

Light Up a Story with Code: From Tinkercad to Scratch

Standards Alignment

ISTE Standards for Students

Standard	How It Applies in This Lesson
1.4 Innovative Designer	Students use Tinkercad Codeblocks to design algorithmic 3D models, experimenting with variables, loops, and geometry to create original forms.
1.5 Computational Thinker	Learners apply logical sequencing, pattern recognition, and parameter control to remix and refine a lighthouse design, connecting math and spatial reasoning to code.
1.6 Creative Communicator	Students use Scratch to animate their designs, combining visual storytelling and interactivity to communicate ideas and narratives.
1.7 Global Collaborator	Learners share and discuss their Scratch projects or Design & Make badge submissions, reflecting on how digital design connects to real-world challenges and audiences.

NGSS Science & Engineering Practices

Practice	Connection to the Activity
Developing and Using Models (SEP 2)	Students construct and manipulate a 3D model using parameters that represent geometric and structural relationships.
Using Mathematics and Computational Thinking (SEP 5)	Students calculate rotations, proportions, and loops to generate evenly spaced components (e.g., railing posts, stripes).
Constructing Explanations and Designing Solutions (SEP 6)	Learners design, test, and modify a lighthouse that meets aesthetic, structural, or environmental goals, such as sustainability or accessibility.
Obtaining, Evaluating, and Communicating Information (SEP 8)	Students present their designs in Scratch through animation or storytelling, clearly communicating design intent and process.

CSTA K–12 Computer Science Standards

CSTA Standard	How It Applies in This Lesson
2-AP-10: Use flowcharts and pseudocode to represent algorithms.	Students visualize algorithmic processes through Tinkercad’s block-based structure.
2-AP-13: Decompose problems and subproblems into parts to facilitate program development.	The lighthouse design is organized into reusable parts (body, roof, railing, light).
2-AP-16: Incorporate control structures (loops, conditionals) into programs.	Students use loops and variables to repeat design patterns and manage dimensions.
2-AP-19: Document programs to make them easier to follow, test, and debug.	Learners annotate their Tinkercad Codeblocks with comments about parameter choices and results.
3A-AP-17: Decompose problems and subproblems into parts to facilitate design, implementation, and review.	Students refine designs iteratively and analyze how small code changes affect outcomes.
3A-IC-24: Evaluate the ways computing impacts people’s everyday activities.	Through remix pathways (e.g., sustainability or accessibility), students consider design’s role in addressing real-world challenges.