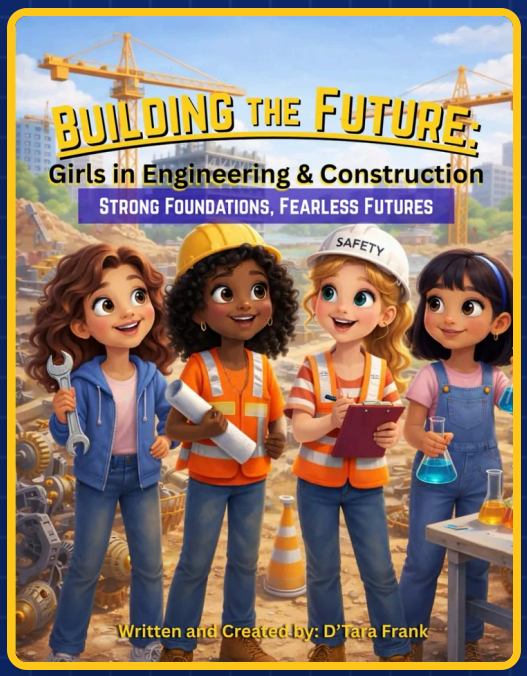
BUILDING THE FUTURE

FREE FOR CLASSROOMS, LIBRARIES, HOMESCHOOLS & BOOK CLUBS

EDUCATOR & BOOK CLUB GUIDE

Discussion questions, hands-on challenges and builder words for the Building the Future series by D'Tara Frank.





BOOK 2 Who Will Build Tomorrow? · ages 9–12

BOOK 1 Girls in Engineering & Construction · ages 5–10

www.buildingthefutureseries.com

START HERE

HOW TO USE THIS GUIDE

These books are meant to start conversations. Use the questions to get kids talking, and the challenges to get their hands busy. You don't need a construction background. In the books, the adults don't have every answer either.

CLASSROOMS

Read Book 2 aloud over two to three weeks, one chapter per session. Use the chapter questions on pages 3 and 4, then one challenge per week. It pairs well with a design-challenge unit, a STEM career day or Engineers Week.

BOOK CLUBS & HOMESCHOOL

Read the whole book, then meet for about 45 minutes. Page 7 has a ready session plan. Ask about a free 30-minute virtual visit with the author.

THE BUILDER'S WAY OF THINKING

This is the process the characters use in Book 2, from the Future Builder Challenge at the back of the book. Post it on the wall and come back to it with every activity.

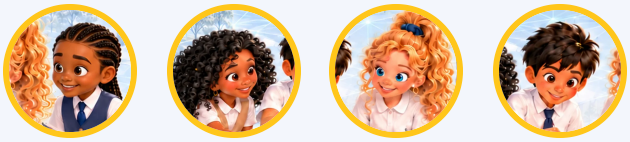
NOTICE	QUESTION	INVESTIGATE	IMAGINE	CREATE
TEST	LEARN	IMPROVE	EXPLAIN	LOOK AGAIN

"You might discover that your first idea was wrong. Good. That means you have new information."

STANDARDS CONNECTIONS

In Book 2, the characters identify problems, consider needs and limits, compare possible solutions, test models, and improve designs using what they learn. These practices connect to the Next Generation Science Standards engineering design progression, from elementary (3-5-ETS1) through middle school (MS-ETS1).* The discussion questions also support speaking, listening, and explaining ideas with evidence. The book can support related lessons. It doesn't replace a full science curriculum or assess mastery of the standards.

*Next Generation Science Standards is a registered trademark of WestEd. Neither WestEd nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of this guide or the books, and they do not endorse them.



Book 2's Future Builders: Chris asks questions others walk past. Nya loves foundations and testing ideas. Kelsey notices what could go wrong and makes it safer. Kai always has one more idea to try.

CHAPTER QUESTIONS, PART 1

Each chapter lists its big ideas, the book's own "Your Turn" question, and two more questions for discussion.

CHAPTER 1 · IT STARTED WITH A QUESTION

Big ideas: observation, asking questions, construction roles, site safety

Your Turn: Name three things you used today without knowing how they work. Pick one. What would you ask the person who designed it?

2. Why do you think the story starts with a question instead of an answer?
3. Construction sites have lots of different jobs. Which job would you want to try first, and why?

CHAPTER 2 · TOMORROW IS ALREADY HERE

Big ideas: water systems, stormwater and drainage, sustainability vs. resilience, smart buildings

Your Turn: Kai said sustainable means "don't run out" and resilient means "don't fall apart." Can you think of something in your town that is one but not the other?

2. When it rains at your school, where does the water go? How could you find out?
3. What makes a building "smart"? Does smart always mean better?

