

Tinkering Kids Learn By Making Stuff Make

Tinkering is a way of learning through hands-on activity -- experimenting with materials and devices to see how they work, taking things apart, making small changes and improvements, exploring and inventing. Tinkering may seem like a form of play -- and it is -- but it is also a powerful way of discovering truths about science, engineering, and math. With this book, Curt Gabrielson follows up on his best-seller Tinkering: Kids Learn by Making Stuff with this all-new volume that features more than three dozen fun and educational tinkering projects based on his years of working with kids in the tropical island nation of Timor-Leste. Step-by-step instructions accompanied by full-color photos take you through a range of enjoyable projects that explore life sciences, physics, chemistry, earth sciences, and mathematics. You'll discover how math is used to make baskets, how fungi create fermentation, how electricity can make a magnet, how the greenhouse effect creates warming, and much more. The author also enlivens his latest batch of tinkering projects with colorful tales of his experiences in the tropic and the lives of the people he' s met there. Inside you'll find: Clear directions for making simple projects and doing activities that teach science, mathematics and engineering Projects rooted in day-to day life and experience in a small, developing nation in the Asian tropics Full-color photographs throughout Explicit connections to standard STEAM concepts, K-12 Activities doable with less than \$5 worth of common materials This book is perfect for parents, teachers, and students with an interest in hands-on, tinkering-based science and mathematics education, whether in traditional schools or in home-schooling situations. It will also be of interest to anyone who wants to learn more about developing nations, the culture and unique history of Timor-Leste, tropical nations or Asian cultures, with specific links to Indonesia, Portugal, or Australia.

How can you consistently pull off hands-on tinkering with kids? How do you deal with questions that you can't answer? How do you know if tinkering kids are learning anything or not? Is there a line between fooling around with real stuff and learning? The idea of learning through tinkering is not so radical. From the dawn of time, whenever humanity has wanted to know more, we have achieved it most effectively by getting our hands dirty and making careful observations of real stuff. Make: Tinkering (Kids Learn by Making Stuff) lets you discover how, why--and even what it is--to tinker and tinker well. Author Curt Gabrielson draws on more than 20 years of experience doing hands-on science to facilitate tinkering: learning science while fooling around with real things. This book shows you how to make: A drum set from plastic bottles, tape, and shrink-wrap Magnetic toys that dance, sway, and amaze Catapults, ball launchers, and table-top basketball A battery-powered magic wand and a steadiness game (don't touch the sides!) Chemical reactors with household items Models of bones and tendons that work like real arms and ankles Spin art machine and a hovercraft from a paper plate! Lifelong learners hungry for their next genuine experience

Tinkering with Tales connects engaging STEM lessons with classic fairy tales. Each chapter refers to an easily accessible story and provides a structured 5E STEM lesson. Activities provide students with rich, hands-on experiences while utilizing affordable consumables and recyclable household items.

Making Simple Robots is based on one idea: Anybody can build a robot! That includes kids, school teachers, parents, and non-engineers. 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. Written in language that non-engineers can understand, Making Simple Robots helps beginners move beyond basic craft kits and materials to the latest products and tools being used by artists and inventors. Find out how to animate folded paper origami, design a versatile robot wheel-leg for 3D printing, or program a rag doll to blink its cyborg eye. Each project includes step-by-step directions as well as clear diagrams and photographs. And every chapter offers suggestions for modifying and expanding the projects, so that you can return to the projects again and again as your skill set grows.

Tinkerlab
Engibear's Bridge
Building Thinking, and Tinkering Projects for the Amazing Maker in You
Anna, Kid Engineer
Making and Tinkering with STEM

Making, Tinkering, and Engineering in the Classroom
Exciting Activities for Young Artists, Scientists and Engineers Spark your curiosity with these fun games and creative projects to learn early concepts in Science, Technology, Engineering, Art and Math. These incredible activities from Andrea Scalzo Yi, creator of Raising Dragons, make learning such a blast, you'll forget you're doing it! Feeling bored on a rainy day? Now you can pick a project, gather your supplies and let the magic happen. Try far-out science experiments like making Shaving Cream Rain Clouds or Lava Lamps. Make math-time snack-time with delicious art projects like Marbled Paper or Monster Bugs. With seasonal activities like the Pool Noodle Obstacle Course and Erupting Pumpkins, there are games to love year-round. Have fun learning early ideas in chemistry, physics, computing, color-mixing and so much more, all while problem-solving and working together with friends. With projects that use common household items and require little adult supervision, 100 Easy STEAM Activities is the ultimate resource for an amazing, creative day of learning. Discover how to develop and implement equitable strategies and practices that support every child in your classroom

It is once again time for the Science Fair. Anna isn't excited about the event because of the embarrassing projects she came up with during her 3rd and 4th grade years. Anna likes to tinker, but what does that have to do with a science fair project? In the process of trying to figure out a project, Anna discovers that she is a kid engineer!

