iTech Design Process #2

Explorers will be introduced to prototyping and user testing while creating their IDC.

BEFORE YOU BEGIN
1. Leaders should have completed the Leader First Day Survey online at the start of the Exploring program.
2. Explorers should have completed the Youth First Day Survey online here at the start of the Exploring program.
3. The Exploring unit should have completed the Intro to Innovation Activity.
4. The Exploring unit should have completed the Design #1 Activity.

ACTIVITY LIBRARY TAGS
- Exploring: Engineering & Technology, Science
- iTech Exploring: Required
- Life Skills: Computer Literacy, Team Building
- US Dept of Education: Information Technology, STEM

OBJECTIVES
By the end of this session, participants will be able to:
- Construct a prototype that solves a problem in the community (local, national or global)
- Lead prototype testing and asses feedback received to project check assumptions
- Explain the importance of prototyping
- Explain the process for user testing and its importance to the design process
- Understand how user needs impact the creation of a prototype

NOTE: Explorers will reference previous handouts from Design Activity #1. Bring these completed handouts to the Design Activity #2 meeting.

SUPPLIES
- Sticky Notes (1 pad of 100 sheets per group)
- Poster Paper (1 per group)
- UN Sustainable Development Goals (use as a reference)
- Paper Prototype Example Video (one per class)
- **Paper Prototyping Questions Handout** (one per group)
- **Paper Prototype Testing Handout** (one per group)

LEADER NOTE: Text in italics should be read aloud to participants. As you engage your unit (post or club) in activities each week, please include comments, discussions, and feedback to the group relating to **Character, Leadership,** and **Ethics.** These are important attributes that make a difference in the success of youth in the workplace and in life.

ACTIVITIES
Activity 1 | Paper Prototyping
Say: What do you know so far about your solution? Who will use it? What will it look like? How will the user interact with it?

YOUTH LEADERSHIP POSITION: Project Managers should lead their team through the following section. Design & User Feedback Manager should assist with the paper prototyping, to ensure that the prototype focuses on the users' needs.

Explorers should revisit their ideas and make any updates/changes to their idea. After Explorers finalize their idea, they will create and test a paper prototype. A prototype is "a first or early model of a product that allows you to test assumptions before developing a final version." This will allow for quick exploration and iteration with minimal investment.

Say: Why is this process is preferable to starting your project immediately?

Explorers will create a paper prototype to map out their project. Think of it like a map for your project or idea. Teams will reference this prototype as they develop their project, so it is important to include as much detail as possible. This will be helpful for user testing.

As a unit, prototype a familiar website or app (Ex. Instagram or Amazon) together as practice discuss the below:
- o What do you notice about this prototype? What do you like/dislike?
- o What did the creator consider when developing their prototype?
- o How does this prototype achieve (or fail to achieve) its goals?
- o How did the creator organize their prototype? What things did they consider?
- o If you were a user testing this, what feedback would you give to the team?
- o If you were the creators of this project, what might you want to know from the test users?

On scrap paper, Explorers should spend about 20-30 minutes, drawing an initial design for their project. Before starting, Explorers should review the **Paper Prototyping Questions** when prototyping their idea. Explorers should review these questions before starting their prototype, in the midst of creating their prototype, and when they feel their prototype is completed. These questions will guide Explorers to think more deeply about their solution and prototype in relation to their users, competition and product improvements.

Say: What materials (if any) does your team need to successfully complete your project? Think about this as you create your paper prototype. If your team has a secretary, he or she should record these notes.

Activity 2 | Testing the Prototype
After all teams have finalized their prototypes, they will test them out to ensure that they meet the users' needs.

YOUTH LEADERSHIP POSITION: Quality Assurance Managers should lead their team through the following section.

To prepare for testing, Explorers will create a list of questions to ask when users are done testing. Explorers can compare the different users' reactions and their answers to the questions. Explorers should ask the same questions each time they test their project. Think about your project and what aspects are still being decided. Example – if your team is struggling on where a button should go or how to phrase specific instructions to the user, use this as an opportunity to get those questions answered by an outside party.

Say: What are some items that you can look for when your user tests your project? Specific to your team, what are the most important items that you want decided?

Distribute the **Paper Prototype Testing Handout.** Ask groups to assign roles for testing, as listed on the Handout. The roles can be switched between tests. Groups should be paired with another group to test out their project.

