

STEM Scale-Up Program

Menu for 2025-26

TOMORROW[®] STEMS FROM IOWA

GOVERNOR'S STEM ADVISORY COUNCIL

at the Iowa Department of Education



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TOMORROW
STEMS
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STEM
SCALE-UP
PROGRAM



2025-26 STEM Scale-Up Program Menu

All About Balance.....4

Description: Allows children to become more curious and engaged as they actively explore the role of balance within the world of objects and with their own bodies.

Grade Level: PK-3

Contact: Beth VanMeeteren, University of Northern Iowa, Iowa Regents' Center for Early Developmental Education Beth.VanMeeteren@uni.edu

Website: regentsctr.uni.edu

Barobo C-STEM Afterschool and Summer Robotics and Robotics-Math Programs.....6

Description: Integrates coding and robotics into PK-12 mathematics education, using both virtual and hardware robots in a standards-aligned curriculum to enhance engagement and boost achievement.

Grade Level: PK-12

Contact: Larry Lagerstrom, Barobo, Inc., larry@barobo.com

Website: barobo.com

CodeJoy Presents: Micro:bit in the Wild.....8

Description: Uses micro:bit to teach educators about Environmental Literacy through hands-on activities with computer science.

Grade Level: 3-12

Contact: Kelsey Derringer, CodeJoy LLC, kelsey@codejoy.org

Website: codejoy.org/iowa-stem-scale-up-microbit-in-the-wild

CodeXcursion: Teach Python Coding with CodeX.....10

Description: Provides opportunities for students to start with Python basics and progress to exciting projects like creating games and simulations.

Grade Level: 4-12

Contact: Sarah St. Germain, Firia Labs, Inc., sarah@firia.com

Website: firialabs.com/collections/codex%E2%84%A2

Drone Designers: Exploring STEAM Careers.....12

Description: Takes a multidisciplinary approach to introducing learners in grades 4–8 to the world of drones and coding with an emphasis on their use in the arts and entertainment industries.

Grade Level: 4-8

Contact: Michelle Fisher, PCS Education Systems Inc., michelle@edventures.com

Website: edventures.com/products/drone-designers

Getting Started with Elementary OpenSciEd Curriculum.....14

Description: Reimagines the experience of science education to ensure that all students, regardless of their previous exposure to science, can excel in and outside of the classroom.

Grade Level: K-5

Contact: Maria Hasken-Averkamp, Eastern Iowa Science Collaborative Led by Grant Wood AEA, mhasken-averkamp@gwaea.org

Website: <https://opensci.ed.org/curriculum/elementary-school/>

Grow, Create, Innovate: The STEAM-Powered Art.....	16
Description: This program allows students to engage in standards-aligned activities, such as the Reaction Game, which explores physics and chemistry through interactive play, and the Operation Game, which combines logic with mechanical design while DNA Modeling merges biology with creative visualization. Students can also build an Automata, which integrates engineering with artistic design.	
Grade Level: K-8	
Contact: Alicia Verweij, Maker Maven LLC, averweij@makermaven.net	
Website: makermaven.net	
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Description: Offers comprehensive resources for middle and high school mathematics. Math Nation+ uses interactive videos, practice tools and personalized learning paths to engage students in deep mathematical understanding.	
Grade Level: 6-12	
Contact: Diana Bauer, Accelerate Learning, Inc., dbauer@acceleratelearning.com	
Website: mathnation.com	
Overcoming Barriers to STEM Engagement: A Cross-Curricular Structural and Wind Energy Project Using Sketching as the First Step.....	20
Description: Provides a hands-on project with wind energy technology that builds engagement with STEM. This project includes design of a scale tower to support a wind turbine with load and deflection testing.	
Grade Level: 6-12	
Contact: Lelli Van Den Einde, eGrove Education, Inc., lelli@egrove.education	
Website: egrove.education/iowa-stem-scale-up	
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Description: A global science experiment, learning experience, and inspirational project-based-learning challenge. Students compete to see who can grow the best crops using lunar and Martian regolith stimulant.	
Grade Level: PK-12	
Contact: Jeanne Kumpunen, Institute of Competition Sciences, jeanne@competitionsociences.org	
Website: plantthemoon.com	
Positive Physics, Chemistry, Physical Science, Biology, Environmental Science & Engineering.....	24
Description: Provides an engaging, online lesson and problem bank for middle and high school science. The site was built by teachers in diverse classrooms and designed to be accessible to students on any level from middle school to advanced placement (AP)	
Grade Level: 6-12	
Contact: Jack Replinger, Positive Physics, jack@positivephysics.org	
Website: positivephysics.org/	
Spintronics: Engineer and Design Mechanical Circuits.....	26
Description: Allows students to learn electronics through hands-on puzzles instead of complex mathematics. Instead of imagining invisible electrons running through wires, the students can see the chains moving through the sprockets.	
Grade Level: 3-8	
Contact: Alyssa Boswell, Upper Story, alyssa.boswell@upperstory.com	
Website: https://upperstory.com/en/spintronics/	
STEAM Innovators K-8: Pathways for Future Leaders.....	28
Description: Designed to make STEM concepts engaging by integrating the arts and blending creativity with science, technology, engineering and mathematics to foster innovation, critical thinking and problem-solving skills.	
Grade Level: K-8	
Contact: Ellie Brown, SAM Labs Inc., ellie.brown@samlabs.com	
Website: samlabs.com/us/	

All About Balance

2025-26 STEM Scale-Up Program Summary

Grade Levels

PK-3

Educational Setting

Both in school and/or out of school.

Informational Webinar

- Jan. 17, 3:45 p.m.
[REGISTER HERE](#)
Passcode: 665321
- Jan 23, 4:30 p.m.
[REGISTER HERE](#)
Passcode: 183131

[Recordings on Iowa STEM's Website](#)

Award Provides

- **Professional learning** that leads to one undergraduate/graduate credit, or 15 clock hours
- **Classroom kit including, but not limited to:**
 - steppingstones
 - hula hoops
 - tinker toys
 - balance bar
 - double set of wooden mini unit blocks
 - suspended pan balance scale
 - wide assortment of tops
 - balance games
 - materials to build mobiles
 - access to a Google Drive with more ideas for implementation
- A participant stipend of \$240.

Join us in *All About Balance* and watch your children's curiosity about balance explode with your classroom kit of materials. Balance is key in human movement, an aesthetical element of art, & key in the design and engineering of technology. *All About Balance* is the latest on a menu of Iowa grown early STEM experiences receiving national and international attention. Why? They immerse children in *doing* STEM every day. An added bonus is that children are compelled to master the tools of reading, writing, and mathematics to communicate their excitement about their STEM learning.

