



ISTE SEAL OF ALIGNMENT REVIEW FINDINGS REPORT

Google CS First
JUNE 2018

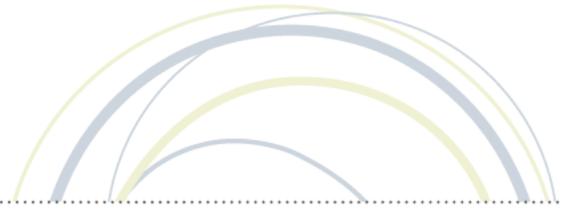
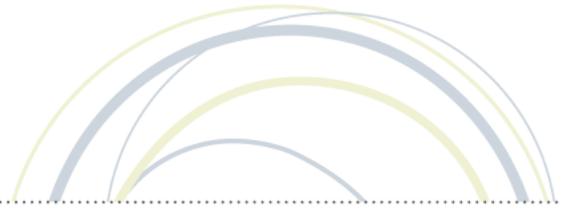


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ABOUT

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.

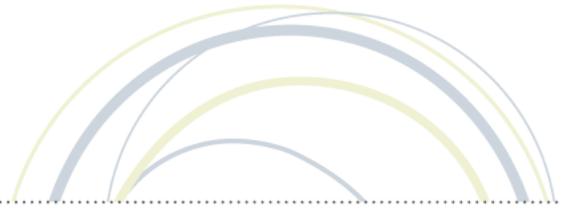
ISTE SEAL OF ALIGNMENT

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



RESOURCE DESCRIPTION

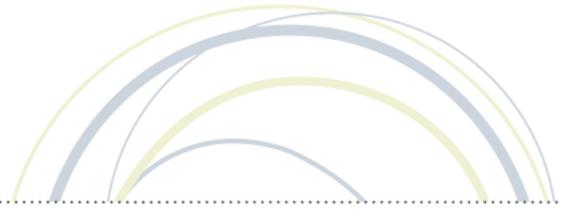
WHAT IS THE GOOGLE CS FIRST PROGRAM?

Google's CS First is a free online computer science and coding curriculum for students in upper elementary and middle school (ages 9-14). Lessons and activities are designed to be engaging and relevant, with themes such as Storytelling, Art, Sports, Fashion Design, Social Media and Animation. The learning activities are divided into units designed to be completed within a class period. Some activities are stand alone and can be completed in a single session. Others are organized for multiple club or class meetings that can extend through as many as eight sessions.

HOW IS THE GOOGLE CS FIRST PROGRAM IMPLEMENTED?

Teachers are provided with step-by-step lesson plans for helping students pursue their learning and complete their projects. Quizzes included in the lessons can help both students and teachers monitor their progress. Student are encouraged to collect their projects into a portfolio and share them with other club members and with the wider community of Scratch users.

The accompanying digital resources include text, graphics and approximately 700 videos that support the learning and creative activities. In addition to the core curriculum materials and resources, each set of activities includes sections with “Adaptations/Extensions” and “Optional Resources.” All the lesson plans are designed for flexible and adaptive uses in a variety of contexts whether that be as an afterschool program or enrichment activity or regular classroom lesson.



ISTE SEAL OF ALIGNMENT REVIEW

Product: CS First

Company: Google

Date of Award: June 2018

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.

The Google CS First resource was reviewed for alignment against the ISTE Standards for Students, at the Readiness level. Readiness level reviews examine how a resource instructs and/or assesses specific skills and knowledge that have been identified as foundational to the elements of the ISTE Standards.

