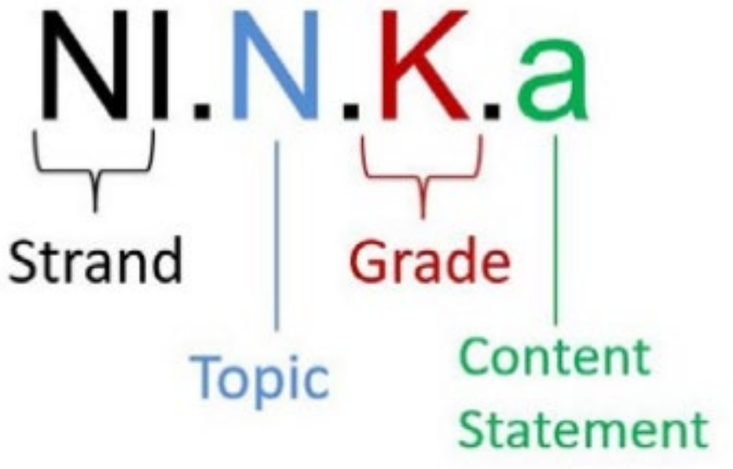


ADDITIONAL TOPICS

- Artificial Intelligence
- Quantum computing
- Internet of Things
- Enhancement of Cybersecurity

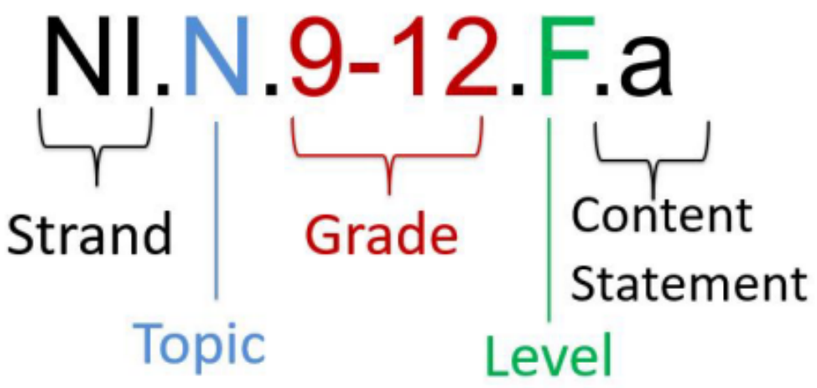
CS Standards

K-8 CS Standards Structure



- Strand - Networking and the Internet **(NI)**
- Topic – Networking **(N)**
- Grade - Kindergarten **(K)**
- Content Statement **(a)**

9-12 CS Standards Structure



- Strand - Networking and the Internet **(NI)**
- Topic – Networking **(N)**
- Grade - 9-12 **(9-12)**
- Level – (**F**)
- Content Statement **(a)**