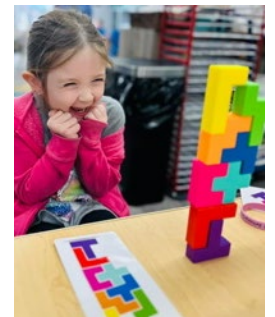


All About Balance experiences and materials were developed in partnership with Iowa researchers in child development and curriculum, Iowa teachers, and Iowa children. Our professional learning supports PK-3 teachers in developing a framework that capitalizes on the reciprocal relationship of STEM and literacy learning. Within this framework, daily independent STEM investigations occur alongside the daily independent literacy investigations that many teachers have already established in PK-3 classrooms. Many educators implementing this framework tell us integrative STEM and literacy has brought them joy in teaching and learning. For STEM to be meaningful to young learners, four things must be in place:



- Children must be able to **produce** an action
- The result of their action must be **immediate**
- The result of their action must be **observable**
- There must be something for children to **vary**

All About Balance fits these criteria well. Children can **produce** the action of positioning objects with an **immediate** result of that action, **observe** the state of balance, then **vary** the spatial positions of objects until a state of balance or stability is reached. Special materials were co-designed with and produced by UNI's Dept of Applied Engineering and Technical Management. In the development of our moveable fulcrum, one experienced urban construction manager exclaimed, "That's how construction cranes work!" The kit materials are open-ended and while designed for PK-3 children, will also engage older children and adults. *All About Balance* materials are designed to break down for easy storage and will not require a large section of the classroom when in use. The body balance experiences are helpful and engaging for indoor recess time in Iowa's frigid winters.



Additional Cost(s) to Awardee During Award Period

None.

Approximate Sustainability Cost(s) After Award Period

Materials will last for years with typical classroom use.

Website

Regentsctr.uni.edu

Video

[All About Balance](#)

Social Media

Facebook

[@RegentsCenterUNI](#)

Requirements to Implement the Program

- Attend and participate in two professional development sessions and posting on a private social media page with other educators and the instructor.
- Participate in the STEM Council Scale-Up Educator Survey.

Iowa Standards Alignment

All About Balance experiences are applicable to many of the **Iowa Early Learning Standards** and **Iowa's K-2 Science Standards** and are highlighted in professional learning. Constructing both stable and kinetic structures are contexts for rich and meaningful engagement in **engineering design**. In the act of construction, students engage in the **mathematics** of spatial thinking, geometry, measurement, and collecting and analyzing data. **Iowa's Standards for Literacy Language, Speaking and Listening, and Writing** are addressed as children participate in discussion about balance and stability, and document their thinking. They recount and describe their construction experiences with appropriate facts and relevant details. They encounter unknown and multiple meanings of words and phrases as they seek to explain and engage in scientific argumentation. Students develop **21st Century Skills** such as creativity and innovation when they have new and worthwhile ideas to build stable or kinetic structures. Finally, our balance materials and experiences support children's **physical development** in proprioception to have better control over their bodies that can positively impact fine motor skills. Research shows that proprioception is linked to skills in reading, writing, concentration and body control.

Professional Development

All About Balance Instructors are Master Educators experienced in teaching and learning with young children. Awardees will engage in two 6-hour sessions of research-based active and playful high-quality professional learning and stay connected via private social media. Educators will earn one UNI graduate credit -or- 15 clock hours and a \$240 stipend after attending session 2.

In the sessions, educators will engage in teacher play to explore balance and stability using the same materials they will offer their children in the classroom. The first session will occur on a weekday in July or August. Each educator will leave with their classroom kit. The second session will take place on a Saturday in October or November after educators have had an opportunity to experience balance and stability with their children.

Duration: Two six-hour days plus regular communication with peers and the instructor through private social media.

Date(s): The first session will be held on a weekday in July/August and the second session held on a Saturday in October/November.

Location: Regionally depending on the number of awards.

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

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

CodeJoy Presents, Micro:bit in the Wild

Grade Levels

3-12

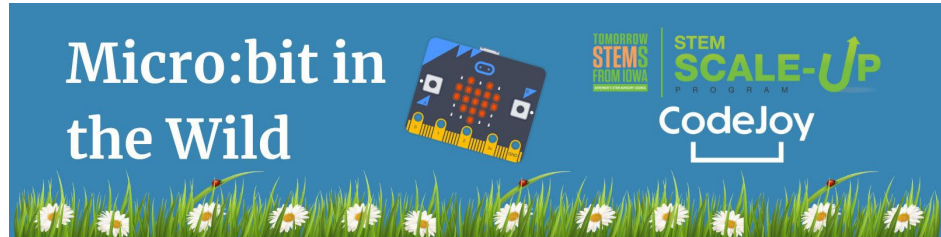
Educational Setting

Both in school and/or out of school.

Award Provides

- 3 micro:bit Club Packs. Each micro:bit Club Pack includes.
 - 10x BBC micro:bit V2 boards
 - 10x micro USB cables
 - 10x battery packs
 - 20x AAA Batteries
 - 10x quick start user guides, safety leaflets, cardboard battery pack holders and stickers

2025-26 STEM Scale-Up Program Summary



Join [CodeJoy](#) for the [Micro:bit in the Wild program](#). The goal of the program is to use micro:bit to teach educators about Environmental Literacy through hands-on activities with Computer Science. This program integrates CS and E Lit into any class, subject, or discipline. Each activity is aligned to standards across the curriculum.



Participants will learn to code, build, and teach with these tools, and will have time to collaborate with fellow educators.

What worked well for me was...

“Learning more ideas that I can implement in the classroom that are aligned with what they are learning in science, for example weather (wind speed & direction) & cardinal directions... Designing a compass would build onto what they are doing in science and STEM.

Aneela Dawood, STEM teacher, Houston, TX

Activities in the program are inspired by historical figures, naturalists, explorers, and science communicators. Each activity prompts learners to create a code, using MakeCode (block-based programming language), to solve a problem, then use the micro:bit to explore and play.

Requirements to Implement the Program

Educators must **attend 3 three-hour live, virtual training sessions** scheduled flexibly, allowing them to choose the sessions that work best for their schedules.

Educators must **participate in the STEM Council Scale-Up Educator Survey**.

“I loved practicing during class so we would know how to do it!”

Tiffany Trent, STEM/Tech Teacher
Wake Co, NC



Additional Cost(s) to Awardee During Award Period

Optional: Craft supplies and printing costs for student printables

Approximate Sustainability Cost(s) After Award Period

Additional batteries as needed.

Website & Video

go.codejoy.org/iowambitw

Social media

Facebook

[@CodeJoyEdu](https://www.facebook.com/CodeJoyEdu)

X

[@CodeJoyEdu](https://twitter.com/CodeJoyEdu)

LinkedIn,

[CodeJoy LLC](https://www.linkedin.com/company/codejoy-llc)

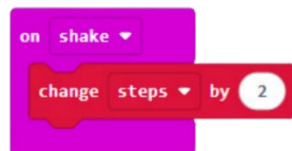
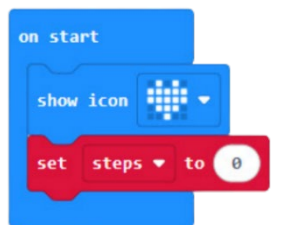
YouTube:

[@CodeJoyEdu](https://www.youtube.com/channel/UCv8Zl8l8l8l8l8l8l8l8l8l)

Iowa Standards Alignment

Example project: micro:bit Step Counter

CS Concepts: In this project, students program the micro:bit to count their steps as they walk. To write this program, they must use the accelerometer as an input to measure the impact of a step. They will also code micro:bit outputs to display the step count and provide other feedback to the wearer. Writing the code will require concepts like conditional statements, loops, event blocks, and variables. This program is designed to collect data for students to analyze.