Seymour Sarason, in the words of Carl Gabel, is "one of America's seminal thinkers about public education." For over four decades his has been a voice of much-needed skepticism about our plans for school reform, teacher training, and educational psychology. Now, for the first time, Sarason's essential writings on these and other issues are collected together, offering student and researcher alike with the range, depth, and originality of Sarason's contributions to American thinking on schooling. As we go from debate to debate on issues such as school choice, problems that seem to drag on without solution, Sarason's critical stance on the folly of many of our attempts to fix schools has always had at the center a concern for the main players in our educational institutions: the students, the teachers and the parents. Any plans that cannot account for their well-being are doomed to failure. And in the face of such failure, the clarity of Sarason's vision for real educational success is a much-needed antidote to much of the rhetoric that currently passes for substantial debate. A wide-ranging and comprehensive source of prized space on any student's or teacher's bookshelf. Author note:Robert Friedis Associate Professor in the School of Education at Northeastern University, and is the author ofThe Passionate Teacher: A Practical GuideandThe Passionate Learner: How Teachers and Parents Can Help Children Reclaim the Joy of Discovery.Seymour Sarason's Professor Emeritus in the Department of Psychology at Yale University. He is the author of over forty books and is considered to be one of the most significant researchers in education and educational psychology in the country.

Book One of The Renegade Girls Tinkering Club
Meet 150+ Makers Working at the Intersection of Art, Science & Technology
Kinetic Contraptions
Awesome Hands-On Projects for Aspiring Artists and Engineers
The How and Wow of the Human Body
Extending Children's Thinking
Tinkering

Weave high-level questions into your teaching practices.

A new and expanded edition of one of the decade's most influential education books. In this practical guide, Sylvia Martinez and Gary Stager provide K-12 educators with the how, why, and cool stuff that supports making in the classroom, library, makerspace, or anywhere learners learn.

Why in the world do I have a belly button? And WHAT in the world does it do? WHEN in the world will my nose stop growing? And HOW in the world does my pee keep flowing? The human body is a fascinating piece of machinery. It's full of mystery, wonder and WOW. And it turns out, every single human on the planet has one! Join Mindy Thomas and Guy Raz, hosts of the mega-popular Wow in the World podcast, as they take you on a fact-filled adventure from your toes and your tongue to your brain and your lungs. Featuring hilarious illustrations and filled with facts, jokes, photos, quizzes and experiments, The How and Wow of the Human Body has everything you need to better understand your own walking, talking, barfing, breathing, pooping body of WOW!

The two dozen contraptions found in this handy resource can move across the land, over the sea, and through the air and can be assembled primarily from low-cost or free recycled materials, batteries, and a single motor. Some of the projects include constructing a hovercraft out of a Styrofoam plate, two corks, and binder clips; building a double-paddlewheeler out of paint stirrers, plastic bottles, and a pair of disposable knives; and turning bamboo skewers, checkers, and a drinking straw into a three-wheeled motorcycle. Each project is clearly explained through materials and tools lists, step-by-step instructions with photographs, and scientific background on the concepts being explored. Budding engineers will get experience working with tools, testing simple circuits, modifying and improving their designs, and building unique contraptions of their own.

A Guide to Engaging Young People in Maker Activities

100 Easy STEAM Activities

Fun Step-by-step Preschool Projects about Science, Technology, Engineering, Art, and Math!

Invent to Learn

100+ STEAM Activities You Won't Learn in School

Why, How, and Wow!

Creating Innovators

Design, Make, Play: Growing the Next Generation of STEM Innovators is 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. The book is aligned with the National Research Council's new Framework for Science Education, which includes an explicit focus on engineering and design content, as well as integration across disciplines. 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. A digital companion app showcases rich multimedia that brings the stories and successes of each program--and the students who learn there--to life.

"Temple Grandin explores how to experiment and how to think about science for young readers..."

55 playful experiments that encourage tinkering, curiosity, and creative thinking--hands-on activities that explore art, science, and more. For children of all ages, from toddlers to teenagers! The creator of the highly popular creativity site for kids, Tinkerlab.com, now delivers dozens of engaging, kid-tested, and easy-to-implement projects that will help parents and teachers bring out the natural tinkerer in every kid—even babies, toddlers, and preschoolers. The creative experiments shared in this book foster curiosity, promote creative and critical thinking, and encourage tinkering—mindsets that are important to children growing up in a world that values independent thinking. In addition to offering a host of activities that parents and teachers can put to use right away, this book also includes a buffet of recipes (magic potions, different kinds of play dough, silly putty, and homemade butter) and a detailed list of materials to include in the art pantry.

