The Design Process ('21-'22)

Designing With Empathy

Resources

Name(s)_____ Period _____ Date _____

Activity Guide - Designing With Empathy

Determine the User

The left-side has descriptions of different types of users, and the right side has pictures of different shoes. Next to each description of a user, write down the letter of each shoe they might use. Be prepared to justify your answers.

1. Someone who spends most of their day indoors
2. Someone who is athletic
3. Someone who spends most of their day standing
4. Someone who likes to appear stylish and unique
5. Someone who needs to apply ointment to their feet twice a day
6. Someone who lives someplace where it snows a lot
7. Someone who walks to work
8. Someone who struggles to put their shoes on due to a physical disability
9. Someone who likes to go on long walks outside
10. Someone who lives by the beach
11. Someone who frequently gets swollen feet due to allergies
12. Someone who spends most of their day working outside
13. Someone who wants to go out and have a good time with friends
14. Someone who needs to put on shoes quickly to walk their dog
15. Someone who wants to appear professional
16. Someone who wants to relax at the end of a long day

A.
Photo By Dave Morris

B.
Photo By Christine Urias

C.
Photo By DLG Images

D.
Photo By Martin Abegglen

E.
Photo By CDR Snapshots

F.
Photo By Marlene Manto

G.
Photo By Claudia Daggett

H.
Photo By Steven Lilley

Design Feedback

For each of these shoes, finish the statements on the right that give feedback on the object's design:

	I like _____ _____ I wish _____ _____ What if _____ _____
	I like _____ _____ I wish _____ _____ What if _____ _____
	I like _____ _____ I wish _____ _____ What if _____ _____
	I like _____ _____ I wish _____ _____ What if _____ _____

The Design Process ('21-'22)

Understanding Your User

Resources

Name(s)_____ Period _____ Date _____

Activity Guide - Reacting as Your User

Product Evaluation

Your teacher will present a series of different products for you to react to. For each product shown, analyze and rate each of the items shown to you, from the point of view of the user described in the user profile.

Misconception Alert

It's easy to think about this in terms of what you like or don't like, but you should be responding based on what your user would like or not like.

Product	Feature Analysis
Product Name: _____ Like Just OK Dislike	My user would like/dislike because
Product Name: _____ Like Just OK Dislike	My user would like/dislike because
Product Name: _____ Like Just OK Dislike	My user would like/dislike because

Product Redesign

Review the 8 chairs as your assigned user and answer the following questions:

1. Which chair would your user prefer? _____
2. Name 2 features of your chair that your user likes. How do you know your user would like them?

3. Given what you've learned about your user, design a better chair in the box below.

Discuss

1. Name two features from your new chair design and describe why they appeal to your user.

2. Name two features from other chairs you chose <u>not</u> to include and explain why.

3. Compare the chairs within your group. What do they have in common? What's different?

Activity Guide - User Profile

Randi : Outdoorsy Professor

User Profile

Randi is a 35 year old woman who lives in Wolf Point, Montana. She is a member of the Sioux Tribe and teaches Native American Studies at Fort Peck Community College. She closely follows the college women's basketball team, the Buffalo Chasers, and she wears the team colors of red, yellow, and black every chance she gets. Randi enjoys winter sports like skiing and ice fishing, and frequently brings her dog Scout with her on her outdoor adventures. She has always wanted to visit the ocean in a warm place like Florida but she generally dislikes hot, muggy weather. When she is not outdoors, she loves to curl up on her couch at home with a good book and a slice of chocolate cake, though she prefers to drink tea with it, since dairy gives her an upset stomach. She dislikes watching TV, high heeled shoes, and punk rock music. In the evenings, she sometimes works online communicating with her students and other professors and doing research. She doesn't have an office space so she does this mainly from her couch. She would love to have a better way to separate her work space from her personal space when she's at home.

Point of view statement

Randi needs a way to more efficiently work from home because she doesn't have an organized office/work space.

Activity Guide - User Profile

Gabriella: Dedicated Mother

User Profile

Gabriella is a 34 year old woman living in Cicero, Illinois. She was born in Indiana and moved to Illinois after meeting her husband Michael in the military. Gabriella now works for a real estate agency and spends much of the rest of her time taking care of her daughter who is in 3rd grade at the local elementary school. She and Michael have early mornings getting to school and then work, and on the weekends they are busy running errands. Gabriella enjoys attending her daughter's soccer games, being involved in community groups in her neighborhood, and attending dance classes. While in the military she would work out more often but in the last few years she's had less and less time. She also wishes she had more time to see her family back in Indiana and worries that her daughter does not get to see her grandparents enough.

Point of View Statement

Gabriella has a jam-packed life in Illinois. She wishes she had a little more time for herself and wants her daughter to be connected to family back in Indiana.

Activity Guide - User Profile

Tony : Insurance Adjuster

User Profile

Tony (full name Antonio) is an insurance adjuster in his late 20's, living outside Los Angeles. He works for a large insurance company in the area, and has to drive a lot for work, which means being stuck in traffic listening to the radio most of the day. Tony really wishes that he had more free time, and could afford to live closer to the city. He would prefer not to keep working in insurance and would rather find a job in health care. He completed high school but never attended college and while he would like to go back to school to change his career, Tony has a hard time saving money.

On the weekends, Tony plays bass in a reggae band with his roommates, but they rarely get to perform or practice. Tony also loves to go to the movies, and he prides himself on knowing the names and history of all the actors. He has found that it's really hard to make friends outside of his roommates and wishes that he had some way to share his knowledge and interest in movies with more people so that he might find new like-minded friends.

Point of view statement

Tony wants a way to share his interest in movies with a wider range of people that could potentially become new friends.

Activity Guide - User Profile

Amelia : Retired Cashier

User Profile

Amelia is a retired grocery store cashier who, after moving around the country with her military husband David, has settled in Atlanta. She loves to cook, and particularly enjoys trying out new recipes from different regions around the world. Amelia and her husband have found that they really enjoy the great food and museums in Atlanta, but the summers have proven to be too hot and humid for their liking and they have started saving up to do a little bit of travelling.

Amelia has 4 grown children and 7 grandchildren. She finds it really hard to live so far away from all of her grandchildren, so she tries really hard to find fun and exciting activities to do with them when they come to visit. Being new to the area, and having grandkids that range in age from 4 - 15, Amelia sometimes has difficulty finding activities that the whole group can enjoy but are still affordable on her budget.

Point of view statement

Amelia wants to find interesting activities in her area that are appropriate for a wide variety of ages, and she’d like to know before leaving the house how much the activity is likely to cost.

The Design Process ('21-'22)

User Centered Design Define and Prepare

Resources

Name(s)_____ Period _____ Date _____

Activity Guide - User Centered Design (Define & Prepare)

Overview

Designing a product requires you to think about the needs of your users, even if those needs are very different from your own. In this activity you will be designing a product from the ground up for the specific needs of a user.

The product you will be designing is a piece of **smart clothing**. For this activity consider smart clothing to be any piece of clothing that also integrates computing technology. It might have sensors that record data, change colors or display information, or even connect to the internet. Push the boundaries of what's possible. So long as your design **meets the needs of your user** it is appropriate for today's activity.

Define

Brainstorm User Groups

In the space below brainstorm as many different kinds of people as you can who might benefit from smart clothing. These should be one or two word phrases that describe large groups of people.

Categorize Users

Create scraps of paper for each of your users. As a group or as a class **create categories of users** by grouping together similar types of users.

Choose Specific User

Choose a specific category of user to design for and write it here: _____

Brainstorm Needs

In the space below brainstorm the **needs, interests, and concerns** of your user.

Categorize Needs

Create scraps of paper for each of your user's needs, interests, and concerns. As a group or as a class **create categories of needs** by grouping together similar needs.

Choose Specific Need

Write the specific need your group selected: _____

Prepare

Brainstorm Solutions

In the space below brainstorm ways **smart clothing** could be used to help address the need your group chose.

Discuss Pros and Cons

With your group discuss the pros and cons of the ideas you brainstormed. In each case keep in mind **the specific need of your user**.