This project will directly address the following Iowa Core Standards for Computer Science, Math, ELA across the 3-5 and 6-8 bands:

1B-CS-02 Model how computer hardware and software work together as a system to accomplish tasks.

2-DA-08 Collect data using computational tools and transform the data to make it more useful and reliable.

5.MD.B: Represent and interpret data.

W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.

Professional Development

Duration:

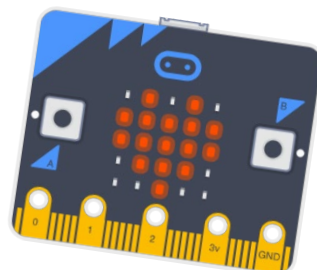
3 three-hour sessions

Dates:

July-September

Location:

LIVE, Virtual



"If you just gave me the micro:bits I would not be able to adequately tap their potential for my students. The PD, spread out with homework, was essential to getting me set up for student success. I now have actionable ideas that I can take to my students and then let them explore."

Tracy Henn, Gifted & Talented, ESL
San Antonio, TX

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

CodeXcursion: Teach Python Coding with CodeX Grades 4-12

Grade Levels

4-12

Educational Setting

Both in school and/or out of school

Informational Webinar(s)

[Register here:](#)

- Jan. 22, 5 p.m.
- Feb. 4, 3:30 p.m.

[Recordings on Iowa STEM's Website](#)

Award Provides

- Class set of CodeX Kits for your largest class fully accommodating all of your students
- Hardware: CodeX, USB-C cord
- 1-year license to virtual curriculum
- Access to CodeSpace Learning Platform
- 2 full days of PD, 3 virtual follow-up sessions
- Python with CodeX Curriculum Guide
- Access to the [Learning Portal](#) Teacher Resources – Lesson Plans, Worksheets, Tests, & Remixes
- Year-round support
- \$150 per day stipend for the first two days of training completed with satisfactory participation

2025-26 STEM Scale-Up Program Summary

CodeXcursion is an innovative program by Firia Labs designed to empower Iowa teachers to integrate computer science into their classrooms—no prior experience with coding or Python is needed! This program supports educators in meeting the growing demand for accessible coding education in K-12 schools, using the CodeX curriculum to teach text-based Python programming in an engaging and authentic way.

Validated in classrooms, CodeXcursion equips teachers with the confidence and resources to introduce students to essential coding skills at a crucial stage in their academic journey. By combining hands-on physical computing devices with an intuitive curriculum, the program ensures early exposure to computer science concepts, helping students develop problem-solving, debugging, and algorithmic thinking skills.

Students start with Python basics and progress to exciting projects like creating games and simulations. Along the way, they build a strong foundation in computational thinking while connecting classroom learning to real-world STEM opportunities. Python, a versatile language used in cutting-edge fields like data science, artificial intelligence, and web development, prepares students with industry-relevant skills for the future. The implementation required for the program ranges between 6 and 18 weeks.

How Our Licensing System Works: Firia Labs licenses use a flexible, seat-based model tailored for classrooms and groups. Each license allows one student to access the online curriculum at a time. For example, with 30 licenses, up to 30 students can use the curriculum simultaneously. Once a student logs out, the license becomes available for another, enabling reuse across multiple classes or groups. Teachers only need enough licenses to cover their largest class size, making this approach cost-effective and easy to manage.

Join CodeXcursion to inspire your students and lead them on a journey of exploration, creativity, and career-ready coding skills!

[CodeX Professional Development - Teacher Praise](#)

Requirements to Implement the Program

- Educator(s) must attend the training.
- Educator(s) must participate in the STEM Council Scale-Up Survey.
- **Computer Requirements:** You can use a Windows 10/11 PC or laptop, a Mac, a Chromebook, or Linux OS computer.
- **Chrome browser is required.** If you don't have Chrome, please download and install it: <https://www.google.com/chrome/browser/>
- If your computer ONLY has USB-C ports (no "regular" USB ports), then you'll need to purchase either an [adapter](#) or [cord](#) to use the CodeX.

Additional Cost(s) to Awardee During Award Period

None

Approximate Sustainability Cost(s) After Award Period

Python with CodeX License Renewal per device: \$69

Website

[Firia Labs Iowa Scale-Up](#)

Videos

[Discover CodeXcursion!](#)

Social media

Facebook

[@firialabs](#)

X

[@firialabs](#)

LinkedIn

[FiriaLabs](#)

YouTube:

[@firialabs](#)

Iowa Standards Alignment

[CodeXcursion & Iowa State Standards](#)

Science HS-PS2-1 | Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. For example: Students will use the CodeX accelerometer to apply Newton's laws of motion. By measuring the acceleration of an object under different forces, students can analyze how the net force on the object affects its acceleration in relation to its mass.

Technology 3A-AP-13 | Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests. For example: Students will use CodeX with external sensors, like a temperature or humidity sensor, to create a weather station. They will write algorithms to collect and process data, such as triggering a notification when a temperature threshold is reached. This project allows students to apply computational thinking to real-world data while exploring their interests in weather and technology.

Professional Development

Duration:

- **Initial training:** 2 consecutive days (6-8 hours per day) of in-person, training between, July 15-Aug 15,
- **Virtual training:** 3 meetings, spread throughout the remainder of the school year. 1 Fall meeting, 1 Winter meeting, 1 Spring meeting; 2.5 hours per meeting.
- **Virtual Coaching:** monthly meet-up September-April (8 total) 1-hour sessions.

Date(s):

All in-person training sessions will be delivered during the months of July and August.

Location:

Professional Development will be in-person, virtual, and synchronous. Pending the number of Scale-Up awards, each Iowa STEM region may host an in-person PD.



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

Drone Designers: Exploring STEAM Careers

Grade Levels

4-8

Educational Setting

In or out of school.

Informational Webinar(s)

Jan. 28, 4 p.m.

Register: [us06web.zoom.us/meeting/register/tZYpc-ysrzltHNzV65GF1KkuxB8cQHbqP77I](https://us06web.zoom.us/j/84525123456)

Passcode: Drones

[Recordings on Iowa STEM's Website](#)

Award Provides

Materials for 30

- Online Curriculum Access
- Instructor Guide, Posters
- Designer's Notebooks: 31
- Storage Tubs: 2
- Ball of String: 1
- #2 & Colored Pencils
- Construction Paper
- Craft Foam (24 pk)
- Digital Scale
- Glitter & White Cardstock
- Battery Multi-Charger: 6
- Lanyard Inserts
- LiPo Safe Storage Bag
- Metal Washers: 80
- Mini Quadcopters: 6
- Mini Motors (4 pack)
- Pencil Sharpeners: 6
- Safety Glasses: 30
- Scissors and tape
- Team Tote Bags: 6
- Tissue Paper
- Educator stipend: \$320
- Training support: \$165
- Optional: 1 CEU (\$55 paid by the educator)

2025-26 STEM Scale-Up Program Summary

Drone Designers: Exploring STEAM Careers takes a multidisciplinary approach to introducing learners in grades 4–8 to the world of drones and coding, with an emphasis on their use in the arts and entertainment industries. The program is designed to be highly engaging for learners and easily implemented by instructors.

Released following the success of two of PCS Edventures' earlier drone-focused offerings and developed in partnership with drone entertainment professionals, the *Drone Designers* program is unique in its emphasis on arts integration.

