K-12 MAKER WORKSHOPS at MIT
Fall 2021
Makerspace Tools, Skills, & Operations for Educators

One-day workshops for educators to:

- develop technical skills with Maker tools
- set up school Makerspaces
- design projects and learn effective ways to use Maker tools with students in grades K-12

These workshops are being offered in-person and online simultaneously. Those on site will use the MIT shop tools, remote participants will be advised of the tools in advance and will have access to all activities. Workshops are limited to 20 in-person and 20 remote participants.

Beginners are welcome! The workshops are appropriate for teachers with tools and materials ranging from portable carts to full-blown makerspaces. No experience required except for the Maker Project Design workshop, where experience with at least one Maker technology is recommended.

**FALL 2021 workshops**

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* Master Making in the Classroom is a 10-week coaching program. See http://k12maker.mit.edu/MasterMaking

Course descriptions on back of flyer
Registration is at edgerton.mit.edu/k-12/makerspaces
For FREE Maker resources, visit k12maker.mit.edu
3-D Modeling and Printing
Learn to create 3D models with Tinkercad, prep (slice) models for print, change filament, and remove parts. Get ready to use a 3-D printer with a classroom of students. Leave with an original print of your own.

"Diane de-mystified 3D printers for me...it was great being able to ask all our uninformed questions, and have them taken seriously."

Electronics for Makers
Learn and practice principles of electricity by building circuits with a variety of switches, LEDs, buzzers, and motors. Use soldering irons and multi-meters correctly. Figure out what electrical components and tools are most appropriate for your students and your budget. Build a take-home project and make a component display board for your classroom.

"...really helped me make connections in my head and fill in the holes that were keeping me from understanding more than the most basic electronics."

Laser Cutter, Vinyl Cutter and 2-D Modeling
Learn how laser and vinyl cutters can be useful tools in your Makerspace. Practice laser etching and cutting on several materials. Try out a simpler technology: vinyl/craft cutters. Explore 2-D modeling techniques that allow you to use a variety of image sources. Take home project samples.

"The sample box project using Gravit was great and sparked a few potential ideas for the classroom. We also plan on purchasing at least one vinyl cutter after seeing it in use."

Design and Operate a Makerspace, with Shop Tool Training
Explore resources for the design, layout, and safe operation of a Makerspace. Learn and use a variety of hand tools and power tools, materials, and fasteners on your own custom project.

"Learned what entry level tools would be appropriate for a middle school makerspace. On the way home I stopped to look at purchasing some new tools!"

NEW - Making with Music courses
Sound Studio: Find sounds, and turn them into music on Soundtrap - a free browser-based collaborative audio editing platform. Create and present expressive, "sonic art" that is rich in meaning.

DIY Acoustic instruments + music theory. Build melodic instruments from wood and explore the physics of music-making.

Physical Computing with Micro:bit and Arduino
Coding is meaningful to students when they can read in touches or light levels and control electrical devices like motors, LEDs, and speakers. Micro:bit and Arduino are both free coding environments that are well-supported, easy to source, and have a wide array of devices designed to interface with them. Follow our tutorial projects to learn and practice coding basics and troubleshooting strategies. Leave with classroom ideas, your own project and an extensive kit of starter materials. Micro:bit is appropriate for students 4th grade and up. Arduino is best for high school or students that can use breadboards.

Maker Project Design
After you and your students learn how to use the tools and tech, what happens next? This one-day experience gives you the opportunity to Join us and learn how to design custom projects that integrate Maker technologies with your academic curriculum. Learn simple hands-on activities that introduce and build enthusiasm for Making. Explore sample Maker projects and our online IdeaGallery. We recommend that participants have some prior skills in at least one Maker technology.