CHAPTER 3 · THE PLAYGROUND PROBLEM

Big ideas: designing around people's needs, accessibility and universal design, research by observation, "impressive" vs. "useful"

Your Turn: The kids with the sticks ignored the expensive play panel. Why do you think that happened? What is the best thing you ever played with that wasn't meant to be a toy?

2. Why did the friends watch kids play before designing anything?
3. Who might have trouble using your school playground? What would you change so every kid can play?

CHAPTER 4 · BUILT TO LAST

Big ideas: shape and material strength, material life cycles, responsible AI use, budgets and trade-offs

Your Turn: Try Nya's test at home. Which shape holds the most weight for you: flat, zigzag, tube, or triangle? Why do you think so?

2. The folded sheet held the toy car, but the flat sheet didn't. It was the same paper. What changed?
3. AI can compare ideas quickly. What should people still decide for themselves?

CHAPTER QUESTIONS, PART 2

CHAPTER 5 · WHEN THE BUILDING THINKS

Big ideas: digital twins, sensors and automation, a broad definition of "technology," judging tools by the problem they solve

Your Turn: Find the oldest technology in your home. (Hint: it probably doesn't plug in.) What problem does it solve?

2. Ms. Arat put a hammer, a measuring tape, a tablet and a sensor on the table. Which ones are technology? Explain your thinking.
3. Chris says, "A tool can be amazing and still be the wrong tool." What does he mean?

CHAPTER 6 · THE DAY EVERYTHING GOES WRONG

Big ideas: systems thinking, testing to failure, risk and priorities, community feedback, cybersecurity basics, supply chains

Your Turn: Kelsey asks, "What could go wrong, and how do we protect people?" Pick a place you know well, like your classroom or a park. What would you test first?

2. Why would engineers want to find out how something fails before people use it?
3. Why does it matter to ask the people who will use a place what they think?

CHAPTER 7 · THE FUTURE THEY FORGOT

Big ideas: designing for people first, productive disagreement, planning for more than one future, growth mindset

Your Turn: Kelsey decided not to hide the repair. Would you have made the same choice? When has fixing a mistake taught you more than getting it right the first time?

2. How can two friends disagree and still make a design better?
3. What does "I was wrong = I learned something" mean to you?

CHAPTER 8 · WHO WILL BUILD TOMORROW?

Big ideas: career exposure without career pressure, presenting work honestly, teamwork, curiosity

1. Is "I'm curious about a lot of things" a good answer to "What do you want to be?" Why?
2. What makes a presentation honest, even when part of the project didn't work?
3. Who will build tomorrow? Could it be you? What would you want to build?

BIG DISCUSSION STARTERS (FROM THE BOOK)

1. Which character's strength is most like yours? Which is least like yours?
2. The kids get an idea wrong more than once. Why might that matter more than getting it right the first time?
3. Kai says AI helps because it can compare ideas quickly, but people still have to decide what matters. Do you agree?
4. Chris says, "A tool can be amazing and still be the wrong tool." Can you think of an example from your own life?
5. What is one thing in your school or neighborhood that someone had to design and build, and that someone still has to maintain?

HANDS-ON

FUTURE BUILDER CHALLENGES

Every challenge uses paper, a few books, or ordinary household materials. Do them with an adult's permission. Let students fail on the first try: that's where the learning is.

THE PAPER BRIDGE TEST

From Chapter 4 · 15 min · paper, books, a small toy car

1. Make two stacks of books with a gap about as wide as a shoebox.
2. Lay one sheet of paper flat across the gap. Set the toy car on it. What happens?
3. Fold a new sheet into tight zigzag pleats and try again.
4. Test a rolled tube and a folded triangle too. Add a second car.

Think: Same paper, same amount. Why does shape change the strength? Steel beams, metal roof panels and cardboard boxes use the same trick.

THE PAPER BUILDING CHALLENGE

From the back of Book 2 · 10 min · one sheet of paper, one book

1. Use one sheet of paper to hold one book above a table.
2. Fold, bend, roll or stand the paper. No tape, glue, scissors or extra paper.
3. Try three ideas before asking for help.

Think: This time the paper has to stand up. Which shape works best?

THE NEIGHBORHOOD WALK

15 min · a sidewalk and an adult

Find five things somebody had to design, build, install, run, fix or improve: a storm drain, a streetlight, a curb ramp, a crosswalk button, a bench, a fire hydrant.

Ask: Who decided to put it there? What problem was it solving? Has it ever failed? What would you change?

THEN, NOW, AND NEXT

20 min · paper and pencils

Pick a tool that has changed over time, like a phone, camera, car, television or map. Draw what it used to be and what it is now. Then design what might come next.

Ask: What problem does it solve? What could be better? Explain your idea.

THE EVERYDAY OBJECT CHALLENGE

Pick something you use a lot: a faucet, a bus stop, a refrigerator, a pair of shoes. Ask: Who made it? What is it made from? What does it need to work? Why was it made this way? Write or draw what you find out.