"Instructions for creating items using scientific methods"--

Exploring Cutting-Edge Robotics with Everyday Stuff

Engibear's Dream

Growing the Next Generation of STEM Innovators

Tinkering with Tales

Design, Make, Play

More Tinkering

MAKE

Explore STEM concepts through making and tinkering!

The perfect kids activity book for every parent looking for ways to help their children learn about the incredible world around us. In a time when children are too often coddled, 50 Dangerous Things (You Should Let Your Children Do) reminds readers that climbing trees is good for the soul, and that a pocket knife is not a weapon. Full of exciting ways children can explore the world around them, this book explains how to "Play with Fire" and "Taste Electricity" while learning about safety. With easy-to-follow instructions, it includes: • Activities, like walking a tightrope • Skills, like throwing a spear • Projects, like melting glass • Experiences, like sleeping in the wild As it guides you through these childlike challenges and more, 50 Dangerous Things (You Should Let Your Children Do) will inspire the whole household to a little danger.

TinkeringKids Learn by Making Stuff(Maker Media, Inc.

What happens if you water plants with juice? Where can you find bacteria in your house? Is slug slime as strong as a glue stick? How would your child find the answers to these questions? In The Curious Kid's Science Book, your child will learn to design his or her own science investigations to determine the answers! Children will learn to ask their own scientific questions, discover value in failed experiments, and — most importantly — have a blast with science. The 100+ hands-on activities in the book use household items to playfully teach important science, technology, engineering, and math skills. Each creative activity includes age-appropriate explanations and (when possible) real life applications of the concepts covered. Adding science to your at-home schedule will make a positive impact on your child's learning. Just one experiment a week will help build children's confidence and excitement about the sciences, boost success in the classroom, and give them the tools to design and execute their own science fair projects.

Invent To Learn

A Seymour Sarason Education Reader

Creating a Reggio-Inspired Stem Environment for Young Children

Playful Learning

500 Activities to Encourage Creativity in Kids Ages 2 to 12--Play, Pretend, Draw, Dance, Sing, Write, Build, Tinker

A Hands-On Guide for Little Inventors

The Invent to Learn Guide to Making in the K-3 Classroom

Meet Engibear.This engineer dreams of designs and starts building a Bearbot to help him at work. Early versions fail -- often spectacularly. However, Engibear keeps trying. Follow him as his designs improve and the amazing Bearbot takes shape.

Parents have a unique opportunity to harness their children's curiosity and channel it into the development of habits of heart and mind that will serve them throughout their lifetime. Playful learning is the magic that takes place when we meld a child's sense of joy and wonder with thoughtfully planned learning experiences.

Start Making! is a hands-on guide to making and tinkering. It's full of fun, easy-to-do projects that will inspire your child to explore, experiment, and create. Start Making! projects in your home, school, library, community center, after-school club, or makerspace. You'll learn strategies for engaging young people in creative thinking, developing individual and team projects, and sharing and reflecting on their creations. Each session includes a list of the supplies you'll need, step-by-step instructions for completing the projects, and prompts for stimulating discussion, curiosity, and confidence. These fun do-it-yourself (and do-it-together) projects teach fundamental STEAM concepts -- science, technology, engineering, art, and math -- while introducing young people to the basics of circuitry, design, coding, crafting, and construction. They'll make paper cards and creations that light up, play music using a MaKey MaKey keyboard and Scratch programming, join together to make paintings with light, design and construct 3D sculptures, build a vibrating art-bot that makes drawings, and sew fabric creations with wearable circuits. Dip into the activities once a week, run them as a week-long summer activity, or go through the guide in any way that works for you. By offering your own Start Making! program, you can inspire young people in your community to develop creative ideas, learn new skills, and share their creations. The Clubhouse Network is a global network of community-based centers led by Boston's Museum of Science in collaboration with the MIT Media Lab.

