START to STEM

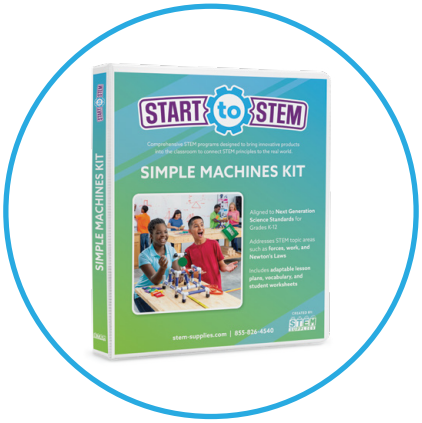
A turn-key solution to STEM!

What is Start to STEM?

Start to STEM is a comprehensive STEM program designed to bring innovative products into the classroom to connect STEM principles to the real world. You have the option to customize your program to create the best solution for your school. We offer:

Engaging STEM Products

- Equipment for a class size of 24
- Centralized around a core STEM topic area
- Reusable for years to come



Day-by-Day Lesson Plans

- Aligned to national education standards
- Scalable across different grade levels
- Includes lessons, vocabulary, equipment instructions, student worksheets, and more

Virtual Professional Development

- Live virtual training with a STEM expert
- Expanded overview of equipment and activities
- Opportunity to learn best practices in using the equipment and teaching real-world applicable STEM lessons

Ready to start your STEM journey?

Whether you're a STEM veteran or new to STEM teaching, we're here to help. The Start to STEM program was designed as a turn-key solution that focuses on real-world applications of STEM fields through hands-on and inquiry-based methods. We're here to provide you the best teaching and learning experience for classrooms, makerspaces, and everything in-between.

Contact Us Today!

stem-supplies.com/start-to-stem | orders@stem-supplies.com | (855) 826-4540

KINESTHETIC STEM

START to STEM
Comprehensive Curriculum Packages

Research shows that physical activity promotes better memory and learning. Through the Start to STEM Kinesthetic STEM Kits, students are encouraged to learn and grow through physical exploration of the world around them. The included equipment teaches science, technology, engineering, and math concepts by exercising the brain and the body. Students will explore concepts like astronomy, physics, algebra, and more through physical activity, creating a memorable experience that connects to real-world applications while encouraging 21st century skills like teamwork.

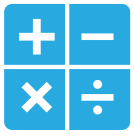
The Start to STEM Kinesthetic STEM Complete Kit includes hands-on equipment for 24 students, a comprehensive curriculum manual aligned to the Next Generation Science Standards, Common Core Math Standards, and CSTA K-12 Computer Science Standards, and a three-hour virtual professional development training. You also have the option to purchase the equipment or the manual alone, as well as the equipment and the manual without the training.

Top Subject Areas Covered:

Physical Activity

Astronomy

Programming



Equations and Expressions

Lesson Objectives:

Daily Instruction Topics	Example Learning Objective
What is Kinesthetic STEM?	Build teamwork, problem solving, and communication skills – all required skill sets in STEM fields.
Traveling the Solar System	Understand that objects in our solar system are spaced out over vast distances.
Heart Rate Check	Learn how to calculate resting heart rate.
Coding Course	Understand the relationships between inputs and outputs in computer programming.
Math in Motion	Practice speed math skills by racing to solve the equation.

Learning Objectives

- Build teamwork, problem solving, and communication skills – all required skill sets in STEM fields.
- Experience how different forces on an object affect the object's motion.

Equipment List

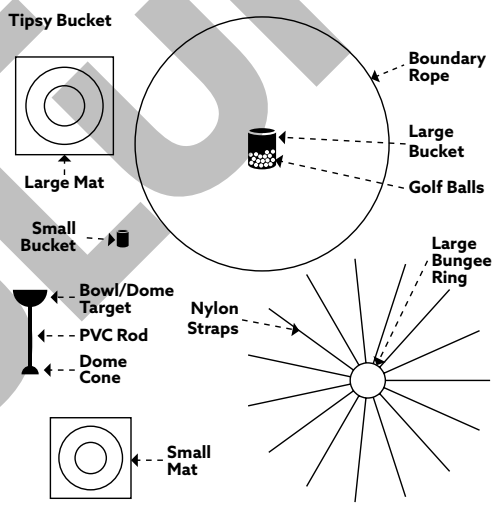
- From Each Object-Retrieval™ Set:
  - 1 Small Blue Mat
  - 1 Large Red Mat
  - 1 Small Bucket
  - 1 Large Bucket
  - 1 Boundary Rope
  - 15 Nylon Straps
  - 12 Golf Balls
  - 1 PVC Rod
  - 1 Bowl/Dome Target
  - 1 Large Bungee Ring
  - 1 Dome Cone