SCOPE OF REVIEW

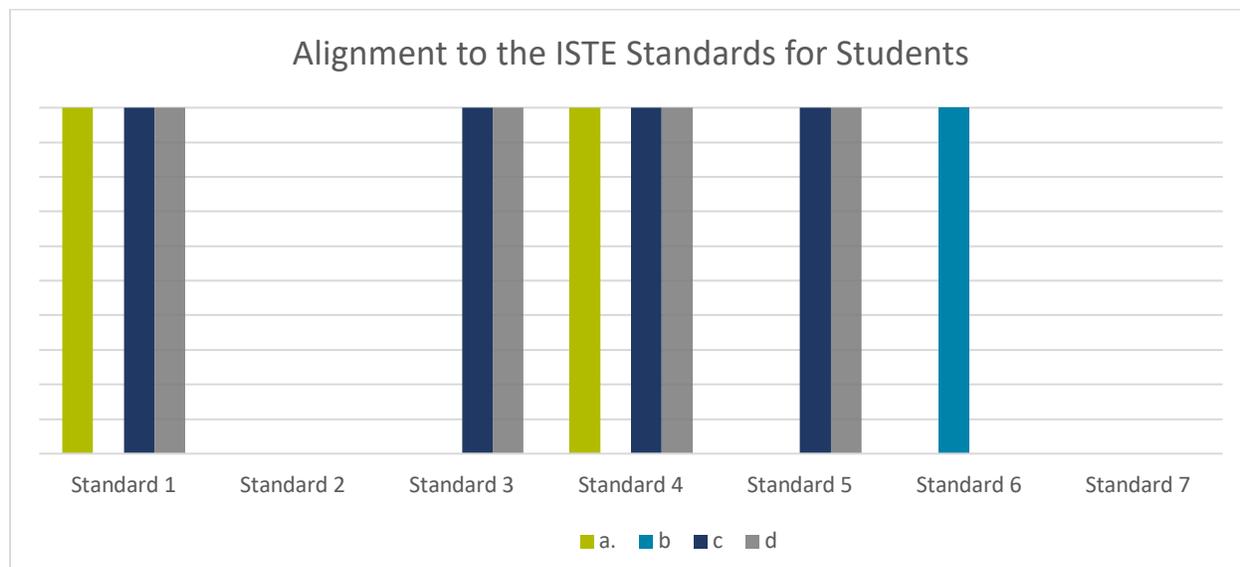
During the review process for the Google CS First program, reviewers:

- collected data on when and how each activity addressed specific skills and knowledge described in the ISTE Standards for Students.
- compiled findings to determine overall alignment across all ISTE Standards for Students standards and indicators.
- used aggregate findings to form the basis of the overall alignment results.



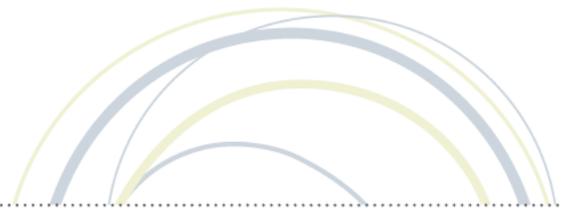
REVIEW FINDINGS

The Google CS First resource supports the following indicators of the ISTE Standards for Students:

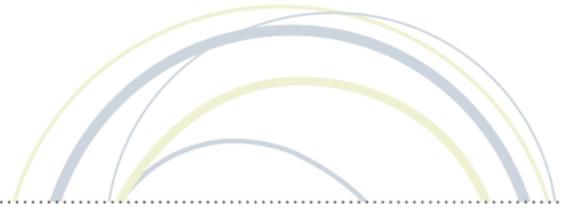


The Google CS First resource aligns to the ISTE Standards for Students at the proficiency level in the following ways:

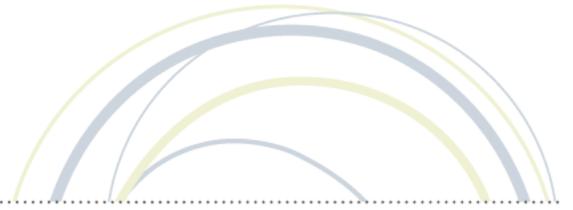
ISTE Standard	Finding Statement
1. Empowered Learner	
1.a. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.	A reflection section is included in each activity that encourages students to reflect on what they learned in that activity as well as commenting on other student projects. Students also learn to use a debugging process for testing, reflecting on the outcomes of their coding, and making improvements based on what they have learned.
1.b. Build networks and customize their learning environments in ways that support the learning process.	



