



# ISTE Seal Review Findings Report

**ST Math**

2024



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## ABOUT

### ABOUT ISTE

The International Society for Technology in Education (ISTE) is home to a community of global educators and solution providers who are passionate about using technology to revolutionize learning. Our vision is to create a bold community where education innovators are supported in reimagining and redesigning learning with a focus on using technology to create transformational and equitable experiences for learners. We're making this vision a reality by delivering practical guidance, evidence-based professional learning, virtual networks, thought-provoking events and the ISTE Standards.

### ISTE SEAL

The ISTE Seal serves as a mark of high-quality product design for solutions that enable and guide high-quality learning. By choosing to demonstrate their commitment to supporting best practices for teaching and learning, these products show a purposeful and meaningful dedication to practical usability, digital pedagogical implementation, and the ISTE Standards. With a focus on user experience, product usability, and the most essential elements of instructional technology today, the ISTE Seal provides a set of criteria and simple indicators to guide educators, students, and technology directors toward the very best products on the market.

ISTE awards a seal only after an extensive analysis conducted by trained ISTE reviewers that ensures a product meets all critical elements under specific review criteria.

By earning an ISTE Seal, ISTE verifies that this product:

- Promotes critical technology skills.
- Supports the use of technology in appropriate ways.
- Incorporates digital pedagogy and the learning sciences.
- Addresses key elements of tech usability, user experience and user interface.
- Aligns to ISTE Standards in specific ways.

## RESOURCE DESCRIPTION

### WHAT IS *ST Math*?

ST Math is a web-based visual instructional program for PreK-8 that leverages the brain's innate spatial-temporal reasoning ability to solve mathematical problems. The program's unique, patented approach provides students equitable access to learning through challenging puzzles, non-routine problem-solving, and formative feedback. With ST Math, students build deep conceptual understanding, and schools see proven, repeatable results.

### HOW IS *ST Math* IMPLEMENTED?

ST Math is accessed through an online portal and utilizes the brain's natural ability to understand space and time. The program starts by teaching the foundational concepts visually and then connects the ideas to symbols, language, and robust classroom discourse. Through this visual learning approach, students are better equipped to solve unfamiliar math problems, recognize patterns, and build deep conceptual understanding. Without language barriers, math problems become accessible to all students, regardless of skill level or language background.

ST Math is also mastery-based, which means students must pass each level with a score of 100% (all puzzles correctly solved) before the next level in a sequence becomes available to them. Each student has a personalized journey, which takes as long as necessary to achieve mastery. This ensures that students are building and demonstrating a solid conceptual foundation.

Action is also critical in ST Math. Through animated formative feedback, students are offered an intrinsically motivating learning experience that shows them the mathematical consequences of each answer, helping to form and shape their understanding.



## ISTE SEAL REVIEW

**Product:** ST Math

**Product Type:** Curriculum

**Organization:** MIND Education

**Date of Award:** May 2024

### REVIEW METHODOLOGY

ISTE Seal reviews are conducted by a distinguished panel of experts in education, instruction, and technology. These experts utilize the most up-to-date data provided by the organization to conduct thorough evaluations of each solution. The evaluations focus on assessing the solution's performance in addressing specific elements outlined in the technical and pedagogical usability framework and the ISTE Standards.

To complete their rigorous evaluations, the reviewers utilize a comprehensive rating system, categorizing each solution as either "meets expectations" or "does not meet expectations." This assessment covers both the required and optional "Look Fors" outlined in the application. To ensure the validity and reliability of their results, the reviewers regularly engage in calibrations. Final review findings are then analyzed and combined, providing an overall score for alignment with each indicator.

At ISTE, we take great pride in our unwavering commitment to delivering results that schools and districts can have full confidence in. To be deemed education-ready learning solutions, products must meet the high standards in learning sciences, user experience and interface, accessibility, and content quality.

### SCOPE OF REVIEW

ST Math was reviewed against the technical, pedagogical usability framework and the ISTE Standards to determine whether **the solution is education-ready**. ISTE reviewers examined all evidence provided by the organization and interacted directly with the product.



## REVIEW FINDINGS

**ISTE STANDARDS:** The ISTE Standards provide the competencies for learning, teaching, and leading in the digital age, providing a comprehensive roadmap for the effective use of technology in schools worldwide. Grounded in learning science research and based on practitioner experience, the ISTE Standards ensure that using technology for learning can create high-impact, sustainable, scalable, and equitable learning experiences for all learners.

**Empowered Learner 1.1.c**

Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

**Innovative Designer 1.4.d**


Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

**Computational Thinker 1.5.c**


Students break problems into component parts, extract key information and develop descriptive models to understand complex systems or facilitate problem-solving.

