iTech Design Process #4

Explorers will be introduced to innovation and implementation through the design process.

BEFORE YOU BEGIN
1. Leaders should have completed the Leader First Day Survey online at the start of the Exploring unit.
2. Explorers should have completed the Youth First Day Survey online here at the start of the Exploring unit.
3. The Exploring unit should have completed the Intro to Innovation Activity.
4. The Exploring unit should have completed the Design Activity #1, #2 and #3.
5. At the completion of these activities:
    a. Leaders should complete the Leader Last Day survey online.
    b. Explorers should complete the Youth Last Day Survey online here.

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:
- Evaluate 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
- Iterate on a project and incorporate feedback from users

NOTE: Explorers will reference previous handouts from Design Activity #1, #2 and #3. Bring these completed handouts to the Design Activity #4 meeting.

SUPPLIES
- Sticky Notes (1 pad of 100 sheets per group)
- Poster Paper (1 per group)
- Scrap paper (5 – 10 sheets per group)
- [UN Sustainable Development Goals](#) (use as a reference)
- **User Testing Handout** (one per group)
- **Interpreting User Feedback Handout** (one per group)

LEADER NOTE: Text in italics should be read aloud to participants. As you engage your Exploring unit (club or post) 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 | User Testing

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

Say: Recall the process used in the testing of the paper prototype:
- ○ *What were the steps used in testing the paper prototype?*
- ○ *What were some of your tasks that revealed valuable information in testing?*
- ○ *What were some of the good questions you asked at the end of testing?*
- ○ *What do you think will be different about testing the project vs paper prototype?*

LEADER NOTE
If possible, incorporate user testing with a site visit. Utilize corporate partners or mentors as users and ask them to provide feedback.

YOUTH LEADERSHIP POSITION: Design & User Feedback Managers should lead their team through the following section.

Use the **User Testing Handout** to complete the activity. Allocate 10 minutes to prepare for testing. Tests should run for 10+ minutes each. Encourage observers to write as much as possible and ask questions. If Explorers finish early, ask them to do a second round with the same person to see if that person missed anything or is willing to provide more thoughts.

Say: Review the findings from testing and discuss key observations.

Activity 2 | Improving & Iterating
Say: Based on user testing, what are some of problems (or bugs) discovered in your project? You likely found plenty of bugs, but what other feedback did users provide? What feedback implies the need for new features?

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

Distribute poster paper, sticky notes and the **Interpreting User Feedback Handout**. They will complete a chart that connects specific user observations to potential bugs or missing features. This will create a list of bugs/features to add to their next version.

Say: There are many roles and skillsets on development teams. Not all bugs or features are solved by designers (Ex. inconsistent color, confusing text, complex layouts).

Once teams organize their feedback into the chart, they can move to brainstorming. Fill out a sticky note for each bug or feature identified:
- ○ <u>Top of note</u>: Write BUG or FEATURE.
- ○ <u>Middle of note</u>: Describe bug/feature and steps to reproduce issue if necessary
- ○ <u>Bottom of note</u>: Quick estimate of how long (in mins) it will take to fix bug or implement the feature. Explorers will have a chance to refine this estimate later.

On poster paper, draw the two charts on page two of the guide. For each sticky note, discuss if it is urgent and if it seems easy or difficult to implement. Based on that discussion, place the sticky in the appropriate quadrant.

Say: Which of the four categories should be the first that you tackle? The last?

Explorers will use feedback from the last round to implement changes that address the needs of their users. Each team will track and prioritize the features/bugs. They will use the "To Do", "Doing", "Done" chart to track the state of bugs/features. They will only have time to implement some of these fixes.

Each time an Explorer finishes a task, they should move the sticky from "To Do" to "Doing" and to "Done" when they finish implementation. Use this chart for a view of how each team is progressing. They should iterate until it works and focus on the one feature or bug that they selected. Ensure that each Explorer implements at least one fix or feature.

Say: Regroup from the last activity and create a plan for the rest of your work time.

Explorers will continue to work on their project for the remainder of the meeting. Remind Explorers that they have [TIME LEFT] and provide frequent updates to keep teams on track.

LEADER NOTE
If you have additional time or meetings, feel free to give Explorers more time to work on their project and repeat one or both activities from Design Activity #4. At the end of the meeting, teams should be finished with their project. Leaders can determine if Explorers have the option to work on their project outside of the unit's allocated time.

LEADER NOTE
After completing the final design activities, refer to the **iTech IDC Prep** activity and the option chosen at the start of your unit in the Exploring Activity Library at www.exploring.org/activity-library-category/itech. Once Explorers have completed the IDC Event, they will reflect on their experience in the **Innovation Reflection** activity in the Exploring Activity Library.

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 unit or specific focus area.

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

RESOURCES
Activity 1 - User Testing Handout

Your group will be testing the prototype of your project on other members of your unit and potentially users outside of the 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 will focus on writing feedback.

Assign Roles for Testing
Decide who on your team will have each of the following roles for the test. You can 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.
- 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 project. If you like you can also run this test with people outside of the unit 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 you'll use 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.	*The images should link to settings page.*

<u>Create User Tasks</u>

Fill in the left column of the table with different common tasks your user will want to do with your project.

<u>Test Your Prototype</u>

Give this testing guide to your user. Test the project by starting them at the beginning of your project. Try to complete each task listed in the table. Here's 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

<u>Record Findings</u>

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 User Tried	My Reaction

Activity 2 - Interpreting User Feedback Handout

Review your notes from user testing and write down your team's observations of the users' feedback.

User Said / Did	What it Means

Brainstorming Session

Using sticky notes and the analysis above, brainstorm the bugs the user identified in the project and features that the user suggested for the project. Record each bug or feature on a separate sticky note.

Make sure to write whether this is a BUG or a FEATURE and give a ballpark estimate of the amount of time the team thinks it would take to implement the fix or new feature. Remember that bugs and features can come from confusing text, inconsistent color choice, and confusing layouts.

Bug and Feature Analysis

Duplicate the tables below on a piece of poster paper. Discuss amongst your team where you think these bugs and feature requests would go in the table, placing the sticky into the appropriate quadrant. If you are unsure about the difficulty of a feature to implement go with your best guess.

	Easy to Implement	Difficult to Implement
Urgent Fix		
Non-Urgent Fix		

Tracking Progress

Using the To Do, Doing, Done chart on the bottom of your poster, start moving sticky notes from the Urgent/Easy quadrant to the To Do column. Choose at least two tasks per group member and write on the sticky who the task is assigned to. As you work on improving the project, you will move the stickies through the stages of this chart.

To Do	Doing	Done