Choose Specific Solution

Write the specific solution your group will focus on: _____

The Design Process ('21-'22)

User Centered Design Try and Reflect

Resources

Name(s)_____ Period _____ Date _____

Activity Guide - User Centered Design (Try & Reflect)

Try

Overview

Imagine you are part of a team of engineers for a smart clothing company - you can create & design any kind of smart clothing you can imagine. In the guide below, you should design a product to meet the needs of your group's user. Each person on the team should have a role:

Scribe: Write a description of what your product is and how it addresses your user's needs.
Artist: Draw your group's product in the space below or on the provided chart paper.
Timekeeper: Watch the time and make sure you group finishes on time. Share out how much time is remaining as the group progresses.
Presenter: Be prepared to share your product with other groups using the prompts on the second page of this activity guide

Describe Your Product

In the space below write a short description of your product and **how it meets the needs of your user.**

_____

_____

_____

_____

Draw Your Product

In the space below **draw a picture of the piece of smart clothing** you want to create. Label the different components you will be adding to the clothing.

Reflect

You will be sharing out your smart clothing design with others in the class and reflecting on how well the product meets the needs of your user

Preparing to Share Out

Answer the following questions in the space below:

Who is your user and what is the specific need you identified?

What are the features of the product you designed?

How do these features address the needs of your user?

What is one feature you might like for yourself but decided NOT to include for your user?

What is one feature you might dislike for yourself, but you included because it meets the needs of your user?

The Design Process ('21-'22)

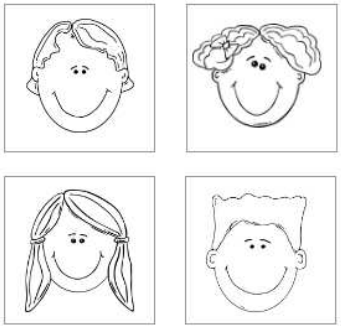
User Interfaces

Resources

Activity Guide - User Interface Screens

User Interface (UI): These images represent the visual elements of this app. Cut out each screen card.

Txt Ur Grndkdz



Suzette

Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th

Chat

Suzette
Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th

Hi granny, how are you?

Just keepin' it real!

LOL, you're a goof

You know me :)

send

LOL

Definition:
Laughing Out Loud

Grandkid Use:
"[Laughing Out Loud], you're a goof"

Help

Txt Ur Grndkdz is an app designed to help you connect better with the younger generation.

Add a grandkid, select their face on the home screen and start chatting. Whenever your grandkid uses a slang word it will show up with a red outline. Click on the outlined word to learn the definition and see a translation of your grandkid's message.

Settings

Settings

Grandkid 1 Name:
Grandkid 1 Bday:
Grandkid 1 Phone:

Grandkid 2 Name:
Grandkid 2 Bday:
Grandkid 2 Phone:

Grandkid 3 Name:
Grandkid 3 Bday:
Grandkid Phone:

Grandkid 4 Name:
Grandkid 4 Bday:
Grandkid 4 Phone:

Allow Notifications: ☑

Home

Activity Guide - User Testing (Computer)

Navigation Diagram

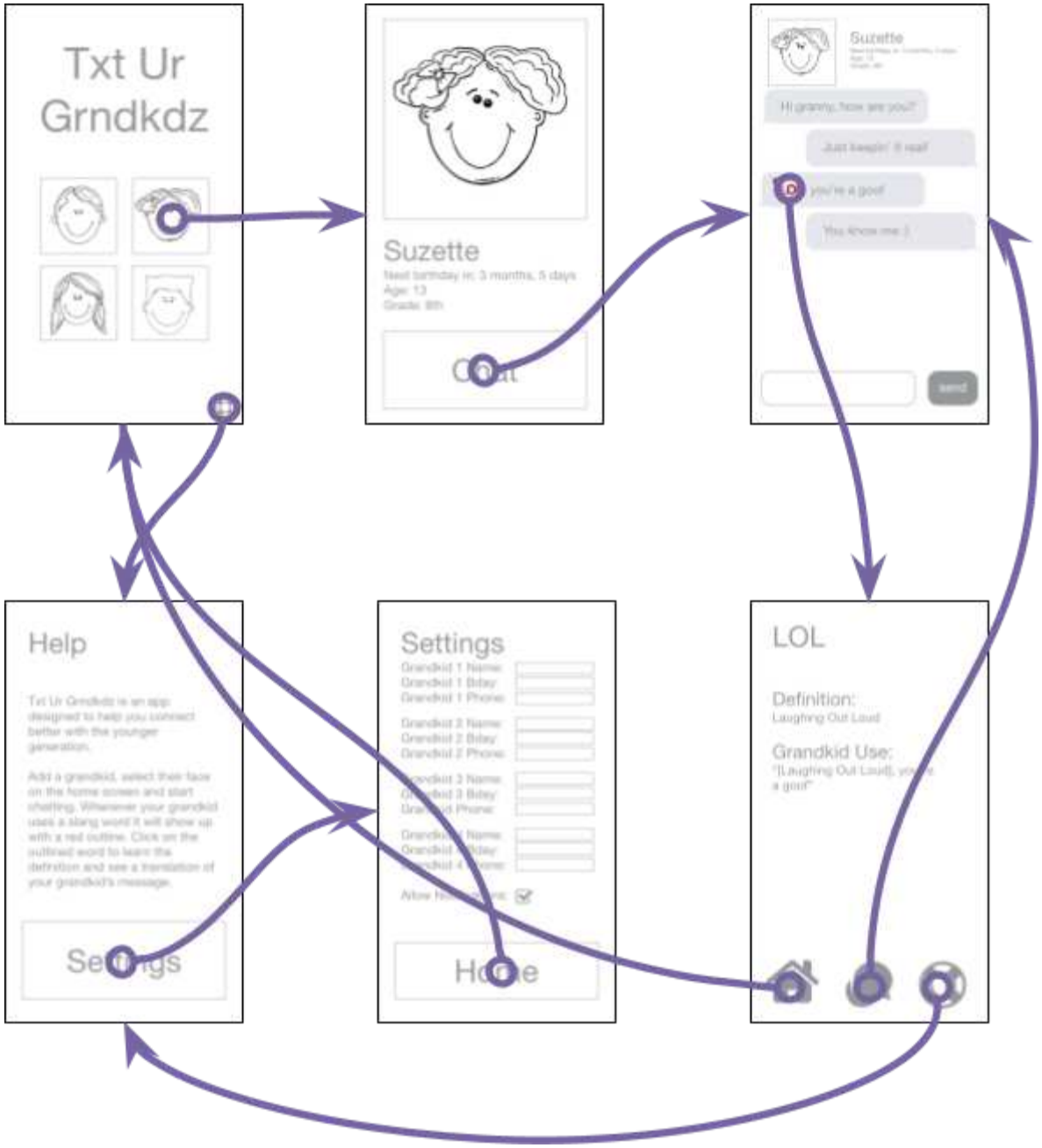
The Navigation Diagram to the right describes how each screen of this prototype is connected to other screens. Each arrow connects an element (such as a button, image, or icon) to another screen of the app. Combined with the UI screens this diagram allows you to “use” the paper prototype as if it were a real app.

Prototype Testing

You’re going to test out this prototype with a partner. Your role is to be the *computer*, taking input from the *user* and responding accordingly.

Rules for the Computer

- Place the first screen in front of the User
- Place the rest of the screens off to the side
- When the user clicks on a card, refer to the diagram:
    - If the clicked element has a line, switch to the screen that the line links to
    - If the clicked element doesn’t have a line, don’t do anything



Name(s)_____ Date _____

Activity Guide - User Testing (User)

Test Cases

A *test case* is a specific user interaction that the developer of an app wants to test for. Choosing good test cases can ensure that when you test an app with a user, you hit all of the important functionality. In the table below, each row is a test case made up of a specific task that you are trying to perform, a space for you to document what you tried, and a space to record your reaction.