Through 12 scaffolded one-hour lessons, learners collaborate with peers as they engage in the iterative design process to design and build drone costumes. Then groups choreograph and code a drone performance set to music.

Not only do learners benefit from hands-on practice in various industry mirroring roles on a production team (from Creative Director to Pilot-in-Command), but they also gain a solid foundation in the basics of coding and computational thinking, as well as an understanding of the safe operation and basic mechanics of drones. With expanding uses of drones across industries, *Drone Designers* is an exciting and engaging way to prepare learners to enter the workplace.

Requirements to Implement the Program

- Educator(s) must attend the initial 2-day in-person professional development and two subsequent 1-hour virtual training sessions.
- *Drone Designers* requires six Internet-connected laptops or Chromebooks (one per drone) to run the Blockly web app and access music. (CoDrone EDU is not compatible with Android or iOS operating systems.)
- Completion takes about 12 hours, using one-hour lessons. From camps to semester courses, it's very flexible.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.

Additional Cost(s) to Awardee During Award Period

None

Approximate Sustainability Cost(s) After Award Period

\$50 - \$250 annually

Website

edventures.com/products/drone-designers

Video

youtu.be/fbaRHMy8r4w?si=VTJxtVNBmiHGqijt

Social media

Facebook

[@PCSEd](https://www.facebook.com/PCSEd)

X

[@PCSEdventures](https://twitter.com/PCSEdventures)

LinkedIn,

[PCS Edventures](https://www.linkedin.com/company/pcs-edventures)

YouTube:

[@PCSEdventures](https://www.youtube.com/channel/UCPCSEdventures)

Iowa Standards Alignment

- Iowa Computer Science Standards– 1B-AP-10: Create programs that include sequences, events, loops, and conditionals.
- NGSS– MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- Iowa Fine Arts Standards– DA:Cr1.1.5a: Build content for choreography using several stimuli (for example, music/sound, text, objects, images, notation, observed dance, experiences, literary forms, natural phenomena, current news, social events).
- For a full list of standards alignment for Drone Designers visit tinyurl.com/ScaleUpDrone

Professional Development

Duration:

Two full-day (6-8 hours) in-person PD days followed by two 1-hour virtual sessions. Materials delivered during training. Awardees will take home two 27-pound boxes, no bigger than 27x14x19 inches.

Date(s):

Tentative training dates pending the number of awards:

- NE Iowa: July 21-22
- SE Iowa: July 24-25
- NW Iowa: July 28-29
- SW Iowa: July 31-Aug. 1
- NC Iowa: Aug. 4-5
- SC Iowa: Aug. 7-8

Location:

In-person.



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

Getting Started with Elementary OpenSciEd Curriculum

Grade Levels

K-5

Educational Setting

In school.

Informational Webinar

Jan. 23, 4 p.m.

[REGISTER HERE](#)

[Recordings on Iowa
STEM's Website](#)

Award Provides

- \$100 stipend for attending one day summer in-person session
- \$50 stipend for attending each of the three virtual support sessions offered (Up to \$150 if participant attends all three virtual support sessions)
- Choice of one grade-level classroom kit of materials (with printed teacher guide):
 - Kindergarten [K.1 Unit](#)
 - First Grade [1.1 Unit](#)
 - Second Grade [2.1 Unit](#)
 - Third Grade [3.1 Unit](#)
 - Fourth Grade [4.1 Unit](#)
 - Fifth Grade [5.1 Unit](#)

2025-26 STEM Scale-Up Program Summary



OpenSciEd (OSE) is more than a curriculum. It is a paradigm shift that reimagines the experience of science education to ensure that all students, regardless of their previous exposure to science, can excel in and outside the classroom.

Teachers select one of the grade-level units listed below and will receive a one day in-person training in addition to an OSE kit for their classroom. There will be multiple virtual support sessions held throughout the 25-26 school year to support educators implementing this curriculum into their practice.

The curriculum is designed to support teachers in engaging students' natural curiosities and interests. The complete K-5 program meets NGSS and integrates ELA/literacy and math standards. Iowa is one of the OSE field test states and has played an integral part in the research and development of curricula materials. This free open education resource provides access for all districts and teachers to use, customize, and share curriculum resources.

The program will provide an overview of the instructional practice shifts necessary to successfully implement this award-winning curriculum widely recognized as high-quality instructional materials.

K-5 OpenSciEd Units available through this Scale Up program:

- K: Energy/Sunlight (Why do some surfaces get hot and how can we make them less hot?)
- 1st Grade: Waves/Light (How can we read under covers when it is dark?)
- 2nd Grade: Earth/Land Changing Shape (How do wind and water change the shape of the land and what can we do about it?)
- 3rd Grade: Forces & Interactions (How can we design objects to balance and move in different ways?)
- 4th Grade: Energy Transfer/Collisions (Why does an object's motion change?)
- 5th Grade: Ecosystems & Matter Cycling (How does a nurse log help other things live and grow?)

Additional Cost(s) to Awardee During Award Period
None.

Approximate Sustainability Cost(s) After Award Period
\$50 to \$100

Website
opencied.org

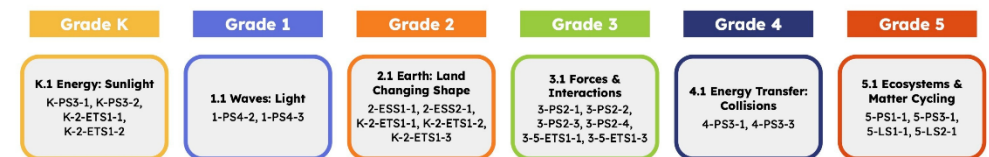
Video
youtube.com/watch?v=aTELpeQke9g

Requirements to Implement the Program

- Educator(s) must attend the in-person training session.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.

Iowa Standards Alignment

All OSE units align with the latest science standards and research and are reviewed using the EQuIP rubric from the NSTA. The diagram below provides a guide for the standards alignment in each unit. This award provides access to the first unit in the sequence for a grade level.



Professional Development

Duration:

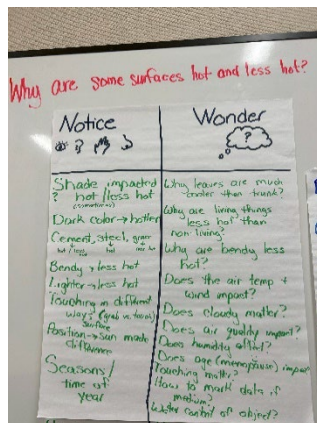
One full day of in-person summer training followed by three optional virtual sessions offered throughout the Fall of 2025.

Date(s):

All training sessions will be delivered between July 15 and August 15.

Location:

Regionally



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

Grow, Create, & Innovate: The STEAM-Powered Art

Grade Levels

K-8

Educational Setting

Both in school and/or out of school (Integration is flexible, allowing use as a whole or in parts.)

Informational Webinar(s)

Jan. 22, 3:30 p.m.

