Design Thinking

Intermediate 2hrs (Can split into multiple sessions)

In this lesson you will use the popular design thinking framework to design your own product and give important feedback to Kano!

OBJECTIVES

⚡️ Learners can identify the steps in design thinking.
⚡️ Learners understand what it means to give constructive feedback and how that applies to design thinking.

STANDARDS

⚡️ NGSS:

3-5-ETS1-1 D  3-5-ETS1-2  MS-ETS1-1 D  MS-ETS1-2

⚡️ CSTA:

K-2: 1A-A-5-3, 1A-I-7-15
3-5: 1B-A-5-3, 1B-I-1-17
6-8: 2-A-5-5, 2-A-6-10
Introduction

What is your favourite toy or game? Gather a list from the students and write it on a board. Everything you named was thought out before it was made. Like when we decide which way to walk to a store, or when we think about writing an essay we think about it before making a decision.

Today we are going to talk about Design Thinking. Walk through each of the steps and ask students for examples of things they've tested or been part of testing.

Empathise

Work to fully understand the experience of the user for whom you are designing. Do this through observation, interaction and immersing yourself in their experiences.

Define

Process and synthesise the findings from your empathy work in order to form a user point of view that you will address with your design.

Ideate

Explore a wide variety of possible solutions through generating a large quantity of diverse possible solutions, allowing you to step beyond the obvious and explore a range of ideas.

Prototype

Transform your ideas into a physical form so that you can experience and interact with them and, in the process, learn and develop more empathy.

Test

Try out high-resolution products and use observations and feedback to refine prototypes, learn more about the user and refine your original point of view.

Explain what Kickstarter is and why it's a good way to validate an idea - the public gives you a response on whether they are interested in your idea and puts down money to support. It also helps early companies to get a product out and test with people instead of creating in a room and launching without user feedback. You can even show some kickstarter projects on the projector.
Explain that Kano was a kickstarter that raised over 1.5m USD on the platform. Kano continues to grow with feedback from students and teachers around the world. Today, you will give Kano feedback. You can use this presentation!

Collect Kanos

Retrieves Computers, Turn On, Log In.

Other resources:
• Paper, Pencil, Crayons (optional)

Exploration Activities

Challenge 1:

Break into groups of four and each group chooses 1 Kano app:
• Make Art
• Make Minecraft
• Terminal Quest
• Make Snake

Answer the questions (in writing to share with Kano!):
• What is your favourite part of the app?
• What is challenging about the app?
• What would you improve about the app?

Class to discuss some of the feedback.

Challenge 2:

You have just used Design Thinking to give Kano feedback on one of the apps already on it. Now what if you can give a recommendation for a new app? Taking the feedback you heard from the class, use Design Thinking to create your own app.
• What problem are you looking to solve with the app?
• What is the app and its purpose? Who would want to use it? In your groups use pen and paper to write out your thoughts.
**Challenge 3:**

Break students into groups and have them think of a few brands and their logos.

What do you like about those brands? What about their logos?

What don’t you like about the brands or logos?

What does a logo express about a brand?

Discuss as a class.

Then, open up Kano kits and launch Make Art.

Logo frenzy!

Choose 2 Logos from world.kano.me [Example 1, Example 2](#) and recreate them in Make Art - add your own creative flair to these logos.

**Challenge 4:**

Create your logo for the app you designed in Challenge 2!

First, sketch out the logo on paper & pencil (if available).

Then Code in Make Art!

Save your work and share to Kano World!

**Closing**

**Sharing**

Groups share their apps and logos. The class can vote on their favourite! Remind students to fill out their daily logs in their engineering journals!

**Extension**

Have students fill out “Design Thinking” worksheet that can be found in the appendix!

**Kano Clean-up**

Power down and put away Kanos
Name: ____________________________________________ Date: _____________________________

Explorer Questions
Directions: Fill out each section by reflecting on your Design Challenge Project!

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**Empathize**

Watch and Listen: What population will you work with?

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**Define**

What is your idea/vision based upon the population and the problem you will work with?

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**Ideate**

What ideas did you brainstorm?

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** Prototype**

Provide a brief explanation of your prototype.

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**Test**

How will you test your prototype?
Programmer Question

**Directions:** When you created your prototype you had to code a portion of the project on Kano. What did you code? Why did you use that coding environment? What were the limitations of that coding environment for your project?

Creator Question

**Directions:** Part of coding is thinking about ways to improve your projects. Below draw a design on how you could improve your Design Thinking Project for next time! Label the drawing explaining how you would improve it.
Explorer Questions

Fill out each section by reflecting on your Design Challenge Project!

For this section learners should have:
• A defined problem they are trying to solve
• A community (local, state, national, international) community they want to work with
• An articulated idea on how they can solve the problem
• A list of a few ideas they had to solve the problem
• The winning idea and a prototype design for the idea
• A clear understanding of how they would test their prototype to get feedback

Programmer Question

When you created your prototype you had to code a portion of the project on Kano. What did you code? Why did you use that coding environment? What were the limitations of that coding environment for your project?

Below is a rubric you can use to evaluate projects:

<table>
<thead>
<tr>
<th>All Learners</th>
<th>Most Learners</th>
<th>Some Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sentence explaining what was coded</td>
<td>2 - 3 sentences explaining what was coded</td>
<td>+3 sentences explaining what was coded</td>
</tr>
<tr>
<td>1 sentence explaining what Kano App they used</td>
<td>2 - 3 sentences explaining what Kano App they used</td>
<td>+3 sentences explaining what Kano App they used</td>
</tr>
<tr>
<td>1 sentence explaining the pros and cons of that Kano App</td>
<td>An explanation of the sequence the code follows</td>
<td>An explanation of the sequence the code follows</td>
</tr>
<tr>
<td></td>
<td>2 - 3 sentences explaining the pros and cons of that Kano App</td>
<td>+3 sentences explaining the pros and cons of that Kano App</td>
</tr>
<tr>
<td></td>
<td></td>
<td>An explanation for why their code is more efficient than other coding environments that could be used</td>
</tr>
</tbody>
</table>

Creator Question

Allow learners to be as creative as they want. There needs to be a drawing with clear labelling and details for improvements to the project.