Prototype Testing

You're going to test out this prototype with a partner. Your role is to be the *User*, interacting with the User Interface screens as if it's an actual app. Your partner (the *Computer*) will take care of making sure the prototype responds as it was designed. Use the table below to try out different test cases and record the results. The last few rows are left blank to allow you to explore other areas of the app that interest you. The first row is completed as an example

Task	What I Tried	My Reaction
View Suzette's information	*Clicked on each of the of the faces until I found one that changed to Suzette's screen.*	*It wasn't really clear who was who on the home screen. It would be nice if it showed each kid's name below their picture*
Get help on how to use the app		
Find out when Suzette's birthday is		
Send Suzette a message		
Get the definition of an unknown acronym		

Table continues on the back

Task	What I Tried	My Reaction
Change Suzette's Age		
Change Suzette's Picture		
Enable Notifications		

The Design Process ('21-'22)

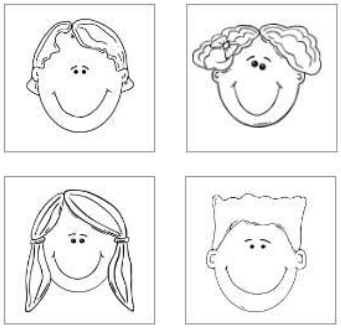
Feedback and Testing

Resources

Activity Guide - User Interface Screens

User Interface (UI): These images represent the visual elements of this app. Cut out each screen card.

Txt Ur Grndkdz



Suzette

Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th

Chat

Suzette
Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th

Hi granny, how are you?

Just keepin' it real!

LOL, you're a goof

You know me :)

send

LOL

Definition:
Laughing Out Loud

Grandkid Use:
"[Laughing Out Loud], you're a goof"

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Settings

Settings

Grandkid 1 Name:
Grandkid 1 Bday:
Grandkid 1 Phone:

Grandkid 2 Name:
Grandkid 2 Bday:
Grandkid 2 Phone:

Grandkid 3 Name:
Grandkid 3 Bday:
Grandkid Phone:

Grandkid 4 Name:
Grandkid 4 Bday:
Grandkid 4 Phone:

Allow Notifications: ☑

Home

1. I'm having a hard time figuring out how to add my grandkids to this app. Seems like it'll be really useful but I've been clicking around and can't seem to find it.	11. I'm wondering if this app needs to be just for people who want to talk to their grandkids. I volunteer at my local elementary school and would love to use this app to keep in touch with my students. Is there any way to make it less grandkids focused?
2. Is there any way to zoom in on this app?	12. Why do I need to go through the help screen to get to the settings screen? It took me a really long time to figure this out and I don't think it makes a lot of sense.
3. How do I add grandkids to this app?	13. I just realized you need to go all the way through to a word's definition to get back to the home screen. I feel like you should always be able to get to the home screen.
4. I just downloaded Txt Ur Grndkdz. I know that lots of apps have names that spell words incorrectly but I feel like it's hard to find this app online because it's spelled incorrectly.	14. How can I add a photo of my grandkids? I found a way to add their information but there's no way to change it from the default image.
5. Is there a way to make it so that when you click on a grandkid it will open up the chat right away? I like the birthday reminders but usually I'm just using this app to talk with my grandkids and don't need all that extra information.	15. Is there a way to change the photo for my grandkids?
6. I'm having a hard time with the text being so small in this app. Is there any way to make it bigger?	16. The font on a lot of these pages is really small and difficult to read. Can we make it bigger?
7. What is a Grndkdz? I don't understand why the app is named this.	17. I feel like I often want to get back to the home page and there's no way to do it. It feels like sometimes you can and sometimes you can't and there's no pattern.
8. I want to change my grandkids' information but I can't seem to find anywhere to do it.	18. There's no way to add my granddaughter's grade. Is it just being calculated using their age?
9. Whenever I go to the chat page for a grandkid I can't seem to get back to the home screen. Right now I just have to shut the whole app down.	19. This says that my kid is in 7th grade but they skipped a grade and are in 8th. How is this grade showing up?
10. I would like a way to talk with more than 4 grandkids. I have 11 and was hoping this app would be a good way to stay in touch will them.	20. Is there a place to enter a student's grade?

Name(s)_____ Date _____

Activity Guide - Improve a Screen

Potential Improvements

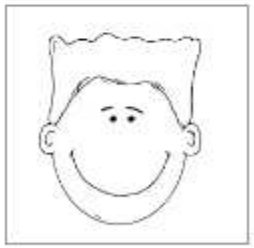
Using the feedback you categorized in the last activity, what improvements could your group make to the app? For each improvement, identify which category of feedback you are addressing.

Proposed Improvement	Feedback Addressed

Screen Redesign

Each group member will select one of the screens, and one of the improvements. Using the page for your chosen screen, sketch out what your improved user interface will look like. Describe changes to the user experience by writing descriptions or drawing arrows to the changes you've made in the space below. How will buttons, inputs, etc. work differently on this updated screen?

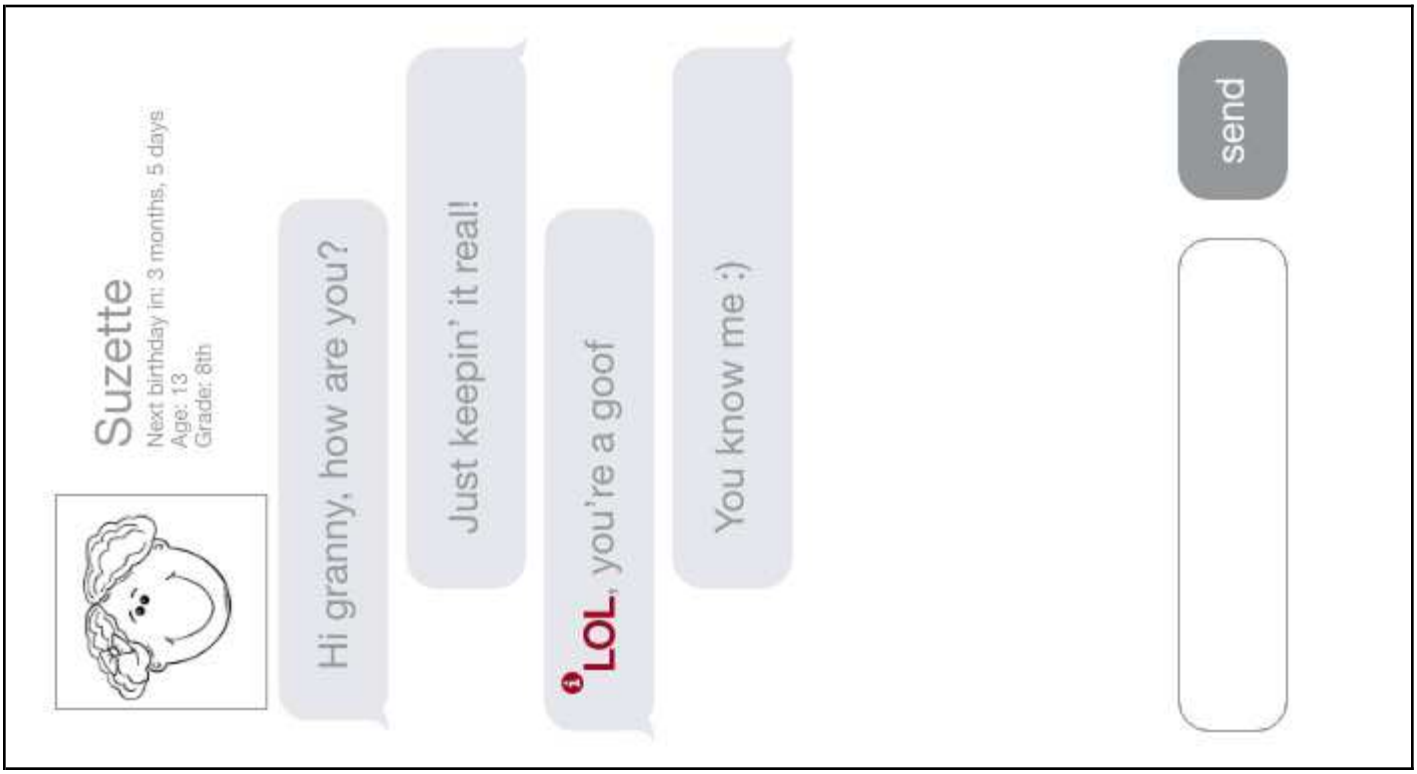
Txt Ur Grndkdz



Suzette

Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th

Chat


Suzette
Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th
Hi granny, how are you?
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LOL, you're a goof
You know me :)
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Grandkid 1 Bday:
Grandkid 1 Phone:

Grandkid 2 Name:
Grandkid 2 Bday:
Grandkid 2 Phone:

Grandkid 3 Name:
Grandkid 3 Bday:
Grandkid Phone:

Grandkid 4 Name:
Grandkid 4 Bday:
Grandkid 4 Phone:

Allow Notifications: ☑

Home

The Design Process ('21-'22)

Identifying User Needs

Resources

Name_____ Date _____

Activity Guide - User Interview

User Interviews

Read through the provided User Interviews and identify a particular user you would like to focus on. You will be developing the prototype for an app to meet the needs or interests of this user.

Which user are you focusing on?_____

Needs & Interests

Based on the information provided by your user, write down as many needs or interests that you notice about your user. You can identify items that they may have said directly, or you can notice needs or interests by reading between the lines or combining together several factors about the person (like their age and where they live). For each item below, you should be able to point to a section of the User Interview that motivated your answer below.

Needs	Interests

Barriers & Opportunities

Using the notes you've taken above, come up with a list below of all of the barriers that are preventing your user from meeting their needs, or new opportunities for your user to explore their interests. These will inform the goals of the app you will develop for this user.

Barriers	Opportunities

App Idea

Circle one of the items you wrote above - this will be your focus. Write 1-2 sentences describing an app that could be a solution to the barrier or opportunity above

Name: Dimitri

Age: 33

Tell us about where you live: I live in a small town surrounded by farms. I know most of the people in my community - we all say hi to each other. We have a big farmer's market event once a month where everyone gets together.

What is an interest or hobby that you have?
I grow flowers and herbs in a garden outside my home. I've been growing vegetables and flowers from around the area, but I'd love to learn more about different types of plants that could grow in my area. A lot of people really like them, so sometimes I sell them at the farmer's market.

What is an issue or problem you've been facing recently?
The weather has become really unpredictable lately, which has been affecting the crops in the farms around the community and will sometimes ruin plants in my garden. It's been hard to know when the area might be heating up or cooling off, because then we need to adjust how we take care of our crops and plants. I wish there was a better way to know when we'll have extreme weather so we could react.

Name: Sung

Age: 57

Tell us about where you live: We just moved - I live with my partner in a community just outside the big city. It's quieter in our neighborhood so we can go for walks, but still close enough to the city to visit friends.

What is an interest or hobby that you have?
I really like going out to events and being with people - like seeing a movie or watching a play or going to a concert. My partner prefers to do something more quiet, like read a book or work on a puzzle. We both like stories with a mystery, so that's usually something we can do together.

What is an issue or problem you've been facing recently?
Since we just moved, we don't know a whole lot of people in our neighborhood yet. Sometimes we see people on a walk, but it's been hard to make new friends. We still go back to the city to visit our old friends, but that can be a long drive and we worry about traffic and the pollution from driving so often. We wish there was an easier way to connect with people.

Name: Rosa

Age: 11

Tell us about where you live: My family and I live in an apartment across from a big park and down the street from the train station. But I'll have a baby sister soon, so we're looking to move somewhere bigger!

What is an interest or hobby that you have?
I really like taking care of animals! We had a class hamster that I got to take care of for two weeks and it was really fun! If I could, I'd help take care of any pets I could find. Except snakes - I don't like snakes.

What is an issue or problem you've been facing recently?
I keep getting in trouble for being late. I take the train home from school, but sometimes I don't know when the train comes and so I miss it and have to catch the next one. Or I'll be playing in the park and lose track of time and get home later for dinner. My family gets worried about me sometimes, so I wish there was a way to let them know I'm okay. Or to help me not be late for things!

Name: Carla

Age: 25

Tell us about where you live: I live in a town up in the mountains surrounded by trees. The main landmark in the town is the college where I go to school - I'm studying computer science!

What is an interest or hobby that you have?
I really like hiking - going out into the forest or the hills and looking out at the landscape. I sometimes forget which hikes I've taken so I end up doing the same one twice, which is really bad when it's a hike that I didn't like the first time. I also try to make sure I have enough water and snacks for the hike, but sometimes I don't have enough and have to turn back early.

What is an issue or problem you've been facing recently?
Our town is really beautiful, but we've had some problems recently with litter and trash in our community. I think it's because most people walk since it's a college town, but you can't always find a trash can to throw things away in. I'd be willing to go with a group to help clean up some parts of our community, but I don't know if there are other people willing to clean up our area too.

The Design Process ('21-'22)

Project - Paper Prototype

Resources

Name(s)_____ Period _____ Date _____

Computer Science Practices Reflection

How I've grown	Practice	How I want to grow
	Problem Solving	
	Persistence	
	Creativity	
	Collaboration	
	Communication	

Name(s)_____ Period _____ Date _____

Project Guide - Paper Prototype

Overview

For this project you will be creating a paper prototype of an app to help a user address a need or interest. You have already chosen a user and identified a barrier or opportunity you would like to address. You will be prototyping an app that helps them overcome this barrier or that expands on this opportunity. Feel free to try creative new approaches to the problem you've identified, but whatever you decide to design, make sure you are empathizing with the needs of your user.

You will submit:

- This project guide
- The screens of your app. These will be drawn on notecards. At most you can have 6 screens
- A navigation diagram of your app, showing how your user moves between screens
- A poster showing off your prototype and describing how it works

Define

You have already recorded this information on the User Interview Activity Guide. Record those results below.

What is the need or interest you are focusing on?

What barrier or opportunity will your app address?

Prepare

As a class you should have discussed types of apps that can address your user's needs. Now it's time to start thinking about what specifically this app will do.

Briefly describe the type of app you are planning to design:

In the space below list the minimum features your app will need to meet your user's needs.

Try

Create Your Navigation Diagram
On the next page, sketch out the outline of your screens and how a user will navigate between them. Any information about how the user interacts with the app should be included on this diagram. To keep your app simple you should limit yourself to 6 screens at most. Some things to keep in mind:

- Focus on structure. What's the purpose of each screen? What features do they need to include?
- Start with core features. Only add "extras" once you're sure they're necessary
- Decide what consistent design features you'll use (e.g. a menu that's always at the top)
- Don't worry about drawing things perfectly. This is a sketch to help you design your final draft.

Create Your Screens
After you've created your navigation diagram, you will be given notecards to draw the final version of your screens. Using pencils, markers, colored pencils, or anything else you wish, create a paper prototype of your app. This should be more formal and look closely like how you imagine the finished app.

Navigation Diagram

Draw simple sketches of your screens in the space below. Then draw arrows showing how a user would navigate between your screens.

Any information about how the user interacts with the app needs to be included on this page.

After you've created your navigation diagram above, you will be given notecards to draw the final version of your screens. Using pencils, markers, colored pencils, or anything else you wish, create a paper prototype of your app. This should be more formal and look closely like how you imagine the finished app.

User Testing

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 app.

Test Your Prototype

Give this testing guide to your user. Test the app by starting them on the home screen and allowing them to navigate through it by clicking. Try to complete each task listed in the table. Here's some guidelines

- As the "computer" only use pieces of interaction included on the Navigation Diagram to move around the app
- Don't explain how the app 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 app was to use.

Task	What I Tried	My Reaction

Reflect

Interpreting User Feedback
Using your notes from user testing, list all of your observations of interesting things the user said or did, and attempt to identify what that might mean about how your app works, or should work.

