St. Jude ePIC Challenge

YOUR STUDENTS CAN MAKE A DIFFERENCE IN THE LIVES OF OTHER CHILDREN BATTLING CANCER.

Create an invention to support kids with cancer.

Raise funds and awareness for St. Jude.

Earn prizes.

Project-based learning, real-world relevance.

Meets Next Generation Science Standards.

Kids helping kids!

Learn more and sign up at stjude.org/epic

Dear Educator,

Even our youngest students can help to solve problems in their schools and communities. And that is what's so powerful about STEM education—by teaching students the process that real-world designers and engineers follow, we show them how they can be powerful problem solvers and forces for change.

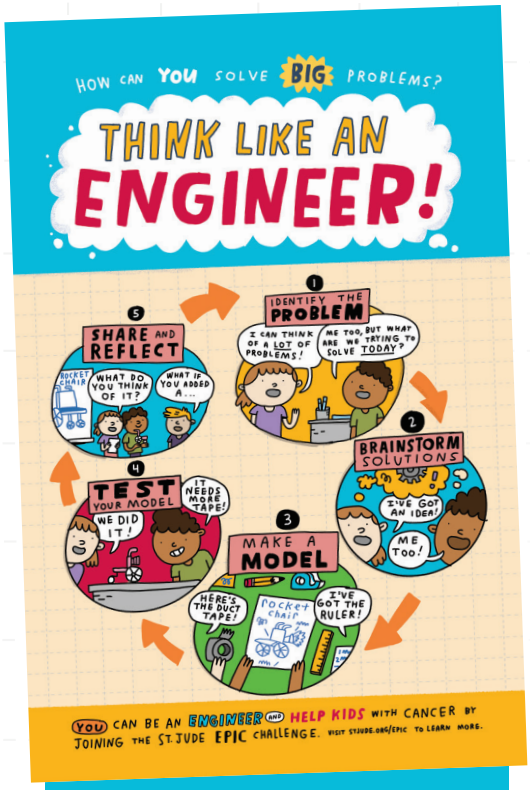
That's why, together with **St. Jude Children's Research Hospital**®, we're delighted to bring you this free engineering and design process poster to hang in your classroom all year long. We invite you to use the poster and following materials as participants in the **St. Jude EPIC Challenge**—a new project-based fundraising experience that inspires students to flex their creative muscles and a whole lot of heart to prototype a life-improving innovation supporting the kids of St. Jude.

Happy inventing!
WeAreTeachers and St. Jude

WE ARE TEACHERS

St. Jude Children's Research Hospital®
Finding cures. Saving children.
ALSAC • DANNY THOMAS, FOUNDER

As students work through the research design process, they can share their progress with friends and family to raise funds and awareness for St. Jude. Every dollar raised unlocks new prizes and helps ensure that families never receive a bill from St. Jude for treatment, travel, housing or food—because all a family should have to worry about is helping their child live.



LESSON PLAN

Teaching the Engineering and Design Process

Time:

30–45 minutes

Materials:

- chart paper
- markers
- printable #1 (included)
- front of this poster

What to do:

1. Begin by asking students if they have ever heard the word "engineer" and know what it means. Record students' ideas on chart paper.
2. Share that engineers work in many different places to help design and build inventions that solve problems and improve our lives.
3. Invite students to share a problem that they have solved. What was the problem? How did they solve it? What steps did they follow? Distribute printable #1 and give students 10–15 minutes to complete it.
4. Come back together and invite students to share their work. As a class, discuss how the steps students took to solve a problem are the same or different.
5. Explain that engineers often use the same steps to solve a problem. Share the front of the poster with students and review the steps. Talk about how the steps students shared to solve their own problems match the steps used by designers and engineers.
6. Share that you will be challenging students to "think like an engineer" many times throughout the school year.
7. Use printables #2–6 in subsequent lessons, or while participating in St. Jude's EPIC Challenge, to support them through the engineering and design process. Remind students to refer to the poster as well.