**Creative Communicator 1.6.c**


Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

FEEDBACK	OUTCOME
<ul style="list-style-type: none"> <li>• Students can track their progress as they navigate through the gamified learning experiences, and challenges give them a safe space to think through their solutions using the feedback provided by the game’s animation.</li> <li>• Open-ended games present students with challenges requiring deductive reasoning to determine the ‘rules.’</li> <li>• Students must use computational thinking strategies to solve each challenge. They must design a solution and then test and revise it.</li> </ul>	




<ul style="list-style-type: none"> <li>Using the gamified format of the program, students solve mathematical challenges through visual models.</li> </ul>	
<p><b>DIMENSION 1: USER INTERFACE AND AGENCY</b></p> <p><b>Definition:</b> The design of the product interface and user experience helps teachers quickly and reliably achieve instructional goals. This dimension includes features related to interface design, learnability, navigation, maximizing time on task, control over actions, and general usability.</p>	
<p style="text-align: center;"><b>FEEDBACK</b></p>	<p style="text-align: center;"><b>OUTCOME</b></p>
<ul style="list-style-type: none"> <li>Young learners can utilize an innovative picture password login, with an onboarding tutorial available to help them access and remember their picture sequence. All learners can opt to log in with either a picture or text.</li> <li>The main menu and classroom dashboard menu are easy to find and clearly labeled.</li> <li>The site offers an intuitive interface, making it easy for educators to search for what they need and filter in many ways, such as by students, standards, or curriculum. Guided video and text tutorials introduce new functions as they are encountered.</li> <li>The support button is constantly accessible at the top of the screen. It provides written and video help, search functionality, live chat, phone, and email support options for all users.</li> </ul>	<div style="text-align: center;">  </div>
<p><b>DIMENSION 2: LEARNING DESIGN</b></p> <p><b>Definition:</b> The product has features that exhibit and promote design and customization of learning episodes in ways that align with research-based best practices, including those rooted in the learning sciences.</p>	
<p style="text-align: center;"><b>FEEDBACK</b></p>	<p style="text-align: center;"><b>OUTCOME</b></p>



<ul style="list-style-type: none"> <li>• The games scaffold in difficulty, visual elements are consistent, and actions have students work with the specified learning objective.</li> <li>• Students retrieve, recall, and build upon what they know throughout each objective and must demonstrate high accuracy before moving too far ahead.</li> <li>• The curriculum is fully modular, and educators can assign specific games to classes, groups, or individuals.</li> <li>• Exemplars at the beginning of each game help students understand the objectives and takeaways. Animated feedback for incorrect answers clearly illustrates non-examples.</li> </ul>	
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### DIMENSION 3: DIGITAL PEDAGOGY

**Definition:** The product is designed to support the development of digital age learning skills, capacities and knowledge. This dimension focuses on how technology can help students and teachers experience the best possible learning experiences, including the social and learning affordances that digital educational products uniquely offer.


FEEDBACK	OUTCOME
<ul style="list-style-type: none"> <li>• Playful games encourage students to use critical thinking to explore and find solutions to real-life math and mathematical challenges.</li> <li>• Puzzle Talks guide students through a version of the design thinking process, creating opportunities for student-led discussions on mathematical concepts and how they solve problems.</li> <li>• The program’s foundation is built on promoting strategic solution development where students can prototype ideas, test their solutions, and revise their thinking within fun, challenging games.</li> </ul>	






**DIMENSION 4: INCLUSIVITY**

**Definition:** The product helps teachers provide learning experiences that are relevant to students of many cultures, backgrounds, and abilities, and support learner motivation and agency in the learning process. The product meets current guidelines around accessibility, and supports a positive classroom culture.

FEEDBACK	OUTCOME
<ul style="list-style-type: none"> <li>● Intentionally designed to be relatable as a friend to students while fulfilling mathematical constraints, Jiji, the gender-neutral penguin, guides young learners through the content, and their success mirrors the students' success. Other characters serve specific mathematical roles and constraints within problems.</li> <li>● The highly visual design of the games relies on context, not audio or text, for students to engage in the content.</li> <li>● Animations provide speed control, and videos provide speed control and closed captioning.</li> </ul>	

**DIMENSION 5: ASSESSMENT AND DATA**

**Definition:** The product uses formative assessments – learning experiences that help make visible what students know and don't yet know – to generate data that inform teachers about student knowledge and skill gaps, and provide students assessment feedback that is specific, actionable, and constructive. As such, it guides teachers' instructional decisions and students' learning journeys.

FEEDBACK	OUTCOME
<ul style="list-style-type: none"> <li>● All pre/post quizzes, formative feedback, and game content are aligned clearly to learning objectives.</li> <li>● Success criteria is straightforward and intuitive. Students cannot progress through the game until they solve the challenge and understand if they have mastered a concept because the characters in the game allow them to move on.</li> </ul>	



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| <ul style="list-style-type: none"><li>• Students receive clear formative feedback within the game context and learn how to solve the challenge through problem-solving strategies and applying that feedback.</li><li>• Reports filtered by student or class progress are available immediately and easy to interpret and reconfigure.</li></ul> |  |
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## CONCLUSION

ST Math is a mastery-based curriculum that challenges students to apply computational and critical thinking skills in solving puzzles spanning the breadth of mathematical concepts. Employing solely non-verbal interactions accommodates a diverse range of learners, ensuring that students can grasp the content regardless of their background. Each puzzle, brief in nature, offers students multiple attempts to refine their thinking and solve it, with reminders of the solution provided as needed. The progressive difficulty of the puzzles prompts students to identify and tackle increasingly complex problems, fostering their critical thinking abilities.

ST Math provides an innovative picture password login and intuitive navigation, complemented by easily accessible menus and search functionalities designed for educators and students. Guided tutorials are available to assist with the introduction of new features. Teachers can customize pathways to suit individual or subgroup needs, leveraging data insights to inform instructional decisions to reinforce, enrich, or remediate specific skills. The games and challenges are highly engaging for students, with clear success criteria. With each hurdle conquered students unlock the next level, fueled by the characters' cues, ensuring they grasp the concept before moving forward. Rooted in promoting strategic solution development, ST Math offers a platform where students can prototype ideas, test solutions, and refine their thinking within engaging, challenging game environments.