BIRDEE Unit 1 Lesson Plans

1.1.2. Empathy & Customer Discovery

Different users have different needs. How do engineers understand users' needs? How do engineers design WITH users rather than FOR them? Tools that can help engineers understand users' needs are surveys and interviews. Students will respond to a customer survey and analyze results to define a relevant problem.

Before the Lesson: This lesson contains a Customer Survey. Teachers will need a Google account to make a working copy for each class. Click here to access the **1.1.2. Birdee Customer Survey Teacher Directions.**

Teacher Note: **Empathy** is when you can feel what another person is feeling. **Empathy** is the foundation of a human- centered **design** process; by deeply understanding people we are better able to **design** for them. We **empathize** to discover people's expressed and latent needs so that you can meet them through your **design** solutions. - Stanford d. School

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Engage: 5 min

View: 1.1.2. BID Ideation
- You are trying to design and make a new musical instrument. What could you look to in nature for inspiration?
- List as many things and organisms from nature as you can that you'd like to inspire an instrument in your new band.
- **Class Discussion** on what students brainstormed

Engage: 15 min *(Teacher led Discussion & Analysis)*

What is empathy?
What is the role of empathy in design/engineering?

Play Video: Jitterbug Video

1.1.2.

BID Ideation

After watching the video, teachers will ask students:
What are your thoughts/reactions to this product?

Student Handouts:

1.1.2. Write an Initial Problem Statement

Student Materials:

Birdee Customer Survey

Instructional PPT's & Materials:

1.1.2. BID Ideation

Compare Phones T Chart

Vanderbilt Makeathon video

Teacher Resources:

1.1.2. Birdee Customer Survey Teacher Directions.

1.1.2. Birdee Customer Survey Questions PDF

1.1.2. Compare Cell Phones T-Chart Teacher Guide

1.1.2. Write an Initial Problem Statement Teacher Key

Web Resources:

Jitterbug Video
IPhone Video
Compare Phones T Chart
1.1.2. Identify User Needs Chart

View: Compare Cell Phones T-Chart
Teachers will guide a discussion to complete the T chart for the Jitterbug:
- Who is the Intended USER of the phone? Describe 3 characteristics.
- What are the features of the Phone?
- Do these Features meet the user's needs? Indicate with star/checkmark.

Play Video: IPhone Video
Teacher adds iPhone information to the T chart with participation from students.

- Which phone would you rather use? Why?
- It is important to understand the needs of your customer so that you can design a solution that actually solves the problem your customer has.
- To fully understand the user's needs **you have to stand in their shoes and that is empathy.**

Explain: 15 min *(Class Activity)*

Empathy and the Engineering Design Process
Engineering problems can be discovered through empathy—by attempting to understand the needs, challenges, and cultures of other people and societies. Empathy allows us to truly understand and uncover the latent (hidden) needs and emotions of the people we design for.

Thinking back to the phone, there are many users with different needs that use a phone. The Jitterbug phone was made for specific users and the iPhone was made for specific users. As a class we will identify 3 characters from books/movies that have different cell phone feature needs (example: The Weasley's from Harry Potter, Wonder Woman, Percy Jackson, character from Star Wars).

View: 1.1.2. Identify User Needs Chart

Teacher Note: Class Discussion The teacher will list 3 different characters based on student suggestions, then solicit cell phone features for each user.

Now you've brainstormed needs FOR someone else who uses a phone. How would you make sure these are **actually** the needs of your customer? How would you design WITH your user?

Design For vs. Design With
How do engineers understand users' needs? Here is an example of how engineers considered users' needs to make a product for the user.
Play Video: Vanderbilt Makeathon for Disabled Kids (3:28)
- Inspired by a challenge to make a child's life better through engineering and design, students from Vanderbilt, occupational therapists, and professional engineers worked for three days to

build inventions that would make life a little easier for a child with special physical needs.
- Engineers design WITH users by observation, interviews, and surveys.

Explore: 10 min *(Individual)*

Birdee Customer Survey

Teacher Note: In order to use the survey with your students, you will need a Google account. This will enable you to make a working copy for each of your classes. Go ahead and login to your google account within your browser.

Now, we are going to move away from our phone activity and return to identifying a problem of something/things that get dirty. You've listed what you think are problems and needs for things that get dirty. You will complete a survey to further investigate this problem and what the actual needs of the users are. Then, you will write a problem statement based on the new information you've gathered from the survey. You are practicing how to design with rather than design for.

Teacher Note: Students take the web based survey - visualizations will be provided automatically through the Google Form survey/Track survey results.

Evaluate: 10 min *(Class Discussion)*

Visualization & Analysis
Teacher Note:
- *Show Visualization of survey data by clicking on the Responses tab in the Google Form.*
- **Class Discussion:**
    - Which of the items on the list is of biggest concern to the most students?
    - Who addresses these problems?
    - How often is it the students themselves versus others?
    - In the discussion, ask students to share their personal experiences. Try to elicit more details about their frustrations and the problems.

Extend: 5 min *(Individual)*

Initial Problem Statement

View: 1.1.2. Write an Initial Problem Statement
- Write a problem statement containing a clear need and a target audience/user. How does empathy play a role in your assessment of the problem? Answer on the worksheet.