St. Jude epic Challenge

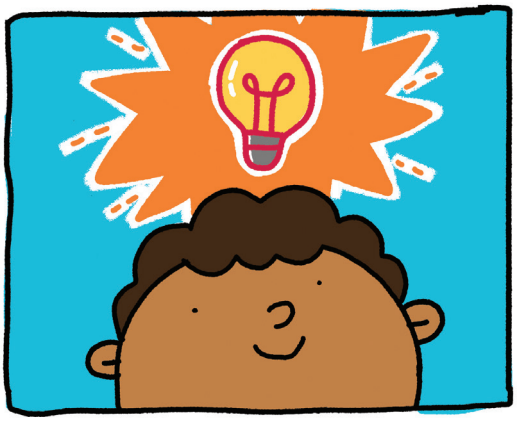
Tip: Make the most of each printable by visiting stjude.org/epic.

Sign up to download your free research-design curriculum and create an online page dedicated to your classroom's inventions.

Name: _____ Date: _____

PRINTABLE #1

One Time, I Solved a Problem...



Engineers are problem solvers! Write about a problem you've had and what you did to solve it.

Once, I had a BIG problem. My problem was: _____

_____

_____

It was a problem because: _____

_____

I solved the problem by: _____

_____

Steps I used to solve the problem:

1. _____
2. _____
3. _____

People that helped me solve the problem: _____

_____

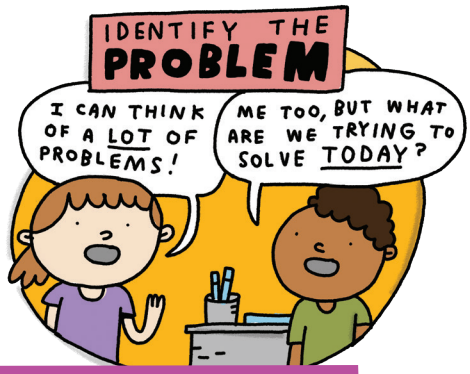
Things that helped me solve the problem: _____

_____

Name: _____ Date: _____

PRINTABLE #2

Identify the Problem



Engineers often solve problems to help improve people's lives. What kind of problem do you want to solve? How could it help others?

Who do I want to help?

What kinds of problems do they have?

What problem interests me?

What problem do I think I can solve?

Problem I want to work on: _____

St. Jude EPIC Challenge

Tip: Help spark students' creativity with the meaningful prompts included in your EPIC Challenge Teacher Guide.

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Name: _____ Date: _____

PRINTABLE #3

Brainstorm Solutions

Engineers think of LOTS of possible solutions to their problems. Can you brainstorm some solutions to your problem?

Problem I want to work on:

Solution 1

Solution 2

Solution 3

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St. Jude Children's Research Hospital

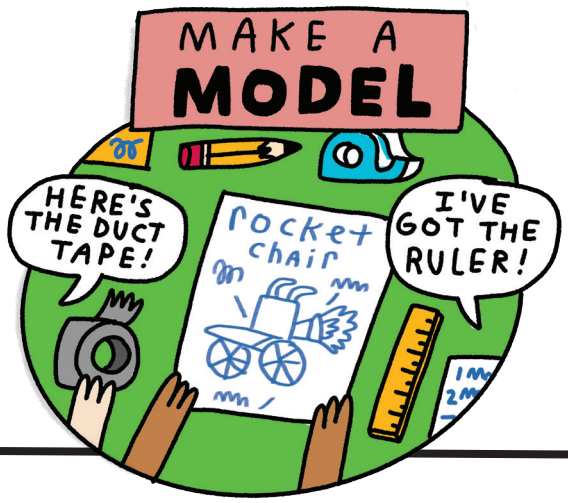
Tip: Think through some of the needs and challenges of St. Jude patients, families, and staff and what might help make their lives easier.

Example: St. Jude patients often spend important days—like birthdays—at the hospital, away from their friends. What can you create to help kids stay in touch while they're in treatment?

