

LSS Pathfinder



Makerspaces

2017 - 2018

Makerspaces are creative, collaborative areas in classrooms and libraries, where students can come together to make and explore. The spaces can include electronics kits, LEGO, arts and crafts supplies, K'Nex, and more. Students are encouraged to think, wonder, tinker and create, both on their own and in collaboration with others.

The resources included in this pathfinder include materials on thinking about 21st century learning and innovation, on how to create creative learning spaces for Makerspaces in classrooms and libraries. As well, there are many resources and kits with project ideas to spur thinking and exploration, for teachers and students

The materials here are currently available at the Library Resource Centre. To borrow these resources, contact the Library Resource Centre at wslslibrary@wsd1.org or call 204-788-0203 ext. 343 (VOIP 101343). These resources can also be booked online by clicking the image of a resource or its title in this pathfinder, then selecting the Place Hold button and logging in to the catalogue.

For more information about WSD Makerspace initiatives please contact the WSD Innovation team: Shauna Cornwell (scornwell@wsd1.org), Richard Roberts (rroberts@wsd1.org), Dorothy Goddard (dgoddard@wsd1.org) and Keith Strachan (kstrachan@wsd1.org)

SEARCH TERMS:

Keywords: tinkering, 3D printing, Minecraft, LEGO, robots, robotics, coding, electronics

Subject Headings: Makerspaces, creative ability in children, creative thinking, inquiry-based learning



<https://globaldigitalcitizen.org/21st-century-skills-every-student-needs>

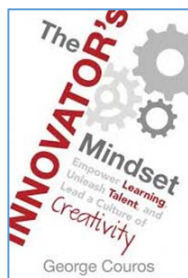
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INNOVATION AND INQUIRY: Books for Educators

371.207 COU

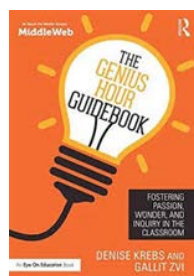


Couros, George. [The innovator's mindset: empower learning, unleash talent, and lead a culture of creativity.](#) San Diego, CA: Dave Burgess Consulting, Inc., 2015.

Encourages teachers and administrators to empower their learners to wonder, to explore, and to become forward-thinking leaders. If we want innovative students, we need innovative educators. In other words, innovation begins with you. Ultimately, innovation is not about a skill set; it is about a mindset.

Audience: Educators

371.3 KRE

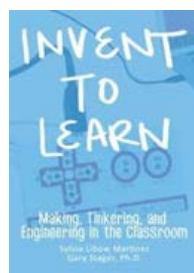


Krebs, Denise and Zvi, Gallit. [The genius hour guidebook: fostering passion, wonder, and inquiry in the classroom.](#) New York: Routledge, 2016.

Promote your students' creativity and get them excited about learning! Learn how to implement Genius Hour, a time when students can develop their own inquiry-based projects around their passions and take ownership of their work.

Audience: Educators

371.33 MAR



Martinez, Sylvia Libow and Gary Stager. [Invent to learn: making, tinkering and engineering in the classroom.](#) Torrance, CA: Constructing Modern Knowledge Press, 2013.

3D printers, robotics, programming, wearable computing, and Arduino capture the imaginations of today's student. When exciting new technologies combine with hands-on traditions, your classroom becomes a Makerspace where learning soars. Making, tinkering, and engineering are how people learn and work in the 21st Century. This book explores how you can join the exciting maker movement and turn any K-12 classroom into a center of innovation.

Audience: Educators

371.33 PRO

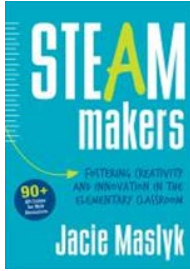


Provenzano, Nicholas. [Your starter guide to Makerspaces.](#) Blend, 2016.

Students learn best when they are able to create and tinker and make. But how do you even begin when there are so many terms floating around? This book provides a fun, practical, and approachable framework for any teacher curious about getting started with Makerspaces.

Audience: Educators

372.5044 MAS



Maslyk, Jacie. [STEAM makers: fostering creativity and innovation in the elementary classroom](#). Thousand Oaks, CA: Corwin, 2016.

Go beyond theory and find out how to systematically integrate STEAM and Makerspaces that prepare students for real-world experiences. This engaging resource outlines step-by-step processes to help anyone start their STEAM and maker journey. Charts, checklists, web links and QR codes, student stories, and teacher challenges help you make meaningful subject-area connections and tap your students' natural curiosity.

