The Tech Challenge

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Adviser Guide

Welcome to The Tech Challenge! This guide is for team advisers, educators, and parents of participants in The Tech Challenge. Thank you for supporting the young innovators who are the heart of this special program.

Please read this guide, as well as the accompanying **Team Guide**. They contain guidelines, resources, and ideas that will help you and your students get the most out of this program.

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1. The Basics

An Adviser is...	• Any responsible adult, including teachers and parents. • NOT a high school student. • Every team must have an adviser. • Advisers do NOT need technical expertise.	• At least 18 years old. • NOT a Tech Challenge judge. • Their role is to guide, mentor, and encourage the team. • If you do have technical expertise, show restraint. Encourage students to explore and research rather than instructing them.

Remember that this is an activity to help students to build confidence in STEM.

A Team is...	Two-six students	Grades 4-12
	The Tech Challenge does not organize teams. We recommend asking friends, classmates, or students from after-school activities.	Team level is set by the highest grade represented in your group.

Review the Team Guide on the website so you are aware of the expectations, guidelines, and resources for student participants.

Registration basics

- For 2026 registration costs are:
  - Early bird registration: $75/team (Nov. 8-Dec. 31)
  - General registration: $150/team (Jan. 1-Mar. 16)
  - Fee waived for Title I schools and after-school programs.
- The team adviser will receive an email copy of the team's registration information with an option to edit the registration details if needed.
- Find more information on the website: thetech.org/techchallenge.

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Participant Events

Advisers	Advisers and Team Members		Community
Interest sessions 30-minute Zoom sessions *Begin in Nov.*	**Team and Adviser Challenge Kick-off** 90-minute hands-on workshop *Nov.-Jan.*	**Test Trials** Registered time to test solutions and get feedback *Feb.-March*	**Showcase** **Save the date for this culminating event!** *April 25-26*

Please see our **website** for more details and to register for these free events.

In addition to events, we have a number of resources available on the website to support advisers and teams through the entire Challenge. Check our mini-design challenges, lesson plans, videos, educator resources, and more!

Spirit of the Challenge

The Tech admires every student who tackles The Tech Challenge. We value your creative thinking and encourage teams to pursue surprising solutions that are better than anything we might imagine.

Remember that this is a challenge, not a competition. Teams work to beat the challenge, not other teams. Work together and keep trying when the going gets tough. Failures are a normal part of the process. We look forward to teams telling us about their journey, even the times when the team felt like quitting. Their journal, interview, and device demonstration do not need to be perfect to be amazing!

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2. Getting Started

I'm not sure how to get the team started. Do you have suggestions?
Many students have never taken on a project like The Tech Challenge. Help them see the big picture by creating a project schedule. Break down the work into stages. For example:

First

Get organized	Schedule team meetings. Not all meetings will be productive, but you can help team members stay on track by getting them to set some ground rules such as: • We will attend all team meetings. • We will focus on the project during team meetings. • We will put every team member's skills to use. • We will be open to ideas from all team members. • Most of all, we'll have fun!
Review the website	• **Register for The Tech Challenge.** • Attend the **Interest Sessions** to learn more about this year's challenge. • Register for a **Team and Adviser Challenge Kick-off** with your team. • Check out the activities and lesson plans in **Educator Resources.** • Send any questions you still have to challenge@thetech.org.
Start thinking	• Have everyone read the rules. • Help the team research the challenge and its constraints. • Encourage the team to break the challenge into smaller parts. • Remind them to look at the world around them for ways this problem can be approached.

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Then

Make a plan	Help the team create a timeline with goals and milestones. • Include important dates and parts of the Challenge. • Review the **Team Guide** and this **Adviser Guide.**
Start a Team Journal	Help the team start a journal and take notes on everything they are doing: • the plan, all brainstorming ideas, research on those ideas, questions and learning from info sessions, etc. This is part of the story of their Tech Challenge journey and a reference for the team.
Brainstorm	There are many brainstorming resources on our website including: Brainstorming Strategies, Brainstorming Tech Tip, Brainstorming Ideas Lesson. • After they brainstorm, have the team pick three or four favorite ideas to prototype.
Research and Develop	• Help the team research the ideas by looking into the science and engineering of how similar solutions have been developed in the past. • Have teams develop their ideas with sketches, words, and quick prototype models. • Make sure they take notes and document their work in their journal.
Test and redesign	• Guide the team through the design process. • They should test and prototype several times. • Encourage them to persevere through challenges.
Document results	Remind the team to take notes at every meeting and spend time analyzing what does and does not work well. • Test results should be added to the Team Journal. • Writing things as they go is better than trying to do it all at the end.