Name: _____ Date: _____

PRINTABLE #4

Make a Model



Hooray, it's time to build! Engineers build models of their inventions to see if they work. Plan your model below.

Sketch your model:

Materials I will need:

Steps I will follow:

Questions I have:

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Tip: Use the letter template included in the EPIC Challenge toolkit to host a supply drive!

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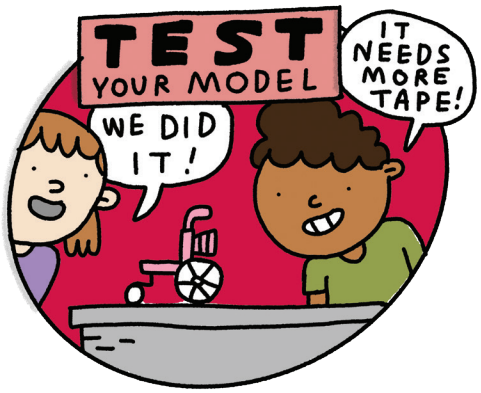
Name: _____ Date: _____

PRINTABLE #5

Test Your Model



Once engineers have built a model, they test it! They use the tests to answer questions they have and make improvements. Use the space below to plan your tests.

Test #1

Question I want to answer: _____

Test I will run: _____

Results: _____

Improvement I will make: _____

Test #2

Question I want to answer: _____

Test I will run: _____

Results: _____

Improvement I will make: _____

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Tip: The best way to make your invention even better is to ask for additional ideas from family and friends. Using page 6 of the Student Journal, encourage students to tell three people about their idea to get even more ideas!

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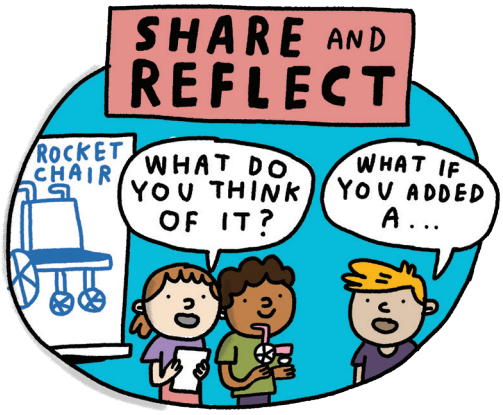
Name: _____ Date: _____

PRINTABLE #6

Share and Reflect

Next, engineers share their models with others, get feedback, and think about what went well and what they will do differently next time.



What's great about my model: _____

_____

_____

_____

_____

What could be better about my model: _____

_____

_____

_____

_____

Feedback from friends

Ask three people to tell you what they think about your model.

1. _____
2. _____
3. _____

St. Jude ePIC Challenge

Earn prizes and help make a real-world impact.

As you share your prototype with family and friends, ask them to join your quest to improve the lives of others by making a donation in support of your idea and the kids of St. Jude Children's Research Hospital.

St. Jude Children's Research Hospital

HOW CAN **YOU** SOLVE **BIG** PROBLEMS?

THINK LIKE AN ENGINEER!

1

IDENTIFY THE PROBLEM

I CAN THINK OF A LOT OF PROBLEMS!

ME TOO, BUT WHAT ARE WE TRYING TO SOLVE TODAY?

2

BRAINSTORM SOLUTIONS

I'VE GOT AN IDEA!

ME TOO!

3

MAKE A MODEL

HERE'S THE DUCT TAPE!

rocket chair

I'VE GOT THE RULER!

4

TEST YOUR MODEL

IT NEEDS MORE TAPE!

WE DID IT!

5

SHARE AND REFLECT

ROCKET CHAIR

WHAT DO YOU THINK OF IT?

WHAT IF YOU ADDED A...

YOU CAN BE AN **ENGINEER** AND **HELP KIDS** WITH CANCER BY JOINING THE ST. JUDE **EPIC** CHALLENGE. VISIT STJUDE.ORG/EPIC TO LEARN MORE.