Audience: Educators

500.1 DES

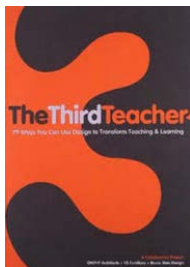


[Design, make, play: growing the next generation of STEM innovators](#). New York, NY: Routledge, 2013.

A resource for practitioners, policymakers, researchers and program developers that illuminates creative, cutting edge ways to inspire and motivate young people about science and technology learning. Extensive case studies explore real world examples of innovative programs that take place in a variety of settings, including schools, museums, community centers, and virtual spaces. Design, Make, and Play are presented as learning methodologies that have the power to rekindle children's intrinsic motivation and innate curiosity about STEM (science, technology, engineering, and mathematics) fields.

Audience: Educators

729 THI



[The third teacher: 79 ways you can use design to transform teaching & learning](#). New York: Abrams, 2010.

Explores the critical link between the school environment and how children learn, and offers 79 practical design ideas, both great and small, to guide readers' efforts to improve our schools. Including a wealth of interviews, facts, statistics, and stories from experts in a wide range of fields, this book is a how-to guide to be used to connect with the many organizations, individuals, and ideas dedicated to innovating and improving teaching and learning.

Contributors include children's singer and advocate Raffi, author and creativity consultant Sir Ken Robinson, scientist and environmentalist David Suzuki, inventor James Dyson, and other experts who are working to create fresh solutions to problems and create a new blueprint for the future of education.

Audience: Educators

SETTING UP MAKERSPACES: Books for Educators

027 BUR

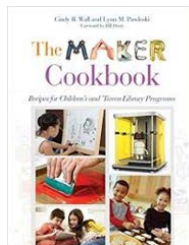


Burke, John. [Makerspaces: a practical guide for librarians](#). Lanham: Rowman & Littlefield, 2014.

Great introduction to building and growing Makerspaces in your library. Understand the mindset behind the maker movement, learn how to assess patron needs, and create a budget for and equip your own space. The book will provide useful case studies, descriptions of technology, and models for planning and assessing Makerspace projects.

Audience: Educators

027.625 WAL

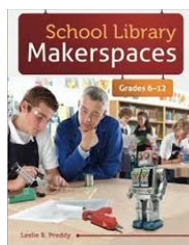


Wall, Cindy R. [The maker cookbook: recipes for children's and 'tween library programs](#). Santa Barbara, CA: Libraries Unlimited, 2014

The philosophy behind the "maker movement" empowers people with the knowledge that they can create the things they want and need. Most programmers think high-tech, but the movement includes art, music, cooking, sewing, and any of the many other do-it-yourself skills. The suggestions in this book will help you make your existing programs into maker programs.

Audience: Educators

027.8 PRE



Preddy, Leslie. [School library Makerspaces: grades 6 – 12](#). Santa Barbara, CA: Libraries Unlimited, 2013.

Explains how to transform school libraries—always considered a destination for thinking and learning—to also be the place of doing, creating, and producing. Supplies practical guidance on Makerspace design, safety, instruction, budget, mentoring, and more.

Audience: Educators

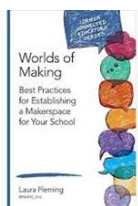


302.3 ROS

Roslund, Samantha. [Makerspaces](#). Ann Arbor, MI: Cherry Lake Publishing, 2014.

Makers often come together to form communities where they can exchange ideas and equipment. Readers will set foot in some of the world's most interesting Makerspaces and see what kinds of tools makers use to create their projects. They will also learn how to find Makerspaces of their own.

Audience: Educators



371.33 FLE

Fleming, Laura. [Worlds of making: best practices for establishing a Makerspace for your school](#). Corwin, 2015.

A guide for tapping into students' innate desires to create, tinker, invent, and make to learn. A compelling, yet simple, recipe for any school or educator to transform any space into a Makerspace on a shoestring budget.

Audience: Educators



609.2 THO

Thomas, AnneMarie. [Making makers](#). Sebastapol, CA: MakerMedia, 2014.

This is a book for parents and other educators--both formal and informal, who are curious about the intersections of learning and making. Through stories, research, and data, it builds the case for why it is crucial to encourage today's youth to be makers--to see the world as something they are actively helping to create. For those who are new to the Maker Movement, some history and introduction is given as well as practical advice for getting kids started in making.

