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# Hands-On Engineering



## Synopsis

With its varied and engaging activities, "Hands-On Engineering" prompts students to understand and apply the methodologies of design and engineering as they create innovative solutions to challenges. Each challenge requires students to think analytically, assess new situations, and solve a hands-on, real-world problem. As students design their own boats, skyscrapers, wheelbarrows, hammocks, and more, they will need perseverance, imagination, and teamwork. This book's emphasis on practical skills, problem solving, and collaboration makes it an ideal tool with which to teach valuable 21st-century skills.

## Book Information

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Age Range: 9 - 13 years

Grade Level: 4 - 7

## Customer Reviews

This is a great starting place for teaching STEM lessons. It supplies valid web links to videos that students can view, quizzes they can take, and templates I can download and print in order to give students hands-on activities for learning. I was concerned about the links still being valid since this book isn't all that newly published, but so far all of them work. The book also has a link to a pdf that you can access and download to provide additional resources. The pdf also contains valid links, so it is easy to copy/paste from the pdf into a browser, and then create a Bookmark so you have easy access during class. It's not all fun and games though: there are serious lessons here about friction, work, Newtons, Joules, and there are worksheets for the students to fill in either during a lesson or afterward for reinforcement and reflection. This gives the class more structure, which keeps

behavior problems in check. But I think my favorite feature of this book is that the materials it requires for projects are inexpensive and easily collected. I will be using this as an introduction to STEM concepts for 6-8th grade students. This book is exactly what I was looking for when I came to .

As a sixth grade teacher of advanced students, I love the challenges in this book. They are hands-on and keep the students engaged with active problem solving. The students are motivated to learn the concepts because they know they will immediately apply what they learn to the project at hand. They also reflect on, evaluate, and improve their ideas, which extends the learning. The author has helpfully linked the material to relevant websites, and with the interactive and collaborative nature of the activities, I can successfully mix gifted learners with regular and special ed students. My favorite challenge is "Whatever Floats Your Boat." It's exciting to bring in a huge tub of water and watch the kids try to keep their boats afloat while loading the boats with one golf ball after another. I highly recommend this book to other educators.

I volunteer to work with the advanced kids in my sons 5th grade class room with some STEM based projects. My friend who teaches at a school for the gifted in another district recommended this book and as soon as I saw it I could tell why! It's nice that it aligns with common core, though that wasn't a deal breaker for me since it's being used to supplement their classroom curriculum. I showed it to my sons teacher (who I love) who has been teaching for over 30 years and she just loved it! It's great because she, as the teacher, can make sure it covers everything and has clear lesson plans, and it has enough information that I, as a parent, can lead the lessons even if it's not a project I have done before. We did our first project today and the kids absolutely loved it!

I love this book. I will be teaching a STEM class to 8-10th grade home school children and I was looking for lab activities that were well laid out, easily and economically done with additional information for the teacher. This book fits the bill perfectly. All the pages are reproducible for one class. Each "Challenge" is divided into a teacher section and a student section with hand outs listing required materials, clear instructions, time needed to complete, individual activities (so my students can do on their own at home) and group activities (that we can do when we meet once a week). The final activity for each challenge is an extended learning information page that includes websites for historical reference, online games, other labs or projects that can be done. I like to incorporate reading (like actual books) into my science classes, either fiction, nonfiction/biographies and that,

sadly, is one thing that is lacking in the extended learning section. However, that's easy enough for me to add. I add this to my classes as extra credit to always be encouraging the students to read for fun and to understand how science makes for great fiction (Jurassic Park anyone??) and to understand a little bit better the tireless efforts of scientists. I recommend this book.

This product is an excellent tool for my gifted fourth and fifth grade students.

Love this book and the activities. Activities easily allow additional concepts to be discussed. Like the fact that has background knowledge and lends itself to design process. Great buy!

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