The Invent to Learn Guide to Making in the K-3 Classroom: Why, How, and Wow! is a practical guide for primary school educators who want to inspire their students to embrace a tinkering mindset so they can invent fantastic contraptions. Veteran teacher Alice Baggett shares her expertise in how to create hands-on learning experiences for young inventors so students experience the thrilling process of making--complete with epic fails and spectacular discoveries. In this full color book loaded with photos, Alice provides ideas, resources, and practical advice about learning space design, plus gathering materials and doing more with less. STEM curriculum objectives and connections combine with inventive open-ended challenges for grades K-3 with programming, electronics, and 3D design. The rapid changes in technology coupled with Alice's desire to help her young students create and not just consume it and building challenges within the curriculum as possible. Before long, she had a closet full of motors, LEDs, pom-poms, and googly eyes. Her students consistently wow with their wacky inventions and technological fluency. This book is aimed at educators of primary school students who want to teach STEM and other subjects in a hands-on, minds-on way that engages and delights. The maker movement is sweeping through schools and the nation, and this book is an essential guidebook for joining in the fun!

Somp Rockets, Catapults, and Kaleidoscopes

How to Think and Create Like an Inventor

Tinkering, 2nd Edition

Free to Make

If I Built a House

Some Bugs

Develop Your Child's Sense of Joy and Wonder

Some of the most creative artists from today's maker scene discuss their process, workspaces and more in this inspiring guide to tinkering. The Art of Tinkering is an unprecedented celebration of what it means to tinker; to take things apart, explore tools and materials, and build wondrous, wild art that's part science, part technology, and entirely creative. Join 150+ makers as they share the stories behind their beautiful and bold work!then do some tinkering yourself! This collection of exhibits, artwork, and projects explores a whole new way to learn, in which people expand their knowledge through making and doing, working with readily available materials, getting their hands dirty, collaborating with others, and problem-solving in the most fun sense of the word. Each artist featured in The Art of Tinkering shares their process and the backstory behind their work. Whether it's discussing their favorite tools (who knew toenail clippers could be so handy?) or offering a glimpse of their workspaces (you'd be amazed how many electronics tools you can pack into a pantry!), the stories, lessons, and tips in The Art of Tinkering offer a fascinating portrait of today's maker scene. Artists include: Scott Weaver, Arthur Ganson, Moxie, Tim Hunkin, AnnMarie Thomas, Ranjit Bhatnajar and Jie Qi.

STEAM Play & Learn is an introduction to STEAM topics (science, technology, engineering, arts, and math) for preschoolers with fun, interactive, easy-to-follow, step-by-step activities.

Selected as one of NPR's Best Books of 2016, this book offers superior learning tools for teachers and students, from A to Z. An explosive growth in research on how people learn has revealed many ways to improve teaching and catalyze learning at all ages. The purpose of this book is to present this new science of learning so that educators can creatively translate the science into exceptional practice. The book is highly appropriate for the preparation and professional development of teachers and college faculty, but also parents, trainers, instructional designers, psychology students, and simply curious folks interested in improving their own learning. Based on a popular Stanford University course, The ABCs of How We Learn uses a novel format that is suitable as both a textbook and a popular read. With everyday language, engaging examples, a sense of humor, and solid evidence, it describes 26 unique ways that students learn. Each chapter offers a concise and approachable breakdown of one way people learn, how it works, how we know it works, how and when to use it, and what mistakes to avoid. The book presents learning research in a way that educators can creatively translate into exceptional lessons and classroom practice. The book covers field-defining learning theories ranging from behaviorism (R is for Reward) to cognitive psychology (S is for Self-Explanation) to social psychology (O is for Observation). The chapters also introduce lesser-known theories exceptionally relevant to practice, such as arousal theory (X is for eXcitement). Together the theories, evidence, and strategies from each chapter can be combined endlessly to create original and effective learning plans and the means to know if they succeed.

Get the buzz on bugs in this Classic Board Book edition of Some Bugs by bestselling author Angela DiTerlizzi! Grab your magnifying glass! Find your field guide! And come hop, hide, swim, and glide through this buggy backyard world! Featuring butterflies and moths, crickets and cicadas, bumblebees and beetles, this zippy rhyming exploration of backyard-bug behavior is sure to have young insect enthusiasts bugging out with excitement!

Maker Camp

Using an Equity Lens When Teaching in Preschool

Calling All Minds

Kids Learn by Making Stuff

How the Maker Movement is Changing Our Schools, Our Jobs, and Our Minds

Using Children's Literature to Engage in STEM

Make This!

Reveals the importance of innovation in American global competitiveness, profiling some of today's most compelling young innovators while explaining how they have succeeded through the unconventional methods of parents, teachers, and mentors.

Now in hardcover, this practical guide has become known worldwide as the "bible of the classroom maker movement." It provides K-12 educators with the how, why, and cool stuff that supports every classroom becoming a makerspace where kids and teachers learn together through direct experience with an assortment of high and low-tech materials.

