Design Challenges in a Virtual Setting

The Tech Interactive
San Jose, CA
Welcome

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Session Goals:
• Reflect on the benefits of Design Challenge Learning.
• Strategies for hands-on learning in a virtual environment.
Agenda

1. Introduction to Design Challenge Learning
2. Do a Design Challenge!
3. Strategies for Virtual Hands-on Learning
4. Tips from an Educator
5. Q & A
A Design Challenge is..

Design challenges use real-world problems to engage learners in an iterative design process.
Key Features of Design Challenges

- Solvable by multiple solutions.
- Provide opportunities for iteration. Students can test and improve designs.
- Connect with participant interests.
- Make explicit connections to real world problems and careers.
Why Design Challenge Learning?

Develops independent thinkers

Empowers learners

Guides learners to become creators and problem solvers

Fosters collaboration, critical thinking, creativity, and informed exploration
“Is this right?”

There is no one correct answer, so students answer this question themselves.
“What do I do now?”

Students drive the direction of their explorations.
“I’m done!”

The **process** is the focus. It is engaging and celebrated.
Paper Tower: Design Challenge

Introduction/Hook
The San Francisco fog has become overwhelming, the city wants to design a building that will give people a glimpse of the sun above the clouds.

Materials
- Paper
- Tape
- Scissors (optional)
Paper Tower: Design Challenge

Create the tallest tower you can.

Criteria
- Tower must stand on its own.

Constraints
- 5 minutes to build.
- Use only 5” of tape, 1 piece of paper.

Think about: How can you cut, fold and tape your paper to make it stable and tall?
Sharing Solutions

Questions:

- How are the towers similar or different?
- How did they create stability?
- How did they get height with our structures?
Paper Tower: Gallery Walk

- Choose gallery view on Zoom.
- Turn on your camera and make sure your tower is visible.
  - (If you can, add in a ruler or other object for reference on size).

Questions:
- How are the towers similar or different?
- How did they create stability?
- How did they get height with our structures?
Paper Tower: Debrief as Participants

• What did you notice about the towers?
• How were they made tall and stable?
• How would you build differently or modify your tower?
Debrief as Educators
Think about Virtual Design Challenges. Reflect on how you might:

- Introduce the challenge.

Have students:
- Imagine, create, prototype and test.
- Document and reflect on their process.
- Share their creations.
- View and provide feedback to each other.
- Iterate and improve.
## Challenges and Opportunities

<table>
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<tr>
<th>Challenges</th>
<th>Opportunities</th>
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<tbody>
<tr>
<td>Technology</td>
<td>Families/students teaching each other how to use technology.</td>
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<td>Not being able to connect with students in the same way to help/support.</td>
<td>Some students are getting MORE work done.</td>
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<td>Planning time!</td>
<td>Time to assign more Art. Time to do a challenge myself!</td>
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<tr>
<td>Communication with families.</td>
<td>Doing things differently.</td>
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Design Challenge Resources

Educator Resources: thetech.org/resources
- Tech Tips
- Lesson Plans
- Videos

Parent Resources: thetech.org/athome
- Design Challenge Guides
- Videos
- Parent Tips Sheet

Spanish Resources: thetech.org/en-casa
## Introducing Challenges

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<tr>
<th>Low Tech</th>
<th>Some Tech</th>
<th>All Tech</th>
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<tr>
<td>Printed instructions or materials kits.</td>
<td>Text messages or emails with simple instructions.</td>
<td>Introductory video to build interest.</td>
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<td>Group video call with discussion/content connections.</td>
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Assign the challenge at the beginning of a week and provide instructions for sharing towards the end of the week.

**Tech Tip: Framing the Challenge**

(PDF/Video)
### Imagine, Create, Test & Reflect

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<td><strong>Prototyping &amp; Iteration</strong></td>
<td>Students work asynchronously on their own.</td>
<td>Educator sends email/text with prompts.</td>
<td>Video call prototyping in small groups.</td>
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<td><strong>Journaling</strong></td>
<td>Written journal. Take a photo or drop off later.</td>
<td>Use photos and videos to capture the process.</td>
<td>Online document or platform.</td>
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If possible, check in with students throughout the week as they prototype and test.
## Sharing Solutions

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<td><strong>Student:</strong> Text or email with response to question prompts.</td>
<td><strong>Student:</strong> Recorded video explaining solution and process.</td>
<td><strong>Video chat:</strong> Gallery view or small group presentation times.</td>
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<tr>
<td><strong>Educator:</strong> Text/email feedback. Share examples of other student work.</td>
<td><strong>Educator:</strong> Photo/video collage.</td>
<td><strong>Educator:</strong> Provide tools for students to comment on and give feedback to each other.</td>
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### Sharing Questions:
- Tell us how your design works.
- What was your original idea?
- What changes did you make?
- What changes would you make if you had more time?

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**Tech Tip:** Sharing Solutions

(PDF/Video)
## Collaboration

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<td><strong>Peer to Peer</strong></td>
<td>“Telephone” – send prototypes, ideas to the next person, then they build.</td>
<td>Small group collaboration through video/shared documents.</td>
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<td>Include family members.</td>
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<td>Classroom pen pals.</td>
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<td><strong>Parent Prep</strong></td>
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<td>Support families with information on materials, process and how to support student work.</td>
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<td>Keep things simple and easy to find.</td>
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<td>Be prepared to provide adaptations or adjustments depending on situations and response.</td>
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**Tech Tip: Innovator Mindsets (PDF)**
Tips from the Field

• Overall structure of virtual teaching.
• Roll-out of subjects and tools.
• Options: Weekend bonus family activities and in-class design challenges.
• Tips on group size, content connections.
• We are all learning together!
Resources

• Educator Resources: thetech.org/resources

• Parent Guides and Videos: thetech.org/athome

• Spanish Guides and Videos: thetech.org/en-casa
Thank you!

Stay in touch!

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