



Iowa Leadership in Engineering Design (ILED)

GRADE LEVELS:

K - 12

EDUCATIONAL SETTING:

Both in and out of school

Award Provides:

- 3 days of workshop on Engineering Design
- Grade-banded kit (\$800)
- Stipend for each day of workshop
- Hotel, meals and travel provided or compensated
- Instruction on provided kit and support to create new engineering design activities
- On-going support
- CE is available!

Additional Cost(s) to Awardee In 2022-2023:

- No additional cost necessary

Approximate Sustainability Cost After Award Period:

- Approximately \$60

2022-2023 STEM Scale-Up Program Summary:

This project embraces the need to empower teachers in the use and creation of engineering design activities. Through a total of three days of workshop, teachers will experience an innovative, grade-level banded kit of engineering design activities, as well as create activities that are unique to their classrooms, curriculums, schools, and communities; while emphasizing 3D learning.

This is much more than engineering design for Physics class or an engineering class. This is engineering design as promoted by NGSS; every student, every class!

Four grade-banded kits (educator chooses one);

K - 2: BOATS AND COLORS (Culminates with LEGO boats and color plates)

3 - 5: FINDING BALANCE (Culminates with simple levers and a mobile)

6 - 8: WHAT MAKES IT FLOAT? (Culminates with boat making, in-sink testing)

9 - 12: BIODEGRADABLE POLYMERS (Open ended culmination with objects made from biodegradable polymers)

BUT THE KITS ARE JUST THE BEGINNING! We want to empower you to create your own engineering design-rich activities for your unique needs in whatever setting you find yourself. Your curriculum, your community, your students... and engineering design!

Students of teacher-participants will be engaged in engineering design, part of STEM and NGSS. They will use practices of engineers as you might write activities for virtually any aspect of STEM that fits your school and your curriculum... And, in all of these projects and activities, students will be observing, measuring, recording data, organizing data, analyzing data, drawing conclusions, evaluating results, and presenting their findings – experiences that will prepare students for all STEM careers.

Engineering design might be the most difficult part of the NGSS. It can also be the pathway to engage your underrepresented groups and disinterested students. Engineering design allows you to present authentic problems that resonate with your students - and that is great teaching at any level!

Professional Development:

Initial Workshop

Duration: Two days in August 2022

Date(s): Either August 1-2 or August 8-9

Location: Either University of Dubuque, Dubuque, IA; or a site on the Western half of the state to be determined

Follow-up Workshop

Duration: One day in Spring of 2023

Date(s): TBD (Thursdays, March 9 - April 22)

Location: 6 Regional STEM Hub sites

Website:

www.IowaLeadershipinEngineeringDesign.com

Video:

<https://media.dbq.edu/MediaSite/Play/e2d3a9793a834be7bef30adb67da88eb1d>

**Information Webinars:
(must pre-register)**

Thurs, Jan. 20, 7:30 am

Thurs, Jan. 27, 3:30 pm

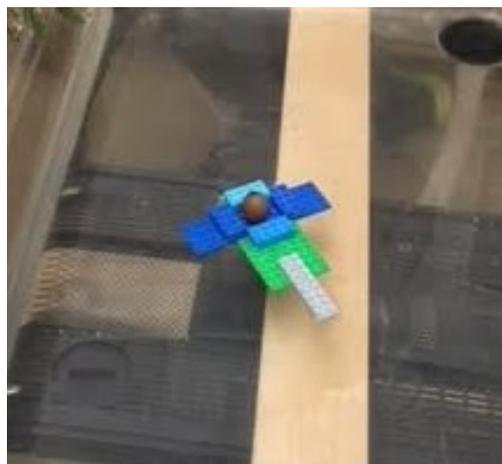
Register for the webinars at:

<https://docs.google.com/forms/d/e/1FAIpQLSd5hd20hMTCe-I7HRQrs6VJYL4qUahFKS5IkBPeTnl5imps6w/viewform>

Requirements to Implement the Program:

- Desire to engage learners of all backgrounds with authentic problems.
- Motivation to modify and enhance existing curriculum to embrace problem-solving lens of scientists and engineers.
- Motivation to modify and enhance provided materials to better serve your students, your school, and your community.
- Creativity and time to design new materials for best fit for your curriculum and the needs of your students.
- Educator must choose one grade-banded kit. (Indicate the desired kit in the additional comments section of the application)
- Time for 2 days of workshop in August 2022, and 1 day of workshop in spring, 2023.
- May require access to sink and electricity.
- Educator(s) must participate in the STEM Council Scale-Up Educator Survey.

Photos:



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