Audience: Educators



729 DOO

Doorley, Scott. [Make space: how to set the stage for creative collaboration](#). Hoboken, NJ: John Wiley & Sons, 2012.

By actively thinking about the implications a space has on its inhabitants, we can create great experiences for those who enter. Make Space is an articulate account about the importance of space: how we think about it, build it, thrive in it, and how to create spaces that inspire creativity and collaboration.

Audience: Educators



eBOOK

[MakerED Resources for School Makerspaces.](#)

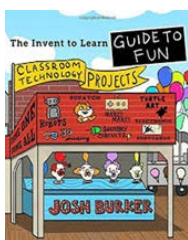
A comprehensive catalogue of ideas for stocking a Makerspace, including many ideas for projects.

Audience: Educators

MAKERSPACES ACTIVITIES: Things to do!

507.8 BUR

Burker, Josh. [The Invent to learn guide to fun](#). Torrance, CA: Constructing Modern Knowledge Press, 2015.



An assortment of insanely clever classroom-tested "maker" projects for learners of all ages. Kick classroom learning-by-making up a notch with step-by-step instructions, full-color photos, open-ended challenges, and sample code. Learn to paint with light, make your own "Operation Game," sew interactive stuffed creatures, build "Rube Goldberg" machines, design artbots, produce mathematically generated mosaic tiles, program adventure games, and more! Your MaKey MaKey, LEGO, old computer, recycled junk, and 3D printer will be put to good use in these fun and educational projects.

Audience: Educators

507.8 CAR

Carey, Anne. [STEAM kids: 50+ science, technology, engineering, art, math hands-on projects for kids](#). Left Brain Craft Brain, 2016.

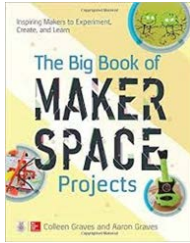


Projects designed to encourage children to question like scientist, design like a technologist, build like an engineer, create like an artist, deduce like a mathematician, and play like a kid.

Audience: Educators

621.3 GRA

Graves, Colleen. [The big books of Makerspace projects: inspiring makers to experiment, create, and learn.](#) New York: McGraw Hill Education, 2017.

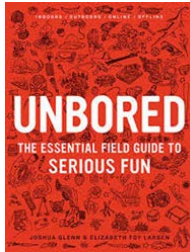


This easy-to-follow guide features dozens of DIY, low-cost projects that will arm you with the skills necessary to dream up and build your own creations. Offers practical tips for beginners and open-ended challenges for advanced makers. Each project features non-technical, step-by-step instructions with photos and illustrations to ensure success and expand your imagination. You will learn recyclable inventions, smartphone tweaks, paper circuits, e-textiles, musical instruments, coding and programming, 3D printing, and much, much more!

Audience: Educators

790 GLE

Glenn, Joshua. [Unbored: the essential field guide to serious fun.](#) New York: Bloomsbury USA, 2012.

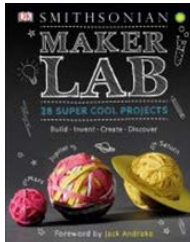


Activities adults will remember from their childhoods are presented alongside bold new possibilities: science experiments, crafts and upcycling, board game hacking, code-cracking, geocaching, skateboard repair, yarn bombing, stop-action movie-making - plus tons of trivia, best-of lists, and forward-thinking ideas made accessible to kids.

Audience: Educators

J 507.8 CHA

Challoner, Jack. [Maker lab: 28 super cool projects: build, invent, create, discover.](#) New York: DK Publishing, 2016.

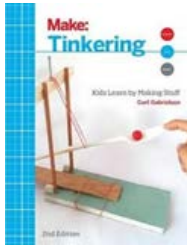


Shows how to create 28 projects using everyday materials. Learn about science in your own home kitchen using everyday materials. Put together a school project or simply make something incredible to share with your friends!

Audience: Educators

TINKERING

507.8 GAB



Gabrielson, Curt. [Tinkering: kids learn by making stuff](#). 2nd edition. San Francisco: Maker Media, 2015.

Offers strategies and ideas for helping children learn scientific concepts through tinkering, and provides instructions for making such objects as a plastic cup torsion drum, catapults, a tornado in a bottle, and magnetic toys.