User Said / Did	What it Means

Create a Poster

Combine the different pieces of work you completed for this project to create a single poster. This will require you to cut out different parts of this activity guide and attach them to a single poster. Your poster should include:

- The name of your App
- Your navigational diagram (page 3)
- Your final user screens (index cards)
- Your table from the results of User Testing (this page)

In addition to the artifacts above, your poster must also have a section with 4-5 sentences that include:

- Describe the user that your app is targeted towards
- Describe the need or interest your app is addressing
- Describe your app and how it works
- Describe how your app addresses the needs of your user
- Describe any improvements you would make based on your testing

Unit 4 Lesson 8 Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Purpose of Your App	The purpose of your app is clearly defined in terms of multiple user needs and challenges as identified in the interview.	The purpose of your app is defined in terms of the needs of the specific user as determined by the interview, and at least one related challenge is identified.	The purpose of your app is described in terms of the needs of the user, but the description may not be specific to the user or relate back to the interview.	The purpose of your app is not defined, and user needs are not identified.
User Needs and App Features	There are explicit connections between user needs and specific features of your app, and explanations of how multiple features address those needs.	There are explicit connections between user needs and features of your app.	User needs are identified, and appear to be related to app features, but may not be explicitly connected	User needs are not mentioned, or do not appear to be addressed in your app.
Screens and Elements	There are multiple screens and elements, with a clear and distinct purpose for each screen and elements that relate to that purpose.	Multiple screens and elements relevant to the user's task and stated features of your app.	At least one screen with multiple elements that are relevant to the user's task and stated features of your app.	No screens, or screens with elements that are not related to the stated features of your app.
Testing	Your poster describes the results of user testing, synthesizes feedback, and identifies specific areas for improvement.	Your poster describes the results of user testing, including a synthesis of user feedback.	Your poster describes the user testing, but there is no clear analysis of test results or synthesis of the feedback.	No user testing is mentioned.
Navigating your App	It is clear how the user would navigate your app and how the steps of the navigation relate to solving the user's problem	It is clear how the user would navigate your app and all required screens and elements are described.	Your poster describes how the user could navigate your app, but elements may be missing.	No description of how the user could navigate your app.
Improvements and Feedback	Multiple proposed improvements to your app are clearly related to the results of testing, with an explanation of how feedback is being addressed.	There are proposed improvements to your app that are explicitly related to the results of testing.	There are some proposed improvements to your app, but there is no clear connection to the results of testing.	There are no improvements mentioned to your app.

Unit 4 Lesson 8 Project - Student Checklist

Key Concept	Extensive Evidence
Purpose of Your App	❒ The purpose of your app is clearly defined in terms of multiple user needs and challenges as identified in the interview.
User Needs and App Features	❒ There are explicit connections between user needs and specific features of your app ❒ There are explanations of how multiple features address those needs.
Screens and Elements	❒ There are multiple screens and elements ❒ There is a clear and distinct purpose for each screen and element that relates to their purpose.
Testing	❒ Your poster describes the results of user testing ❒ Your poster synthesizes feedback ❒ Your poster identifies specific areas for improvement.
Navigating your App	❒ It is clear how the user would navigate your app ❒ It is clear how the steps of the navigation relate to solving the user's problem
Improvements and Feedback	❒ There are multiple proposed improvements to your app that are clearly related to the results of testing ❒ There are explanations of how feedback is being addressed.

The Design Process ('21-'22)

Designing Apps for Good

Resources

Team Name : _____ Period _____ Date _____

Activity Guide - App Design Kickoff

Team Agreement

Your first decision as a team is to agree on how you'll work together. You'll follow upon classroom norms for communication, decision-making, and participation. There is space for additional agreements as well.

Read through this agreement, discuss it as a team, then sign in the box below saying you agree.

Communication

When working together in the classroom, we agree that we'll treat each other with respect. That means:

- our written and verbal communication will be considerate (no calling each other names)
- we'll take turns when sharing ideas, and listen politely when others are speaking
-
-
-

Decision Making

When making decisions as a team, we'll first listen to everyone's point of view. We'll then try to make a decision that respects everyone's ideas, and that everyone can agree on.

If that isn't possible after several tries, then we'll _____

_____.

If we still can't decide, then we'll ask the teacher to help.

Once a decision is made, we all agree to work on it with our best effort, even if it wasn't our personal choice.

Participation

We agree that this project will only succeed if we are all participating and working on it. We promise to:

- try our best on every activity, and ask for help if we need it
- turn in our work on time
- check in with other team members or the teacher if we miss class, so the project can stay on track
-
-

First and Last Name	Today's Date
1.	
2.	
3.	
4.	
5.	

Brainstorming

Team Name

Choose a team name and write it below:

Topic

What general topic will your app focus on? Don't worry about what specifically the app will do at this point, just consider what type of problem you are interested in. For example, you may consider issues in your school community, encouraging civic service, promoting the arts, improving the environment, or improving the health and wellbeing of others.

User Groups

What kinds of people could you develop this app for? Consider all of the different groups of users impacted by your chosen topic.

Other Notes:

U4L09 Activity Guide - App Resource List

This is a resource list of the apps referenced in this lesson:

1. Verizon App Challenge winner created “Hello Navi”. Helps blind students navigate school and other locations.
    - (2:57 min) Pitch video: https://www.youtube.com/watch?v=vT-sOUZ_g4Q
2. Trisha Prabhu created “ReThink”. Helps prevent cyberbullying by making users think before sending a mean text.
    - (2:38 min) ReThink YouTube video: https://www.youtube.com/watch?v=oGuvpB4r_tU
    - ReThink website: http://www.rethinkwords.com/
3. Technovation 2016 MS winning team California Coders: “Loc8Don8”. Finds donation sites and tracks several types of charitable donations.
    - (3:51 min) Loc8Don8 pitch video: https://www.youtube.com/watch?v=evOgwXoi7oU
    - (1:27 min) Loc8Don8 demo video: https://www.youtube.com/watch?v=HYLvaojZ0Q0
    - (6:30 min) Loc8Don8 PP Presentation: https://www.youtube.com/watch?v=sKFIxquRj2Y
4. The Techi Crew from Winchester, MA created “SpeechReach”. Helps users improve public speaking skills.
    - (3:23 min) SpeechReach pitch video: https://www.youtube.com/watch?v=K4vdf7O4ckM
    - (1:53 min) SpeechReach demo video: https://www.youtube.com/watch?v=klL2AMmVUf0
5. Verizon App Challenge 2014 winning team from Kennewick, WA created “Safe and Sound”. Helps teens cope with depression.
    - Youtube video: https://www.youtube.com/watch?v=4nis8VmJHKc
    - Huffington Post article: http://www.huffingtonpost.com/2015/02/20/safe-and-sound-app_n_6723386.html

The Design Process ('21-'22)

Market Research

Resources

Team Name _____ Period _____ Date _____

Activity Guide - Market Research

Finding Similar Apps

Use the internet to find apps that have a similar topic to the one you chose with your team. Fill in the information below on the apps that you find during your research. For each app you find, you'll need to identify who the target users might be, what you liked about the app (and therefore might use for inspiration in your own app), and what you didn't like.

Misconception Alert

The goal of this research is to help you decide the topic, the target user group, and the type of app you want to create. You are not yet making decisions about what the individual screens of your app will look like.

Name of App What it does	**Who is the target user?** How are their needs met?	**I liked...**	**I didn't like...**

Brainstorming App Ideas

Brainstorm with your team potential ideas for your app. When you've found an idea that the team can agree on, document it here. **Focus on the minimum set of features** that will allow you to prototype and test your core idea.

Team App Idea:

Apps used for Inspiration:

App Name and URL	Features

The Design Process ('21-'22)

Exploring UI Elements

Resources

Team Name_____ Period _____ Date _____

Activity Guide - Explore UI Elements

UI Elements:

The following is a table of some of the UI elements that are available in App Lab. For each element, discuss as a team what you think this element does in general, and how you might specifically use it in your app.

