

The page is decorated with several thick, curved lines in shades of blue and green. These lines are arranged in a way that they appear to be part of a larger, abstract design, possibly representing a seal or a stylized letter. The lines are positioned in the top right, middle left, and bottom right areas of the page.

ISTE SEAL OF ALIGNMENT REVIEW FINDINGS REPORT

TechFactors Inc.

RoboTek

March 2022

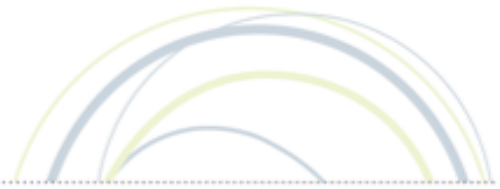
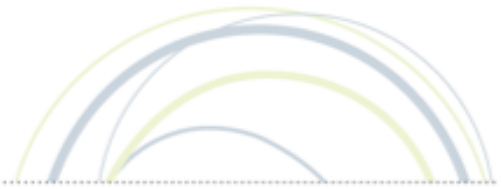


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ABOUT

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.

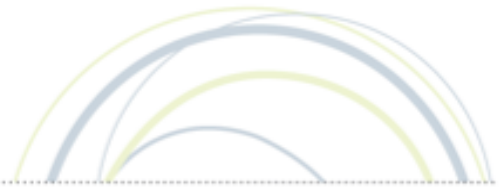
ISTE SEAL OF ALIGNMENT

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



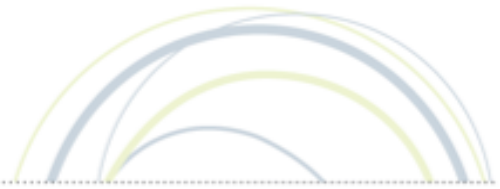
RESOURCE DESCRIPTION

WHAT IS ROBOTEK?

RoboTek is a guided course sequence from Kindergarten through 10th grade. The courses are presented to provide students with a solid foundation in robotics that includes building and coding. RoboTek utilizes a problem-based approach to teach students the fundamentals of robotics. Beginning in Kindergarten, students learn the key components and design strategies to solve real-world problems.

HOW IS ROBOTEK IMPLEMENTED?

Each course has a hard-copy textbook that guides students through the concepts and activities. Students may work from the textbook or through the online platform. The content in the textbook is mirrored on the learning management system. If the course is delivered through the online platform/learning management system, all tasks may be assigned and turned in through the platform. Additionally, for each lesson there is an interactive game which serves as a formative assessment. RoboTek includes a hardware set that gives students all of the components, wiring, and diagrams to guide students through their learning.



ISTE SEAL OF ALIGNMENT REVIEW

Product: RoboTek

Organization: TechFactors Inc.

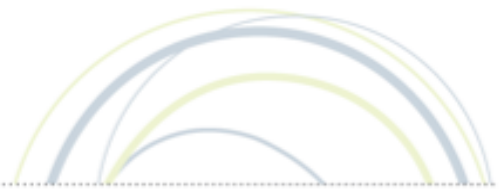
Date of Award: March 2022

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

RoboTek was reviewed for alignment against the ISTE Standards for Students. ISTE reviewers examined the student facing materials, both hardcopy and through the learning management system. Teachers' Guides were also consulted to understand the guidance the teacher is given regarding learning outcomes, assignments, questioning techniques, and assessments.



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.

RoboTek was found to align to the ISTE Standards for Students in the following areas:

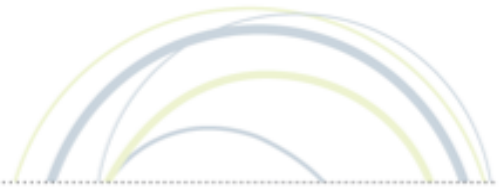
ISTE STANDARDS FOR STUDENTS							
	Standard 1 Empowered Learner	Standard 2 Digital Citizen	Standard 3 Knowledge Constructor	Standard 4 Collaborator	Standard 5 Innovative Designer	Standard 6 Computational Thinker	Standard 7 Creative Communicator
Indicator A							
Indicator B							
Indicator C					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



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

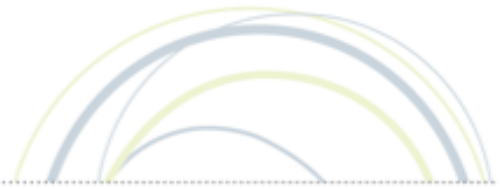


Applied resources and activities focus primarily on practical, real-world and/or relevant opportunities to practice the skills and knowledge learned in the curriculum.

