K-12 Maker at the MIT Edgerton Center

Students learning and growing through Making in the classroom

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The MIT Edgerton Center was founded in 1992 to honor the legacy of Harold (Doc) Edgerton, an inventor, entrepreneur, explorer and MIT professor or electrical engineering. He pioneered strobe photography and high speed imaging, creating new ways to see things. More than that, he welcomed students into his labs to work on personal projects creating a Makerspace long before that name was coined.
MIT Clubs and Teams have a permanent home with shop facilities: MIT Driverless, Solar Electric Vehicle, MIT Robotics, MIT Motorsports, Design for America, and more.

The Student Project Lab has been a Makerspace in operation for decades and hosts a variety of MIT courses and programs.

We honor Harold “Doc” Edgerton’s legacy of innovation and fun in learning through K-12 Outreach by providing school-year field trips and summer camps.
Key Needs in K-12 Education

Students:
- Engagement
- Persisting past barriers and failure
- STEM connections and awareness
- 21st century skills

Teachers:
- Create relevant learning experiences
- Use digital resources and technologies
- Facilitate learning instead of instructing
What defines a Maker project?

Using cool tools
to build
something creative of your own
with others
improving as you go
What do kids get from a Maker project?

- Using cool tools → Tech skills
- to build → Hands-on thinking
- something creative of your own → Ownership
- with others → Collaboration
- improving as you go → Iteration
# Making to learn vs. Making stuff

| Using cool tools to build something creative of your own with others improving as you go | → Appropriate digital fab, electronics, tech tools → Show examples, avoid a detailed build guide → Different products using the same tools → individual or group projects, done in peer groups → Without iteration, it’s just an activity |

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Making to learn vs. Making stuff

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- → Without iteration, it’s just an activity
Does Maker fit in an academic classroom?

Teachers are responsible for students learning specific content and skills.

AND

The “Big Picture” goal of school is to empower students in their lives.

Often called “21st century skills”, these life skills can be integrated in all subjects:

- learning on their own
- working with others
- using technology appropriately
- communicating well
- thinking critically
- persisting through setbacks

*Maker projects can be a way to successfully accomplish both of those goals.*
What does a Maker project look like?
Maker projects from teachers

“About Me” pencil holder

Students learned the Glowforge laser cutter while reflecting on and expressing identity.
Create-a-Creature

Students designed and printed a 3D critter model to reinforce learning about adaptation.
Maker projects from teachers

Trojan Horse Legend

ELL students used a vinyl cutter to add new vocabulary words to a model
Maker projects from teachers

Passport Stamps

Students created craft foam stamps with a Cricut that represented a place that they researched.
Maker projects from teachers

Monuments

Students used crafts tools or digital fabrication to build model monuments to underrepresented people and events.
Maker projects from teachers

Fallas from Valencia

Students created *fallas* of problems they wanted to rid the world of, and created a video of their statues “burning” in a fire

[Video](#) – “burning” of the fallas
Maker projects from teachers

“Layered Identities”
for Hispanic/Latinx Heritage Month + Indigenous People’s Day
High school project involving research, design, art, expression, collaboration, fabrication technologies
Maker projects from teachers

Six Word Stories

Magnetic tiles lit up students’ creative writing assignment

MET SEA LIONS. MANY HIGH FIVES.
EMMA M.
Essential parts of a good Maker experience

- **STUFF AND SKILLS**: makerspace tools, materials, and training
- **PROJECT**: academic, techy, and relevant
- **TEACHER PRACTICES**: facilitation skills, ways of being
We address this with:

- **Maker Project Workshops**
- Tool and facility resources that we create and publish online

**STUFF AND SKILLS**

makerspace tools, materials, and training
K-12 Maker Project Workshops

Spend a day at MIT with K-12 Maker experts learning digital fabrication (3D printers, laser cutters, Cricut cutters), electronics, physical computing or handcrafting tools and techniques through fun, engaging Maker projects that you can adapt to use in your classes.

Make by Hand
Maker projects with real crafting, textile, and shop tools

Digital Fabrication
Maker projects with 3D printers, laser cutters & vinyl cutters

Electronics
Light up learning with simple electronics Maker projects

Physical Computing
Maker projects that bring coding to life in the real world

k12maker.mit.edu/maker-project-workshops
Our website is an invaluable free resource for all Makers and educators. We cover everything you need to know to establish and run a successful K-12 Makerspace, including:

- Guides to Maker tools and software selection, operation and training
- Makerspace design guide
- Articles and books that make the case for Making in K-12 education
- Project ideas, instructions and inspiration
- Introduction to processes and tools for designing good Maker projects
We address this with:

- Project inspiration and design resources that we publish online
- *Master Making in the Classroom* teacher professional development
K-12 Maker Project Ideas and Tutorials

instructables.com/member/EdgertonCenter/

Step-by-step guides geared towards K-12 Maker educators, but enjoyable (and doable!) by anyone.

k12maker.mit.edu/webinars

Kind of like live instructables - free resources and recordings of project webinars with more coming in the future!

k12maker.mit.edu/ideagallery

Adaptable, inspirational Maker project ideas that have been shared by K-12 Teachers and Maker-Educators
Master Making in the Classroom Teacher PD

10-week programs for Maker educators and leaders to master our Maker Methodology to design and deliver impactful and relevant Maker experiences.

k12maker.mit.edu/master-making-in-the-classroom
TEACHER PRACTICES
facilitation skills, ways of being

We address this with:

- Master Making in the Classroom teacher professional development
Become an excellent Maker project leader by learning practical and effective teaching practices in Master Making in the Classroom.
Maker PD Packages

A year of coaching and professional development that is customized to meet the needs of your program, school or district.

Maker PD Packages starting at $10,000 include planning, goals and needs identification, custom training and materials, connection to a network of K-12 Maker Educators, and more.

We meet with you to discuss your vision, identify goals, and explore how Maker projects and technologies bring your vision to life. We’ll walk you through our PD strands and resources, including Makerspace design, tool training, project design, teacher practices, and lots more. We will work with you to choose appropriate strands and create a custom program.

Learn more at k12maker.mit.edu/pdpackages or contact us at k12maker.mit.edu to get started!
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