Create a

MAKER

SPACE

for your school

in 5 Easy Steps

Ready to seriously foster your students’ curiosity—on a budget? Start today!
TABLE OF CONTENTS

3............ Introduction
4............ Get Started: Study Up and Network
5............ Getting Stuff for Your Makerspace: Bring the Outside World In
6............ Find Space + Time: Turn Common Spaces into Makerspaces and Give Kids Time to Explore
7............ Make It Work: Start a Design Challenge Practice
8............ Make It Last: Get Creative With the Curriculum
9............ Thank You
10.......... Learn More
One hundred years ago, progressive New York City educator Angelo Patri wrote *A Schoolmaster of the Great City* (1917), an examination of multicultural education and the need for providing a wide range of hands-on learning experiences to inspire young learners. In it, he noted, “Playrooms and games, animals and plants, wood and nails, must take their place side-by-side with books and words.” Today’s ever-expanding Maker Movement speaks to Patri’s belief that student learning should remain authentically connected to the real world. “The substitution of direct experiences for indirect ones leads nowhere,” he wrote. At Concordia University-Portland, where our Master of Education in Curriculum & Instruction: STEAM is one of our most popular programs, we couldn’t agree more.

**Makerspaces provide a place for dreaming, tinkering, thinking, doing, creating, and experimenting.**

They encourage students to try, fail, and try again—just as the world’s most amazing innovators do in their labs and studios every day. Makerspaces range from elaborate fabrication shops to small book carts full of craft supplies, but no matter the size or amount of equipment, they need only foster curiosity, discovery, and learning. According to *The Makerspace Playbook*, “A collection of tools does not define a makerspace. Rather, we define it by what it enables: making.” Heck, yeah!

Without further ado, if you’ve got the blessing from your administrators (or perhaps you are the administrator in charge of this effort!), let’s get your school up and running with makerspaces that rock.
THE STEAM + MAKERSPACE CONNECTION

The terms STEAM and makerspace are often thrown around together. Here’s why: The STEAM education movement emphasizes 21st century skills, project based learning, and the interconnectedness of academic subject areas. Teaching STEAM helps students become more proficient in collaboration, questioning, problem-solving and critical thinking. How do makerspaces fit in? Makerspaces are a hands-on method for STEAM learning, allowing students to explore science, technology, engineering, arts, and mathematics with space to explore.
Get Started:
Study Up + Network

When it comes to starting a makerspace, you don’t have to reinvent the wheel and you’re definitely not alone. Start by picking up a few reading materials you can reference all year (this guide is just meant to get you started!) and connecting to the myriad of like-minded educators across the country, sharing their ideas and advice. The web is full of brilliant suggestions for makerspace supply lists, project ideas, and tools for managing STEAM-based maker programs in schools. Follow STEAM teachers on social media, search YouTube for relevant videos, visit a makerspace if you can and test some projects out on your own. Whatever your budget or makerspace dream, there is a lot of support available to make it a reality. Do your homework and jump on in.
PICK UP THIS BOOK:
The Big Book of Makerspace Projects

FOLLOW THIS TWITTER ACCOUNT:
@Makerspaces_com

BOOKMARK THIS SITE:
Makerspace for Education

READ THIS:
The Art of Tinkering by Karen Wilkinson and Mike Petrich
School budgets can’t always cover makerspace supply costs—but that shouldn’t hinder your efforts. Your best bet? Ask your community for help. Makerspaces can use everything from cardboard boxes to office supplies to popsicle sticks. In other words: one business’ trash is a young inventor’s treasure. First, come up with a list of projects and necessary supplies. Then, deliver the list to local businesses, tack it to the community board in your local cafe, and post it on social media. Think about parents too—what do they often throw away that you could use? Glass baby food jars = paint holders. Empty tissue boxes = supply containers. Chances are, you’ll get much of what you need for free.

Beyond supplies, take advantage of the expertise and talents of your neighbors as well. Bringing in members of the community for maker demos and class projects bridges the gap between classroom learning and the outside world. Invite your local electrician to help kids build a light-up circuit, or bring in a construction expert to help design the perfect tiny house. Collaboration at its finest.
Dear Neighbor,

Our school is committed to providing makerspaces for our community's learners. Makerspaces allow students to explore, innovate, and tinker with materials to design, solve problems, and dream up inventions. To get started, we're looking for donations from our generous neighbors to make this kind of learning possible. Donations can be delivered to the school or we can come pick them up!

Thank you!
STARTER MAKERSPACE SUPPLY LIST

☐ Straws
☐ Pipe Cleaners
☐ Pasta
☐ Tape (All Types!)
☐ Glue (All Types!)
☐ PVC piping
☐ Cardboard Boxes
☐ Office Supplies
☐ Rubber Bands
☐ Marbles/Balls
☐ Paper (All Types!)
☐ Toilet Paper/Paper Towel Tubes
☐ Lego's/Building Toys
☐ Pencils/Pens/Markers/Crayons
☐ Magazines and Newspapers
☐ String or Rope or Twine
☐ Marshmallows
☐ Toothpicks
☐ Matchbox Cars
☐ Popsicle Sticks
☐ Wiring
☐ Fabric
☐ Bubble Wrap
☐ Corks
☐ Tools
☐ Hot Glue Gun & Glue Sticks
☐ Soldering Irons
☐ Batteries
☐ Aluminum Foil

☐ Plastic Wrap
☐ Sewing Machine
☐ Storage Containers
☐ Label Maker
☐ Craft Supplies
☐ Sewing Supplies
☐ Building Supplies
☐ Paint (All Types!)
☐ Clay/Play Dough
☐ Recyclables (Cans, Bottles, etc.)
☐ Electronic Parts
☐ Household Goods
☐ Shoe Boxes or Cereal Boxes

