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# Makerspaces K-12

What is  
Making? What  
is a  
Makerspace?

Making &  
Makerspaces

Reports &  
Journal/Magazine  
Articles

Makerspace  
Blogs,  
Websites  
and Makers  
to Follow

Project  
Books for  
Makers

Library  
Resources

Makerspace  
Projects by  
Curriculum  
Subject



Green  
Screen/Video  
Editing/Podcasting  
  
Virtual  
Reality/360  
  
Robotics

**Dash and Dot**  
**Sphero Mini**  
**OzoBot**  
**Coding**  
**OSMO**  
**Electronics**  
**Makey Makey**  
**littleBits**  
**Arduino**  
**Paterson Library Makerspace**

## Making & Makerspaces

While there is no official definition, making is generally thought of as turning ideas into products through design, invention, and building.

We define making as:

- an iterative process of design and fabrication that draws on a do-it-yourself (DIY) mindset;
- allows for self-expression through the creation of personally meaningful product shared with a larger community, and like project-based instruction;
- can help students learn content as they design solutions and build products. These products can address real-world challenges or simply be items students are inspired to create.

(From: Rodriguez et al. Elements of Making. The Science Teacher, February 2018)

A makerspace is a **collaborative work space** inside a school, library or separate public/private facility for making, learning, exploring and sharing that uses high tech to no tech tools. These spaces are open to kids, adults, and entrepreneurs and have a variety of maker equipment including 3D printers, laser cutters, cnc machines, soldering irons and even sewing machines.

A makerspace however doesn't need to include all of these machines or even any of them to be considered a makerspace. If you have cardboard, legos and art supplies you're in business. It's more of the **maker mindset of creating something out of nothing** and exploring your own interests that's at the core of a makerspace.

These spaces are also helping to prepare those who need the **critical 21st century skills** in the fields of science, technology, engineering and math (STEM). They provide **hands on learning**, help with critical thinking skills and even boost self-confidence.

Some of the skills that are learned in a makerspace pertain to electronics, 3d printing, 3D modeling, coding, robotics and even woodworking. Makerspaces are also fostering entrepreneurship and are being utilized as incubators and accelerators for business startups.

(from Makerspaces.com, 2017)



## Education Librarian



**Gisella  
Scalese**

**Email Me**

Book a  
Research  
Consultation

**Social:**



**Subjects:**

Education,  
Gender and  
Women's Studies

## Reports & Journal/Magazine Articles

- Meaningful Making: Establishing a Makerspace in Your School or Classroom. What Works? Research into Practice. April 2017  
By Dr Janette Hughes, University of Ontario Institute of Technology
- NMC/CoSN Horizon Report > 2017 K-12 Edition
- 7 Things You Should Know About Makerspaces (EDUCAUSE, 2013)
- "The Philosophy of Educational Makerspaces" Teacher Librarian. vol 41 (5)
- A Librarian's Guide to Makerspaces: 16 Resources
- Starting a School Makerspace from Scratch (Maker Education, Edutopia)
- Makerspace: A 3 Step DIY Guide to Creating One in Your Classroom (Aug, 2019)

## Makerspace Blogs, Websites and Makers to Follow

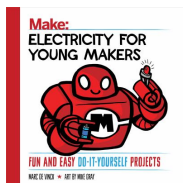


- Makerspace for Education
- Makerspaces.com: What is a Makerspace?
- Jeannette Hughes Steam 3D Maker Lab @OTU

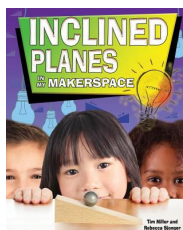
## Project Books for Makers



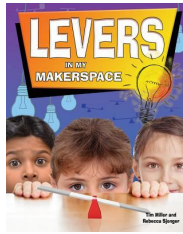
**Creating with Cardboard** by Amy Quinn



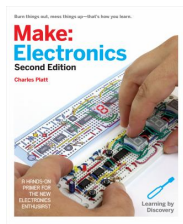
**Electricity for Young Makers** by Marc de Vinck



