Project Theme
Needfinding
Arduino + Electronics
Project Theme
Re-imagine how a living space can support and enrich our activities.
Apple Pie
Workspace

Banana Split
Kitchen

Creme Brule
Living Room
Dulce de Leche

Bedroom

Eclair

Bathroom
Confectioners sugar
8.45oz
Salted butter
7.05oz
Egg white
6 Egg whites
Ground almonds
5.30oz
Blackberries

All purpose flour
0.60oz
Confectioners sugar
As Needed
Sing with Me Step Stool
Fisher-Price
Iteration 1

Kids’ Party Games

Iteration 2

Storyboard 3 concepts
Create and test 2 prototypes
Present 1 final design

Iteration 3
Interactive Living Final Project

Documentation on Build in Progress

$100 group budget
Google Spreadsheets + keep receipts!
Tax exempt form
Needfinding
Needfinding

Uncovering design opportunities by identifying compelling, unmet needs
Kano Model

Customer satisfaction

Degree of achievement

delight attributes

performance attributes

basic attributes

Kano Model
contact list and caller ID
Choose storage:

How much storage is right for you?  

- **16GB²** From $199  
  or from $27.05/mo. with AT&T Next  
  Select for availability

- **64GB²** From $299  
  or from $31.21/mo. with AT&T Next  
  Select for availability

- **128GB²** From $399  
  or from $35.38/mo. with AT&T Next  
  Select for availability
NFC & Tap to Share

Customer satisfaction

Degree of achievement

delight attributes

delight attributes

performance attributes

basic attributes
Technologies are constantly changing

Needs are overarching
Technologies are constantly changing

Needs are overarching

contact list and caller ID

storage

NFC & Tap to Share

Keep in touch with our friends and family

Reflect and extend our memory

Share our experiences with others
How do we identify needs?
How do we identify needs?

Market Research & Benchmarking

Observations and Interviews
How do we identify needs?

Market Research & Benchmarking

Observations and Interviews
Needfinding: observations

Used to observe actions that are implicit / difficult to articulate

Choose site and observe activities in the space
- Demographics (age, gender, etc.)
- Activities
- Behaviors
- Unexpected interactions
- Focus on entire space / one individual
Natalie.
She has a new idea. Brings towards robot but they are against. It
get another piece.

"Natalie, so what we're going to do is this." (A) "Nice!" (N)
seems genuinely excited
so hold on, show me the idea again." (N) 

They work together on putting together pieces to add to the robot.

"You don't need four regular pegs. You just need one." (A).

A adds pieces to the robot. They discuss which piece to add to the robot first
(N) agrees with (A).

"We need a rubber band" (N) 

"No no, it needs this." (A) grabs piece and tries to fit it to robot
"Oh I see." (N).

Great said positively, no sign of anger/resentment.

Worker grabs robot over to table. (A) grabs it
from table and says "Let's program it first." (A)

Second guy intervenes: Suggests not using
a third motor.

(A) tells another guy not to do what he's
during another robot. The other guy
strongly disagrees. (A) walks away
(X).

Third guy (green shirt) says if they
use their third motor and one else can

"Just go work on your own robot (A) to (G).

12:04 MY (GS) explaining how the wheels rotate,
slide.

"2.69" seems like they're figuring out exactly how much robot rotates.

robot

Generally (A) looks for pieces while talking
about which piece to add to the robot first
(N) follows, tries to look
for pieces too, but doesn't seem sure of what they're looking for

"Axle didn't exist. I suggested it at end of class." (A)
"Axle is in during mounting.

Axle hadn't been shown.

M1 & M2 for front wheels. M3 & M4 for back wheels.

12:14: Buy programming claw robot has taken over robot. (A) 

on robot.

You're doing great. Keep at it!" (K)

Strategy is not to use sensors unless they need to. "Dead reckoning instead."
Told a story about another team that came in last with sensors. Decided
against it next year and used

All students listen to story (K) about
how people should be "open, helpful, sharing." One team shared strategies
was nice with other team. In front of their robot ran out of batteries. Other
Airport Security Exercise

- Demographics (age, gender, etc.)
- Activities
- Behaviors
- Unexpected interactions
Airport Security Example

- Demographics (age, gender, etc.)
- Activities
- Behaviors
- Unexpected interactions
Needfinding: observations

Being observant
Count how many times the players wearing white pass the ball
The correct answer is 16 passes
Needfinding: observations

Being observant
Minimize biases and preconceptions
Exercise: Go Forth and Observe!

Observe a living space on campus

Take notes and photographs (put on BiP)
   > 5 activities you observe
   How are these activities carried out?

Start with observing entire space, then focus on a single individual

30 minutes
Apple Pie
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Bedroom

Eclair
Bathroom

Ideation (3-446)
/ Athena Cluster

Steam Cafe (7-407)

Stratton First Floor
Couches

Dollar Bill Lounge
(Lobby 10)

Infinite Corridor
Bathrooms
30 minutes
(20 minute observation)
Exercise: Go Forth and Observe!
Share
EXTREME Users
Extreme users

Edge cases - people who have unusual needs

Amplify needs that may be more generalizable
Extreme users

List attributes of the space

Create a spectrum / map for each attribute

Identify a user at either extreme
Extreme users

Attributes

Storage Closet
Extreme users

Storage Closet

Attributes

What is stored?

How big is it?
Extreme users

Attributes

What is stored?

How big is it?

Storage Closet
Storage Closet

- Food
- Clothing
- Memorabilia
- Packaging

What is stored?
How big is it?
What is stored?

Urban Dweller

Clothing

Suburban Home Owner

How big is it?

large

small
Exercise: Identify Extreme Users

Using your observations, come up with a list of 3 extreme users for your assigned living space.

10 minutes
Bedroom?
Bathroom?
Home Office?
Assignment: Due Tomorrow

Do one more observation of an area that falls under your team’s assigned living space

(ideally one of your extreme users)
Can be done in group or individually

Add to your list of observed behaviors

Post images and observations to BiP
Arduino + Electronics