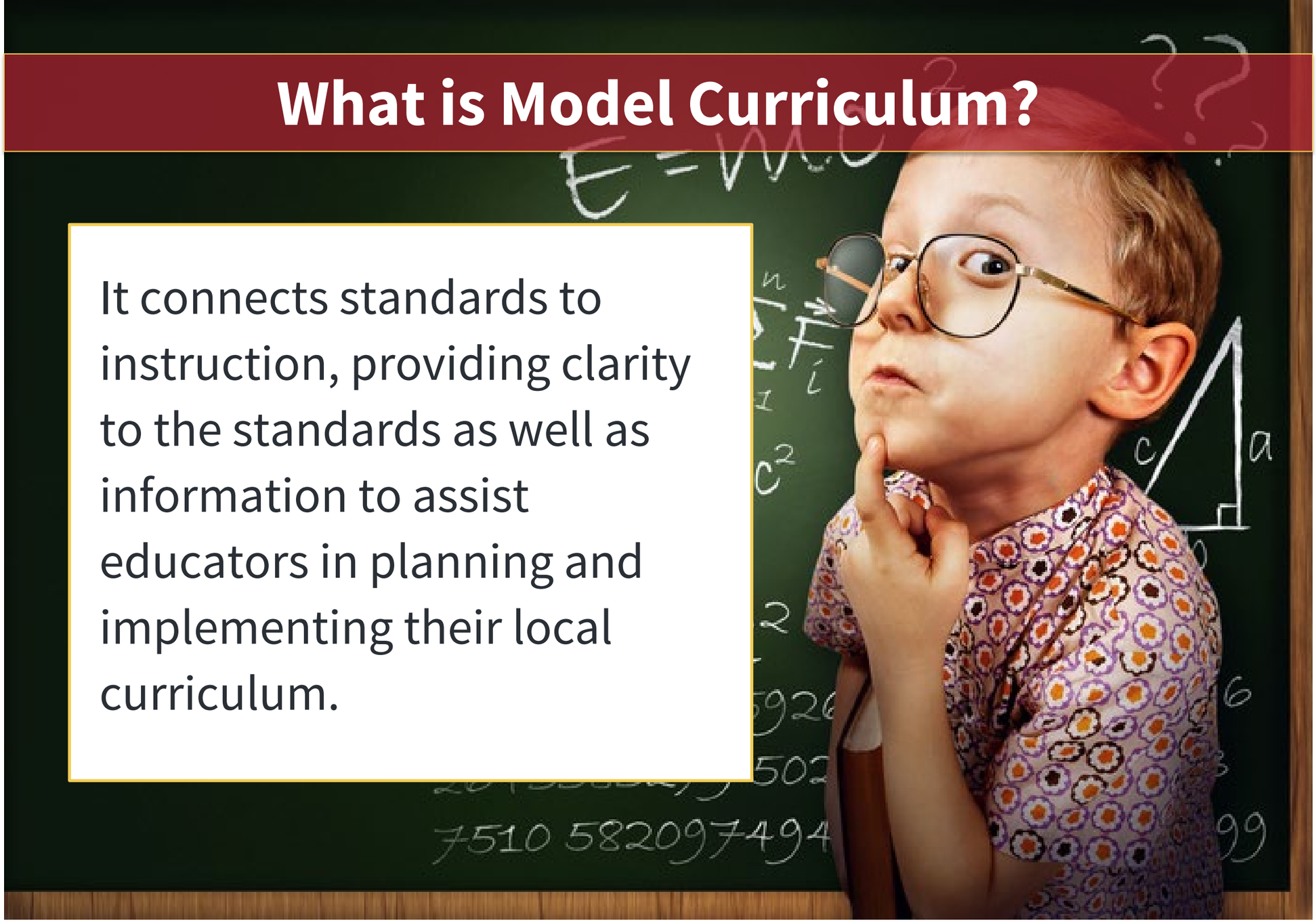
Computer Science Model Curriculum

CS Model Curriculum

- Introduction
- Expectations for Learning
- Content Elaborations
- **Career Connections**

What is Model Curriculum?

It connects standards to instruction, providing clarity to the standards as well as information to assist educators in planning and implementing their local curriculum.