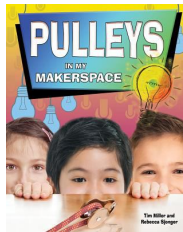
**Inclined Planes in My Makerspace** by Tim Miller;  
Rebecca Sjonger



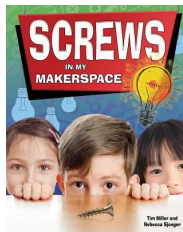
**Levers in My Makerspace** by Tim Miller; Rebecca Sjonger



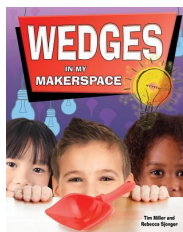
**Make: Electronics** by Charles Platt



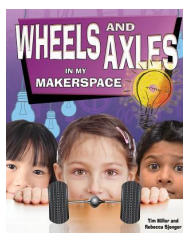
**Pulleys in My Makerspace** by Tim Miller



**Screws in My Makerspace** by Tim Miller; Rebecca Sjonger



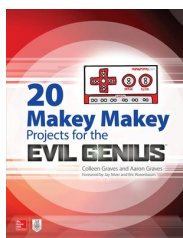
**Wedges in My Makerspace** by Tim Miller



**Wheels and Axles in My Makerspace** by Tim Miller



## Library Resources



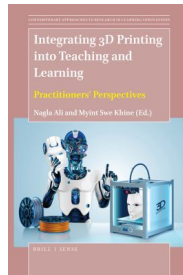
**20 Makey Makey Projects for the Evil Genius** by Aaron Graves; Colleen Graves



**Building Your Own Electronics Lab** by Dale Wheat



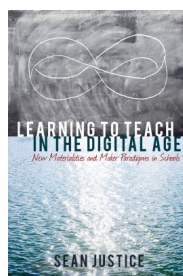
**Getting the Most Out of Makerspaces to Make Musical Instruments** by Greg Roza



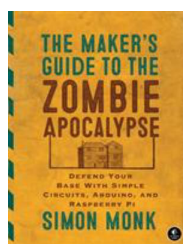
**Integrating 3D Printing into Teaching and Learning** by Myint Swe Khine (Volume Editor); Nagla Ali (Volume Editor)



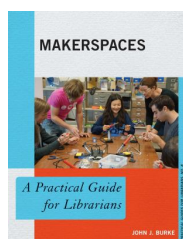
**Invent to Learn: Making, Tinkering and Engineering in the Classroom** by Sylvia Libow Martinez; Gary S. Stager



**Learning to Teach in the Digital Age** by Sean Justice



**The Maker's Guide to the Zombie Apocalypse: defend your base with simple circuits, Arduino, and Raspberry Pi** by Simon Monk



**Makerspaces** by John J. Burke



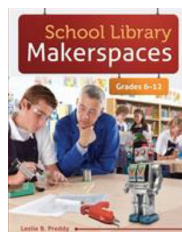
**Makerspaces in Practice: Successful Models for Implementation** by Ellyssa Kroski  
According to a Library Journal survey, 89 percent of public libraries now offer maker programming. And they're increasingly popular at academic and



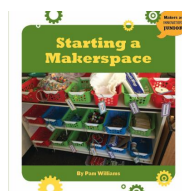
school libraries too. More than a decade since they first began to crop up they continue to transform and revitalize libraries, tapping into patron creativity and fostering collaboration. In this follow-up to her bestselling *The Makerspace Librarians Sourcebook*, Kroski gathers trailblazers of the maker movement to share their experiences and success stories. This volume is packed with programs and ideas you'll be excited to implement at your own library. Learn what's working (and what's not) through first-hand perspectives on such topics as survey results showing the most popular makerspace programs; 6 common makerspace challenges and the solutions to meet them; examples of successful local partnerships for public, academic, and school libraries; establishing norms that encourage safety and peer learning; meeting the needs of explorers, learners, and experts in your maker community; practical operational guidance, such as workflows for maintaining supplies like scissors, glue, and 3D printer filament; hardware and software choices that improve accessibility; new developments in 3D printers and modeling software; cataloging and circulating maker kits for crafting, soldering, and other projects; budgeting tips, including how to plan for ongoing operational costs; measuring outcomes in public library makerspaces; and future developments expected for library makerspaces and equipment. You'll be introduced to a host of tried and tested programs you can adapt for your own library, helping you support your community through making.



