Barobo C-STEM Afterschool and Summer Robotics and Robotics-Math Programs

Grade Levels
PK-12

Educational Setting
Both in school and/or out of school.

Informational Webinars:
(click to register):

- Jan. 14, 4 p.m.
- Jan. 16, 4 p.m.
- Jan. 22, 4 p.m.
- Jan. 23, 4 p.m.

Recordings on Iowa STEM's Website

Award Provides

- Classroom kit for up to 32 students (4 students per robot), including:
- 8-Linkbot Bundle
- 4 OmniBot Packs
- 2 RoboTown Activity Mats
- 2 RoboExploration Activity Mats
- All-inclusive Annual Instructor License for up to 320 students
- Two full days of in-person Professional Development
- Access to online forum for instructors
- Two 2-hour online follow-up PD sessions during the school year

2025-26 STEM Scale-Up Program Summary

Barobo, Inc. is the leader in educational robotics for PK-12 students learning mathematics, computer science, and engineering design. Math competency is a critical gateway for students into 21st-century STEM-related careers, yet most students fall short of the needed proficiency. The Barobo C-STEM program addresses this urgent need by integrating coding and robotics into PK-12 math education, using both virtual and hardware robots in a standards-aligned curriculum to enhance engagement and boost achievement. The curriculum fosters hands-on learning based on real-life problems and supports learning in multiple contexts, including classroom, intervention, enrichment, and accelerated learning.

Barobo's Afterschool and Summer Robotics and Robotics-Math Programs are an excellent starting point:

- The Afterschool and Summer programs provide 40 hours of lessons and activities organized into grade bands: PK-K, 1-2, 3-5, 6-8, and 9-12.
- In the Robotics programs the participants build robotic machines and learn coding, engineering, art, and music via robotics.
- The Robotics-Math programs focus on empowering students for accelerated and deeper learning of math through programming and robotics projects and the solution of real-world problems.
- Can be combined with a level-playing-field RoboPlay Competition for students to showcase their robotics and math problem solving skills.

Barobo also offers other K-12 standards-aligned curricula for the classroom, either for supplementary or first instruction:

- *RoboBlocky Math* (includes alignments to many popular textbooks)
- *Computer Science with Robotics*
- *Engineering Design with Robotics*
- College Board Endorsed AP Computer Science Principles with Robotics

Requirements to Implement the Program

- Educator must attend the two-day PD session.
- At least one laptop computer per robot (Windows, Mac, or Chromebook machine, 8 robots in each award bundle).
- Reliable internet connection.
- Classroom floor space to lay out activity mats (48"x72").
- IT support for software installation, whitelisting, and troubleshooting.
- Educator(s) must participate in the STEM Council Scale-Up Survey.

Additional Cost(s) to Awardee During Award Period
None

Approximate Sustainability Cost(s) After Award Period
$1200 for annual instructor license renewal

Website:
www.barobo.com

Videos:
Redlands USD Success Story

Showcase of Summer Robotics Camps at Hacienda La Puente USD

Thanksgiving Linkbot Parade (Rex Fortune Elementary)

Iowa Standards Alignment

The Barobo Afterschool and Summer Robotics-Math Programs are designed to supplement, reinforce, and extend regular instruction. Lessons and activities in the Robotics-Math Program are aligned with Iowa Standards in Math and Major Work topics:

- Grades PK-K and 1-2: Addition, subtraction, place value, number line
- Grades 3-5: Multiplication and division of whole numbers and fractions
- Grades 6-8: Ratios and proportional relationships, expressions and equations, rational numbers, systems of linear equations
- Grades 9-12: Geometric transformations, exponential and polynomial functions, transformations of functions

Example: Alignment with Math Standard 3.NF.A.2: *Understand a fraction as a number on the number line; represent fractions on a number line diagram.* The lessons and activities use virtual and/or hardware robots along the number line to demonstrate and reinforce the concept.

Example: Alignment with Math Standard 8.EE.C.8: *Analyze and solve pairs of simultaneous linear equations.* The activities use virtual and hardware robots in a variety of situations, such as one robot chasing another that had a head start, to better understand linear equations and graphs.

Both programs reinforce and align with many of the CSTA CS Standards, Iowa CTE Standards, and Iowa Technology Literacy Standards, such as:

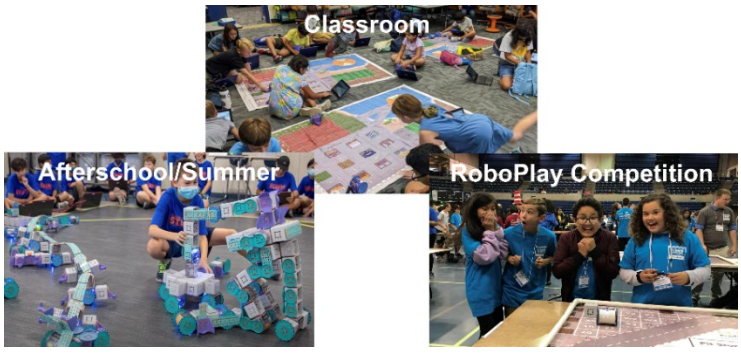
- CSTA 3-5.AP.17: Test and debug a program or algorithm to ensure it accomplishes its intended task.
- CTE Information Solutions MS Standard 3.3: Develop, test and revise prototypes utilizing a cyclical process of trial and error and reflecting on problems or setbacks as opportunities for improvement.
- Technology Literacy 21.3-5.TL.1: Use technology resources to create original products, identify patterns and problems, make predictions, and propose solutions.

Professional Development

Duration:
Two-day in-person training.

Date(s):
TBD (July 15 through August 6, 2025)

Location:
Regionally depending on awards.



To Learn More or To Apply: educate.iowa.gov/STEM/ScaleUp