

# Engineering For Community Building

The Tech Interactive  
San Jose, CA



**The Bowers Institute**

# Welcome



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## Session Goals

- Experience a short challenge
- Discuss strategies to help build learner perseverance and collaboration during distance learning
- Reflect on how to apply these strategies with your learners

# Agenda

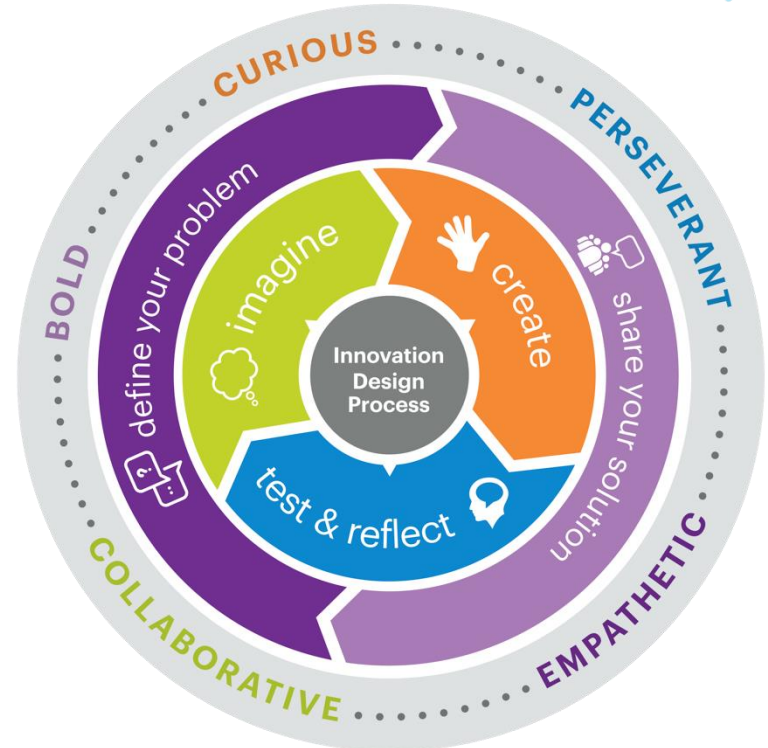


1. Do a Design Challenge!
2. Building Perseverance and Collaboration
3. Application to Your Learners
4. Facilitation Tips
5. Q & A

# 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**.



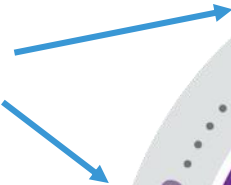
Make explicit connections to **real world problems** and **careers**.



# Mindsets for Community Building



Safe space for risk-taking innovator identities



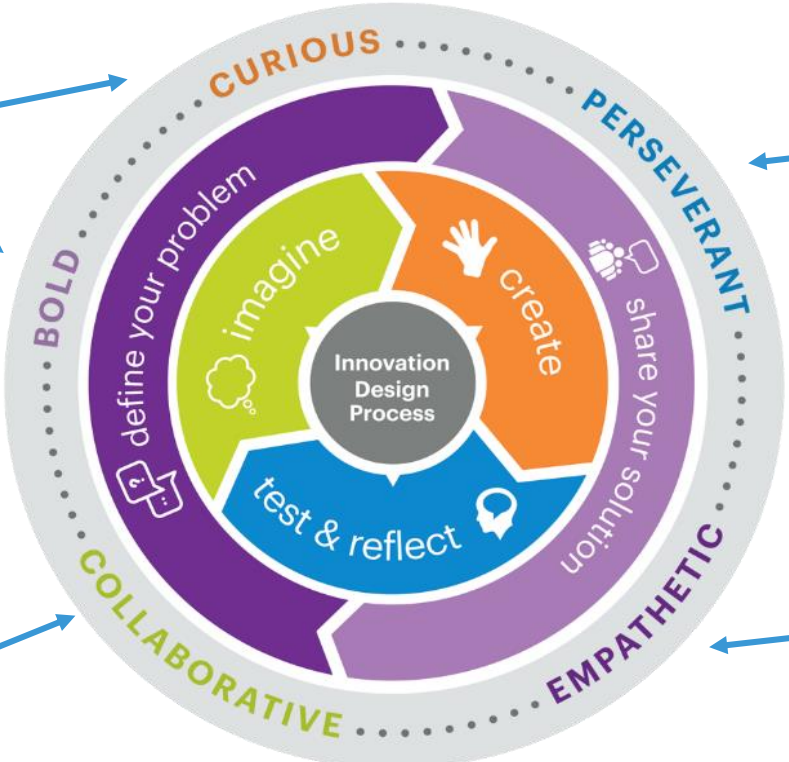
Giving constructive feedback, recognizing failure as part of the learning process



