ISTE SEAL OF ALIGNMENT REVIEW FINDINGS REPORT

Matatalab

JULY 2020

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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 nourish 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 MATATALAB?

The central product is the Matatalab Coding Set, which is designed for use by children ages 4-9. It includes the major hardware and instructional components necessary to develop a set of fundamental coding skills. The Matatalab Coding Set is supported by four add-on packs that expand the kinds of programming students can do. These add-ons are *Musician, Artist, Sensor, and Animation*. There is also a simplified version called *Matatalab Lite* that allows programming and control of the robot without using the control board and command tower.

The core components of the Matatalab system are:

1. A controllable **robot**
2. A set of **coding blocks** that contain individual instructions for the robot
3. A **control board** on which the coding blocks are arranged
4. A **command tower** that reads the blocks and transmits them to the robot via Bluetooth maps with 16 blocks arranged in a 4x4 matrix on which the robot moves in response to instructions transmitted by the command tower. Numerous pre-printed maps are available and custom maps can be created.

HOW IS MATATALAB IMPLEMENTED?

The curriculum guides that accompany each Matatalab Coding Set product include 12 lesson plans with a variety of learning activities structured to progressively develop coding skills. Lessons are usually 60 minutes in duration, and they include standard lesson plan components: objectives, a list of standards addressed (including but not limited to ISTE standards), advice for teacher preparation and setup, materials needed, etc.

Most lessons culminate in the completion of coding projects which are completed collaboratively by student groups of four. Beginning lessons focus on basic skills required to set up and control the robot while more advanced projects range from programming the robot to draw various shapes to creating a board game through which the robot advances as students play the game. The vocabulary provides the opportunity to gain in-depth, advanced experience with coding-specific terminology that younger children may not otherwise have the opportunity to work with (algorithm, function, loop, parameter). Educators have the option to adjust the pacing and project activities to suit the level of the students being taught.

Students use teacher-provided journals to take notes, draw up plans for projects, and write about their experiences. Assessment occurs via a class discussion about what went well and what students would do differently if they had the chance to try the same project again.

Product: Matatalab Coding Set
Organization: Matatalab
Date of Award: July 2020

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.

During the review process for Matatalab, reviewers:

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

SCOPE OF REVIEW

ISTE reviewers conducted a comprehensive review of Matatalab's materials, including:

- Matatalab Coding Set
- Matatalab Lite
- Matatalab Pro Set
- Musician add-on
- Artist add-on
- Animation add-on
- Sensor add-on
- Seven curriculum books
- Mobile app
- Online training program

The reviewers had the opportunity to set up the robot, examine curriculum guides and component lessons in the coding kit and add-ons, and complete some of the project challenges. Additionally, the review team visited the Matatalab website to explore the array of downloadable activities, read the company blog, and other available materials.

REVIEW FINDINGS

Matatalab Coding Set addresses the ISTE Standards for Students at both the Foundational and Applied levels.

- Resources and activities aligned at the foundational level primarily focus on introductory skills and knowledge that facilitate skill acquisition to eventually meet ISTE Standard indicators while resources aligned at the applied level focus primarily on practical, real-world activities.
- 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.

Matatalab Coding Set was found to address the following standards and indicators of the ISTE Standards for Students:

ISTE STANDARDS FOR STUDENTS

	Standard 1 **Empowered Learner**	Standard 2 **Digital Citizen**	Standard 3 **Knowledge Constructor**	Standard 4 **Innovative Designer**	Standard 5 **Computational Thinker**	Standard 6 **Creative Communicator**	Standard 7 **Global Collaborator**
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.

ISTE Standard	Foundational/Readiness Finding Statement	Proficiency/Applied 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.c. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.	Students expect and use feedback from the Matatalab robot as they try out different coding sequences. Analysis of what the robot does, intended or not, guides adjustments to the code to improve their programming expertise.	
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.		Students develop coding skills to direct a robot's movements, synthesize music, and generate original works of art. Programming concepts employed include loops, functions, and parameters.
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.		Students use deliberate design process to plan and create simple original works of synthesized music and to direct the robot to draw artistic pieces that become part of larger student-constructed works.
4.c. Develop, test and refine prototypes as part of a cyclical design process.	Every project in the curriculum gives students the opportunity to design, test, and refine their coding instructions.	
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.	Students analyze challenges and self-selected designs to break them down into component parts which can be addressed with correctly selected and arrange coding blocks.	
5.c. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.	Younger students gain experience in breaking problems into smaller steps that help achieve the desired movement of the robot or musical output.	Older students face numerous challenges to break large challenges into smaller challenges with individual steps to completion.
5.d. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	Many activities give younger students experience with the concept of setting up a sequence of robot instructions once and repeatedly initiating execution of those instructions with the touch of a button.	Older students have many opportunities to become proficient in increasing the power of automation by controlling the robot with code that is made more compact and efficient with the use of parameters, loops, and functions.
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.		
6.a. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.	Every challenge in this curriculum requires students to determine, recognize, and properly sequence the right command blocks that will guide the robot to achieve their intended objectives.	
6.b. Create original works or responsibly repurpose or remix digital resources into new creations.	The Animation, Artist, and Musician add-ons give students many opportunities to create original graphic or musical works. The basic coding kit gives students introductory experiences that contribute to foundational skill development for this standard.	

CONCLUSION

Matatalab offers an engaging resource that makes computer coding and robot control accessible to elementary students. The accompanying curriculum guides contain a wealth of introductory activities that give students a good grounding in computer coding. Using the resource feels like play, but users will develop an operational understanding of significant and fairly sophisticated coding concepts. The system has clear instructions for set up and is simple to operate. Young learners will learn basic concepts as they work toward a level of semi-independence in programming and controlling the robot while older students build on coding skills.

After reviewing Matatalab;s offerings against the ISTE Standards for Students, the ISTE Review Team found that Matatalab makes coding accessible to elementary students and the projects provide opportunities to explore applications of technology while developing skills related to computational thinking and design.