CREATE WITHOUT A SCREEN

Set a timer for twenty minutes and make something without a screen for instructions. Build, draw, invent a game, redesign an object, make a fort or write a story. There's no single right answer.

BOOK 1 · GIRLS IN ENGINEERING & CONSTRUCTION · AGES 5–10

EXPLORING BOOK 1

BEFORE YOU READ: A BUILDER'S MINDSET

The book opens with these questions. Ask them before reading, then again after.

1. Have you ever wondered how big facilities, machines or systems are built?
2. What kind of problems would you want to solve if you were an engineer?
3. Do you think leadership is just about being in charge, or something more?
4. What does courage look like in your life right now?
5. If you could build anything in the world, what would it be?

CHARACTER	WHAT SHE EXPLORES	WHERE HER CAREER GOES	HER VALUE
Nya	Civil engineering: foundations, soil and the load path	Civil engineer, then construction management and a director role	Purpose
Sophia	Mechanical engineering: pumps, turbines and moving systems	Mechanical engineer, then engineering director	Wisdom
Kelsey	Safety: spotting hazards before anyone gets hurt	Occupational safety and health, then vice president of safety	Bravery
Lian	Chemical process engineering: turning raw materials into products	Process engineer, then operations leader	Growth

SPOT THE HAZARD

On the safety page, Kelsey scans a job site and finds an open hole near active work, exposed heat sources, an overhead load in motion, and areas without barricades. Look at the picture together.

Ask: "If you were leading this site, which risk would you address first?" (That's the book's own question.)

HOLD A TOOLBOX MEETING

Before work starts, Kelsey's crew asks three questions. Use them before any class project:

1. What is today's scope of work?
2. What tools will be used?
3. Where are the hazards?

FOLLOW A PROCESS FLOW

Lian learns that an excavator pulls raw materials from the earth, a plant transforms them, and they become products like medicine and shoes. Pick something in the classroom and draw its journey in 4 steps.

CAREER MATCH

The appendix lists more than 25 careers, from geotechnical engineer to estimator, welder and superintendent. Read three descriptions aloud and have kids guess the job. Which one surprised them?

BOOK CLUBS

A 45-MINUTE BOOK CLUB SESSION

TIME	WHAT TO DO
5 min	**Warm-up:** Everyone names one thing they used today without knowing how it works (Chapter 1's Your Turn).
15 min	**Talk:** Pick three questions from pages 3 and 4. Start with "Which character's strength is most like yours?"
15 min	**Build:** Run the Paper Bridge Test in small teams. Each team reports its strongest shape.
5 min	**Look again:** What would you change about your bridge if you tried again?
5 min	**Take it home:** Do the Neighborhood Walk with a grown-up this week.

BUILDER WORDS

FROM THE BOOK 2 GLOSSARY

Accessible. Easy for people with different abilities, including people with disabilities, to reach and use.

Construction management. Organizing a project so the people, work, money, materials and safety plans fit together.

Digital twin. A digital model connected to information from the real thing it represents.

Drainage. The way water leaves an area, such as flowing into a drain or soaking into soil.

Engineer. A person who uses science, math and creative thinking to design, test and improve solutions to problems.

Infrastructure. The structures and systems people depend on, such as roads, bridges, water pipes and electricity lines.

Life cycle. All the stages something goes through, from getting its materials to reusing, recycling or throwing it away.

Maintenance. Regular care and repairs that help something keep working safely.

Prototype. An early version built to test an idea.

Resilience. The ability to prepare for trouble, handle it, and recover afterward.

Sensor. A device that detects or measures something, such as light, motion or temperature.

Stormwater. Water from rain or melting snow that flows over land, roofs and roads.

Sustainability. Meeting needs today while protecting what people will need in the future.

Systems thinking. Looking at how parts affect one another and the whole.

Technology. Tools and ways of doing things that people create to solve problems. A hammer, a water pipe and a computer are all technology.

Trade-off. Giving up one benefit to gain another.

KEEP BUILDING

BRING THE AUTHOR TO YOUR STUDENTS



D'Tara "DT" Frank is a construction manager in the industrial field, working on the plants and facilities that make everyday things. She holds a civil engineering degree and an MBA with a concentration in project management.

She founded the Each One Teach One Foundation, which supports young people through mentoring, career preparation, college preparation and scholarships. She is a mom, and her son keeps curiosity at the heart of her work.

VIRTUAL VISIT

A free 30-minute Zoom chat for classes and book clubs that read the book. Book 4 to 5 weeks ahead.

BUILDER LAB

An in-person session: read a chapter, then test paper bridges as a team.

MONTHLY CHALLENGE

Join the free Builders Club for a new thinking challenge every month. Your email stays private.

Book a visit or order for your class

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