Every team member contributes to the design and share out



Using active listening strategies, researching the needs of the user



# Community Building Design



**Build for a common goal**

Design a playground for the class pet

**Have each team design a product for another team**

Design a delivery system for the other team's favorite snack

**Design for a community need**

Design a community garden or a COVID safe food delivery system for neighbors

**Sharing solutions more broadly with the school, teacher, parent**

Learners can help plan a group presentation for (virtually) invited guests

# Let's do a (Quick) Design Challenge!



**1. Frame & Introduce**



**2. Prototype: Imagine, Create, Test & Reflect**



**3. Share Solutions**





# Introducing Challenges



- Question
- Video
- Story/Scenario

How would you inspire your students?



**Tech Tip: Framing the Challenge**  
([PDF](#)/[Video](#))

# Engineering for Earthquakes & Desk Shakes



Build a desktop paper fort for a future class pet.

Create a stable structure that our new friend can hide in.



- **Criteria:**
  - Needs to stay standing for 3 shakes
  - Include a way for the pet to rest off of the desk surface (roof deck, second level, watch tower)
- **Constraints:**
  - 10 minutes to build and test
  - **Use as much paper as your heart desires (tape only sparingly)**
  - Base should be 6"x6"



# Prototyping Questions



## Empathy

- What does our pet need from this structure?

## Collaboration

- Can anyone share a neat trick they discovered for connecting their paper together?

## Perseverance

- What is a challenge you are running into and how did you solve it?
- Or what challenge are you running into and what suggestions do others have?

### Criteria:

- Needs to stay standing for 3 shakes
- Include a way for the pet to rest off of the desk surface (roof deck, second level, watch tower)

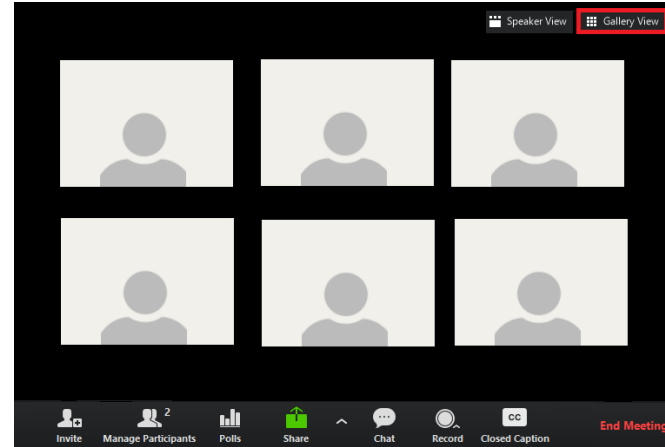
### Constraints:

- 10 minutes to build and test
- **Use as much paper as your heart desires (tape only sparingly)**
- Base should be 6"x6"



# Share Out

- Raise virtual hand and we will promote you to panelist.
- Choose gallery view on Zoom.
- Turn on your camera and make sure your device is visible.



