

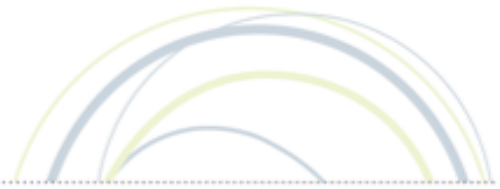


# ISTE SEAL OF ALIGNMENT REVIEW FINDINGS REPORT

**Certiport**

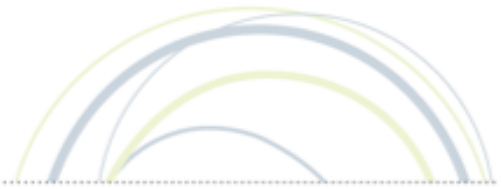
*Information Technology Specialist in  
Computational Thinking (ITS in CT)*

March 2022



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## ABOUT

### ABOUT ISTE

The International Society for Technology in Education (ISTE) is the premier nonprofit membership organization serving educators and education leaders. ISTE is committed to empowering connected learners in a connected world and serves more than 100,000 education stakeholders throughout the world.

As the creator and steward of the definitive education technology standards, our mission is to empower learners to flourish in a connected world by cultivating a passionate professional learning community, linking educators and partners, leveraging knowledge and expertise, advocating for strategic policies, and continually improving learning and teaching.

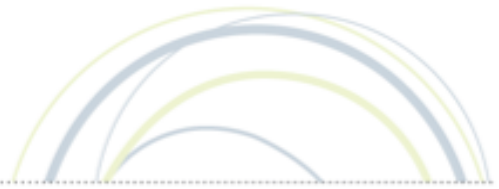
### ISTE SEAL OF ALIGNMENT

Resources and products designed with the ISTE Standards in mind are choosing to demonstrate their commitment to support critical digital age learning skills and knowledge. Regardless of a solution's intended grade level, purpose or content area, by addressing the ISTE Standards and earning a Seal of Alignment, a solution is shown to consciously, purposefully and meaningfully support best practices for digital age teaching and learning.

ISTE considers a solution aligned to the ISTE Standards only after an extensive review conducted by trained ISTE Seal of Alignment reviewers, and it has been determined to meet all critical elements of a particular standard indicator in accordance with specific review criteria.

By earning a Seal of Alignment, ISTE verifies that this product:

- Promotes critical technology skills
- Supports the use of technology in appropriate ways
- Contributes to the pedagogically robust use of technology for teaching and learning
- Aligns to the ISTE Standards in specific ways as described in the review finding report



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## RESOURCE DESCRIPTION

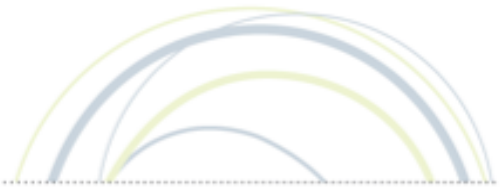
### **WHAT INFORMATION TECHNOLOGY SPECIALIST IN COMPUTATIONAL THINKING?**

The Computational Thinking Specialist in Computational Thinking is a certification exam that is geared toward candidates who can decompose problems, collect and analyze data, recognize patterns in data, represent data through abstractions, and automate solutions by using algorithmic thinking. The exam also stresses solution specification, automating solutions, and presenting and improving solutions.

The exam is designed for school age students. There are 48 items using multiple choice, matching, and True/False formats. The majority of items are based on scenarios in which students compute simple algorithms, complete flow charts, identify needed variables, and analyze sample data across various procedures such as flow charts, graphs and tables, and algorithms. There are two forms of the exam so it can be administered twice without using the same items. Forty two of the items are unique to the form and six items are replicated. The primary language is English. French, Spanish, Portuguese, Chinese, and Arabic versions are available.

### **HOW IS INFORMATION TECHNOLOGY SPECIALIST IN COMPUTATIONAL THINKING IMPLEMENTED?**

Approximately 50 minutes total are available for the timed exam. There is a sample item at the start of the exam. Students can access a test summary at any time showing the items attempted, the items remaining, and any items they have marked for further review. The student clicks Submit when finished. Access to the exam is closed to the student once it is submitted. The exam score is displayed immediately upon submission.