Next

Choose a design	After the team has prototyped and tested several ideas, have them select one design to work on.
Review criteria	Review the rules, criteria, and constraints. • Help the team analyze how successful their design will be. • Review the requirements for the interview and journal.

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Finally

Test and redesign	Go through a final stage of testing and troubleshooting.
Prepare documentation	Encourage the team to organize their notes and review their process. • Remind them of the criteria for success and help them find relevant examples of how they used different parts of the process. • Have them reflect on how their design and teamwork changed since they started the project.
Get creative	Encourage the team members to express their creativity at the Showcase with costumes.
Prepare for the finish line	Have the team get ready for the Showcase by: • making finishing touches to their device. • organizing their Team Journal (make sure to gather all information into one well-organized document). • practicing the team interview. Encourage them to think about what they learned from both successes and failures.

Celebrate early and often!

There are plenty of milestones if you break things up in steps. Celebrating can be as simple as getting excited about a small part of the prototype working.

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3. The Adviser's Role

How involved in the project should I be?
Here are some tips:

- Do not direct. Mentor and guide the team. The project should be designed, built, and tested by the students.
- Facilitate conversations to help the team consider the challenge from different perspectives.
- Help the team solve problems by asking open-ended questions. Do not provide answers or solutions.
- "I don't know" or "I'm not sure" followed by "let's find out" are useful phrases.
- When providing assistance with tools, be sure to follow the team's exact directions even when they may be flawed (as long as it's safe).
- Be supportive. Encourage. Be patient.
- Keep your hands off the device, except to ensure safety.

As an adviser, your role will vary based on the needs of your team. The most important job is to encourage the team members and help them solve the Challenge themselves.

What are some questions I should be asking myself as the work progresses?

- Are the students doing the actual work?
- Are the design ideas generated by the team?
- Are you advising and mentoring, or problem-solving?
- Are you asking open-ended questions that allow the team to come up with their own ideas, or have you been steering them toward solutions?

What if more than one parent wants to be an adviser?
They may be well-meaning, but the more adults advising a team, the greater the chance they will take over the project.

- Here are helpful roles other adults who want to be involved can play:
  - Provide transportation if needed.
  - Organize and host team meetings.
  - Prepare lunch/snacks for team meetings.
  - Donate items to be used in prototyping/building and provide tools.
  - Assist with team costumes.
- It's a good idea to hold a parent meeting at the beginning of the project. This way everyone can understand the Challenge, put key dates on their calendars, and have a common understanding of each person's role.

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Will I be with my team during the Showcase?

- No. You are not allowed to accompany your team after the registration check point.
- During the device demonstration, you will be able to observe with the audience.
  - Trust that your team is ready. Your team should be able to handle everything themselves.

Safety

You are the adult in the room, and you know the capabilities of the students, so take the lead where safety is concerned, especially when using tools.

- Let them do what they can, but step in if you feel your students can't do something safely on their own.
- Print and refer to the **Safety Poster** and review the safety rules with the team

Educators

- Want to know more about how The Tech Challenge aligns with standards?
- Need lesson plans that provide scaffolded support?
- Interested in key vocabulary and terminology?

Look at our **educator resources webpage.**

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4. Materials and Support

Remember: The device needs to be built by the team, so focus on materials the team can use or learn to use with limited support.

What kinds of materials should we use?

- We encourage you to reuse and recycle items found in your community.
- Many common items are useful for prototyping and building a device. Cardboard can even work well if the team considers how it will withstand testing.
- Find used items. In addition to items found in your recycling bin, visit garage sales, flea markets and thrift shops to find gadgets, tools, junk, used toys, and other items to take apart and salvage.
  - Taking apart discarded items or electronic toys can help students learn valuable things about mechanics, motors, and more.
- Purchased components may be part of your device. Purchased kits are not allowed. When shopping check out:
  - Hardware, hobby, and craft stores.
  - Stores like **RAFT** (Resource Area for Teachers) which provide a variety of educational supplies and recycled materials.
  - Stores that specialize in particular materials such as plastics or foam can be great sources.

Costumes and team spirit
One of your biggest jobs as an adviser is keeping the team motivated. Helping them develop a team name, costume, or even a chant and team logo can help keep their energy and engagement up. These aspects of the experience can be inexpensive and allow them to express their skills in other ways.

What sort of additional support can my team seek out?

There are many ways schools, organizations, teachers, and parents can support your team:

- Seek help from teachers (examples: science, shop or woodworking, drafting, art) or volunteers at a school or community organization. Expand your search outside the school, organization or teachers you know.
- Seek carpenters, hardware stores, local builders, fabric stores, and grocery stores to provide all sorts of materials for building and connectors.