Audience: Educators

600 DOO

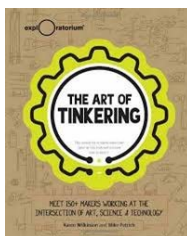


Doorley, Rachelle. [Tinkerlab: a hands-on guide for little inventors: 55 playful experiments that encourage tinkering, curiosity & creative thinking](#). Boston: Roost Books, 2014.

Kids are natural tinkerers. They experiment, explore, test, and play - and learn a great deal in the process through problem-solving and hands-on experiments. From art making to simple robot building, magic potion testing, and nature exploration, this book is about creative experiments, in all fields, that help kids explore the world.

Audience: Educators

J 609.2273 WIL



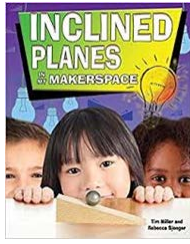
Wilkinson, Karen. [The art of tinkering: meet 150+ makers working at the intersection of art, science & technology](#). San Francisco: Weldon Owen, 2013.

A celebration of what it means to tinker: to take things apart, explore tools and materials, and build wondrous, wild art that's part science and part technology. Join 150 makers as they share the stories behind their beautiful and bold work - and learn a few lessons in tinkering yourself.

Audience: Grades 5 and up

Audience: Educators

J 621.8 MIL

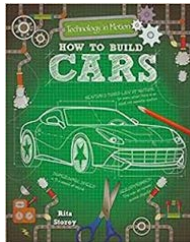


Miller, Tim and Rebecca Sjonger. [Inclined planes in my Makerspace](#). Simple machines in my Makerspace series. St. Catharines, ON: Crabtree Publishing, 2017.

Using Makerspace principles, like collaboration, thinking, design, wondering, students are encouraged to discover how simple machines work, and how they can be used in technology. Series titles also include [Levers in my Makerspace](#), [Pulleys in my Makerspace](#), [Screws in my Makerspace](#), [Wedges in my Makerspace](#), and [Wheels and axles in my Makerspace](#).

Audience: Grades 1 to 6

J 629.22 STO



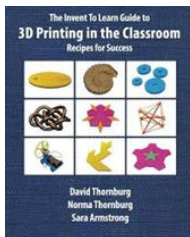
Storey, Rita. [How to build cars](#). St. Catharines, ON: Crabtree Publishing, 2017.

Play around with easily accessible materials, and discover how aerodynamics and Newton's laws of motion affect movement, while creating cars that really go.

Audience: Grades 4 to 8

3D PRINTING

371.334 THO



Thornburg, David D. [The Invent to learn guide to 3D printing in the classroom: recipes for success](#). Torrance, CA: Constructing Modern Knowledge Press, 2014.

Explores the use of 3D printers in schools, providing instructions for eighteen projects, from making a backpack tag, gear board, and pentagrams to designing creatures, a two gear clock, and a replica of a Greek temple.

Audience: Teachers of grade 3 and up

J 621.988 DIA



Diana, Carla. [LEO the maker prince: journeys in 3D printing](#). Sebastapol, CA: Maker Media, 2014.

LEO is a walking, talking robot who has the magical ability to print (in plastic) any object that Carla draws. The other robots have their own special capabilities. Readers can come along for the journey, too: all of the objects in the book are printable one way or another.

Audience: Grade 4 and up

J 621.988 MUR



Murphy, Maggie. [High-tech DIY projects with 3D printing](#). New York: PowerKids Press, 2015.

Discover how 3D printers work, where they're headed, and how to create your own fun projects, like 3D print your head, or create a MakerBOT.

Audience: Grade 5 and up



J 621.988 PET

Petrikowski, Nicki Peter. [Getting the most out of Makerspaces to create with 3-D printers](#). New York: Rosen Publishing, 2015.

Cool projects and suggestions for programming with 3-D printers.

Audience: Grade 5 and up

ART LABS

702.8 SCH

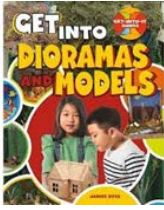


Schwake, Susan. [Art lab for kids: 52 creative adventures in drawing, painting, printmaking, paper, and mixed media – for budding artists of all ages](#). Beverley, MA: 2012.

This fun and creative book features 52 fine art projects set into weekly lessons, beginning with drawing, moving through painting and printmaking, and then building to paper collage and mixed media.

Audience: Educators

J 645.8 DYE



Dyer, Janice. [Get into dioramas and models](#). St Catharine's, ON: Crabtree Publishing, 2017.

