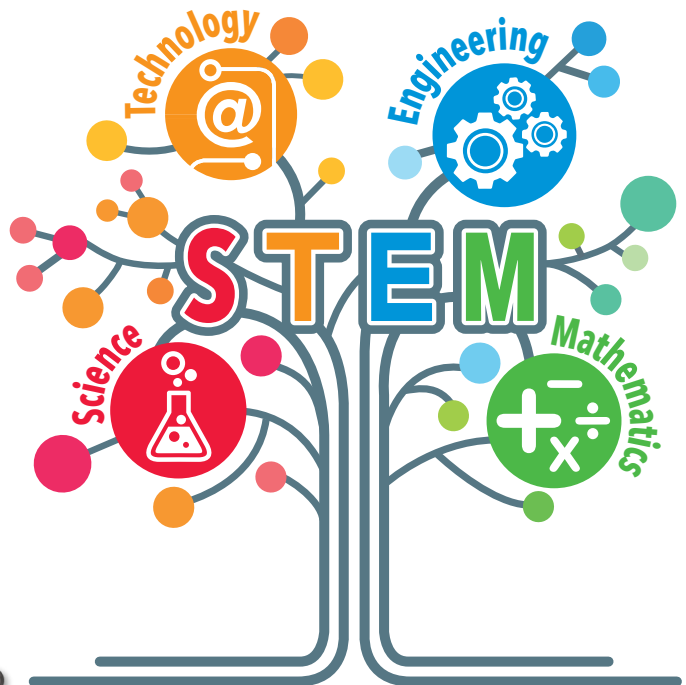


NEW

**21st-Century Curriculum
Promotes Fun, Hands-On
Learning For Grades K-8**



Building on the success of our Singapore Math® educational solutions, Marshall Cavendish Education (MCE) is pleased to introduce **STEM Academy!** Aligned with the Next Generation Science Standards, **STEM Academy** is an innovative and student-centered program that encourages multidisciplinary learning for grades K–8 through engaging hands-on modules.

Key Features

- Professional Development
- Teacher's Guide (including online resources)
- Hardware Kit
- Student Book
- Student e-Book with interactive components



STEM Academy's 12 hands-on modules allow students to work collaboratively to discover solutions systematically and scientifically.

STEM Academy Curriculum

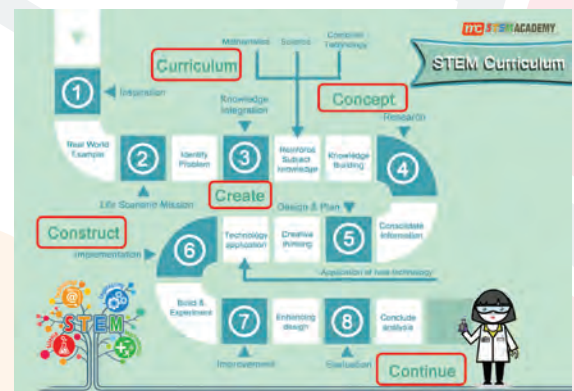


- Enables students to transfer and apply their knowledge and skills to solve real-world problems
- Provides educators with kits to create an environment that fosters exploration
- Offers Professional Development and online teacher support
- Is flexible and can be scaled for in-class and after-school programs









Professional Development

The STEM Professional Development designed by MCE provides educators with a cohesive plan for implementing STEM modules and projects, STEM curriculum, and STEM education standards. During each 6-hour training course, educators receive:

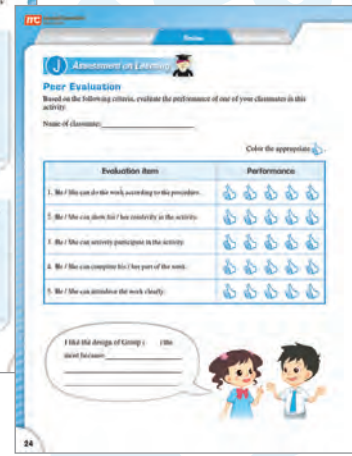
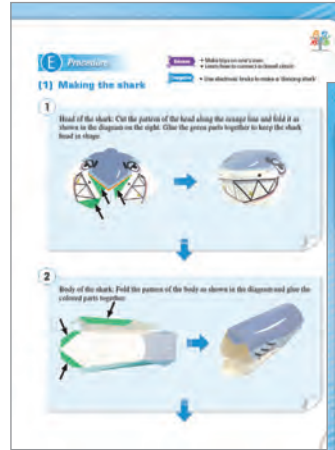
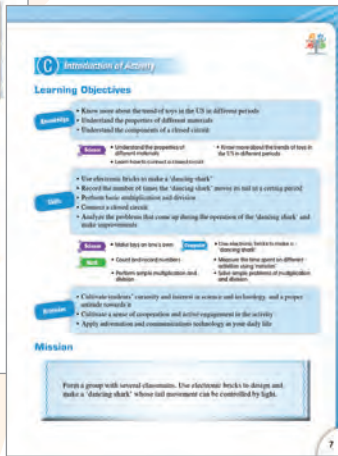
- An overview of the MCE STEM curriculum and instructional pathway
- Comprehensive and hands-on construction of STEM modules
- Connections to 21st-Century Skills
- Science and Math standards alignment and mapping to the modules
- Strategies for incorporating higher-order thinking and problem-solving skills



12 modules aligned to Next Generation Science Standards (NGSS)

STEM Academy Module	Next Generation Science Standards – Three Dimensions			Mathematics Elements
	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
 Electric Elevator	Asking Questions and Defining Problems (K-2-ETS1-1)	ETS1.A: Defining and Delimiting Engineering Problems (K-2-ETS1-1)	Structure and Function (K-2-ETS1-2)	<ul style="list-style-type: none"> Measure and compare the distances between objects in centimeters Choose the appropriate tools for measurement Compare the sizes of angles Recognize some common quadrilaterals
 Dancing Shark	Planning and Carrying Out Investigations (1-PS4-3)	PS4.B: Electromagnetic Radiation (1-PS4-3)	Cause and Effect (1-PS4-3)	<ul style="list-style-type: none"> Count and record numbers Measure the duration of time spent on different activities in minutes Perform basic multiplication and division Solve simple problems of multiplication and division
 Parachute	Analyzing and Interpreting Data (2-PS1-2)	Structure and Properties of Matter (2-PS1-2)	Cause and Effect (2-PS1-2)	<ul style="list-style-type: none"> Choose the appropriate tools for measurement Record the lengths of objects and the distances between objects using appropriate measuring units Develop the concept of area Compare directly the area of 2-D shapes Understand and apply the formulas for calculating the area of squares
 Magnetic Levitation Train	Planning and Carrying Out Investigations (3-PS2-2)	PS2.B: Types of Interactions (3-PS2-3)	Cause and Effect (3-PS2-3) Interdependence of Science, Engineering, and Technology (3-PS2-4)	<ul style="list-style-type: none"> Recognize parallel lines Understand the concept of speed Solve simple problems
 Sound-Controlled Car	Planning and Carrying Out Investigations (4-PS3-2)	PS3.A: Definitions of Energy (4-PS3-2)	Energy and Matter (4-PS3-2)	<ul style="list-style-type: none"> Measure the distances between objects in meters Choose the appropriate tools for measurement Record the duration of time for different activities in seconds
 4WD Racing Car	Constructing Explanations and Designing Solutions (4-PS3-4)	PS3.B: Conservation of Energy and Energy Transfer (4-PS3-4)	Energy and Matter (4-PS3-4)	<ul style="list-style-type: none"> Measure and compare the weights of objects in grams Solve simple problems (apply the formulas for calculating speed) Measure the distances between objects in meters
 Digital Decibel Meter	Constructing Explanations and Designing Solutions (4-PS3-4)	PS3.B: Conservation of Energy and Energy Transfer (4-PS3-4)	Energy and Matter (4-PS3-4)	<ul style="list-style-type: none"> Construct simple bar charts
 Morse Code Machine	Constructing Explanations and Designing Solutions (4-PS4-3)	PS4.C: Information Technologies and Instrumentation (4-PS4-3)	Patterns (4-PS4-3)	<ul style="list-style-type: none"> Introduce seconds Perform mixed operations of multiplication and addition Recognize decimals as another way of recording fractions
 3D Electric Boat	Analyzing and Interpreting Data (MS-PS1-2)	Structure and Properties of Matter (MS-PS1-2)	Patterns (MS-PS1-2)	<ul style="list-style-type: none"> Choose the appropriate tools for measurement Record the lengths of objects and the distances between objects using appropriate units of measure Record the duration of time for different activities in seconds Develop the concept of place value in decimals Develop the concepts of weight and volume Understand and apply the formulas for calculating the area of rectangles
 Aeronautics Technology	Constructing Explanations and Designing Solutions (MS-PS2-1)	PS2.A: Force and Motion (MS-PS2-1)	Systems and System Models (MS-PS2-1)	<ul style="list-style-type: none"> Measure and compare the capacity of containers in milliliters Choose the appropriate tools for measurement Develop the concept of fractions as parts of a whole Measure and compare the sizes of angles
 Scratch (coding) Car	Analyzing and Interpreting Data (MS-PS3-1)	PS3.A: Definitions of Energy (MS-PS3-1)	Scale, Proportion, and Quantity (MS-PS3-1)	<ul style="list-style-type: none"> Measure and compare the weights of objects in grams Understand the concept of speed Solve simple problems (apply the formulas for calculating speed)
 Roman Catapult	Engaging in Argument from Evidence (MS-PS3-5)	Asking Questions and Defining Problems (K-2-ETS1-1)	Asking Questions and Defining Problems (K-2-ETS1-1)	<ul style="list-style-type: none"> Solve simple problems on percentages Find the average of a group of data