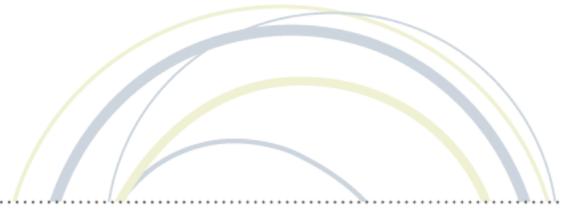
<p>1.c. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.</p>	<p>Students also share their projects in real time with others in their club and post their projects online to the Scratch Community. The variety of projects they create enable them 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>While the focus is mainly on coding and software development, students have to successfully use hardware to participate. Students learn to use a debugging process for testing, reflecting on the outcomes of their coding, and transferring their knowledge by applying what they have learned in successively more challenging projects.</p>
<p>2. Digital Citizen</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>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>3. Knowledge Constructor</p>	
<p>3.a. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.</p>	
<p>3.b. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other 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>The curation in Google CS First is focused on the creation of digital artifacts that require the thoughtful organization of a variety of coding elements that demonstrate their proficiency in reaching a number of meaningful goals. The variety of themes and product types offer practice creating and sharing collections of theme-based projects.</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>The activities include an introduction at the beginning of each meeting that engages students in considering how CS helps to solve real world problems such as Encryption (Storytelling) and marketing (Fashion Design). The connections to real world applications align with the activity students are involved in.</p>
<p>4. Innovative Designer</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>The detailed and progressively more difficult programming projects are designed to help students learn effective design principles and processes that enable them to generate ideas, test theories, solve coding problems and create personalized software projects.</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>4.c. Develop, test and refine prototypes as part of a cyclical design process.</p>	<p>Every activity engages students in building progressively more difficult programming projects focused on a number of real world themes and requires students to develop and test coding prototypes and refine them through a cyclical design process.</p>
<p>4.d. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.</p>	<p>The more open-ended design and implementation steps of a number of student projects, particularly in the more advanced themes, require students to learn the characteristics of open-ended projects and to practice persevering to complete them.</p>



5. Computational Thinker	
5.a. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.	
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.	
5.c. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.	Virtually every coding activity shows students how to break problems into their component parts and focus on the key information. In the more open-ended coding challenges students get some independent practice doing this as a means of problem-solving.
5.d. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	Coding projects from easy to advanced-level, engage students in practicing development of the sequence of steps needed to create and test automated solutions. Students also use algorithmic thinking, especially in the more advanced activities and in the optional add-on stage of each project.
6. Creative Communicator	
6.a. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.	
6.b. Create original works or responsibly repurpose or remix digital resources into new creations.	Coding projects typically start with a template or a set of code created previously then ask students to repurpose or remix parts of it to create something new, so students are involved in this process throughout the program.
6.c. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.	
6.d. Publish or present content that customizes the message and medium for their intended audiences.	
7. Global Collaborator	



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.	
7.b. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.	
7.c. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.	
7.d. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.	

CONCLUSION

The Google CS First curriculum is well-designed to appeal to its audience of students ages nine through fourteen. It is also designed for easy adaptability to a wide range of learning settings. The materials are clear, detailed, user-friendly and visually appealing. The incorporation of videos throughout the lessons make the learning process particularly appealing to beginning students. The use of blended lesson plans involving teachers or volunteers helps to facilitate ongoing support for students of all levels.

The theme-based projects reference real world applications of the skills being learned, and in some cases the themes are career oriented. The learning environment encourages sharing, peer support and participation in a wider learning community.

Teacher lesson plans include mappings to the CSTA standards and also address a number of foundational knowledge and skills for the ISTE Standards for Students. Given the strength, adaptability and focus on the popular topic of coding and application to real world tasks, these lessons reflect not just solid alignment with the standards but a strong example of the kind of learning strategies that support the ISTE mission.