What to do with recycled cardboard boxes, paper tubes, and other easy-to-find materials? Instructive text and photos guide readers as they create dioramas, models, and structures. Engaging questions prompt young builders to unleash their unique creative design skills to make the project their own.

Audience: Grade 4 and up

J 745.5 MOR

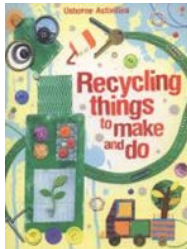


Morgan, Richela Fabian. [Tape it & make it: 101 duct tape activities](#). Hauppauge, NY: Barron's Educational Series, Inc., 2012.

This fun-filled book presents dozens of creative ideas and easy-to-follow instructions for using versatile duct tape to make everything from coin purses to neckties, from elegant artificial flowers and highly original Halloween costumes to a duct tape yoga mat!

Audience: Grade 3 and up

J 745.584 BON



Bone, Emily. [Recycling things to make and do](#). London: Usborne Publishing, 2012.

There are a surprising number of things you can make and do with old magazines, cardboard tubes, plastic bags and other things from your recycling bin. This book is full of fun ideas that will cost you nothing more than a little of your time.

Audience: Grade 3 and up

CODING

J 005 GIF

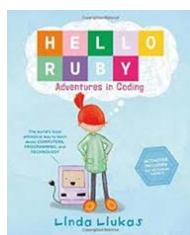


Gifford, Clive. [Awesome algorithms and creative coding](#). St. Catharines, ON: Crabtree Publishing Company, 2015.

Explores how computers work and explains how to think in a logical way. The bright and engaging design guides readers through clear explanations of binary code, simple algorithms, and computer language. With real-life examples, students learn about the development of coding using simple decision-making processes. Programming languages that readers can use themselves, including Scratch and LOGO, are reviewed.

Audience: Grades 4 to 6

J 005.13 LIU



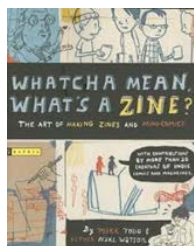
Liukas, Linda. [Hello Ruby: adventures in coding](#). New York: Feiwel and Friends, 2015.

A little girl with a huge imagination teams up with her animal friends to solve a computer puzzle in a story that introduces young children to basic coding and programming concepts through a series of activities.

Audience: Grade 2 and up

COMICS AND ZINES

J 070.5 TOD



Todd, Mark. [Whatcha mean, what's a zine: the art of making zines and mini comics](#). Boston: Graphia, 2006.

A zine is a handmade magazine or mini-comic about anything you can imagine: favorite bands, personal stories, subcultures, or collections. They contain diary entries, rants, interviews, and stories. Design and print your own zine so you can put it in others' hands. It's for anyone who has something to say.

Audience: Grade 5 and up

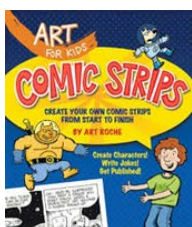


J 741.5 KOV

Kovacs, Vic. [Get into cartooning](#). St Catharine's, ON: Crabtree Publishing, 2017.

Cartoonists combine pictures and words to create stories and share experiences. Using cartooning tools and materials, you'll learn how to use different styles and techniques to draw characters by creating shapes, to give them facial expressions, and to build a world for them to inhabit.

Audience: Grade 4 and up



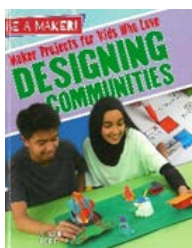
J 741.51 ROC

Roche, Art. [Comic strips: create your own comic strips from start to finish](#). New York: Sterling Books, 2006.

Join professional cartoonist Art Roche as he walks you step-by-step through the process of creating a new comic strip from scratch. Learn how to draw your own wacky characters, write the funniest jokes ever told, and make your friends giggle with comic strips that might one day make it to a newspaper near you!

Audience: Grade 4 and up

DESIGN



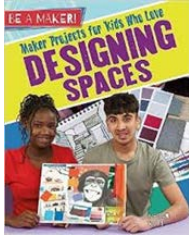
J 307.1 KOP

Kopp, Mega. [Maker projects for kids who love designing communities](#). St Catharine's, ON: Crabtree Publishing, 2017.

Allows budding young engineers, architects, and designers to use their personal creativity to design communities and their spaces. Opportunities to take plans from paper to screen build digital skills, making projects diverse and multi-level for all types of readers.

