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)

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