



One of the optimal times for learning from a design challenge is while sharing solutions. At The Tech, we foster collaboration and risk-taking by creating space for learners to not only test ideas, but share their process with their peers. This mindset encourages teams to incorporate, build upon and give credit to innovations discovered by other teams.

Having time to reflect is so critical to learning that we allow time for sharing in any given learning session, even if learners haven't finished building. When young engineers/designers share with one another, they see other designs, hear about other teams' processes, gain quality feedback on their own work and practice giving respectful and constructive feedback to others. Through this process, learners develop their skills in communication and become more comfortable and confident with the process of iteration through failure and persistence.

FACILITATION

- Gather all teams around the testing area and ensure that everyone can see and participate in the discussion.
- Share reflection questions.
- Teams take turns presenting:
 - Teams explain their components and design structure, their choices and how the design is intended to work before testing.
 - Teams demonstrate their solution, share testing data with the group and reflect on their process.
 - As needed, the facilitator refocuses teams on the strengths of each design, before noticing failure points and asking for areas of improvement.
 - Teams share changes they would make next.
- Teams work together to:
 - Celebrate each team's successes (keeping this positive helps foster learning by decreasing high stakes-driven stress).
 - Pinpoint areas for iteration (identify failure points) on each design.
 - Gather data that will inform improvement of all solutions.
- Make sure:
 - All teams present their solutions, even if they do not have a complete or working solution.
 - Encourage learners to use new concepts as part of their share-out. Ask them questions to help foster this knowledge.

FACILITATIVE QUESTIONS

Less technical language

- Tell us how your design works.
- What was your original idea?
- What changes did you make as you were building?
- What changes would you make if you had more time?

More technical language

- Tell us about your design.
- How is your design intended to solve the problem?
- What do we notice about the strengths of this design?
- How does your design meet the criteria and constraints of this challenge?
- Where are the failure points in this solution?
- What changes could you make to your design that might improve it?
- What do you need to iterate your design?
- Who or what could be impacted by this solution?



ADDITIONAL SCAFFOLD OPTIONS

- Have reflection questions on the board or projected on screen that teams answer as they present.
- Ask teams to divide up the questions to ensure every teammate shares.
- Provide sentence starters for both the presenting team and the audience to help support quality presentations and audience participation.
- Have individual learners describe materials and related principles for each part of their design in a drawing/sketch. You can ask why specific materials were chosen and have learners connect to concepts or principles within the design (e.g., I chose rubber for the wheel so it can increase friction and traction. I chose plastic for the joint to decrease friction and allow more maneuverability).
- Critical friends. After using the facilitation techniques listed above several times as a whole class, have teams follow the protocol in team pairs. Groups should test each other's solutions and provide feedback.
- Analyze the design.
 - Video is a tool that can be used in different ways to help accurately analyze the design and help learners collect data. They can record their tests and use it as part of their share-out.
 - Have learners add testing data to a spreadsheet or graph to project during sharing.
- Record feedback.
 - Observers record what they see on sticky notes and give them to the team sharing out.
 - Facilitator records in a central location the trends developing in observations.
- If your design session takes place over several days, provide opportunities for multiple tests and share-outs to encourage learning from other teams' iterations.

ENCOURAGE MULTIPLE SHARING STYLES

Try different methods for sharing to keep it interesting and build new skills.



Podcasts, videos, infographics, songs, plays, newscasts.



Drawings of entire innovation design process.



Fish-bowl discussions, feedback circles, peer interviews.



Embodied somatic feedback (each team member physically demonstrates the function of one component of the design).

 For Tech Tip facilitation videos, visit thetech.org/resources.