UI Element	General Use	How We Might Use It In Our App
Button		
Text Input		
Label		
Dropdown		
Radio Button		
Checkbox		
Image		
Slider		

The Design Process ('21-'22)

Build a Paper Prototype

Resources

Team Name_____ Period _____ Date _____

Activity Guide - Paper Prototype Planning

Screen Planning

Based on the app you plan to develop, identify all of the screens that you'll need to design. For each screen, decide on a title and write a brief description of what the screen will include, then decide on which team member will be responsible for creating the screen. You may not end up using all of the rows in this table.

Screen Title	Description	Person Responsible

Navigation Planning

Draw simple sketches of your screens in the space below. Then draw arrows showing how a user would navigate between your screens. You should complete this step as a team - one person can draw, everyone else can provide ideas. If you need more screens, draw extra boxes at the bottom of this page.

The Design Process ('21-'22)

Prototype Testing

Resources

Team Name_____ Period _____ Date _____

Activity Guide - User Test Cases

App Introduction

Hello! We are team _____ and we've developed an exciting app called

_____. The purpose of our app is _____

_____

_____

User Testing

Task	What I Tried	I Wish… (this box is optional)

Team Name_____ Period _____ Date _____

Activity Guide - Paper Prototype User Testing

1) Overview

Your group will be testing the paper prototype of your app on other members of your class and potentially users outside of the class. We will be assigning roles for testing, coming up with user test cases, then testing our prototype with different users and taking notes. This process helps make sure we get clear feedback that we can use to improve our apps.

2) Assign Roles for Testing

Decide who on your team will have each of the following roles for the test. You will 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:** handle the paper prototype based on what the user is doing.
- **Observers:** watch the interaction and write down what they see the user do in response to the computer

3) Create Test Cases

On the User Test Cases Activity Guide, write in an App Introduction that you will use to introduce yourself to your user. Then, fill in **only** the left-hand column with common tasks your user will want to do with your app. If you plan to test with multiple users, then each user should have their own copy of the User Test Cases Activity Guide.

4) Test Your Prototype

Find a test user to try out your app. The narrator should introduce your team by reading the App Introduction script you wrote in the last step. Give them a copy of the User Test Cases Activity Guide. As the user tests your app, they can take their own notes on their activity guide as a way to provide feedback. At the same time, you can take notes in this activity guide based on what you observe from the user. Here are some guidelines:

- As the “computer”, only use pieces of interaction included on the Navigation Diagram to move around the app
- Don’t explain how the app 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
- Record anything you notice the user try or say during the test

What The User Did	What Happened (it’s okay if nothing happened)

What The User Did	What Happened (it's okay if nothing happened)

5) Summarize Findings

After user testing, talk as a team on any patterns you noticed while the user was testing your app or any key observations you made. Think about how these observations could lead to changes in your app.

Things the User Did	Changes We Can Make To Our App

The Design Process ('21-'22)

Design Mode in App Lab

Resources

Name_____ Period _____ Date _____

Activity Guide - Screen Ownership

Assigning Screens

Using your paper prototypes as a guide, divide the screens up evenly among your group members. Each person should be assigned at least one screen. If there are additional screens left, consider grouping similar screens together to assign to a single member.

Because you'll be dividing the work up, you'll want to do some planning ahead of time to decide on a common look and feel for your pages. For example, you'll want to agree on things such as:

- Where do navigation buttons go?
- What colors will you use for backgrounds, text, and buttons
- What's the general style and layout?

Give each screen a name that will be used in the app. Screen names can contain only letters and numbers - no spaces, punctuation, or other special characters.

Screen Name	Team Member

Name_____ Period _____ Date _____

Activity Guide - Screen Design

Choose a Screen Name

Each screen needs to have a unique (within the app) and descriptive name. The screen name can only contain letters and numbers - no spaces, punctuation, or other special characters.

Screen Name: _____

Incorporating Feedback

Before designing your screen in App Lab, we need to include the feedback we got when user testing our paper prototype. List any changes you will make to this screen based on user feedback after testing with the paper prototype.

Changes From Feedback:

Naming Your Element IDs

When you create an ID for your elements, it's a good idea to include the name of your screen at the front of each ID. For example, if your screen name is **account** and you have an input box for the user's first name, your ID for that input box would be **account_firstName**.

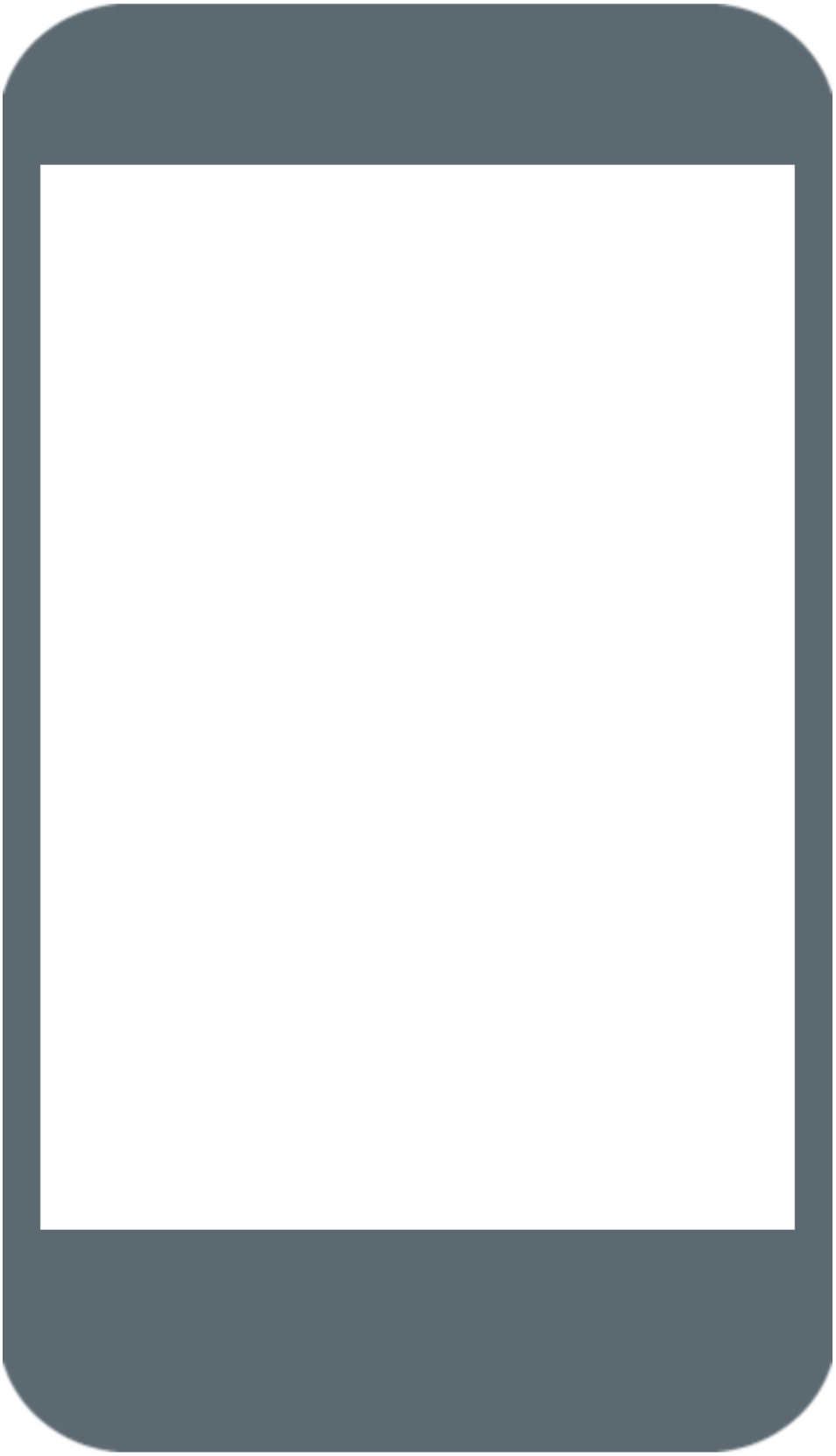
This helps differentiate the elements on your screen from the elements on everyone else's screen. For example, if everyone on your team has a button called "home" on their screen, this can be confusing when trying to talk about the button on your screen rather than someone else's. This will also help with future steps when it's time to combine screens together.