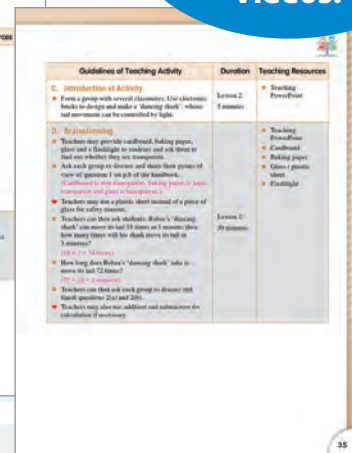
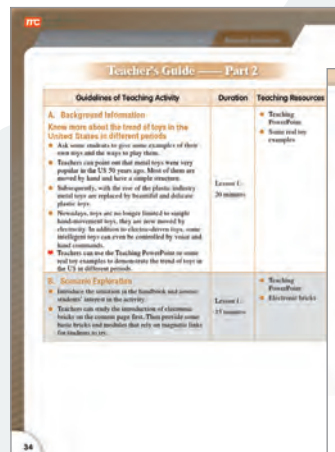
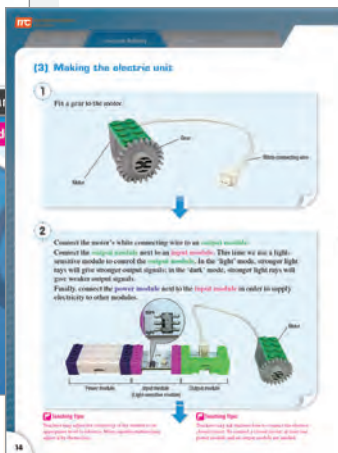
Student Workbooks



Unlike other programs that focus solely on Technology, STEM Academy uses student-centered learning to develop the deep conceptual understanding needed for students to apply their knowledge across different subject disciplines using scientific methods.