Using the **Paper Prototype Testing Handout**, Explorers will test their project with a user. Testing will run for 5-7 minutes each. Encourage observers to write as much as they can. Groups will discuss observations, record their findings and discuss prototype updates. Testing should take ~30 minutes.

Say: Reflect as a group or individually on these questions:
- o *Was there a difference between testing with a user that was involved in the creation of your prototype vs testing with a user who had never seen it before?*
- o *What were some of the similarities and differences between the two types of users?*

At the end of the meeting, collect all prototypes. Consider a dedicated spot in the room to store them.

LEADER NOTE
Once Explorers have completed the Design Activity #2, they will move onto Design Activity #3 in the Exploring Activity Library at www.exploring.org/activity-library-category/itech. Save the completed handouts from Design Activity #1 and #2. Explorers will use these handouts as a reference in future activities.

LEADER NOTE
Some sample questions are below. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own questions that relate to your program or specific focus area.

REFLECTION
- *Why is it important to prototype on paper before starting your project?*
- *What worked well when prototyping your project? What would you do differently next time?*
- *How did your team work together to test your project? Why is it important to test your paper prototype on a user?*
- *How does testing help your team to improve your project? How did testing help your team to better understand your user?*

Content for this session provided by Kiwi Compute (www.kiwicompute.com).

RESOURCES

Activity 1 – Paper Prototyping Questions Handout

Before you create your prototype, discuss the below questions with your team:

1. What problem does your idea solve?
2. How are users solving this problem currently?
3. Who is your competition? How have previous solutions failed?
4. How can you improve your product to surpass your competition?
5. What pages, components and/or items are required for the project to run at a basic level?
    a. How do these pieces fit together?
6. What design components or features are needed for the project to function properly?
    a. Where do these design components/features physically live on your project?
7. Does your target market actually have a need for this product? What do you need to include so your primary users' needs are met?

As you work on your prototype, think about and discuss the below questions with your team:

1. If users had a magic wand, what would they change about the product?
2. What features are missing?
3. How likely or unlikely would a user be to use this product once it's finished?
4. How would a user expect your product to look?
5. Does anything seem out of place or unnecessary?

Before you finalize your paper prototype, discuss the below questions with your team:

1. Does the prototype do what it's supposed to?
2. Does the design match its purpose?
3. Does anything distract them or get in their way?
4. Does the structure and navigation of your project make sense? Can users find what they're looking for?
5. Does your target market feel like this product was designed for them?
6. What, if anything, would make your users want to use this product frequently?
7. How would your user describe this product using their own words?

Activity 2 – Paper Prototype Testing Handout

Overview
Your group will be testing the paper prototype of your project on other members of your unit. In order to get the best feedback possible, you will be assigning different roles in the process so that while some team members run the simulation the others just focus on writing feedback.

Assign Roles for Testing: Decide who on your team will have each of the following roles for the test. If you like you may switch roles between tests.

- Narrator: the person running the test. They explain what is happening to the user, answer any questions (though do not help the user) and assign users new tasks.

- Computer: manipulate the low fidelity prototype based on what the user is doing.

- Observers: watch the interaction and write down in their notes what they see the user do in response to the computer

Identify Users: Decide who in your class will be your user of your app. If you like you can also run this test with people outside of the class who might be part of the target audience of the project.

Create and Run Test Cases: On the next sheet, you'll find the test cases sheet to run and record your test.

Summarize Findings: Once you've run your tests record the most important findings or changes you found in your testing

User Said / Did	What It Means
Example: Kept clicking on Suzette's face to try and change her settings.	*Grandchildren images should link to settings page.*

iTech
EXPLORING

Test Cases
Create User Tasks - Fill in the left column of the table with different common tasks your user will want to do with your project.

Test Your Prototype - Give this testing guide to your user. The user should try to complete each task listed in the table. Here are some guidelines
- Don't explain how the project works to your user. You want to observe how they would use it without guidance
- The user can and should think out loud. This is a way to help you understand their experience
- Keep a scratch piece of paper to record anything else you notice during the test

Record Findings
In the "What I Tried" and "My Reaction" columns include what your user did to complete each task. In the next column include their reactions about how easy or approachable the project was to use.

Task	What I Tried	My Reaction