

12.01.2010

ReefBot Web

Daisy Fang, Chloe Ma, Emily Schwartzman, Syp Vandy, Brian Yee

Agenda

- 1) Introduction: What is ReefBot?**
- 2) Design Process & Lessons Learned: HCI Methods**
- 3) Design Recommendations**

What is ReefBot Web?

A SPARK and Sprout Fund-sponsored project that extends the ReefBot console experience within the PPG Aquarium.

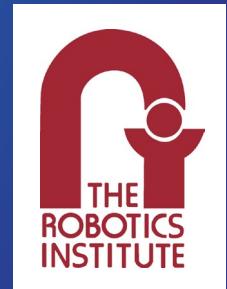
Designed to continue the learning experience and initiate discussion at home about ocean life and coral reef preservation.

Our Stakeholders

Justine Kaznica: ReefBot Project Manager

Ashley Kidd: PPG Aquarium

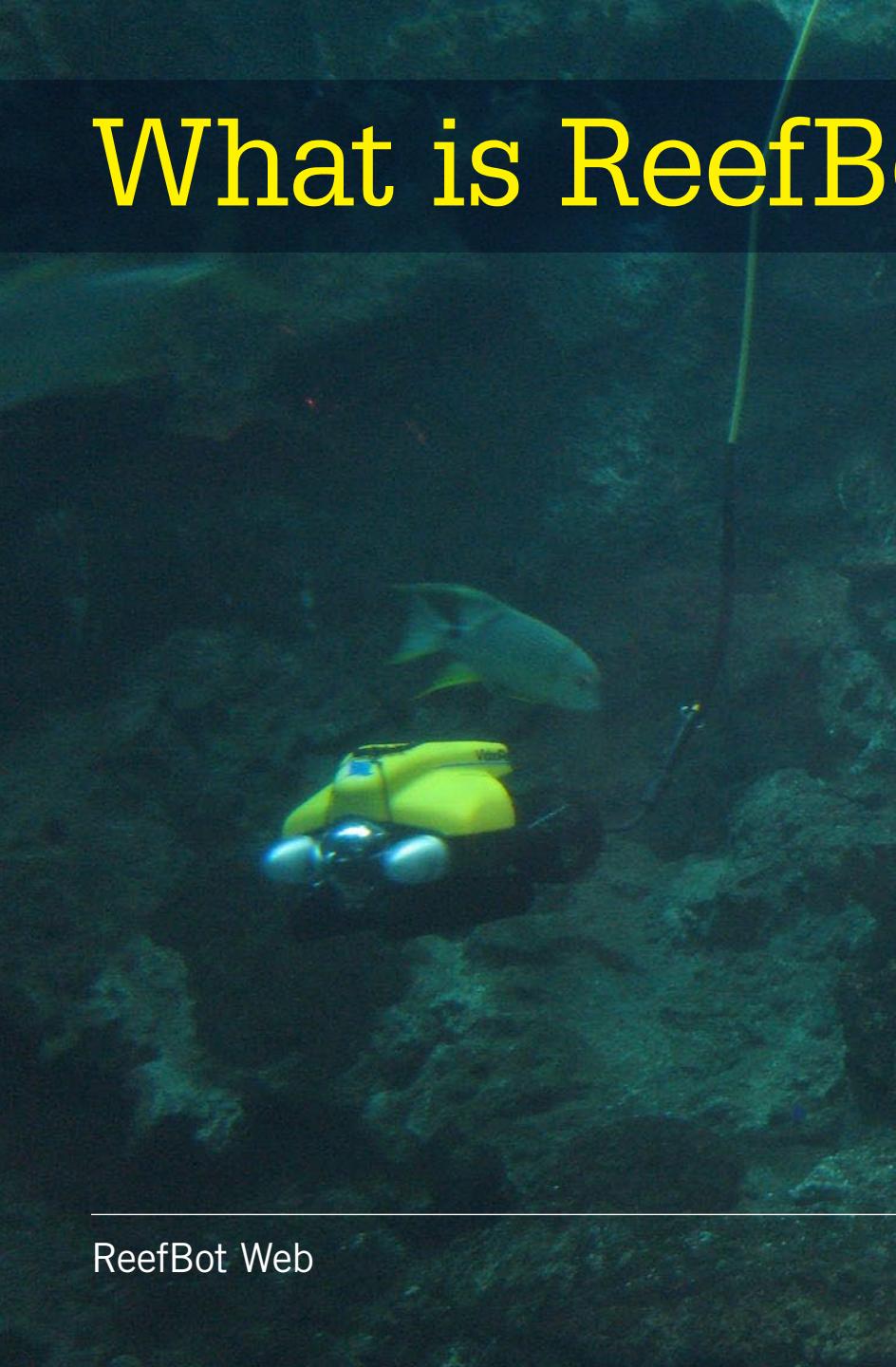
David Wettergreen: CMU Robotics Professor / PhD Advisor



What is ReefBot?



