

⚙ Making Makerspaces ⚙ in Schools and Communities

What is a makerspace? According to makerspace.com, “Makerspaces represent the democratization of design, engineering, fabrication and education.” Because the space and resources are based on your particular need, budget, and the skill set of the people in the room, there is no one model for the ideal makerspace.

At right, summer STEAM Camp pop-up Home Depot/makerspace for emergency preparedness challenge.



Why do I want/need one? Let’s first assume that you have curriculum and instructional gaps that you believe could be filled by a makerspace-- gaps in content, skills, applications, or student engagement. Do you need a space that promotes:

- open ended problem solving?
- applications of real world skills?
- sustainability (upcycling)
- equity and access?
- personalization and engagement?

The right space can do all that and more.

Sample Spaces in order of complexity and budget:

- “**A la cart**” pop-ups with removable bins sorted by material (wood, plastic) rather than purpose; tools, instructions, and safety equipment, able to be rolled to the room that needs it.
- **Corner spaces** can be cleared by consolidating books in libraries or replacing desktop computers with tablets; add shelves with bins and set up a table or two with simple maker tools and materials.
- **Renovated spaces** often begin as a lab or woodshop; with staff, student, and community input, make room for Arduinos, 3D scanners and printers, and CNC machines

Left, before, 1960s era woodshop, before. Right, after, with hand tools plus 3D printers, LCDs, lasercutter



- If you have the chance to be on the design team for a **new space**, built from the ground up, perhaps in a new wing or a gutted room, carefully consider electric access, ventilation, safety equipment, and storage.

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Creating Your Space

You needn't have the perfect space in order to bring a problem-based mindset into every classroom or shared area. The diversity of your selection of tools and materials should be as much as possible to align with your purpose for the space. You can always add as you discover new needs!

ENTRY POINT	MATERIAL EXAMPLES	TOOL EXAMPLES
Basic Low tech, easy to find donations Able to move and store	Cardboard, duct tape, fabric, paper, styrofoam, paints, hot glue sticks Batteries, conductive tape, LEDs, wires Legos and other build kits Green screen	Tablets, Chromebooks Craft saw, clamps, brushes, sewing machine, foam cutter, files, exactos, scissors, glue, tape, glue gun, stapler, tweezers, tape measure
Intermediate Easy tech Dedicated section of a room	PVC pipes, wood, Alligator clips, non-solderable breadboards,	Microbits, Arduinos Dremel, sanding blocks, saws, heat gun, staple gun, wire cutter,
Full scale Renovation, remodel, or from-the-ground-up dedicated room	Hardware, solder Electronic and robotics parts, solderable breadboards	Computers with CAD, image and video editing software; CNC machines (lasercutters, 3D printers, routers) Smart panel Cordless drills, hammers, soldering irons, wrenches

Other considerations based on the purpose of the space:

- ★ Environment: color scheme, murals, display shelves, posters, flooring (carpet, tile, rubberized...)
- ★ Utilities: lighting, ventilation, access to power
- ★ Furniture: moveable tables, chairs; new or repurposed; consider sinks, waste disposal
- ★ Storage: cabinets/shelves to safely store materials and projects-in-progress
- ★ Sustainability: staff training, replacing consumables, tool repair and replacement
- ★ Safety: goggles, gloves, noise protection, signage, fume hoods, first aid kits
- ★ Promoting the space: newsletters, special events, displays and signs around the school
- ★ Professional contractors and permits (if needed)

Resources

<https://tinkergroup.wordpress.com/>

<http://makeitatyourlibrary.org/>

<http://showmelibrarian.blogspot.com/p/all-things-steam.html>

<http://www.alsc.ala.org/blog/2014/04/making-without-a-makerspace/>

<http://www.alsc.ala.org/blog/2014/08/could-a-child-with-a-disability-use-your-makerspace/>

<http://www.alsc.ala.org/blog/2014/03/makerbox-no-space-required-pla2014/>

<http://americanlibrariesmagazine.org/2015/05/18/making-for-stem-success/>

<http://robottestkitchen.com/>