## ISTE SEAL OF ALIGNMENT REVIEW

**Product:** Information Technology Specialist in Computational Thinking

**Organization:** Certiport

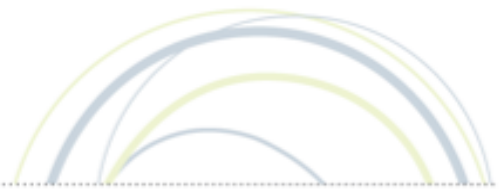
**Date of Award:** March 2022

### REVIEW METHODOLOGY

ISTE Seal of Alignment reviews are conducted by a panel of education and instructional experts. Reviewers use data collected both separately and collectively to determine how a solution addresses specific elements described in each of the indicators of the ISTE Standards. Special instruments are used by reviewers to collect data on potential alignment across all resource materials. Alignment is determined based on the extent to which all or some of specific elements are addressed within the materials. Reviewers conduct regular calibrations to assure the validity and reliability of the results and final review findings are combined for an overall score for alignment on each individual indicator.

### SCOPE OF REVIEW

Information Technology Specialist in Computational Thinking was reviewed for alignment against the ISTE Standards for Students. ISTE reviewers examined product descriptions, an outline of the exam objectives, and completed both forms A and B of the exam. There is enough comparability between the two exams to indicate that they are interchangeable.



## REVIEW FINDINGS

The ISTE Standards can be aligned at the following levels:

- **Foundational** - Resources and activities aligned at the *foundational* level primarily focus on skills and knowledge that facilitate skill acquisition to eventually meet ISTE Standard indicators.
- **Applied** – Resources and activities aligned at the *applied* level primarily focus on practical, real-world, and/or relevant opportunities to practice the skills and knowledge learned in the curriculum.

*Information Technology Specialist in Computational Thinking* was found to align to the ISTE Standards for Students in the following areas:

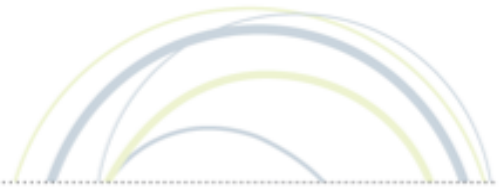
ISTE STANDARDS FOR STUDENTS							
	Standard 1 Empowered Learner	Standard 2 Digital Citizen	Standard 3 Knowledge Constructor	Standard 4 Collaborator	Standard 5 Innovative Designer	Standard 6 Computational Thinker	Standard 7 Creative Communicator
Indicator A							
Indicator B							
Indicator C							
Indicator D							



**Foundational** resources and activities focus primarily on knowledge that facilitates skills acquisition to eventually meet ISTE Standards indicators.

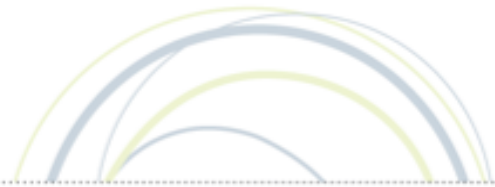


**Applied** resources and activities focus primarily on practical, real-world and/or relevant opportunities to practice the skills and knowledge learned in the curriculum.



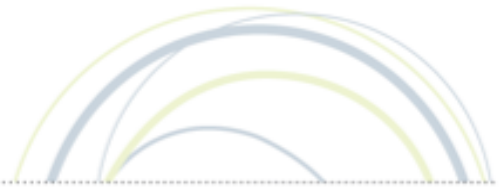
*Information Technology Specialist in Computational Thinking* was found to address the ISTE Standards for Students in the following ways:

ISTE STANDARD	FOUNDATIONAL FINDING STATEMENT
<p><b>1. Empowered Learner.</b> Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.</p>	
<p>1.a. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.</p>	
<p>1.b. Build networks and customize their learning environments in ways that support the learning process.</p>	
<p>1.c. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.</p>	
<p>1.d. Understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.</p>	<p>One or more objectives/test items use real life situations to assess readiness for technology operations.</p>