What is ReefBot?



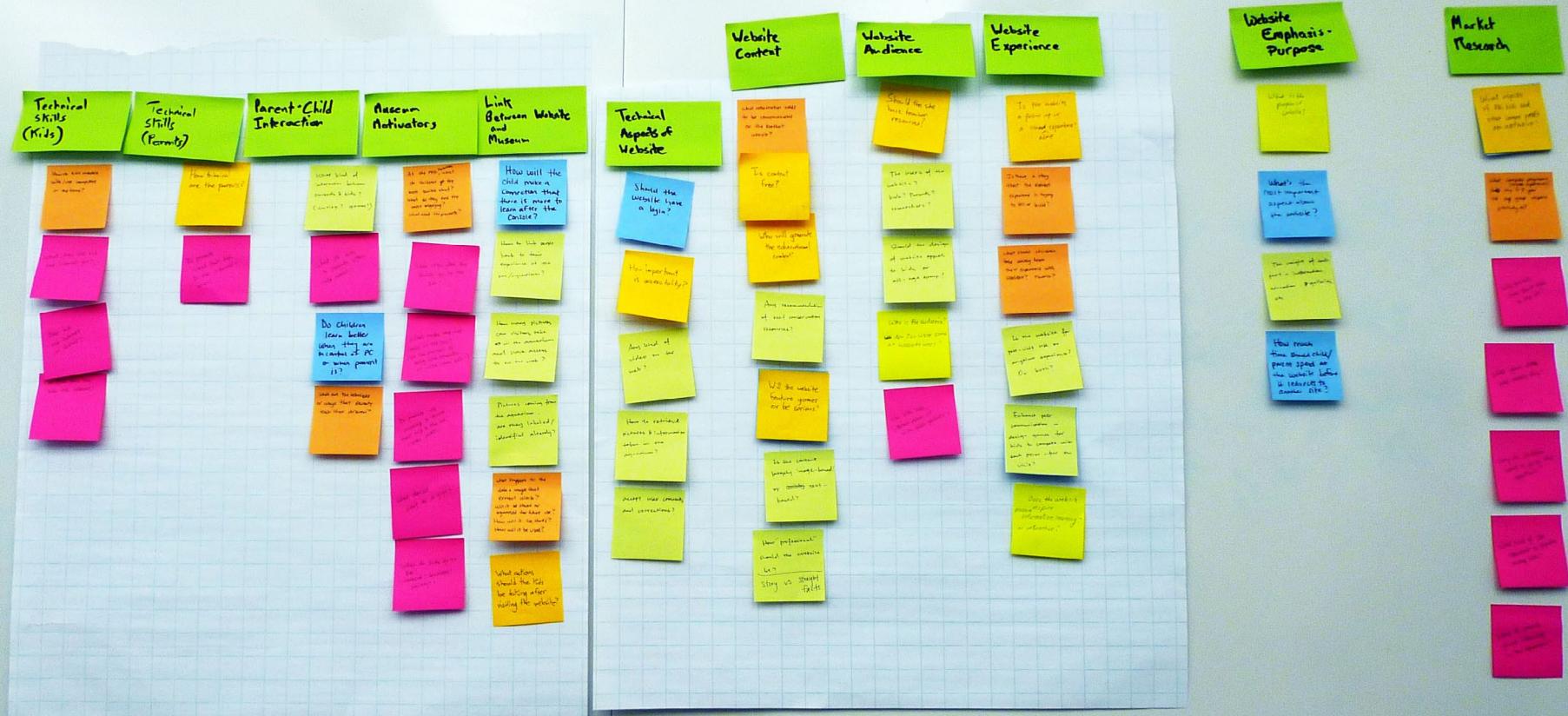
ReefBot Web



Introduction

Design Process

Focus Setting



Focus Setting

Initial Focus

Understand the role computers play in families
with young children

How do parents educate their children using
the computer/internet

Final Focus

How do we get parents to educate their children using
a physical experience and linking it back to the internet