Audience: Grades 4 to 8

J 747 KOP



Kopp, Megan. [Maker projects for kids who love designing spaces](#). St Catharine's, ON: Crabtree Publishing, 2017.

Find out about the influential designers and the artistic movements that shaped the inventive field of interior design. Learn how to make a design ideas board, how to build a 3-D model of an interior space, and how to dress it to match your own unique style. Then use these tools in creative Maker projects and experiment with your own designs.

Audience: Grade 4 and up

ELECTRONICS

621.381 BDE

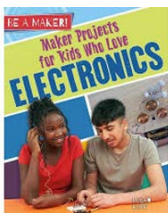


Bdeir, Ayah and Matt Richardson. [Make: getting started with littleBits](#). San Francisco: MakerMedia, 2015.

littleBits is the award-winning modular electronics platform that has put the power of electronics in the hands of everyone. Just snap them together - no soldering, programming, or wiring needed. Start from the very simple (lights, sounds, sensors) and invent your way to the very complex (wireless RF, programmable, cloud-connected), with billions of possible combinations.

Audience: Grade 4 and up

J 621.381 KOP

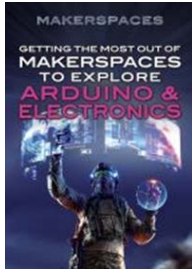


Kopp, Megan. [Maker projects for kids who love electronics](#). St Catharine's, ON: Crabtree Publishing, 2017.

Students can learn the basics of electronic circuits and how electronic components work, which they can then apply to an idea of their own. They will be able to create their project using everyday materials and easy-to-understand computer elements.

Audience: Grade 4 and up

J 629.8 RAU

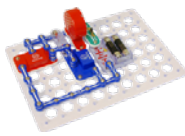


Rauf, Don. [Getting the most out of Makerspaces to explore Arduino & electronics](#). New York: Rosen Publishing, 2015.

If Makerspaces allow young people to collaborate on building projects, then Arduino allows them to go to the next level. Arduino is a do-it-yourself kit that includes a microcontroller that makes using electronics more accessible. Basically, this means that even those who are not experts in electronics can do amazing things, such as build and program robots.

Audience: Grade 5 and up

KIT1385



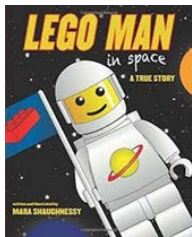
[Electronic snap circuits: basic electricity & electronics educational program kit](#). Wheeling, IL: Elenco Electronics, 2007.

A tool for opening the exciting world of electronics. Students will be able to build projects such as AM radios, burglar alarms, doorbells and much more!

Audience: Grade 4 and up

LEGO

J 629.4362 SHA

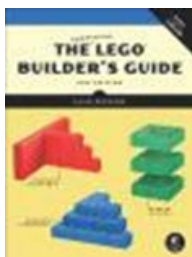


Shaughnessy, Mara. [LEGO man in space: a true story](#). New York: Sky Pony Press, 2013.

Recounts the story of two boys who launched a LEGO man into near space with a weather balloon and documented the feat with digital cameras.

Audience: Grades 3 to 8

WSD Digital Library downloadable eBook



Bedford, Allan. [The unofficial LEGO builder's guide](#). San Francisco: No Starch Press, 2013.

What's the difference between a tile and a plate? Why isn't it a good idea to stack bricks in columns to make a wall? How do you build a LEGO mosaic or build at different scales?

Audience: Grade 4 and up

WSD Digital Library downloadable eBook



Lyles, Brian. [The LEGO neighborhood book: build your own town!](#) San Francisco: No Starch Press, 2014.

Create buildings with real-world details like cornices and facades, and try your hand at interior design by filling your buildings with furniture and light fixtures. Then add the finishing touches to your models with plants, traffic lights, scaffolding, and park benches. Snap together a few houses, shops, and apartment buildings to create your own neighborhood!

Audience: Grade 3 and up

MINECRAFT

J 794.8 KOV



Kovacs, Vic. [Get Into Minecraft](#). St. Catharines, ON: Crabtree Publishing, 2017.

One of the most popular video games in the world, Minecraft is all about using creativity, collaboration, and skill to create and protect exciting digital worlds. Learn the basics of building worlds, and get tips and tricks for gathering the items you'll need to do it. An offline activity gives you the pattern to build a very familiar item using the same building blocks of Minecraft - cubes!