Tech Supplies

☐ 3D Printer
☐ Scanner
☐ Video Camera or Go Pro
☐ USB Microphone
☐ Drone
☐ Maker Software
☐ Drawing Tablet
☐ Tablets
☐ Green Screen
☐ Cameras
☐ Laptops
☐ 3D Printing Pens
Local and school-based libraries around the country are swiftly becoming makerspaces—a natural extension, as libraries have always been a central location for community learning. But take a good walk around your own school, noting where you could easily manipulate the space to offer the chance for low-stakes creative STEAM-based learning and for bigger, group projects too. When students finish eating in the cafeteria, for example, why not let them engage in some freestyle crafts or games? Create wipeable placemats by laminating old checker boards or Scrabble boards. If you’re a teacher with your own classroom, consider decking out one corner with supplies and cozy seating—you could even block it off with a makeshift curtain so it feels like its own lab. Have a storage closet collecting dust? Make it a secret Maker Lair!

Find Space + Time:
Turn Any Space into a Makerspace and Give Kids Time to Explore
TABLE TOP LEARNING GAMES FOR SCHOOL COMMON SPACES
Checkers/Chess
Jenga
Scrabble
Puzzles
Mazes
Dominoes

TABLE TOP CREATIVE ACTIVITIES FOR SCHOOL COMMON SPACES
Drawing/Coloring
Origami
Blocks/Legos/Building Toys
Play Dough
Story Writing
Crafts

FUN FACT:
Benjamin Franklin helped found the Pennsylvania Library Company, and used it as a makerspace for his early work with electricity.
Make it Work:
Start a Design Challenge Practice

Once you’ve got a makerspace assembled, commit to making creativity and innovation routine in your school by hosting regular design challenges. Whether weekly, monthly, or once a semester, design challenge events can quickly build maker momentum in your school community; they can be schoolwide, grade-wide, or classroom-based, and work well when both competitive or merely for learning. The goal is to get students engaged in design thinking, collaboration, and problem-solving.

What could a design challenge look like? Task students with creating the ultimate board game, and then have a game night with families and students to test them out. Or challenge students to reimagine a classroom, let them vote on the winning design, and actually renovate the space. Identify a community issue and task students with developing a solution for it. To keep the maker culture alive with regular participation, use the element of surprise by announcing “Drop Everything & Make” challenges or create a design challenge schedule for the year.
“Design thinking is a human-centered approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.”  
- Tim Brown, CEO of IDEO

**Design Thinking Stages:**

- **Empathy:** Asks designers to put themselves in the place of the user, what is the problem to be solved? What effects does the problem have on the user?
- **Define:** Identify the end-user’s major need.
- **Ideate:** Brainstorm and come up with a list of solutions and ideas for the identified problem.
- **Prototype:** Narrow down your list and make some samples of your ideas. See what works.
- **Test:** Test out your prototypes on users and gather information about what needs editing.

**Why use design challenges for students?**

- Let students imitate the real design process used by inventors and innovators.
- Add structure to maker projects.
- Create opportunities for students to solve problems.
- Provide a focused need, theme, and task.
- Set a time limit for completion.
- Encourage healthy competition and inspire students to rise to complex challenges.
While makerspace learning time need not always live within the high-stakes curriculum, maker education should connect to classroom learning. Consider ways to incorporate maker projects into your everyday unit and lesson plans, as well as long-term projects. Doing so cements the association between real-world curiosity and experimentation to more structured and measured classroom instruction.

To build upon your students’ natural curiosity and creativity, it’s good to have unstructured makerspaces where materials are left out for students to independently manipulate or use to complete a challenge without the looming shadow of evaluation. However, embedding maker culture into curriculum learning creates a long-term practice with measurable outcomes. To make it work, guide students toward identifying and understanding learning targets and then engage them in self-reflection and revision—just like real innovators. Need ideas? The internet is full of ready-made and free makerspace lesson plans for all subject areas.
MAKERSPACE CURRICULUM RESOURCES

Makey Makey
makeymakey.com

Institute of Play
instituteofplay.org

Games for Change
gamesforchange.org

Exploratorium
tinkering.exploratorium.edu

Genius Hour
geniushour.com

SparkFun Education
sparkfuneducation.com

Lego Education
education.lego.com/en-us
THANK YOU!

We hope your makerspace comes to life exactly the way you envision it—and that you have a lot of fun in the process. If you’d like to take your passion for innovation in education a step further, take a look at our MEd in Curriculum & Instruction: Science, Technology, Engineering, Arts, and Mathematics (STEAM) program.

Offered 100% online or on campus in Portland, Oregon, our master’s program provides preK-12 teachers (and really anyone interested in STEAM) with the ability to connect their transformative education practices with the scientific and mathematical principles of critical thinking, problem solving, and inquiry. You’ll examine best practices for integrating STEAM principles across the curriculum, and you could earn your degree in just one year.

Regionally accredited, nonprofit, private, and founded upon Lutheran values of grace, education, and open discourse, Concordia University has been preparing transformative leaders from our Portland, Oregon campus since 1905.

The convenience of 100% online program options and clearly defined coursework, paired with realistic deadlines and the ability to immediately apply what you learn in your classroom—makes our MEd programs ideal for busy lifestyles. And the potential career benefits—from higher pay to promotions—are second only to the reward of having an everlasting impact on the lives of your students.

Join our community of over 10,000 College of Education alumni, and let’s change the world through education, together.
For more on us:

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EXPLORE OUR WEBSITE

REACH OUT TO OUR ENROLLMENT TEAM

APPLY NOW