[REGISTER HERE](#)

[Recordings on Iowa STEM's Website](#)

Award Provides

- Maker Cart (fully assembled)
- Reaction Game
- Operation Game
- DNA Modeling
- Building an Automata
- Micro:Bit 10 pack x 3
- 3Doodlers EDU Start+ 12 Pack
- What Will You Create? Activity Book
- MakeyMakey Literacy Kit: 12 pack x 2

2025-26 STEM Scale-Up Program Summary

The Grow, Create, & Innovate program integrates STEM and the arts to enhance students' critical thinking and problem-solving skills. The program originated to address the need for engaging, hands-on learning. It aligns with CCSS, NGSS, ISTE, and CSTA standards and has earned STEM.org Authentication for its excellence in STEM education. Students engage in standards-aligned activities such as:

- Reaction Game explores physics and chemistry through interactive play
- Operation Game combines logic with mechanical design
- DNA Modeling merges biology with creative visualization
- Building an Automata integrates engineering with artistic design.

These activities foster creativity and exploration while demonstrating the connection between STEM and the arts, preparing students for careers that require technical skills, and inspiring creative problem-solving. By emphasizing integration, the program ensures students develop real-world skills through meaningful, interdisciplinary learning.

The program integrates standards, delivers engaging future-ready learning experiences, and tailors to diverse student needs including gifted learners. With a proven track record in over 80 schools, this program empowers educators to inspire innovation and creativity in the classroom using award-winning tools and strategies.

Requirements to Implement the Program

- Educators must attend the initial two day in-person training to receive materials.
- Student implementation is flexible, ranging 4-9 weeks if an average of 45 minutes is spent on lessons.
- Original kit serves 24-40 students. Additional activity replenishment kits can be added each serving 40 students.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.



Additional Cost(s) to Awardee During Award Period

None

Approximate Sustainability Cost(s) After Award Period

Only refill materials for the Maker Cart and 3D filament as needed, cost ranges from \$200 to \$500 per activity.

Website

makermaven.net/

Video

share.synthesia.io/dfa35ee0-d582-4d6c-aef8-601d7e2091d9

Social media

Facebook

[@makermaven](https://www.facebook.com/makermaven)

X

[@maker_maven](https://twitter.com/maker_maven)

LinkedIn,

[Maker Maven](https://www.linkedin.com/company/maker-maven)

YouTube:

[@makermaven1724](https://www.youtube.com/channel/UC1724makermaven)

Iowa Standards Alignment

Science Standards: The DNA Modeling activity supports Iowa Science Standard 4-LS1-1 by helping students explore genetic concepts and biological structures. Students build physical models of DNA, applying scientific inquiry to understand genetics and molecular biology.

Mathematics Standards: The Reaction Game integrates Iowa Math Standard 2.OA.A.1 by involving students in calculations related to reaction times and scoring. They use addition and subtraction to solve problems and analyze data, linking mathematical operations with experimental outcomes.

21st Century Skills: All of the projects integrate Iowa 21st Century Standards 21.3-5.TL.1 by engaging students in creating innovative, media-rich projects that integrate art, engineering, and science concepts. Through collaborative and individual activities, students use technology to design original products, identify patterns, solve problems, and share their ideas using models, simulations, and creative tools.

[See full standards alignment here.](#)

Professional Development

Session One: A two-day in person on a weekday in July/August. The Makey Makey, Microbits, and the 3Doodler pens will be disbursed during this session. Once the educator has completed this training, the remaining materials will be shipped to their location.

Session Two: Between November 1, 2025 and February 15, 2026, participants will attend a follow-up virtual support session to ensure effective implementation and address any additional questions/needs. Each educator will schedule a one-on-one virtual meeting with a dedicated support specialist.

Duration:

Two days of required in-person training (Session One).

15 to 30 minutes of one-on-one virtual session (Session Two).

Date(s):

In-person workshops (session one) will be scheduled during the weeks of July 28 and Aug. 4, 2025.

Virtual learning sessions (session two) will be scheduled between Nov. 1, 2025 and Feb. 15, 2026.

Location:

We plan to offer at least one in-person workshop in each STEM region pending the number of awards in each region.

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

Grade Levels

6-12

Educational Setting

Both in school and/or out of school.

Informational Webinar(s)

- Jan. 6, 3:30 p.m.
[REGISTER HERE](#)
- Jan. 8, 9:30 a.m.
[REGISTER HERE](#)
- Jan. 13, 9:30 AM
[REGISTER HERE](#)
- Jan. 15, 3:30 p.m.
[REGISTER HERE](#)
- Jan. 20, 3:30 p.m.
[REGISTER HERE](#)
- Jan. 22, 9:30 a.m.
[REGISTER HERE](#)

[Recordings on Iowa STEM's Website](#)

Award Provides

- Digital access to Math Nation+ teacher account
 - Math Nation+ student experience
 - Dedicated teacher portal, (unit overviews, 'Teacher Prep' videos student lessons, lesson answer keys, warm-up activities)
- Supplementary activities

2025-26 STEM Scale-Up Program Summary

Math Nation+ is a validated research-backed platform designed to address the critical need for effective math instruction. The program offers comprehensive resources for middle/high school math. Math Nation+ uses interactive videos, practice tools and personalized learning paths to engage students in deep mathematical understanding. Learners engage in collaborative problem-solving, critical thinking, and real-world applications of math concepts, connecting classroom learning to STEM careers. By fostering a growth mindset and providing support tailored to individual needs, Math Nation+ prepares students for academic success and future opportunities in STEM fields ensuring they are equipped with skills necessary for the world of work. Math Nation+ is the complement to any core curriculum. Written to national standards, this product brings the best of Math Nation features to highly aligned instructional materials.

Requirements to Implement the Program

- Educator must attend a training session.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey

Iowa Standards Alignment

Math Nation+ fully address the Iowa Core Standards for Mathematics in the following grades:

- 6th Grade Math
- 7th Grade Math
- 8th Grade Math
- Algebra 1
- Geometry
- Algebra 2

Math Nation+ aligns with Iowa Academic Standards by supporting the development of critical 21st Century Skills, including problem-solving, critical thinking, collaboration, and digital literacy. The platform encourages students to apply mathematical concepts to real-world situations, fostering a deeper understanding of how math is used in STEM fields. This approach not only strengthens students' math skills but also equips them with the ability to think analytically and work effectively in teams—essential components of the 21st Century Skills framework.

Additional Cost(s) to Awardee During Award Period

None.

Approximate Sustainability Cost(s) After Award Period

\$9.95 per student for system license renewal. Student licenses will be awarded to attendees by September 1, 2025 and will expire on June 30, 2026.

Website

mathnation.com

Video

[acceleratelearning.wistia.com/medias/23011jftxj](https://www.acceleratelearning.wistia.com/medias/23011jftxj)

Social media

Facebook

[@AccelerateLearningInc](https://www.facebook.com/AccelerateLearningInc)

X

[@Accel_Learn_Inc](https://twitter.com/Accel_Learn_Inc)

LinkedIn,

[Accelerate Learning](https://www.linkedin.com/company/accelerate-learning)

YouTube:

[@acceleratelearninginc](https://www.youtube.com/@acceleratelearninginc)

Iowa Standards Alignment (continued)

Furthermore, Math Nation+ promotes cross-curricular connections, linking math with science, technology, and engineering. Through project-based learning and real-world problem-solving activities, students explore the interconnectedness of math with other STEM disciplines. For example, learners might use mathematical modeling to solve engineering challenges or apply statistical analysis in scientific research. This integration reinforces the relevance of math in various fields and prepares students for future STEM careers.