Teacher Resources

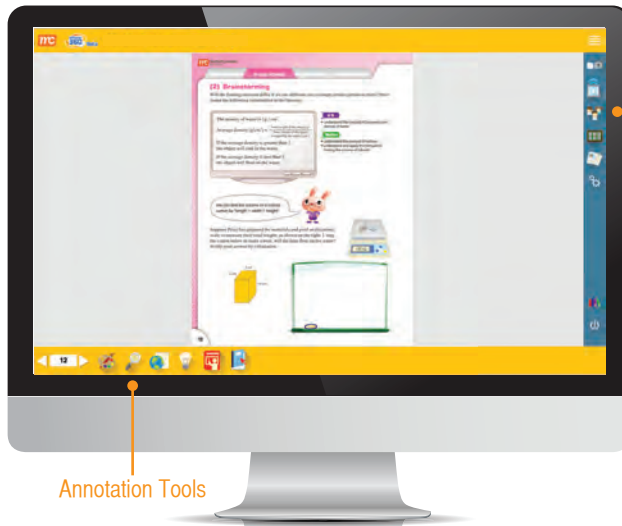
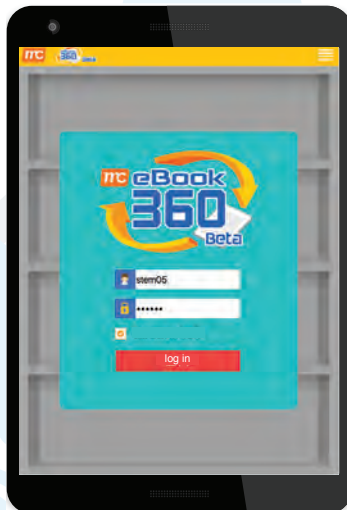
Online resources include How-to-Build Videos!



Teacher's Guides provide red-line solutions, answers and Teaching Tips. Lesson Plans outline a detailed teaching flow that includes before-class preparation, in-class activities, after-class review and learning assessment.

COMPONENTS

E-Books



Interactive E-Books allow students to complete assignments on desktops and mobile devices. The easy-to-use interface provides tools for annotation and sidebar options to facilitate communication between teachers and students.

Hardware

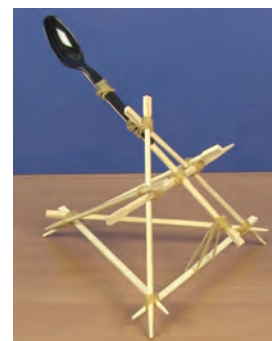


In addition to building bricks, each kit includes these magnetic connective electronic parts:

- 5V rechargeable battery module
- Node 1 programmable controller
- Light sensor
- Roller switch
- Press switch
- Sound sensor
- Touch switch
- Latch
- Bar graph LED
- Buzzer
- Bright LED
- Controllable motor
- DC motor
- 4-way fork connector
- Output wire



Students use Scratch coding to build a programmable electric car.



Complete lists of easy-to-source materials are included with all make-it-yourself modules.

mc STEM ACADEMY

Grades K-8



Each module can be adapted for in-class, afterschool and summer programs!

Curriculum integrates multidisciplinary learning through engaging projects such as electric car racing and building a Morse code machine. Program includes Professional Development, instructional materials and hands-on solution kits.

For more information about **STEM Academy** and pricing, call **800-821-9881** or email stemacademy@marshallcavendish.com.

Learn how each of the 12 modules in our K-8 curriculum aligns to **Next Generation Science Standards (NGSS)** at mceducation.us/stemacademy



NEW Singapore Math[®] Fact Fluency Grades K-5

Help students apply appropriate problem-solving strategies while they simultaneously develop conceptual understanding.

Learn more at mceducation.us/fact-fluency



Visit our online bookstore at shop.mceducation.us