The Model Curriculum

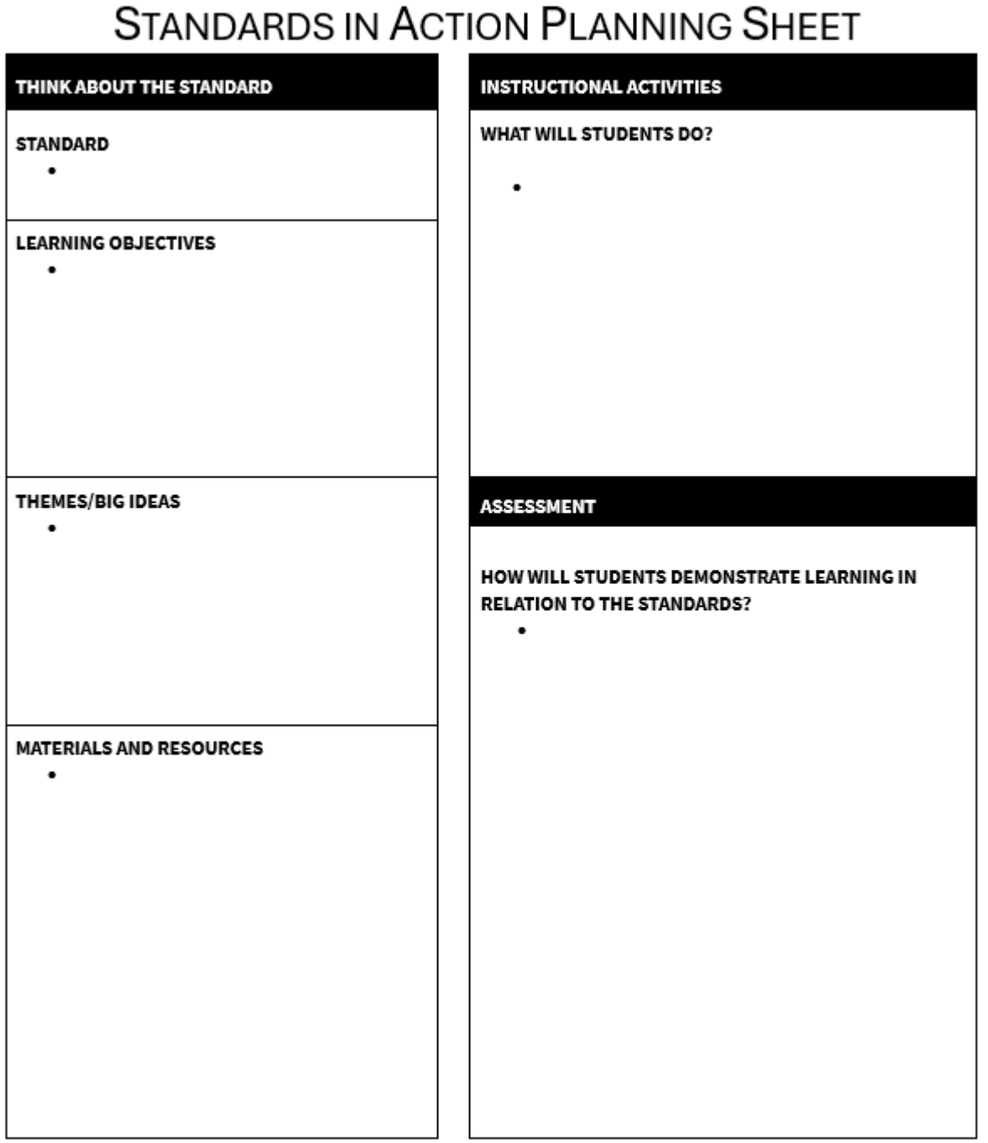
What it is	What it is Not
= Detailed descriptions of the knowledge/ skills in the learning standards = A support for instructional planning using the learning standards as a foundation	ǂ Lesson plans ǂ An exhaustive list of classroom activities per standard ǂ Instructional units ǂ A resource meant to replace district decisions or direction

