

Model thinking for everyday life

 openaccessgovernment.org/article/model-thinking-for-everyday-life/186408

13 December 2024

Many people rely on quick internet searches for knowledge acquisition. In his book MODEL THINKING For Every Day Life, Richard C. Larson discusses how we can rethink our approach to problem-solving, leading to greater learning in the process

Invest in yourself! Learn something new each and every day. How? Think differently. See the world around you in terms of models, usually conceptual and sometimes mathematical. Become a true critical thinker. You'll begin to appreciate the 'physics' of your world, thinking, understanding, and appreciating. Maybe even being in awe of things you saw often but didn't really see. You'll share your new insights with family and friends using the collaborative process of 'discovery learning.'

Model Thinking for Everyday Life

Welcome to our new book, Model Thinking for Everyday Life, an active- learning book in which you will use a sharpened pencil and a blank sheet of paper to move forward on many topics. A key motivation is my perception that much 'learning' these days takes place on the computer. People often confuse a Google search with learning. They confuse dropping data into a 'plug-and- chug' algorithm with learning. With reliance on technology, they have lost track of orders of magnitude, losing the ability to guesstimate the approximate answer to a problem. Faced with a new problem, people often lack the ability to frame and formulate it using basic principles. Some have called these problems a serious national syndrome of 'shallow learning.' So, we move ahead with all computers off, our only technology being a sharpened pencil and many blank sheets of paper.

In this book, model thinking has two equally important and related interpretations: (1) thinking aided by models, both conceptual and mathematical and (2) exemplary thinking—a type of thinking to be emulated. You've heard the term 'model citizen.' Well, we can coin the phrase 'model thinker!' In many problems, both interpretations of model thinking can help get us to where we want to go— full problem comprehension. For instance, a model thinker will often utilize mathematical or conceptual models as part of their analysis of a problem. And we would hope that those who primarily use models in their work are also model thinkers more broadly!

Prerequisites. You're thinking, 'What background do I need to benefit from this book?' The most important attributes are an open, inquiring mind and a willingness to concentrate and engage. Most of the technical arguments in the book borrow ideas from applied mathematics and physics, usually in a broad sense. Our emphasis is on problem framing

and formulation, with mathematics and physics playing supporting roles. A good background in high school mathematics is recommended, but no calculus! A past course in physics is nice but not required.

Discovery-Learning with your Child

We learn from our children, and they learn from us.

“Mom, how come when it’s raining and we’re in the car, it always seems to rain faster on our windshield when you start driving, moving down the road?”

You may have a correct answer in your pocket, ready to deliver. But this is a possible teaching moment for your child to show them how to structure their thinking about daily situations they experience. It’s even better if you do not know the answer straight away but must think it through in a ‘discovery-learning’ collaboration with your child. Usual result: Joint creation of a conceptual model that explains the situation. Each chapter contains at least one question a child would ask their parent, along with a possible conversation that could follow. Research has shown that parents who involve their children in math and science early in life get them engaged and eager to learn more in school. A parent is a vitally important part of a child’s learning ecosystem.

Learning by example. Did you know:

- In many logistical systems, you can ‘speed service’ by deliberately inserting delays.
- In most service systems where customers may have to wait for service, the wait duration is not the most important part of customer satisfaction.
- When choosing locations for wind turbines, the location with the highest average wind speed is not necessarily the one that will provide the most electrical energy.
- Simply moving certain chronically ill patients from one group to the next can increase the life expectancies of both groups.
- Of two baseball players, Julian and Brayton, Julian may have the higher batting average in each of two successive seasons, but—when the two seasons are combined—Brayton has the higher batting average.
- Most airline passengers may experience nearly full planes while airline management is worried about not reaching the break-even 50% load factor.
- About half of all marriages end in divorce, but only one out of eight existing marriages will end in divorce.

These statements are illustrative of ones that can be resolved with models, conceptual and mathematical. While we may not confront a bonified head-scratcher each day of our lives, we will undertake professional activities, consume news stories, read books, and engage in conversations that involve complex issues—all beyond our intuition. These can often be resolved by careful model thinking.

The kinds of problems that we share in this book are not standard fare in math or science textbooks. They are not ‘turn-the-crank’ problems. Other than answer-focused Google searches, computers are not much help. Our problems are often multi-step problems, and

many of us in the age of instant Google searches have lost the ability—or perhaps the patience—to undertake multi-step problems. Some of our challenges may require you to think about them overnight. Again, in an age of instant gratification, a prolonged examination of the problem is not something many of us are used to. But dedicated critical thinkers, sketching their ideas out on paper, welcome such challenges!

Working within our framework, you, the reader, will resolve our many stated problems. Get your blank sheets of paper and think of all of your learning ahead!

“Tell me, and I forget. Teach me, and I remember. Involve me, and I learn.”
– Benjamin Franklin.

MODEL THINKING For Every Day Life

by Richard C. Larson is published by INFORMS, Catonsville, MD, 2023.

Contributor Details

- Article Categories
 - [Fundamental Research](#)
- Article Tags
 - [North America Analysis](#)
 - [Physics](#)
 - [Science and Research](#)
- Publication Tags
 - [OAG 045 - January 2025](#)