On the next page, don't forget to include your screen name at the beginning of each ID!

Tracking IDs

As you design your screen, sketch each element in the frame on the right, write its ID in the table on the left, and connect the two with a line. Don't forget to include the name of your screen at the beginning of each of your IDs.

Element Id

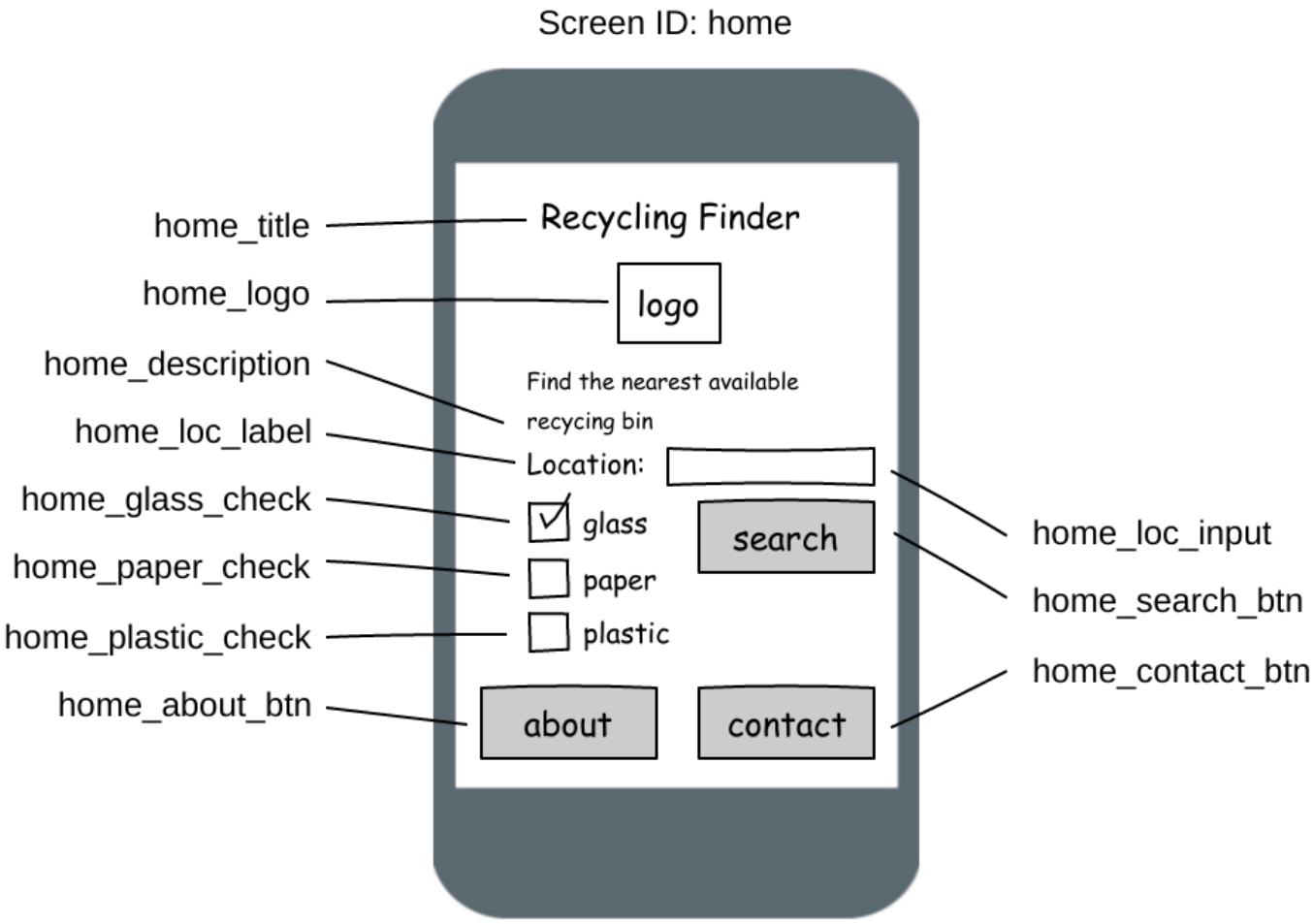


Name_____ Period _____ Date _____

Activity Guide - Model Screen Design

Translate from paper to digital

Using Design Mode in App Lab, create a digital version of this paper prototype. Make sure that the IDs you use match the IDs on the right. If an element on the screen isn't labelled with an id, create one of your own.



The Design Process ('21-'22)

Build a Digital Prototype

Resources

Name_____ Period _____ Date _____

Activity Guide - Screen Design

Choose a Screen Name

Each screen needs to have a unique (within the app) and descriptive name. The screen name can only contain letters and numbers - no spaces, punctuation, or other special characters.

Screen Name: _____

Incorporating Feedback

Before designing your screen in App Lab, we need to include the feedback we got when user testing our paper prototype. List any changes you will make to this screen based on user feedback after testing with the paper prototype.

Changes From Feedback:

Naming Your Element IDs

When you create an ID for your elements, it's a good idea to include the name of your screen at the front of each ID. For example, if your screen name is **account** and you have an input box for the user's first name, your ID for that input box would be **account_firstName**.

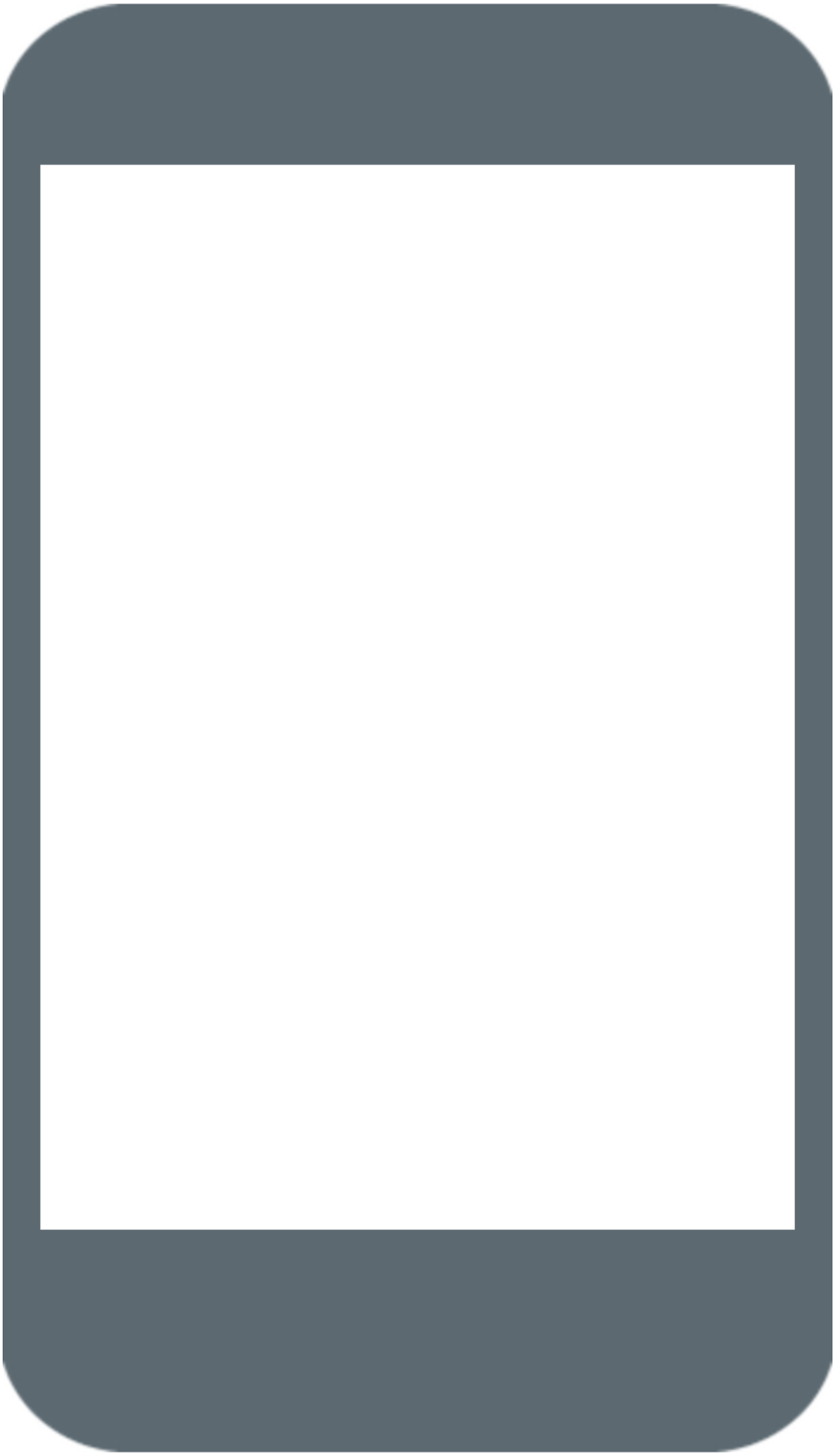
This helps differentiate the elements on your screen from the elements on everyone else's screen. For example, if everyone on your team has a button called "home" on their screen, this can be confusing when trying to talk about the button on your screen rather than someone else's. This will also help with future steps when it's time to combine screens together.

