ISTE & CSTA say that Computational Thinking (CT) is a problem-solving process that includes:

• Formulating problems in a way that enables us to use a computer 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

VCTAL is developing a set of instructional modules and mini-modules for use in high school classrooms to help cultivate a facility with computational thinking in students across different grade levels and subject areas.

Module Fast Facts:
• Provide 4-6 days of classroom activities
• Student-centered, activity-driven, problem-based
• Active, not passive
• Drawn from everyday life
• Encourage hands-on experimentation with computers
• Include “stand-alone” parts so that teachers do not have to commit to the full module

Fundamental CT Question: How do I solve this problem given that I can compute?

Module Testing and Evaluation:
• Pilot Testing with students at Student Prototyping Workshop
• Field Testing at partner high schools in AK, MS, MT, PA, SC
• Evaluation instruments to help assess student engagement, the CT/CS learning that occurs, CT skills transfer, etc.

Student comment following the Prototyping Workshop:
I would like to come back next year and possibly major in this in college.

VCTAL Timeline

Year 1 | Year 2 | Publish Module Group 1
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Year 2 | Year 3 | Publish Module Group 2
Year 3 | Year 4 | Publish Module Group 3

Select topics and authors; hold author meeting | Summer workshops/meetings
Write module draft | Module revision, testing, and review

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