# Turing Tumble: Build Marble-Powered Computers

**GRADE LEVELS:**
3-12

**Educational Setting:**
Both in school and out of school.

**Award Provides:**
30 Student Bundle, including everything required for play & instruction:
- 15 kits for 30 students
- 6 marble reloaders
- 6 extra parts packs
- Educator Guide PDF
- 4 hr. in-person training
- $50 Visa gift card

**Implementation Time:**
May be used for full-semester programming or as an extension activity

**Additional Cost(s) to Awardee in 2024-2025:**
None

**Approximate Sustainability Cost After Award Period:**
None. Extra parts included.

**2024-2025 STEM Scale-Up Program Summary:**
Turing Tumble is a revolutionary STEM game that teaches how computers work at a fundamental level. Students build marble-powered, mechanical computers to solve a series of structured logic puzzles, using their own hands instead of a screen. It looks like a fun marble run, has an engaging graphic novel woven through the puzzle book, and is the first STEM curriculum solution that allows students to grasp the fundamentals of how a computer works by hearing, seeing, feeling, and programming a mechanical computer.

With Turing Tumble, students learn how to use logic to solve problems. In the process, they discover how coding works while building confidence in computational thinking.

Click here to see Turing Tumble in action

**Materials Include:**
30-Student Bundle: Turing Tumble games, Marble Reloaders, extra parts, complete puzzle books, and PDF of the Educator Guide

**Requirements to Implement the Program:**
- Attend a 4-hour, in-person professional development session (date TBD) in July or August.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.

**Professional Development:**
**Duration:** Half-day (4 hours) of training
**Date(s):** Dates will be announced in April 2024
**Location:** Trainings will be held in each of the six STEM Regions

**Classroom Videos:**
- See how it works
- Introduction to classroom use
- Getting Started
- How Turing Tumble is a Computer

**Iowa Standards Alignment:**
Turing Tumble meets standards in computer science, science, math and 21st Century Skills. Turing Tumble meets CSTA standards in the concept area for programming and algorithms solidly through grade 5.

Follow this link for standards alignment for the following:

- CSTA
- NGSS
- Iowa's Academic Standards
- 21st Century Skills



**Different Ages. Deeper Learning. Enjoyed by grades 3-12 and beyond.**

Kids and teens learn best when they use their senses to explore new concepts. Turing Tumble teaches computational thinking, coding strategy, algorithms, programming, and other abstract concepts in a fun, tangible way that is hands-on and screen-free.

**Educator Resources Include:**
Follow this link for our educator resources described below:
- **Educator Guide:** A companion guide to assist educators in guiding students through the first 30 puzzles. It offers:
  - computer logic lessons
  - breakdown of concepts with classroom tips
  - troubleshooting suggestions for each puzzle
- **Classroom Videos:** Quick, engaging videos to get your students started and to walk through the differences between a mechanical computer and its electronic counterpart.
- **Practice Guide:** A detailed guide to ensure you're equipped to answer student questions. Including:
  - descriptions of how each challenge works to cement important concepts
  - black and white printables to share with the class
  - 30 extra puzzles to help bridge gaps and solidify what they've already learned
- **Educator Blog:** Whether you are a teacher, an administrator, a librarian, or an after school professional, our blog articles are a resource to incorporate Turing Tumble in your classroom or program. Explore our lesson plans on how to get started.

Questions? Contact us at hello@upperstory.com


**STEM Scale-Up Program Application Link:** www.IowaSTEM.org/Scale-Up-Application