Dale Dougherty, creator of MAKE: magazine and the Maker Faire, provides a guided tour of the international phenomenon known as the Maker Movement, a social revolution that is changing what gets made, how it' s made, where it' s made, and who makes it. Free to Make is a call to join what Dougherty calls the " renaissance of making, " an invitation to see ourselves as creators and shapers of the world around us. As the internet thrives and world-changing technologies--like 3D printers and tiny microcontrollers--become increasingly affordable, people around the world are moving away from the passivity of one-size-fits-all consumption and command-and-control models of education and business. Free to Make explores how making revives abandoned and neglected urban areas, reinvigorates community spaces like libraries and museums, and even impacts our personal and social development--fostering a mindset that is engaged, playful, and resourceful. Free to Make asks us to imagine a world where making is an everyday occurrence in our schools, workplaces, and local communities, grounding us in the physical world and empowering us to solve the challenges we face.

Winner of the 2015 Parent's Choice Award The perfect starting point for creative play, this is the ultimate book of ideas for arts and crafts, building and tinkering, writing and rhyming, singing and dancing, and more! For parents who don't feel they are creative, this book provides an easy entry point for raising creative kids. Creativity is an essential ingredient for a happy childhood, and this is the ultimate collection of ideas for arts and crafts, building and tinkering, writing and rhyming, singing and dancing, and more! With 500 unplugged, hands-on activities for children ages two to twelve, this book goes beyond the simple arts and crafts found in most kids ' creativity books and offers fun ideas for a generous range of imaginative and creative play—all in one giant book. You have the power to encourage creativity in your child ' s daily life, whether you feel creative yourself or not. This book is your guide for being a creativity mentor, your handbook for raising kids rich with creative habits and skills, and your toolbox full of ideas and activities. So say YES to creativity! Encourage your child to dabble in all kinds of activities, and discover the magic and beauty of imagination.

Making Simple Robots

How Kids in the Tropics Learn by Making Stuff

STEAM Play & Learn

Big Questions for Young Minds

with audio recording

Wow in the World

Heritage Crafts and Skill-Building Projects for Kids

Kids will learn how things they encounter every day operate by building their own models with this hands-on activity book. Projects include building a working model of the human hand's muscles, bones, and tendons using drinking straws, tape, and string; using a pair of two-liter bottles and a length of rubber tubing to learn how a toilet flushes; and discovering how musical instruments make sounds by fashioning a harmonica, saxophone, drum, flute, or oboe. All devices are designed to use recycled or nearly free materials and common tools. Kids are encouraged to modify and improve the designs, or create an entirely new device using the concepts explored. Each project includes materials and tools lists, step-by-step instructions with photographs, a summary of the science concept demonstrated, and follow-up questions to gauge student understanding for use in the classroom.

Free to Make is an innovative and up-to-date guide designed to teach both heritage skills and how to think creatively. Handcraft is part of human nature: we build, we create, we innovate. The 20+ projects in this book from an experienced art educator weave a story of human innovation and creativity, from the very beginnings of building shelters in the woods to tinkering with recycled materials. Heritage skills teach children how to be independent and capable makers; fiber and wood projects offer rewarding crafts and also teach planning, preparation, and safe risk taking; and tinkering activities connect the low-tech process of making and doing with innovation. From soap carving and knot tying to building toy cars and junk robots, this book brings the fun of making things with your hands to young kids and links skills of the past with the present. The book also explores how to set up a maker space and teaches foundational workshop practices that can easily be applied to the home studio. Each project offers extensions for different ages and abilities and provides guiding questions to enrich the experience for both the maker (teacher/parent) and the apprentice (child) to encourage and celebrate creative, practical play.

The children at Munnagoong Primary School decide on a dinosaur design for their new bridge. It's a big job so Engilna, the town's chief engineer, asks her friends, Engibear and Bearbot, for some help. Follow the team as they work through the year to create a roar-inspiring attraction.

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100+ Creative Hands-On Activities for Ages 4-8

Each and Every Child

The ABCs of How We Learn: 26 Scientifically Proven Approaches, How They Work, and When to Use Them

30+ Amazing Science Projects You Can Build for Less than \$1

Solving Design Challenges with Young Children

50 Dangerous Things (You Should Let Your Children Do)

The Art of Tinkering

Imaginative Jack describes the kind of house he would build--one with a racetrack, a flying room, and a gigantic slide.

The Making of Young People Who Will Change the World

The Renegade Spy Project

The Giant Book of Creativity for Kids

Start Making!

The Skeptical Visionary

The Curious Kid's Science Book