Audience: Grades 4 to 8

WSD Digital Library downloadable eBook



Miller, John. [Unofficial Minecraft lab for kids: family-friendly projects for exploring and teaching math, science, history, and culture through creative building](#). Beverly: Rockport Publishers, 2016.

Includes a variety of creative exercises that explore Minecraft's aspects and use them to teach fun, educational lessons. Begins by brushing up on some common Minecraft language and examines each of the four game modes: survival, creative, adventure, and spectator. Then, use this knowledge to venture off onto six different quests. These "gamified" labs will allow the reader to earn stickers and badges as rewards as they complete quests. You'll even learn how to screencast and narrate your own videos to share with family and friends! Unofficial Minecraft Lab for Kids provides a fun, educational gaming goals!

Audience: Grade 4 and up

OUTDOORS

J 635 KOP



Kopp, Megan. [Maker project for kids who love greening up spaces](#). St Catharine's, ON: Crabtree Publishing, 2017.

From vertical gardens to urban parklets, students can "green up" spaces in their communities in a way that promotes environmental awareness, collaboration, and group planning. Profiles of innovators and their green creations encourage readers to embrace their own ideas and create their Maker visions.

Audience: Grades 4 to 8

J 745.5 LEV



Levete, Sarah. [Maker projects for kids who love exploring the outdoors](#). St Catharine's, ON: Crabtree Publishing, 2017.

From designing devices to study the natural world to figuring out ways to find food or water outside, this refreshing title inspires readers to come up with Maker projects of their own in their back yards or communities.

Audience: Grade 4 and up

PAPER ENGINEERING

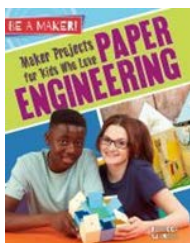
J 629.133 STO



Storey, Rita. [How to build aircraft](#). St. Catharines, ON: Crabtree Publishing, 2017.

Featuring simple step-by-step instructions, handy templates, vibrant photographs, and easily accessible materials, this title shows readers how to build their very own aircraft that can really fly!

Audience: Grades 4 to 8



J 745.54 SJO

Sjonger, Rebecca. [Maker projects for kids who love paper engineering](#). St Catharine's, ON: Crabtree Publishing, 2017.

Create "Maker" projects using paper--a medium readily accessible to any classroom or Makerspace.

Audience: Grade 4 and up

J 745.592 HAR

Harbo, Christopher. "**Paper Airplanes**" series. Mankato, MN: Capstone Press, 2011.

Check out the whole series, for progressively more complicated paper airplane models that enable students to explore the dynamics of flight and engineering:

[Flight School Level 1](#)

[Copilot Level 2](#)

[Pilot Level 3](#)

[Captain Level 4.](#)

Audience: Grade 3 and up



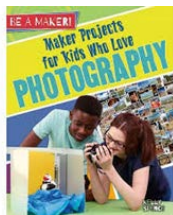
PHOTOGRAPHY

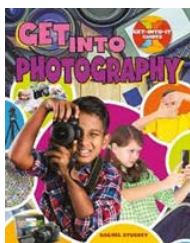
J 770 SPE

Spence, Kelly. [Maker projects for kids who love photography](#). St Catharine's, ON: Crabtree Publishing, 2017.

Explore the history of this important art, and the pioneers who innovated and created some of the world's most notable cameras and photos. Readers will learn about lenses, filters, composition, and lighting. They will also be encouraged to create their own photography projects using different styles and mediums, and changing their photos into forms that suit their ideas and concepts.

Audience: Grades 4 to 8





J 770 STU

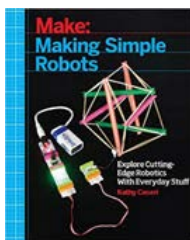
Stuckey, Rachel. [Get into photography](#). St Catharine's, ON: Crabtree Publishing, 2017.

Learn about the basics of photography, how to compose your shots, and photo editing techniques. Ideas and tips will help you build your skills, and imaginative projects help you create interesting shots of sports, animals, people, landscapes, and still life.

Audience: Grades 4 to 8

ROBOTS

629.892 CEC



Ceceri, Kathy. [Making simple robots](#). San Francisco, CA: Maker Media, 2015.

