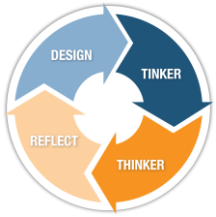
Facilitator Guide for Primary Students using *My Design Thinking Notebook* Resources



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.

This Facilitator Guide refers to ***Taking Making into Classrooms: A Toolkit for Fostering Curiosity and Imagination (TMintoC)*** available for download at (http://www.mytrainingbc.ca/maker/downloads/Taking_Making_into_Classrooms.pdf)

Design Challenge

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

To get started, you may choose either of the Design Challenges *Helping Our Friends the Bats* or *Helping Our Friends the Wrens.* Alternatively, you may develop a Design Challenge for your learners.

Tips on developing Design Challenges can be found in ***TMintoC*** *Section 3, Design Challenges - Prompts for Learning and Hard Fun.* If you are looking to modify existing Design Challenges, examples of Design Challenges can be found in ***TMintoC*** *Section 12, Sample Design Challenges*.

Items Needed

1. Copy of Design Challenge
2. Copies of *My Primary Design Thinking Notebook* – Depending on your context – grade level, amount of time you are spending in the project, adult support, etc. - these sheets might be used as
   a. A wall chart,
   b. Headings on flip chart paper
   c. PowerPoint slide deck for groups or individuals,
   d. Sections of an ePortfolio, or
   e. A *Design Thinking Notebook* for groups or individuals may be created by photocopying the sheets on letter-size paper, folding flip chart paper into a Quick and Easy 8-Page Booklet (https://www.youtube.com/watch?v=21qi9ZcQVto&feature=youtu.be) and gluing the photocopied sheets into the booklet
3. Participant Kits (i.e., either miscellaneous items or precut materials, depending on the Design Challenge. A sample design for the Bat House or Wren House may require some pre-cut materials.
4. Shared Pantry (see ***TMintoC*** *Section 14* for suggestions)
5. Shared Tool Station (see ***TMintoC,*** *Section 14* for suggestions)

Pre-Planning and Set-up

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. Answering the following two questions will address many of your pre-planning and set-up.

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1. Are there content, skills, or technologies that you may want to practice with your students before starting the Design Thinking Activity?
   - After reading the Design Challenge, are there are any terms, words, or ideas that need clarification for your student? You may want to take the time to create common definitions for key words on separate sheets of paper.

   - Use the revised Bloom's Taxonomy verb stems to help students craft good, open questions before starting the Design Challenge or prepare a *Prompts Page* using the Bloom's Revised Taxonomy (https://www.cloud.edu/Assets/PDFs/assessment/revised-blooms-chart.pdf)

   - 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 ***TMintoC,*** *Section 6 Why We Need Our Students to Be Design Thinkers* for background information.

   - Are there skills or technologies that need to be practiced?

2. How will you facilitate the Design Thinking Process?
   - 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.

3. How will you prepare for collaborative prototyping?
   - In ***TMintoC,*** Section 7, *Intent and Choosing a Maker Experience for Your Classroom,* four *Learning Intentions* are outlined. Please review early in your developing and designing of your activities. Your choice of learning intentions will inform the tools / technologies and materials you may require for your 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!

Suggested Facilitation Steps for Four Phases (Design, Tinker, Thinker, Reflect)
Share with students (and volunteers) your version of *My Design Notebook* and explain that every one will work through the process together.

Design

1. *Understanding Context:* 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 review or create common definitions for key words on separate sheets of paper or have students develop them to add to their Design Notebooks.

2. *Defining:* Ask the students what they know about the subject shared in the Design Challenge.

   - Record the students' initial responses on the Design Thinking Notebook Page **1. WHAT DO WE KNOW? (Gaining Empathy – Design)**.

   - 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.

   - Record the students' responses on the Design Thinking Worksheet **2. HOW DO WE KNOW? (Deepening Empathy)**.

   - 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.

   - Reassemble the students and record new information on the Design Thinking Worksheet **4. WHAT MORE DID WE LEARN? (Refining Our Thinking)**.

   - Remind the students of the Problem Scenario in the Design Challenge. Help them to understand what their task is! Introduce them to the Parameters and Success Determinants (how they will be assessed throughout the process).

4. *Ideating:* 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).**

Tinker

5. 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)**

6. *Making / Prototyping:* Once each group has settled on a 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 8, Safety Issues*.

    - Note: For the *Helping Our Friends the Bats* or *Helping our Friends the Wrens …* You may choose to have your students build their prototypes with Pantry items (i.e., craft sticks, straws, pipe cleaners, etc.) as representations of their thinking. Then *Making and Sharing* would be building the actual bat or wren houses out of wood. Timing for prototyping will depend on the design challenge, the students' abilities, the amount of support, and time and materials available.

Thinker

7. *Sharing / Testing:* 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.

    - 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?

Reflection

8. *Making (optional):* Depending on how you have chosen to develop and design your activities, the *Making* might include completing a PowerPoint slide deck, ePortfolio, Design Notebook, an individual reflection from each student (oral, written, videotaped). Alternatively, the *Making* might be building the bat or wren houses with older students or adult volunteers.

9. *Sharing (optional):* Depending on how you have chosen to develop and design your activities, the *Sharing* may include presenting the prototypes to an intended audience, evaluating and/or reflecting on the process and their work, and/or receiving final feedback from other groups.

General Comment: Congratulations on a job well done! Make sure students clean up their work areas table and return all items that are reusable to the shared pantry and tool area. After your first prototyping activity, you may consider a *Recycle Station* or adding badging to your events (i.e., badges for recycling, showing how to be sustainable, safety, etc.)