Math Nation+ also aligns with Iowa's cross-curricular standards by emphasizing literacy in math education. Students are encouraged to articulate their thought processes, explain solutions, and engage in discussions that enhance their understanding and communication skills. This holistic approach ensures that Math Nation+ not only meets but exceeds Iowa's educational standards, providing students with the knowledge, skills, and competencies necessary for success in the modern workforce.

Full alignments for each course have been provided here: [Math Nation+ Iowa Alignments](#)

Professional Development

Duration:

Half-day (three hours) of training.

Date(s):

All training sessions will be delivered during the months of July and August.

Location:

Educators may choose between a three hour in-person training or a two-hour virtual session. In-person training will be conducted regionally depending on awards.

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

Overcoming Barriers to STEM Engagement: A Cross-Curricular Structural and Wind Energy Project Using Sketching as the First Step

Grade Levels

6-12

Educational Setting

Both in school and/or out of school. (Ideal for CTE, Engineering, Physics, and Science.)

Informational Webinar(s)

Jan. 27, 4:30 p.m.

[REGISTER HERE](#)

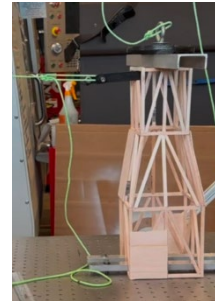
[Recordings on Iowa STEM's Website](#)

Award Provides

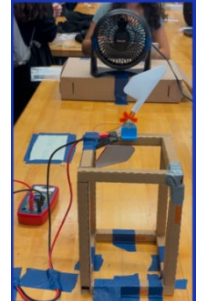
- Professional Development
- Two 3-hour live synchronous zoom sessions (required)
- 6 hours of asynchronous activities (required)
- Four office hour Zoom sessions (optional)
- \$240 educator stipend
- Spatial Vis Classroom Kit (non-consumable)
- Wind Turbine Project Test Kit (non-consumable)
- Wind Turbine Design-Build Kit (consumable)
- Spatial Vis software (1 year)

2025-26 STEM Scale-Up Program Summary

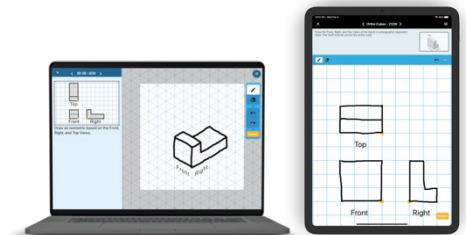
A hands-on project with wind energy technology builds engagement with STEM. This project includes design of a scale tower to support a wind turbine, with load and deflection testing. Students also build a turbine, and then test the efficiency of the turbine by connecting it to a generator and applying a wind load. During this project students learn technical sketching using the Spatial Vis software. These skills help with concept generation, communicating among team members, and prepares them for success in Computer Aided Design (CAD). The curriculum highlights Iowa's leadership in wind energy and will prepare students for careers in Iowa.



Lateral Load-Displacement Test



Wind Energy Generation Test



Spatial Vis Software

The Spatial Vis software teaches sketching of 2D and 3D views, which form the foundation for reading blueprints and using CAD. The software automatically grades freehand sketches and provides personalized hints. Spatial Vis increases spatial visualization skills, which in turn have been shown to improve GPAs and graduation rates in STEM. It is a great way to get your class engaged with STEM.

Requirements to Implement the Program

- Complete full professional development: two 3-hour live synchronous Zoom sessions and 6 hours of asynchronous activities.
- Students will need access to at least one of these devices: Chromebook or Computer, Apple iPhone, Apple iPad, Android Phone, or Android Tablet.
- Participate in the STEM Council Scale-Up Educator Survey.

Iowa Standards Alignment

Middle/high school science standards in Forces and Interactions (MS-PS2/HS-PS2) and Energy (MS-PS3/HS-PS3) are addressed, as well as Iowa Core Science Standards in Engineering Design (MS-ETS1, HS-ETS1) such as defining criteria and constraints, evaluating solutions and trade-offs, analyzing data, and developing models for iterative testing.

Additional Cost(s) to Awardee During Award Period

None

Approximate Sustainability Cost(s) After Award Period

- \$15/student annual license
- \$100 - \$600 for Wind Turbine Design-Build Kit replacement consumable materials.

Website

egrove.education/iowa-stem-scale-up

Video

youtube.com/watch?v=RaHZt3diccY

Social media

Facebook

[@egroveeducation](https://facebook.com/egroveeducation)

X

[@egroveeducation](https://twitter.com/egroveeducation)

Iowa Standards Alignment (continued)

- High School CTE - Applied Sciences, Technology, Engineering and Manufacturing Standards (Drafting and Design (DFT4, DFT10), Engineering and Design)
- Middle School CTE - Applied Science, Technology, Engineering and Manufacturing Service Area Standards (3. Understand the engineering design process)
- 21st Century Skills in the area of Employability Literacy (21.6-8.ES.1, 21.9-12.ES.1, 21.6-8.ES.4 and 21.9-12.ES.4) related to communication, productivity, creativity, skill mastery, and engaging in effective problem solving.
- Technology Literacy (21.6-8.TL.2, 21.9-12.TL.2, 21.6-8.TL.4, 21.9-12.TL.4, 21.6-8.TL.6, and 21.9-12.TL.6) related to collaboration and critical thinking skills using interactive technology and facilitating learning technology applications (CAD) to produce finished products (technical design drawings).
- [More cross-curricular standards](#)

Professional Development

Duration:

Two 3-hour Synchronous Webinars, ~6 hours of asynchronous training

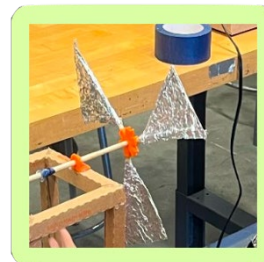
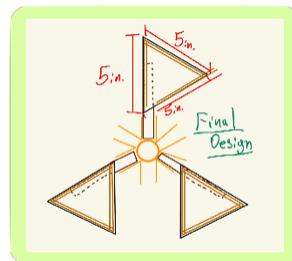
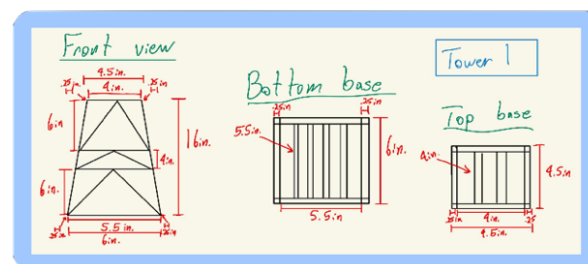
(Optional: Four 2-hour optional office-hour Zoom sessions.)

Date(s):

Will be determined by the awardees

Location:

Virtually



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

Plant the Moon Challenge

Grade Levels
PK-12

Educational Setting

In or out of school educators. It is important to have the same students throughout the program. Teams need space to house and grow plants for eight weeks.

Informational Webinar(s)

Jan. 29, 4 p.m.
[REGISTER HERE](#)

[Recordings on Iowa STEM's Website](#)

Award Provides

Access to the curriculum materials and competition platform. Good for one competition season (Fall or Spring. About six months).

PTMC Project Kit (one kit serves 10 students)

- Five Kg lunar or Martian regolith simulant
- Ten planter pots
- Ten PTMC stickers
- Materials safety flier
- PTMC Getting Started Flier
- pH materials
- PPE
- \$80 training stipend.

