Problem Solving through Computational Thinking for Educators

This Professional Development course will provide you, as a teacher, an understanding of what Computational Thinking (CT) is, why it is important, and ways you can incorporate CT skills into your classroom.

What is Computational Thinking?

Computational thinking (CT) is a problem-solving process that includes (but is not limited to) the following characteristics:

• Formulating problems in a way that enables us to use a computer and other tools to help solve them.
• Logically organizing and analyzing data
• Representing data through abstractions such as models and simulations
• Automating solutions through algorithmic thinking (a series of ordered steps)
• Identifying, analyzing, and implementing possible solutions with the goal of achieving the most efficient and effective combination of steps and resources
• Generalizing and transferring this problem solving process to a wide variety of problems

- From the International Society of Technology in Education (ISTE) and the Computer Science Teachers Association (CSTA)
Computational Thinking Process

**Decomposition**—when analyzing a problem, logically breaking it down into smaller, more manageable subproblems.

**Pattern Recognition**—when analyzing a problem, recognizing patterns and/or trends within or among subproblems.

**Abstraction and Pattern Generalization**—generalizing variables and determining their relationships which may allow for modeling or automation.

**Algorithm Design**—carefully defining logical instructions to carry out solving part or all of the problem.

Why is Computational Thinking Important for Today’s Students?

- Computational Thinking can be used to solve problems in any area or field.
- Leads to IT fluency (vs. IT literacy) (moving students from being users of technology to creators of technology).
- Engaging in Computational Thinking can lead to a much better understanding about computing.
- Provides a framework for critically thinking problem solvers across all career fields.
- Incorporates both creativity and efficiency into problem solving.
- Develops job skills (leading to increased income).

More information about the Course

Access the Course: Problem Solving through Computational Thinking for Educators