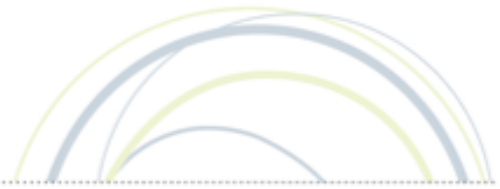


RoboTek was found to address the ISTE Standards for Students in the following ways:

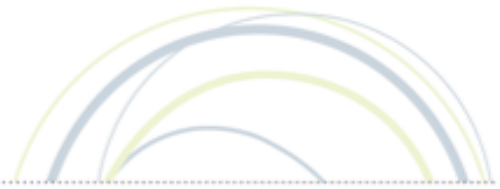
ISTE STANDARD	FOUNDATIONAL FINDING STATEMENT
1. Empowered Learner. Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.	
1.a. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.	
1.b. Build networks and customize their learning environments in ways that support the learning process.	
1.c. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.	
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.	The scaffolding of RoboTek courses is designed to provide students with an understanding of the components of robotics and the debugging of programs on a variety of platforms.
2. Digital Citizen. 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.	



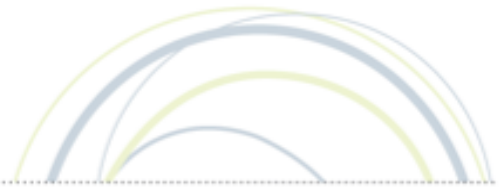
<p>2.a. Cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.</p>	
<p>2.b. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.</p>	
<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. 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>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</p>	



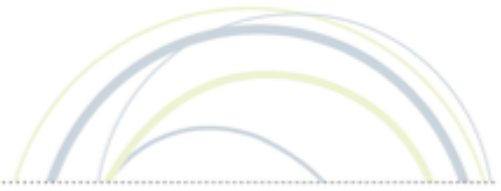
demonstrate meaningful connections or conclusions.	
3.d. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.	Robotics tasks are designed to reflect real-world situations - with guided practice to design solutions.
4. Innovative Designer. Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.	
4.a. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.	RoboTek models the design process in the steps to complete tasks while building solutions.
4.b. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.	
4.c. Develop, test and refine prototypes as part of a cyclical design process.	RoboTek’s content includes guided solutions. The design process is modeled and finished models are tested and code debugged.
4.d. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.	Higher grade courses challenge students to modify a previous code to meet specific (given) criteria.
5. Computational Thinker. Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.	
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>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>5.c. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.</p>	<p>Course content presents guided solutions as a system of component parts and presents models, both in the hard copy text and in the platform.</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>The sequence of courses is designed to build on the concept of automation and how robotics can be employed as a strategy to solve problems. The sequence of steps presented in each solution are written to show the connection and impact of the system.</p>
<p>6. Creative Communicator. 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>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</p>	



<p>medium for their intended audiences.</p>	
<p>7. Global Collaborator. 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>7.c. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.</p>	<p>All RoboTek tasks are completed in teams. If appropriate to the task, students are asked to take on roles, while others allow students to determine their group dynamic.</p>
<p>7.d. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.</p>	<p>Each of the RoboTek lessons reflects a local task that is better served through robotics.</p>



CONCLUSION

RoboTek is a rigorous set of courses that begins in Kindergarten to introduce students to components of electrical systems, nodes, and robotics. Working through the grades, students explore other robotic platforms while solving real-world challenges. Each course comes with a kit that provides students with the guided challenges and parts needed to complete them. The self-contained problems, while not open-ended, do provide students with a strong foundation in creating systems, coding, and debugging.