

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 the team get the most out of this program.

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1. The Basics

The Goal 	• The Challenge: Over several months, the team will design, build, and test a physical device to solve a specific engineering problem. The Challenge scenario changes every year. • The Showcase: The season culminates in a final event day (typically in April/ May) where teams present their devices to judges, explain their design process, and celebrate their hard work with other teams. • The Spirit of the Challenge: The Challenge is not a competition. The goal is teaching students resilience, teamwork, and iterative problem-solving.
The Adviser 	• Who: Any responsible adult (18+). High school students and Tech Challenge judges may not serve as advisers. • Requirement: Every team must have an adviser. • Your role: Guide, mentor, and encourage. Create a supportive environment where students build confidence and solve problems together. • All advisers welcome: Technical expertise is not required. If you do have a STEM background, leave room for your students to develop their own STEM identity. Ask questions that encourage students to research and problem-solve rather than providing the solutions yourself.
 A Team is...	• Size: Two to six students. • Grades: 4th–12th grade. • Division level: The team's Challenge division is set by the highest grade represented in the team. Division-specific requirements are listed in The Rules. • Formation: The Tech Challenge does not organize teams. A team can be made up of friends, classmates, and afterschool program participants.
 Review the Team Guide on the website so you are aware of the expectations, guidelines, and resources for student participants.	
The Commitment 	• Season length: Tech Challenge runs from the release of the rules in October through the final showcase in April/May. • Flexible schedule: Past teams have reported spending 15 to 30+ hours on their projects. • Supervision: An adviser (or another designated, responsible adult) should be physically present for every team meeting.
The Setup 	• Materials: Projects may use low-cost, everyday items like cardboard and other recycled materials. Expensive tools or building supplies are not needed. • Location: Kitchen tables, garages, or classrooms work fine. No formal lab or workshop required.

Registration 	• Important Dates: Registration typically opens in October. Check the official website for pricing and registration deadlines. • Fees & Financial Aid: There is a standard registration fee per team, but Title I teams and afterschool programs may qualify for fee waivers. • Point of Contact: The team adviser will receive an email copy of the team's registration information. As the registered adviser, you are the primary point of contact for all communication from The Tech Challenge. • Find more information on the website: thetech.org/techchallenge
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 Advisers	  Advisers and Team Members		 Community
Interest sessions 30-minute Zoom sessions <i>Begin in Nov.</i>	Team Orientation 90-minute hands-on workshop <i>Nov.-Jan.</i>	Test Trials Registered time to test solutions and get feedback <i>Feb.-March</i>	Showcase Save the date for this culminating event! <i>Apri/May</i>

Please see our [website](http://thetech.org/techchallenge) 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 their 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!



2. Getting Started

As an adviser, you may find it helpful to organize the Challenge into four main phases. Use the guidelines in the table below to plan ahead and keep the team on track!

Team & Adviser Focus Areas (Phases 1 and 2)

 Team (Focus on Design & Engineering)	 Adviser (Focus on Facilitation)
1 Define & Research: • Read the rules, analyze the problem, and list requirements • Start documenting team member information and research findings in the team journal.	Team Kick-Off! • Register the team • Help the team set ground rules for working together • Ask open-ended questions like, “What do the rules say about this?” rather than giving answers Optional Tech Challenge Events: • Register yourself and the team for a Team Orientation • Browse The Tech Challenge website for useful resources and sign up for the Adviser Learning Series
2 Brainstorm & Prototype: • Come up with ideas • Select a few favorite ideas to build as quick prototypes • Document all ideas and materials used	Resource Management: • Help the team get building materials • Encourage the team to write and draw their wild ideas in their journal Optional Tech Challenge Events: • Register team for Test Trials

Team & Adviser Focus Areas (Phases 3 and 4)



Team
(Focus on Design
& Engineering)



Adviser
(Focus on Facilitation)

3

Test & Iterate:

- Test the prototypes, gather data and feedback
- Take photos of the prototypes and document reasons for making changes
- Iteration Loop: Cycle through phases 2 and 3 and redesign your device as needed

Team Kick-Off!

- Celebrate small wins (like a feature of the device working for the first time) and remind the team that failure is an expected part of the design process
- Ensure they are recording their test results and failures
- Coordinate travel/logistics for testing



Optional Tech Challenge Events:

- Bring team to Test Trials

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Final Refinement:

- Finalize device
- Finalize and submit journal
- Practice for the Showcase interview and demonstration
- Optional: Create team costumes or commit to a theme for the Showcase

Final Admin:

- Help team submit their journal
- Submit final Showcase sign-up
- Coordinate team travel and logistics as needed
- Encourage team spirit and creativity



Optional Tech Challenge Events:

- Ensure all team members are present at Showcase



3. The Adviser's Role

Your main role is to guide, mentor, and encourage. Create a supportive environment where the team can build confidence and solve problems together.

How hands-on should I be during team meetings?

The project must be designed, built, and tested entirely by the students. Use these core guidelines to maintain a supportive, student-led environment:

- **Ask, don't tell:** guide the team by asking open-ended questions instead of offering solutions. For example, "What do you think will happen if...?" or "What else could you try?"
- **Embrace "I don't know."** "I'm not sure" followed by "let's find out together" are useful phrases. Encourage the team to research instead of giving direct answers.
- When assisting with tools, follow the team's exact directions even if you know the design is flawed (as long as it's safe). Let the team learn through failure.
- Be supportive. Be encouraging. Be patient.
- **Keep your hands off the device,** except to ensure safety.



Adviser Self-Check

Ask yourself throughout the season:

- Are the design ideas coming directly from the students?
- Am I asking open-ended questions, or steering them toward my own preferred solution?
- Am I mentoring the process, or trying to fix the problem?

When should I step in for safety?

As the adult in the room, you are ultimately responsible for safety, especially around building and testing.

- **Take the lead on safety** and step in if a task exceeds team capabilities or presents a physical hazard.
- **Encourage independence** by allowing students to handle what they can before stepping in.
- Print and refer to the **Safety Poster** from the Tech Challenge website and review the safety guidelines with the team before builds.

What if more than one adult wants to be an adviser?

- Having too many adults in team meetings increases the risk of crowding out the students. Limit official advising duties to designated leads, but engage other adults through specific support tasks.
- Ways extra adults can help:
 - Travel: Organizing carpools and providing transportation.
 - Hosting: Offering a living room, garage, or driveway as a meeting space.

- Nutrition: Providing snacks and drinks for team sessions.
- Supplies: Donating household materials, cardboard, or basic tools.
- Costumes: Assisting students with team shirts or Showcase attire.
- Consider holding an initial meeting at the start of the season. Use this time to explain the rules, review the calendar, and assign support roles so everyone shares a common understanding.

What is my role on Showcase day?

Showcase day is the team's moment to shine independently.

- You will not accompany the team during the judged portions of the Showcase (after team registration).
- During the device demonstration, you will be able to observe with the audience.
- Trust in the team: by Showcase day, they will have built the skills to handle the judging on their own!



Tip: Print this poster in the space where your team meets to remind everybody about the responsibilities of the team and adviser!



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 lessons and activities [webpage](#).



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 it is constructed to 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.



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
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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 for judges to evaluate.

Refer to the **Safety Poster** for safety guidelines specific to Device Demonstration.

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!

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 brainstorm in their Team Journal.

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!
thetech.org/thetechchallenge