Suggested Timing

- 20+ minutes

SET UP

- Using a large space (a gym, large classroom with open space, or outdoor area), place the 2 mats on the floor 15' apart. See Tipsy Bucket diagram for reference.
- Place the boundary rope in a circle separate from the mats.
- Place the golf balls inside the large bucket and put the large bucket in the center of the boundary rope.
- Place the small bucket a short distance from the large red mat.
- Insert the PVC rod into the dome cone and place the bowl/dome target on top of the PVC rod. Position this between the small blue mat and the small bucket.
- Connect the nylon straps to the large bungee ring. Set it outside of the boundary rope.
- Repeat this set up with the other Object-Retrieval™ Set. Split your class into two groups, assigning each group to their own Object-Retrieval™ Set.



TEACH

- First, move the golf balls from the large bucket to the small bucket.
- Once it's empty, students set the large bucket on the large red mat and then move the golf balls from the small bucket to the bowl/dome target where they dump the balls.
- Students complete the activity by setting the small bucket down on the large red mat.
- If the golf balls spill during transport, the activity returns to original setup and students start over.
- If the small bucket or bowl/dome target tips over while students dump the golf balls, the activity returns to the original setup and students start over.

REFLECTION QUESTIONS

- Look at the final landing locations of the golf balls. Discuss if the placement of the golf balls are accurate and/or precise.

NGSS Alignment

PS2.A: Forces and Motion
Each force acts on one particular object and has both strength and a direction.

PS2.B: Types of Interactions
Objects in contact exert forces on each other.

Vocabulary

- **Accuracy**– how close measurements are to true value (e.g. center of a target)
- **Precision** – how close measurements are to each other

Worksheets

- None required for this activity.

TEACHING SUGGESTIONS

- Advise each student to take hold of 1 nylon strap. Based on number of students, they can hold 2 straps or decrease the number of straps connected to the bungee ring.

ADDITIONAL LESSON OPTIONS

- Swap the golf balls for the red and blue beanbags. Discuss how beanbags behave differently than golf balls in this version of the lesson.
- Place several containers around your space. Challenge students to move just a single golf ball from the large bucket to each individual container.

TEACHER REFLECTION

NEXT GENERATION SCIENCE STANDARDS FOR TEACHING KINESTHETIC STEM TOPICS

The Next Generation Science Standards* (NGSS) are widely accepted K-12 science and engineering content standards. They outline the expectations of what students should know and provide a research-based approach to teaching science. To help you in your classroom, we have mapped relevant NGSS to key concepts found in this kinesthetic STEM pack including astronomy and biology themes.

As you read these standards, you will encounter the standard number (e.g. K-PS2-1), its description, and its connection to the three dimensions of science learning covered by the Next Generation Science Standards:

Science & Engineering Practices – describe what real scientists and engineers do

Disciplinary Core Ideas – the core ideas in science with importance across multiple science/engineering disciplines

Crosscutting Concepts – help students explore concepts between the four areas of science including Physical Science, Life Science, Earth and Space Science, and Engineering Design

EARLY ELEMENTARY CONNECTIONS TO KINESTHETIC STEM

K-2 NGSS PERFORMANCE EXPECTATIONS

K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. Covered in Day 1 – Object-Retrieval™.

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
• With guidance, plan and conduct an investigation in collaboration with peers. • Scientists use different ways to study the world.	• Pushes and pulls can have different strengths and directions. • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. • When objects touch or collide, they push on one another and can change motion. • A bigger push or pull makes things speed up or slow down more quickly.	• Simple tests can be designed to gather evidence to support or refute student ideas about causes.