2025-26 STEM Scale-Up Program Summary

The Plant the Moon Challenge is a global science experiment, learning experience, and inspirational project-based-learning challenge. Students compete to see who can grow the best crops using lunar and Martian regolith stimulant. One kit serves 10 students.

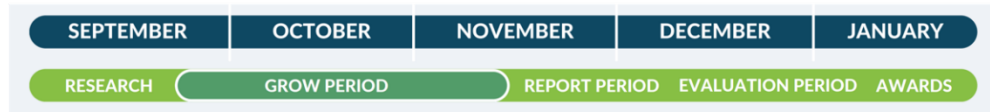
The Plant the Moon Challenge is both a student activity and competition. Participants will be sent a Plant the Moon Activity Kit. Teams will use the Project Guide to define their own plant growth experiments, defining parameters such as the structure of the plant growth setup, amount of water used, and nutrients added to the regolith simulant to help support plant growth.

Teams submit photos, videos, and an experiment report. Best-in-show awards will be provided to teams with the best plant growth results and experimental design.

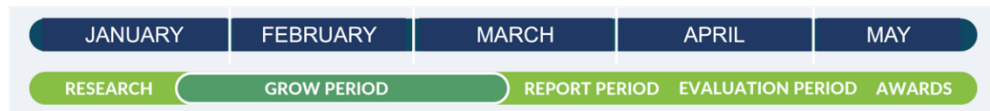
The fall opening symposium kicks off the season in mid-September with final project reports due in early December. The spring opening symposium kicks off the season in mid-January with project reports due in early April. Dates of program events will be provided with the Training Program in Jul/Aug.

Throughout the 12-week program period, teachers and their students are supported with a series of weekly engagements and four live virtual events connecting them to NASA subject matter experts, research scientists, and program staff to provide advice, guidance, and inspiration through each step of the program

Fall Challenge Timeline



Spring Challenge Timeline



Requirements to Implement the Program

- Educators must attend training to receive materials.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.

Additional Cost(s) to Awardee During Award Period

All materials not listed under Award Provides section of this Fact Sheet that are specific to the student experimental design (seeds, alternative growing containers, etc.) must be provided by the educator/student.

Approximate Sustainability Cost(s) After Award Period

\$449 for 10 youth. Covers the standard registration fee for the team, project kit, and shipping.

Website

plantthemoon.com

Video

youtube.com/watch?v=0Jvzi8lba8U

Social media

Facebook

[@PlantTheMoonChallenge](https://www.facebook.com/PlantTheMoonChallenge)

X

[@plant the moon](https://twitter.com/plant_the_moon)

Requirements to Implement the Program (continued)

- Timeline varies depending on learners. If students meet once a week for 30 to 90 minutes, the baseline experimental process is 12 weeks or 12 to 18 hours, which breaks down like this:
 - Weeks one to two are prepping and experiment design,
 - Weeks three to ten are planting and monitoring,
 - Weeks eleven and twelve are analyzing and reporting.

Iowa Standards Alignment

Engineering, Technology, and Applications of Science (ETS):

HSETS1: Involves designing experiments that assess agricultural technologies applicable in space. Students solve engineering problems while aligning with HSETS12 (Design and engineering process) and HSETS13 (Evaluating solutions).

Earth and Space Science:

HSESS3 (Earth and human activity): The program encourages exploration of sustainable practices for space agriculture, focusing on HSESS32 (Natural resources) and HSESS33 (Human impacts on Earth systems).

Life Science:

HLS2 (Ecosystems): Students explore ecological principles through hands-on experiments related to crop growth in simulated space environments, focusing on LS26 (Ecosystem interactions) and LS28 (Ecosystem dynamics).

Full Alignment

Professional Development

Duration:

Half day.

Date(s):

Training will occur July 15 to Aug. 15, 2025. Specific date will be scheduled after awardees are announced.

Location:

Virtual, live and synchronous.



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

Positive Physics, Chemistry, Physical Science, Biology, Environmental Science & Engineering

Grade Levels

6-12

Educational Setting

In School (This program is best implemented in situations where the same students meet for the full implementation.)

Informational Webinar(s)

- Jan. 29, 5 p.m.
[REGISTER HERE](#)
- Feb. 19, 5 p.m.
[REGISTER HERE](#)

[Recordings on Iowa STEM's Website](#)

Award Provides

- Training sessions
- One year of teacher and student subscriptions to the platform
- \$100 stipend for attendance of required workshop
- On-going support

2025-26 STEM Scale-Up Program Summary

Positive Physics, Chemistry+ (positivephysics.org) is an engaging lesson and problem bank for Middle & High School Science. The site was built by teachers in diverse classrooms and designed to be accessible to students on any level from middle school to AP. Awardees receive:

- 5000+ Interactive questions & videos designed to replace a textbook.
- Immediate feedback & automatic grading.
- Randomization to prevent copying.
- Nurturing environment to build student confidence.
- Responsive customer service (contact jack@positivephysics.org any time).
- [1 Minute Intro Video](#)

"My chemistry, physics, and physical science students LOVE using positivephysics.org!"

- Launa Buxton (East HS, Waterloo)

"Positive Physics is one of the best online programs I've used in my many years of teaching. It is easy to use and tailor to my personal needs and preferences. Students are very engaged in the lessons and practice!"

- Liz Moritz (Midland HS, Midland)

"This resource has been an amazing addition to my classroom this year! The assignments allow students to discuss strategies instead of sharing answers because numbers are randomized so that no two students will have the same answer."

- Anna Pauley (Atlantic High School, Atlantic)

"The site is fantastic. It is great for new learning and for review. I had a student today that told me she felt really good after completing the lesson on velocity graphing from yesterday because she was struggling, and she now understands the concept. She said it feels good to go from struggling to understanding. Jack is also personally very responsive to any question and welcomes feedback."

- Brad Horton (Kennedy High School, Cedar Rapids)

Requirements to Implement the Program

- Educator(s) must participate in one, one hour workshop (Teacher will receive \$100 attendance stipend)
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.

Additional Cost(s) to Awardee During Award Period

None

Approximate Sustainability Cost(s) After Award Period

\$299/Teacher/Year
(includes unlimited student subscriptions)

Website

positivephysics.org

Video

youtube.com/embed/9bhD_EkuJsyl?autoplay=1

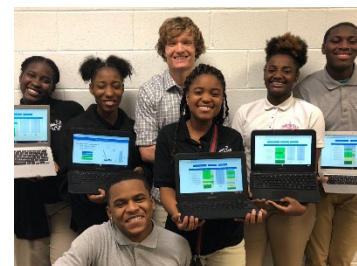
Iowa Standards Alignment

Positive Physics and Chemistry is designed to cover all topics covered in the following courses:

- Physics (including AP)
- Chemistry (including AP)
- Biology (including AP)
- Environmental Science (including AP)
- Physical Science
- Engineering

In addition, each unit begins with an inquiry activity that is based on the NGSS/Iowa standards. Three inquiry activities with strong curricular ties are described below and full NGSS alignment can be found on the site.

HS-PS2-1: Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. [See Unit 5 Inquiry]



HS-PS2-2: Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system. [See Unit 14 Inquiry]

HS-PS3: Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects). [See Unit 13 Inquiry].