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5. Showcase

What should we expect at the showcase?
On the day of the Showcase, teams will be judged on three categories:

Team **Journal**	Team **Interview**	Device **Demonstration**

Advisers do not accompany teams through the judging process.

What is involved in the interview process?
Teams of judges will interview the team. During the interviews, team members should be prepared to:

- Discuss their roles, process, and experiences working on the Challenge, including how they dealt with failure and what they learned.
- Point out elements of their documentation that highlight their process and experience.
- Explain their innovations in design and/or use of materials.
- Explain the real-life applicability of their designs.
- Show off their creativity, inventiveness, and style using costumes, songs, and/or cheers.
- Teams should prepare by practicing with their adviser.

See the **Team Guide** for some sample interview questions and the **Educator Resources** webpage for lesson plans and other resources.

How does device demonstration work?
The team will demonstrate their device on a test rig for judges to evaluate. Power outlets will not be available.

What else do we need to know?
The showcase can be hectic, so make sure everyone knows what they're supposed to do. Have the team practice. Some guidelines:

- Make sure all the parents know well in advance the date and time of the showcase.
- Have the team make a list of everything they need for judging.
- The team should practice demonstrating their device multiple times, including setup, operation, and cleanup.
- The team should practice the interview and device demonstration in front of parents or other supportive adults.
- Teams need support and encouragement from you and their families. Keep the focus on the fun of participating in The Tech Challenge, not the stress of competing to win an award.

Celebrate the team's accomplishments regardless of the day's outcome. Have fun!

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6. HELP! What do I do when...?

We have our first team meeting! How should we organize it?

- Each meeting should have an agenda and goals.
- Keep track of time and make sure there is room in the schedule for cleanup.
- Keep in mind that most students can work on an activity like this for about two hours before their productivity drops. Snack time can help break up longer meetings.

The team has an idea they want to build. How do we start prototyping?

Some tips:

- Have the team mock up their top ideas using cardboard or other easily found materials.
- After getting design ideas from those mockups, encourage the team to build a functional prototype (not necessarily made of the final materials).
- The team should test their prototypes multiple times and adjust or rebuild as necessary. Don't forget to document the prototyping and testing processes in the Team Journal.

The team is spending a lot of time building, but we haven't tested their ideas yet. How important is testing?

Very important! Test early and often.

- Create a makeshift testing area in your school or home where your team can test often.
- Have the team document the tests in their Team Journal.
  - What did they observe? What happened? What could they improve?
- Be sure to test team prototypes as many times as possible
- See the **Participant Events webpage** for details on Test Trial events and try to attend more than one if possible. The team will gain valuable experience and be able to get feedback from our judges.

It's important to make sure the team doesn't get discouraged by failure. Remind them how much they're learning about what doesn't work, and encourage them to persevere. Failure is part of the design process.

We've been working on this for a while, and the team is losing focus. What should I do?

- Students may lose motivation mid-way through the project, particularly if they are feeling stuck.
- Help guide them around this problem by having them look elsewhere for inspiration such as books, toys, other teams, games or TV shows, or back at their original brainstorms in their Team Journal.

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Keeping a Team Journal is a challenge for our team. Any suggestions?

- To make journaling seem less difficult and help get the team's thoughts organized, ask these questions at the beginning of each meeting:
  - *"What are we going to do today? What do we want to accomplish?"*
- At the end of the meeting, teams should answer:
  - *"What did we learn today? What do we need to do at the next meeting?"*
- These answers can be in words, photographs, or sketches. This is the beginning of a great Team Journal! Be sure to add detail and information to drawings and sketches such as dimensions and construction notes.
- Have the team work on the journal as they go along. At this stage, a journal doesn't have to be a professional-looking, "finished" document. It's important just to take notes.
- If your team is still stuck, review the checklist in the Team Guide for some ideas of things they could include.

What do I do when my team is having trouble collaborating?

Students sometimes need a little nudging to get out of the "all about me" phase. When communication breaks down, give them hints about how to talk to each other:

Common phrasing	More productive phrasing
We should...	What if we tried...
My idea is...	Remember when you came up with the idea that...
I think...	What do you think we should try next?
We need to...	Have we looked at all of your options?

If you are advising a mixed-gender team, keep an eye on who takes on which roles.

- Each team member should have experience in all stages of the project.
- Make sure all students have an equal chance to learn new skills.

It seems like one or a couple of team members are running the show. What should I do?

- Some students may take over the project, leaving others' voices unheard.
- Some will disengage on their own, while others are pushed out.
- Don't let this happen. Say things like, "Have you taken a vote on this?"

Additional Resources

Looking for more ideas of how to support your team throughout the design process? Check out the website for mini-design challenges, adviser resources, educator resources, videos, lesson plans and more!
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