**Introduction**

Students of all ages can develop Design Thinking Mindsets. However, like all important things we need to learn, a Design Thinking Mindset starts with a process that takes practice, collaboration, patient facilitation, and most importantly, a GREAT design challenge to provoke an intention to design a possible solution.

The Design Challenge provides the curricular and pedagogical link for *taking making into your setting*.

To get started, you need to develop or modify a Design Challenge for your learners. Tips on developing Design Challenges can be found in \* ***Taking Making into Classrooms Toolkit*** *Section III Design Challenges - Prompts for Learning and Hard Fun.* Examples of Design Challenges can be found in \* ***Taking Making into Classrooms Toolkit*** *Section XII Sample Design Challenges*.

**Items Needed**

* Copy of Design Challenge
* Facilitator copy of Design Thinking Worksheet (this might be a wall chart or group sheets depending on your situation – grade level, adult support, etc.)
* Participant Kits (i.e., either misc. items or precut materials, depending on the Design Challenge. The sample design for the Bat House requires some pre-cut materials)
* Shared Pantry (see \* ***Taking Making into Classrooms Toolkit*** *Section XIV* for suggestions)
* Shared Tool Station (see \* ***Taking Making into Classrooms Toolkit*** *Section XIV* for suggestions)

**Suggested Facilitation Steps**

1. Pre-Planning and Set-up

A. Facilitation of the Design Thinking Process

Based on your students’ age, experiences, abilities, and access to volunteers, you need to decide if you are going to facilitate the entire group using one Design Thinking Worksheet or organize your class into facilitated, smaller groupings.

* You may wish to copy the Design Thinking headings onto chart paper so students can see their contributions and observe the process.
* You might consider inviting other adults or older students to help with the facilitation process.

B. Collaborative Prototyping

* Regardless of how you facilitate the Design Thinking process, you will want the students to tinker and build their prototypes in small groups. We recommend 4 students per group, but you can determine the groupings that work best in your setting.
* Make sure you have enough Participant Kits for each group. Contents of kits should NOT be shared with the students until Step 13 of this Facilitator Guide. The reason for not sharing the materials is that students might design to the materials rather than the design challenge!
1. Read the Design Challenge to your group. Ask the students if there are any terms, words, or ideas that need clarification. You may want to take the time to create common definitions for key words on separate sheets of paper.
2. Share the Design Thinking Worksheet with the students and explain that you all will work through the process together. If this is the first time your students have experienced the Design Thinking process, explain the importance of designing before building.
* Help them understand if we simply started building, we’d build what we know, but if we engage in a *User-Centered / Human-Centered* Design Thinking process, we’ll be able to Problem Find and consider alternative points of view, new ideas, and design considerations. NOTE: *User-Centered* means we are considering the needs of living beings (i.e., bats) that will ultimately use our solutions; *Human-Centered* means we are considering the needs of humans who are assisting us in the Design Thinking process, might be using our solutions, or might look after our solutions after we have distributed them.
* See \* ***Taking Making into Classrooms Toolkit*** *Section VI Why We Need Our Students to Be Design Thinkers* for background information.
1. Ask the students what they know about the subject shared in the Design Challenge. Use the revised Bloom’s Taxonomy verb stems to help you craft good, open questions. (<https://www.cloud.edu/Assets/PDFs/assessment/revised-blooms-chart.pdf>)
2. Record the students’ responses on the Design Thinking Worksheet **1. WHAT DO WE KNOW? (Gaining Empathy – Design)**.
3. Ask the students to add to their responses. Do they have stories to tell about the topic? Ask how they know what they know. Explore to see if they have questions they want to ask one another.
4. Record the students’ responses on the Design Thinking Worksheet **2. HOW DO WE KNOW? (Deepening Empathy)**.
5. Ask the students what else do we need to know about the challenge. Record their questions / responses on the Design Thinking Worksheet **3. WHAT DO WE NEED TO LEARN? (Defining the Challenge)**. This might be a good time to stop and do a bit of research or invite an expert in the subject to speak with the students.
6. Reassemble the students and record new information on the Design Thinking Worksheet **4. WHAT MORE DID WE LEARN? (Refining Our Thinking)**.
7. Remind the students of the Problem Scenario in the Design Challenge. Help them to understand what their task is! Introduce them to the Success Determinants.
8. Give them individual pieces of paper and ask them to sketch several possible solutions to the Problem Scenario. Post the sketches where everyone can see them. You might want to create common chart where the students can post their ideas - on Design Thinking Worksheet **5. SKETCHING OUR IDEAS (IDEATION).**
9. Working in smaller groups, discuss the merits and limitations of the sketches. Try to determine components that might be incorporated into a group solution. Ask each group to draw one sketch and post it on a chart paper sheet – on Design Thinking Worksheet **6.** **COMBINING OUR IDEAS (Beginning to Tinker)**
10. Once each group has settled on their sketch to build, introduce the Participant Kits and the shared pantry and tools. Explain necessary roles, rules and safety information. Tips for safety can be found in \* ***Taking Making into Classrooms Toolkit*** *Section VIII Safety Issues*.
11. Allow the students to build their prototypes. Timing will depend on the design challenge, the students’ abilities, the amount of support, and time and materials available.
12. Prepare for the Gallery Tour. During the gallery tour, one student stays with the prototype and answers questions, the other students tour and explore the other groups’ prototypes. Make sure you have a plan for the students to trade off in terms of who is touring and who is staying back.
13. Following the Gallery Tour, begin the group reflection. Record student observation and comments on Design Thinking Worksheet #**7 Reflection (Thinkering).**  Four suggested questions: What did we like about the bat house prototypes? What might we change next time? What questions do we still have? What new ideas did we discover?
14. Make sure students clean up their work areas table and return all items that are reusable to the shared pantry and tool area. Congratulation students on a job well done!