On the next page, don't forget to include your screen name at the beginning of each ID!

Tracking IDs

As you design your screen, sketch each element in the frame on the right, write its ID in the table on the left, and connect the two with a line. Don't forget to include the name of your screen at the beginning of each of your IDs.

Element Id



The Design Process ('21-'22)

Testing the App

Resources

Team Name_____ Period _____ Date _____

Activity Guide - User Test Cases

App Introduction

Hello! We are team _____ and we've developed an exciting app called

_____. The purpose of our app is _____

_____

_____

User Testing

Task	What I Tried	I Wish… (this box is optional)

Team Name_____ Period _____ Date _____

Activity Guide - Digital Prototype User Testing

1) Overview

Your group will be testing your digital prototype of your app on other members of your class and potentially users outside of the class. We will be assigning roles for testing, coming up with user test cases, then testing our prototype with different users and taking notes. This process helps make sure we get clear feedback that we can use to improve our apps.

2) Assign Roles for Testing

Decide who on your team will have each of the following roles for the test. You will 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
- **Computer:** No one! The app is the computer!

3) Create Test Cases

On the User Test Cases Activity Guide, write in an App Introduction that you will use to introduce yourself to your user. Then, fill in **only** the left-hand column with common tasks your user will want to do with your app. If you plan to test with multiple users, then each user should have their own copy of the User Test Cases Activity Guide.

4) Test Your Prototype

Find a test user to try out your app. The narrator should introduce your team by reading the App Introduction script you wrote in the last step. Give them a copy of the User Test Cases Activity Guide. As the user tests your app, they can take their own notes on their activity guide as a way to provide feedback. At the same time, you can take notes in this activity guide based on what you observe from the user. Here are some guidelines:

- Don't explain how the app 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.
- Record anything you notice the user try or say during the test.

What The User Did	What Happened (it's okay if nothing happened)

What The User Did	What Happened (it's okay if nothing happened)

5) Summarize Observations

After user testing, talk as a team on any patterns you noticed while the user was testing your app or any key observations you made. Think about how these observations could lead to changes in your app.

Things the User Did	Changes We Can Make To Our App

The Design Process ('21-'22)

Bugs and Features

Resources

Team Name: _____ Period _____ Date _____

Activity Guide - Bugs and Features

Interpreting User Feedback

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

Things the User Did	Changes We Can Make To Our App

Brainstorming Session

Using sticky notes and the analysis above, brainstorm the bugs and features the user identified in the app. Use the following guidelines when creating your sticky notes:

- The top of the sticky note should say BUG or FEATURE.
- The middle of the sticky note should be a description of what the bug or features is
- The bottom of the sticky note should have a quick estimate of how long (in minutes) it will take to fix this bug or implement this feature.

Remember that bugs and features can be about more than code! Confusing text, inconsistent color choice, and confusing layouts are all potential bugs as well.

Bug and Feature Analysis

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		

The Design Process ('21-'22)

Updating Your Prototype

Resources

Team Name: _____ Period _____ Date _____

Activity Guide - Updating Your Prototype

Overview

In the previous lesson, you created sticky notes to represent different tasks to improve your app and you placed them in a chart. Using the **To Do, Doing, Done**, columns below, start moving sticky notes from the upper-left Urgent/Easy area 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 app, you will move the stickies through the stages of this chart.

To Do	Doing	Done

The Design Process ('21-'22)

Project - App Presentation

Resources

Name(s)_____ Period _____ Date _____

Computer Science Practices Reflection

How I've grown	Practice	How I want to grow
	Problem Solving	
	Persistence	
	Creativity	
	Collaboration	
	Communication	

Unit 4 App Project Student Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Designing Your App	Your app requirements are clearly defined in relation to user needs. Your app's functionality and features that address those requirements are described and justified.	Your app requirements are defined and functionality and features that address those requirements are listed.	Some app requirements are defined, but may not be linked to aspects of your app design.	The requirements of your app are not defined.
Market Research	Your market research includes specific relevant apps and their citations, with evaluation of how they meet user needs, identifying specific features that made them more or less successful.	Your market research includes specific relevant apps and their citations, as well as an evaluation of how well they meet user needs.	Your market research includes at least one app that is relevant to the defined problem.	There is no market research.
Paper Prototype	The paper prototype includes multiple screens and elements, with a clear and distinct purpose for each screen and elements that relate to that purpose.	The paper prototype includes multiple screens and elements relevant to the user's task and stated features of your app.	The paper prototype includes at least one screen with multiple elements that are relevant to the user's task and stated features of your app.	There is no paper prototype, or it includes screens with elements that are not related to the stated features of your app.
Demo App	Your demo clearly shows how a user would use core functions of your app and highlights features that address the stated user needs.	Your demo covers basic functionality and clearly shows how your app should work.	Your demo describes your app with enough information to understand its general purpose, and shows at least one screen.	There is no demo or it does not give sufficient information to understand what your app is.
App Presentation	Your presentation describes the results of user feedback from both paper and digital prototypes. The feedback is addressed with multiple proposed improvements clearly related to the results of the user testing.	Your presentation describes results of user feedback from both paper and digital prototypes. The feedback is addressed with appropriate changes to your app.	Your presentation describes the results of user feedback from at least one stage of app development.	No feedback is described.
Digital Prototype	Your digital prototype makes extensive use of user input and consistently responds to user input in ways that make sense.	Your digital prototype responds to some user input in a way that makes sense for the functioning of your app.	Your digital prototype responds to input, but it may have significant bugs that prevent it from working properly.	Your digital prototype does not respond to user input.

Unit 4 App Project - Student Checklist

Key Concept	Extensive Evidence
Designing Your App	❒ Your app requirements are clearly defined in relation to user needs. ❒ Your app's functionality and the features that address those requirements are described and justified.
Market Research	❒ Your market research includes specific relevant apps and their citations ❒ Your market research includes evaluation of how they meet user needs ❒ Your market research identifies specific features that made them more or less successful.
Paper Prototype	❒ The paper prototype includes multiple screens and elements, ❒ The paper prototype includes a clear and distinct purpose for each screen and elements that relate to that purpose.
Demo App	❒ Your demo clearly shows how a user would use core functions of your app ❒ Your demo highlights features that address the stated user needs.
App Presentation	❒ Your presentation describes the results of user feedback from both paper and digital prototypes. ❒ The feedback is addressed with multiple proposed improvements clearly related to the results of the user testing.
Digital Prototype	❒ Your digital prototype makes extensive use of user input ❒ Your digital prototype consistently responds to user input in ways that make sense.