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Collana	Technology in action The new shop class
Disciplina	004
Soggetti	Computer input-output equipment Optical data processing Hardware and Maker Computer Imaging, Vision, Pattern Recognition and Graphics
Lingua di pubblicazione	Inglese
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Nota di contenuto	Contents at a Glance; Introduction; Part I: The Technologies; Chapter 1: 21st Century Shop Teacher; What Is "Making?"; Who Is a 21st Century Shop Teacher ?; Joan: An Engineer and Educator Meets Making; Learning by Doing-Are There Limits?; Global, Virtual Apprenticeship; Rich: The Hacker Path; Hacker vs. Maker; Learning by Doing: Overcoming the Limits; Physical Software; How the Paths Merge; Defining Your Problem; Making a Scientist; Making and the Common Core; Educational Implications; Broader Social Implications; Making Prototyping Cheaper; Intellectual Property Issues; Summary Chapter 2: Arduino, Raspberry Pi, and Programming Physical ThingsProcessing and Arduino; Learning Processing; Arduino and Its Ecosystem; Interfacing an Arduino with the Real World; Output Pins; Input Pins; Shields; Stepper Motors; Circuit Design and Components; Resistors; LEDs; Power Supplies and Batteries; Raspberry Pi; Starting More Simply; Things You Need To Learn; Adult Supervision; Learning About Circuits; Learning to Code; Learning to Solder; Electrical Safety; Where to Learn Online; How Much Does Getting Started Cost?; Summary; Chapter 3: 3D Printing; What Is 3D Printing? Additive vs. Subtractive ManufacturingDoes 3D Printing Live Up to Its

Hype?; Types of 3D Printers; Printers that Use Powders; Printers that Use Resin; Printers that Use Filament; Hybrid Technologies; Printers That Use Other Materials; The Consumer 3D Printer; Hardware; Firmware; Using a Consumer 3D Printer; Creating a Model to Print; Beginner Packages; More Advanced Packages; Scanning an Object; Downloading an Object To Print; The Next Step: Slicing; Sending the File to the Printer; Materials; PLA; ABS; Nylon; Elastomers; 3D Printer Limitations; Print Time and Print Size
Layer Lines And Feature SizePrinter Mechanical Issues; Suppose I Want a Metal or Glass Part?; Purchasing Considerations; Heated Bed; Bed Size; Filament Cartridges vs. Spools; Should I Buy a Kit?; Community Support; 3D Printing for Educators; Safety; Using a Service Bureau; How Much Does Getting Started with 3D Printing Cost?; What Do I Have to Learn to Use 3D Printing?; Summary; Chapter 4: Robots, Drones, and Other Things That Move; Types of Robots; The Technology of Hobbyist Robots; Making Robots Move; Controlling a Robot; Powering a Robot; Quadcopter Drones; Robotics as a Competitive Sport
What Do You Need to Know to Get Started?Kits; Safety; What Does It Cost to Get Started?; Summary; Part II: Applications and Communities; Chapter 5: What's a Makerspace (or Hackerspace)?; Types of Maker/ Hackerspaces; Why Are Makerspaces Important?; Case Studies: Community Maker/ Hackerspaces; Crashspace, Culver City, California; Vocademy: The Makerspace, Riverside, California; Artisan's Asylum, Somerville, Massachusetts; Fab Labs, Worldwide; TechShop; Equipment Considerations; Biohacking; Makerspaces at Museums, Schools, and Libraries; Museums and Libraries
Case study: Windward School, West Los Angeles

Sommario/riassunto

The New Shop Class connects the worlds of the maker and hacker with that of the scientist and engineer. If you are a parent or educator or a budding maker yourself, and you feel overwhelmed with all of the possible technologies, this book will get you started with clear discussions of what open source technologies like 3D printers, Arduinos, robots and wearable tech can really do in the right hands. Written by real "rocket scientist" Joan Horvath, author of Mastering 3D Printing, and 3D printing expert Rich Cameron (AKA whosawhatsis), The New Shop Class is a friendly, down-to-earth chat about how hands-on making things can lead to a science career. Get practical suggestions about how to use technologies like 3D printing, Arduino, and simple electronics Learn how to stay a step ahead of the young makers in your life and how to encourage them in maker activities Discover how engineers and scientists got their start, and how their mindsets mirror that of the maker.