Anybody can build a robot! If you can knit, sew, or fold a flat piece of paper into a box, you can build a no-tech robotic part. If you can use a hot glue gun, you can learn to solder basic electronics into a low-tech robot that reacts to its environment. And if you can figure out how to use the apps on your smart phone, you can learn enough programming to communicate with a simple robot.

Audience: Grade 4 and up

629.892 VAL

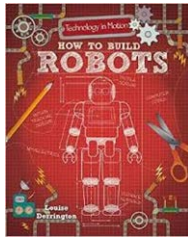


Valk, Laurens. [The LEGO Mindstorms EV3 discovery book: a beginner's guide to building and programming robots](#). San Francisco: No Starch Press, 2014.

Begin with the basics as you build and program a simple robot to experiment with motors, sensors, and EV3 programming. Then you'll move on to a series of increasingly sophisticated robots that will show you how to work with advanced programming techniques like data wires, variables, and custom-made programming blocks. You'll also learn essential techniques like how to use beams, gears, and connector blocks effectively in your own designs.

For use with [LEGO Mindstorms Education: EV3: core set \(KIT1546\)](#).

Audience: Grade 5 and up

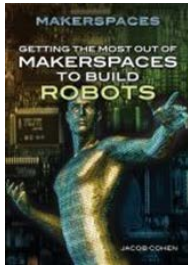


J 629.8 DER

Derrington, Louise. [How to build robots](#). St. Catharines, ON: Crabtree, 2017.

Instructs readers on how to make useable robots, including one that will scrub a table! Featuring easy-to-follow instructions, vivid photographs, easily accessible materials, and a handy template, readers will delight in watching their creations come to life!

Audience: Grades 5 to 8

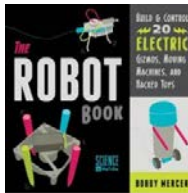


J 629.892 COH

Cohen, Jacob. [Getting the most out of Makerspaces to build robots](#). New York: Rosen Publishing, 2015.

Robots are at the heart of the Makerspaces movement, which aims to bring together like-minded computer experts to build collaborative projects. This book introduces readers to the nascent world of Makerspaces and its potential.

Audience: Grade 5 and up



J 629.892 MER

Mercer, Bobby. [The robot book: build & control 20 electric gizmos, moving machines and hacked toys](#). Chicago, IL: Chicago Review Press, 2014.

The 20 easy-to-build robots in this project book can be constructed for little or no cost using common household objects and repurposed materials.

Audience: Grade 4 and up



KIT 1535

[LEGO Mindstorms Education: 9797 base set](#). 2006

This set enables students to build and program real-life robotic solutions.

Audience: Grade 5 and up

KIT 1546



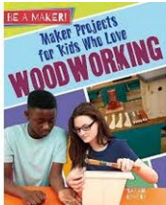
[LEGO Mindstorms Education: EV3: core set.](#) 2013.

This core set is optimized for classroom use and contains all you need to teach using LEGO Mindstorms Education EV3. It enables students to build, program, and test their solutions based on real-life robotics technology. Contains EV3 Intelligent Brick, a powerful small computer that makes it possible to control motors and collect sensor feedback.

Audience: Grade 5 and up

WOODWORKING

J 745.51 LEV

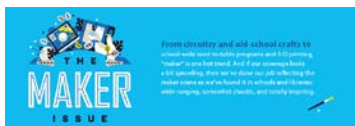


Levet, Sarah. [Maker projects for kids who love woodworking.](#) St Catharine's, ON: Crabtree Publishing, 2017.

Instructs young readers on how to shape wooden objects based on their own, unique ideas. Kids will explore this exciting and popular field by learning a few basic techniques of woodworking and what tools to use, which they can then experiment with in safe and accessible projects.

Audience: Grade 6 and up

SELECTED WEBSITES



The Maker Issue, School Library Journal.

<http://www.slj.com/features/the-maker-issue-slj-2015/>

Hot trends in school library makerspaces.



Renovated Learning.

<http://renovatedlearning.com/>

With downloadable manuals and plenty of real life examples, this site by teacher-librarian Diana Rendina will be sure to inspire!



Starting a School Makerspace from Scratch.

<https://www.edutopia.org/blog/starting-school-makerspace-from-scratch-colleen-graves>

Makermaster Colleen Graves shares clear steps in how to set up a Makerspace.



What is a Makerspace?

<http://makerspacesaustralia.weebly.com/what-is-a-makerspace.html>

Successful Makerspace projects across Australian schools.