The Components

Strand	Impacts of Computing
Topic	**Culture**
IC.Cu.3.a Identify computing technologies that have changed the world and express how those technologies influence and are influenced by cultural practice.	**Expectations for Learning** **LEARNING PROGRESSION** In grade 2, students compared and contrasted how technology use has changed and the impact it has had on their personal lives. In grade 3, students identify the impact technology has on everyday life in the local community. In grade 4, students will recognize the impact of technology on the global community. **IMPORTANT CONCEPTS** • People within a local community use technology in various ways • Daily life is influenced by the technology in a community **KEY SKILL/PROCEDURES** • Identify specific types of technology used in the local community • Describe ways that various technology resources impact daily life in a local community **Content Elaborations** **CLARIFICATIONS** New computing technology is created, and existing technologies are modified for many reasons, including to increase their benefits, decrease their risks, and meet societal needs. Students explore topics that relate to the history of technology and the changes in the world due to technology. Topics could be based on current news content, such as robotics, wireless internet, mobile computing devices, GPS systems, wearable computing, or ways social media has influenced social and political changes. (CSTA K-12 Computer Science Standards, 2017) **CONTENT FOCUS** The focus is on the impacts of technology on the local community. **COMPUTER SCIENCE PRACTICES** *Practice 1.* Fostering an Inclusive Computing Culture 1. Include the unique perspective of others and reflect on one's own perspectives when designing and developing computational products. **Career Connections** **CAREER AWARENESS** Using a resource such as Smithsonian Institute, students learn about computing technologies from the past. Students choose one type of technology to research to see how it has changed society and how people work. Students create an artifact such as a timeline or presentation to share their findings.

Standards in Action

- With the Model Curriculum as a guide, go to Standards in Action Worksheet.
- Have one person in your group make a copy.
- Agree on a grade band and select a standard.
- Complete the document collaboratively.
- Select one person to represent your group when we come back together.



STANDARDS IN ACTION PLANNING SHEET

THINK ABOUT THE STANDARD

STANDARD

•

LEARNING OBJECTIVES

•

THEMES/BIG IDEAS

•

MATERIALS AND RESOURCES

•

INSTRUCTIONAL ACTIVITIES

WHAT WILL STUDENTS DO?

•

ASSESSMENT

HOW WILL STUDENTS DEMONSTRATE LEARNING IN RELATION TO THE STANDARDS?

•

Integration Techniques

- Real World Applications
  - Have students present their ideas for an app using a SharkTank approach. Students work on their presentations and are judged on their ideas, how CS was used to solve the problem, and their presentation skills.
  - Have students explore the use of sensors in a familiar object (such as a Roomba) to examine how it works.
  - Have students use their interest areas to create a personalized game.

Integration Techniques

- Hands-On Activities
  - Set up a CS “playground” to expose students to a wide variety of CS activities, including tinkering and maker challenges.
  - Let students collaborate on designing and building new robots. Students create, test, and discover the potential of their robots to conquer challenges.
  - Let students learn about computer hardware through a computer assembling project .
  - Bring literacy into your CS teaching by having students work on a book creation project using a coding program to teach decomposition and sequencing.

Integration Techniques

- Scaffolded and guided student learning
  - The famous Peanut Butter and Jelly Sandwich activity!
    - Alternative: Have students all build a structure and write directions and throw them into a slide deck of your choosing. Randomize and have the entire class try to use the directions on the screen to recreate it. Students take a picture of theirs and send it to you so that people can see what it's "supposed to look like" afterward.
  - Modeling - doing a think-aloud of how the teacher is solving a problem so that students can hear the thinking and see the teacher is a computational thinker. Gradually, the teacher will stop being the one doing it, and then the students will do the thinking and talking.
  - Explain the importance of making mistakes to your students.

Collaborative Brainstorm

- Share out! How have you implemented Ohio's Computer Science Learning Standards?

Resources and Support

- Department of Education Computer Science Page
- State Board Of Education, Office of Licensure
- CSTA - Ohio
- Next Webinar:
  - **High Quality Instructional Material Selection in Technology and Computer Science**
    - **Description:** Gain insights into selecting the most effective instructional materials for technology and computer science courses. The Ohio Computer Science and Technology High-Quality Instructional Materials (HQIM) Rubric will be examined, in addition to other tools aimed at enhancing the evaluation and selection process for educational technology and computer science resources.
    - **Date:** Wednesday, June 18, 2025
    - **Time:** 3:00 PM – 4:15 PM
    - **Registration Link**

QUESTIONS?

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