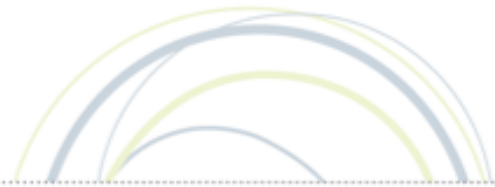


<p><b>2. Digital Citizen.</b> Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.</p>	
<p>2.a. Cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.</p>	
<p>2.b. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.</p>	<p>One or more objectives/test items use real life situations to assess readiness for using technology with students with diverse abilities.</p>
<p>2.c. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.</p>	
<p>2.d. Manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.</p>	
<p><b>3. Knowledge Constructor.</b> Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.</p>	
<p>3.a. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.</p>	<p>One or more objectives/test items use real life situations to assess readiness data research strategies.</p>
<p>3.b. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.</p>	<p>One or more objectives/test items use real life situations to assess readiness for evaluating the validity of resources.</p>

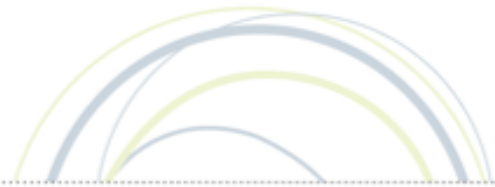




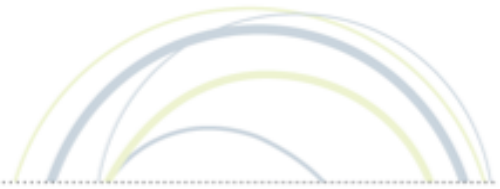
<p>3.c. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.</p>	
<p>3.d. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.</p>	
<p><b>4. Innovative Designer.</b> Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.</p>	
<p>4.a. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.</p>	<p>One or more objectives/test items use real life situations to assess readiness for data gathering and analysis processes.</p>
<p>4.b. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.</p>	<p>One or more objectives/test items use real life situations to assess readiness for using technology for designing data gathering and analysis processes.</p>
<p>4.c. Develop, test and refine prototypes as part of a cyclical design process.</p>	<p>One or more objectives/test items use real life situations to assess readiness for cyclical design processes.</p>
<p>4.d. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.</p>	
<p><b>5. Computational Thinker.</b> Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>	



<p>5.a. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.</p>	<p>One or more objectives/test items use real life situations to assess readiness for defining problems.</p>
<p>5.b. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.</p>	<p>One or more objectives/test items use real life situations to assess readiness for representing and analyzing data sets.</p>
<p>5.c. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.</p>	<p>One or more objectives/test items use real life situations to assess readiness for models and problem solving.</p>
<p>5.d. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.</p>	<p>One or more objectives/test items use real life situations to assess readiness for algorithmic thinking.</p>
<p><b>6. Creative Communicator.</b> Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.</p>	
<p>6.a. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.</p>	<p>Limited objectives/test items use real life situations to assess readiness for selecting platforms.</p>
<p>6.b. Create original works or responsibly repurpose or remix digital resources into new creations.</p>	
<p>6.c. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.</p>	



<p>6.d. Publish or present content that customizes the message and medium for their intended audiences.</p>	<p>Limited objectives/test items use real life situations to assess readiness for publishing and presenting data.</p>
<p><b>7. Global Collaborator.</b> Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.</p>	
<p>7.a. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.</p>	
<p>7.b. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.</p>	<p>Limited objectives/test items use real life situations to assess readiness for collaborative work.</p>
<p>7.c. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.</p>	<p>Limited objectives/test items use real life situations to assess readiness for collaborative project roles.</p>
<p>7.d. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.</p>	



## CONCLUSION

The focus of the exam is Computational Thinking which is the domain of ISTE Student Standard Five, Computational Thinker. The items require students to use their knowledge of defining problems, algorithmic thinking and analyzing various formats such as tables, graphs, flow charts, and coding sequences. The test items have value as pre-requisites for the application and use of those skills in executing projects and tasks. The students gain additional practice as they complete the exam.

This product focuses on ISTE Student Standard Five Computational Thinker with all four indicators represented by multiple objectives and items. It is noteworthy, however, that all seven ISTE Student Standards are covered to some extent in the exam. Standard Three (Knowledge Constructor) and Standard Four (Innovative Designer) include multiple objectives and exam items for several indicators but not all four. Standard One (Empowered Learner), Standard Six (Creative Communicator), and Standard Seven (Global Collaborator) have more limited presence in the objectives and exam items.