Professional Development

Duration:

One hour

Date(s):

July/August

Location:

Virtual via Zoom

positivephysics PREMIUM Jack Completion: 98% Accuracy: 98%

Balance the chemical reaction, then answer the questions that follow:

$$1 \text{ NaCl} + 1 \text{ KOH} \rightarrow 1 \text{ KCl} + 1 \text{ NaOH}$$

How many grams of NaOH will be produced if 16 grams of NaCl reacts with KOH?

16 grams NaCl 1 mol NaCl 1 mol NaOH

58.4 grams NaCl 1 mol NaCl

Check Answers

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

Spintronics: Engineer and Design Mechanical Circuits

Grade Levels

3-8

Educational Setting

Both in school and/or out of school.

Informational Webinar(s)

- Jan. 14, 3:30 p.m.
[REGISTER HERE](#)
- Jan. 15, 3:30 p.m.
[REGISTER HERE](#)
- Jan. 16, 3:30 p.m.
[REGISTER HERE](#)

[Recordings on Iowa STEM's Website](#)

Award Provides

A classroom kit which includes.

- 16 Act One games
- Two Act Two games
- Two Power Pack games
- Five extra packs of chain
- One extra pack of resistors
- Stipend: \$139 for in-person training, \$60 for online training

2025-26 STEM Scale-Up Program Summary

Electricity and circuits are all around us, but we often don't notice them until the power goes out! Understanding electronics usually requires complex math, but Spintronics allows students to learn through hands-on puzzles. Instead of imagining invisible electrons running through wires, the students can see the chains moving through the sprockets. Through solving the challenges, students not only learn how electronics work, but also engage in the engineering design process through play and discovery. Every puzzle invites them to plan their approach, build it, and adjust. Tutorials teach concepts, circuit diagramming, and theory, including advanced concepts like Kirchoff's law. Students practice solving problems, communicating with others, thinking through multiple step processes, and perseverance.



Requirements to Implement the Program

- Educators must attend one three-hour training session.
- Educators 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

None.

Website

spintronics.com

Video

[Spintronics](#)

Social media

Facebook:

[@EndlessCuriosity](#)

YouTube:

[@UpperStory](#)

Iowa Standards Alignment

NGSS Science: Spintronics fulfills the grade 4 energy science standards. It teaches how energy, electronics, and circuits work at the fundamental level. It gives them a concrete understanding of how energy is manipulated in those circuits to be useful in everything that uses power. Instead of invisible electrons moving through wires and in a circuit, Spintronics lets players build mechanical circuits with a chain moving around sprockets so that they can see and feel how the electrons move. 4-PS3-1. Tutorial 1, puzzles 1-5, 4-PS3-2. Tutorial 5, puzzles 9-12, 4-PS3-4. Ammeter info, puzzles 9-12

Technology: By creating mechanical circuits, they develop skills in problem solving, logic, and creative solutions. These skills are the foundation of technology literacy, transferable to coding, software use, and expressing themselves creativity.

NGSS Engineering Design: It fulfills all standards for grades 3-5 and Middle School by inviting players to design small mechanical machines, troubleshoot, and improve them. Every puzzle (149) presents an engineering challenge, including the criteria for success and constraints. They are encouraged to test their design and look for weaknesses to improve the machine. The content is focused on electronics and electricity, which is a natural segue into electrical engineering, mechanical engineering, renewable energy and nanotechnology. 3-5-ETS1-1, 2, 3. MS-ETS1-1, 2,3, 4



Professional Development

Duration:

Half-day (three hours) of training.

Date(s):

All training sessions will be delivered during the month of July

Location:

Educators may choose between one in-person training that will be delivered in Ames or Des Moines or four synchronous virtual sessions.

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

STEAM Innovators K-8: Pathways for Future Leaders

Grade Levels

K-8

Educational Setting

Both in school and/or out of school.

Informational Webinar(s)

Jan. 14, 4 p.m.

[REGISTER HERE](#)

[Recordings on Iowa STEM's Website](#)

Award Provides

- For K-5: Classroom Kit and Maker kit. Content to our 500+ lessons and activities that can be aligned to your science units or ELA curriculum.
- For 6-8: Classroom Kit and STEAM Plus kit. Content to our 500+ lessons and activities, specifically our 6-8th grade STEAM Careers Pathways Course.

2025-26 STEM Scale-Up Program Summary

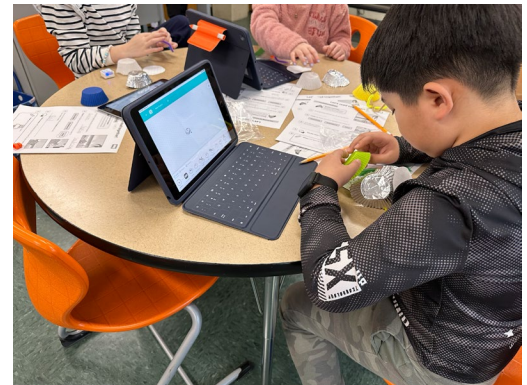


SAM Labs' STEAM program was designed to make STEM concepts engaging by integrating the arts, blending creativity with science, technology, engineering, and math to foster innovation, critical thinking, and problem-solving skills. Our program aligns with NGSS, Iowa Science Standards, Common Core, and ISTI, ensuring that students meet essential learning goals while engaging in hands-on projects.

Students participate in project-based activities that promote collaboration, creativity, and leadership, developing skills like communication and teamwork. These activities make STEM relevant to future careers in fields like architecture, video game design, and urban planning.

By incorporating real-world problem-solving, students create portfolio-worthy projects that showcase their skills to potential employers, linking education directly to the demands of the 21st-century workforce.

This [flyer](#) goes over our elementary courses and this [website](#) gives an overview of our 6-8th grade STEAM Careers Pathways course. Lastly, this [document](#) provides all of our content and categorizes them into careers.



Requirements to Implement the Program

- Educators must attend one three-hour training session.
- Educators must participate in the STEM Council Scale-Up Educator Survey.

Additional Cost(s) to Awardee During Award Period

None.

Approximate Sustainability Cost(s) After Award Period

\$5,000 per school (all students and teachers will have access)

Website

samlabs.com/us/

Video

youtube.com/watch?v=Coqc0IUcnq8

Iowa Standards Alignment

21st Century Skills: SAM Labs emphasizes essential 21st Century Skills such as critical thinking, problem-solving, collaboration, and digital literacy. These skills are embedded in project-based learning activities that require students to work together, think creatively, and apply technology effectively.

Cross-Curricular Standards: The program aligns with cross-curricular standards by integrating STEM concepts with other subject areas. Each lesson will include what ELA, Math, Social Studies and Science standards are covered during that time. For example:

- **Language Arts:** Students might document their projects through written reports or presentations, enhancing their communication and literacy skills.
- **Math:** Students will use equations or create graphs to complete their lessons.

This is a [link](#) that aligns the Iowa Science Standards with our STEM lessons.

Professional Development

Duration:

Professional Development is approximately three hours.

Date(s):

Training sessions will take place from July 21st-July 25th, depending on the STEM hub you are assigned to.

Location:

Professional Development will be in-person at the STEM hubs, virtual PD support and follow-ups are available.

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