### **Organizing a MakerFest** by Kristin Fontichiaro



### **School Library Makerspaces: Grades 6-12** by Leslie B. Preddy

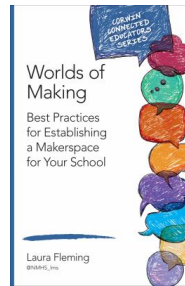
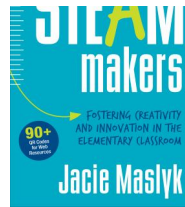


### **Starting a Makerspace** by Pam Williams



### **STEAM Makers** by Jacie Maslyk





**Worlds of Making: Best Practices for Establishing a Makerspace for Your School** by Laura Fleming

## Makerspace Projects by Curriculum Subject



**10 Great Makerspace Projects Using Art** by Adam Furgang

"Makerspaces are public spaces located in schools, public libraries, and other community locations where people can meet up, share creative interests, tinker with new technologies, and learn as they go. The specialized resources in many makerspaces are perfectly suited for artists and other creative people. This easy-to-follow guide explores ten compelling art projects students can work on with friends at local makerspaces. 3D printers, graphic computer programs, creative mobile apps, traditional arts and crafts supplies, and even LEGOs are just some of the tools used in the projects described in this dynamic book."



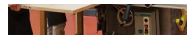
**10 Great Makerspace Projects Using Language Arts** by Anita Louise McCormick

"Makerspaces, equipped with 3D printers, laser cutters, robotics, and other high-tech tools, are often associated with STEM programs like science, math, and technology. Educators have discovered that the learning opportunities makerspaces offer can be just as valuable in other curriculum areas as well."

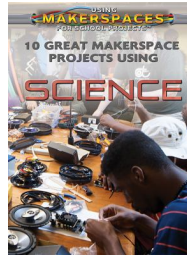


**10 Great Makerspace Projects Using Math** by Kevin Hall

"Technology has become a major component of today's classroom environment. Teachers are using



new methods like makerspaces in order to engage their students. Makerspaces refer to tools students can use to explore, discover, and create new ideas and concepts using technology. This book will focus on makerspace projects that will help students with math. Complete with detailed directions and examples, this easy-to-read guide will focus on new methods of learning and mastering mathematical concepts. At last there's a way to make math fun and hands-on using the latest tools and technology."



### **10 Great Makerspace Projects Using Science** by Erin Staley

"Makerspaces are community-based, hands-on workshops in which people of all ages and skill levels come together to learn, work together, and create. Using creativity and collaboration, makerspace science projects are both fun and fulfilling. This guide brings science to life with ten easy-to-follow makerspace activities using sewing machines, laser cutters, 3D printers, electronics, woodworking tools, and metalworking equipment. Makers will develop new people and project skills, build confidence by overcoming challenges, and possibly discover innovative ways to address modern-day issues with science."



### **10 Great Makerspace Projects Using Social Studies** by Kerry Hinton

"Technology and tools once available only in factories can now be found in classroom makerspaces. Maker culture uses 3D printers, laser cutters, and other manufacturing tools to provide invaluable learning experiences. Combining technology with more abstract ideas such as social justice, history, and civics can lead students to become more involved with the local community as well the global one. This interesting guide provides step-by-step instructions to help both educators and students experience social studies projects like never before. Learn how to implement STEM principles to make social studies hands-on and fun at the same time."



### **Be a Maker Series** by James Bow

Topics in Series: Animation, Electronics, Fashion,





Games, Greening up Spaces, Music, the Outdoors,  
Photography, and Robotics