**Questions:** How did you address the pet's needs?  
Did you borrow any neat ideas you saw in someone else's design?

**Everyone else:** Add helpful feedback or ideas you might have about the design to the chat



# Prototyping Community Building Strategies



## Today we used:

- Synchronous build time
- Asking for ideas when feeling stuck
- Shared tips and tricks as we discover them

## Key Strategies for Virtual

- Have students build on camera so they can learn from each other.
- Use break out rooms so smaller groups can dialog and collaborate as they prototype.



**Tech Tip: Prototyping**  
[\(PDF/Video\)](#)



# Sharing Solutions Community Building Strategies



## Today we used:

- Focusing on the needs of the user
- Crediting ideas inspired by others
- Community feedback

*How would you celebrate and include everyone?*

## Key Strategies

- Everyone Shares
- Collaboration and Inspirations are recognized
- Appreciations
- Focus on Process
- Presenting for outside stakeholders



**Tech Tip: Sharing Solutions**  
[\(PDF/Video\)](#)

# Innovator Mindsets Debrief



 **Tech Tip: Innovator Mindsets**  
[\(PDF\)](#)

**Next up..a poll!**  
PollEv.com/techacademie419 or text  
techacademie419 to 22333

# Which innovator mindset do you think you embodied the most today?

Bold

Curious

Perseverant

Empathetic

Collaborative





# Mindsets Self-Reflection



	1-5 Area of Strength	How did I embody this today?	What do I want to try next time?
<b>Bold</b>			
<b>Curious</b>			
<b>Perseverant</b>			
<b>Empathetic</b>			
<b>Collaborative</b>			

# What did you notice?



## AS PARTICIPANT

- Which parts of the process helped you feel connected to the other participants?

## AS FACILITATOR

- What would you add in order to layer in more community building opportunities?

# Virtual Settings



- Assign the challenge at the beginning of a week. Provide instructions for sharing towards the end of the week.
- Support families with information on materials, process and how to support student work.
- Vary length. Incorporate different topics depending on content.

Low Tech	Some Tech	All Tech
Students work asynchronously on their own.  Use printed instructions, materials kits, written journals.	Students capture their process with photos and videos.  Use text messages, emails to communicate and share feedback.	Use of online platforms for synchronous and asynchronous collaboration. Small group collaboration through video, shared documents, feedback live or via collaborative docs.



**Parent Guide**  
[\(PDF\)](#)

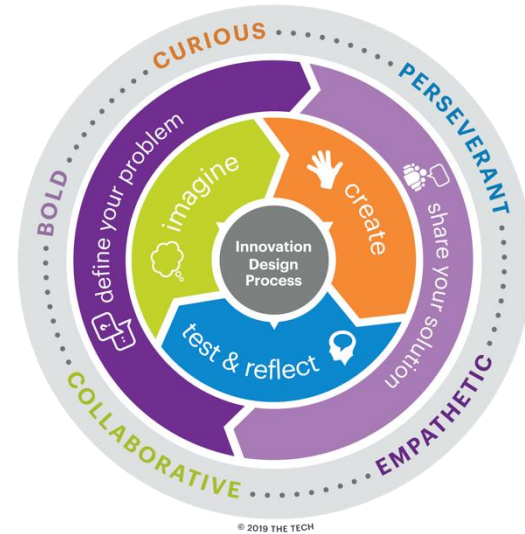
**Educator Guide**  
[\(PDF\)](#)



# Remind Yourself

You are learning and iterating too!

- Be flexible.
- Try new things!
- Test and reflect.



Think about: What will you try next?

# Q & A



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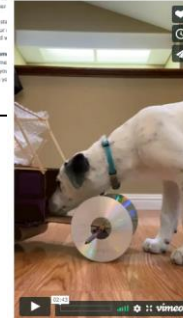


# Resources

- Educator Resources: [thetech.org/resources](https://thetech.org/resources)

- Parent Guides and Videos: [thetech.org/athome](https://thetech.org/athome)

- Spanish Guides and Videos: [thetech.org/en-casa](https://thetech.org/en-casa)




# Thank you!

Stay in touch!

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