Focus Setting

Lessons Learned

Focus will continue to evolve throughout the process

Stakeholders bring valuable input when setting focus

Communicate early and often

Contextual Inquiries

Task

Observe parent and child selecting a souvenir
in the Aquarium gift shop

Participant Selection

Families with young children, ideally 4-8 years old

Contextual Inquiries

Overview

Conducted 3 CI's at PPG Aquarium gift shop

Concluded CI with informal interview with parents

Contextual Inquiries

Lessons Learned

Begin participant recruitment early

Task selection is critical

Challenging to define an observable task
for a new design space

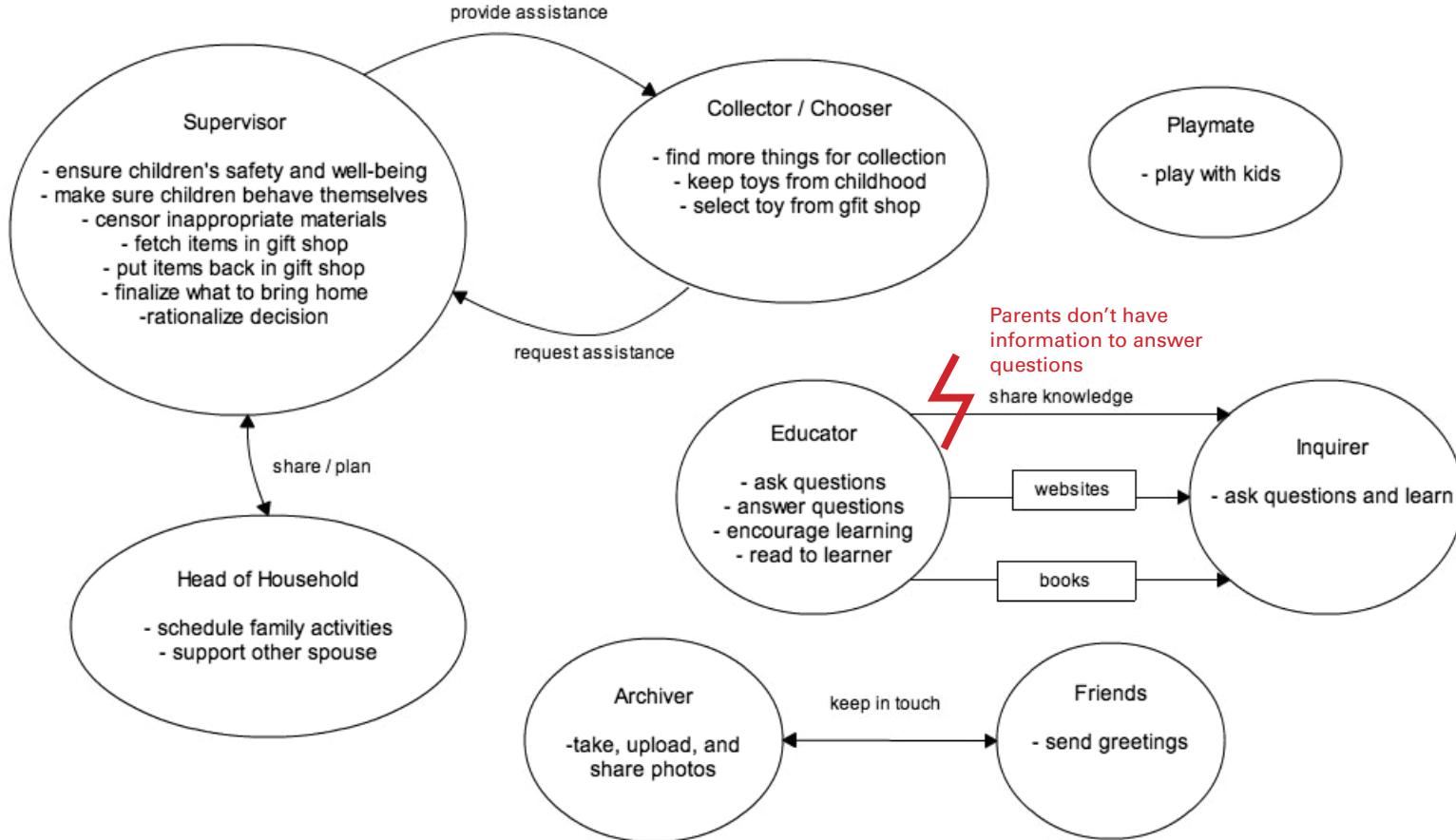
Contextual Design

Interpretation, Modeling & Consolidation

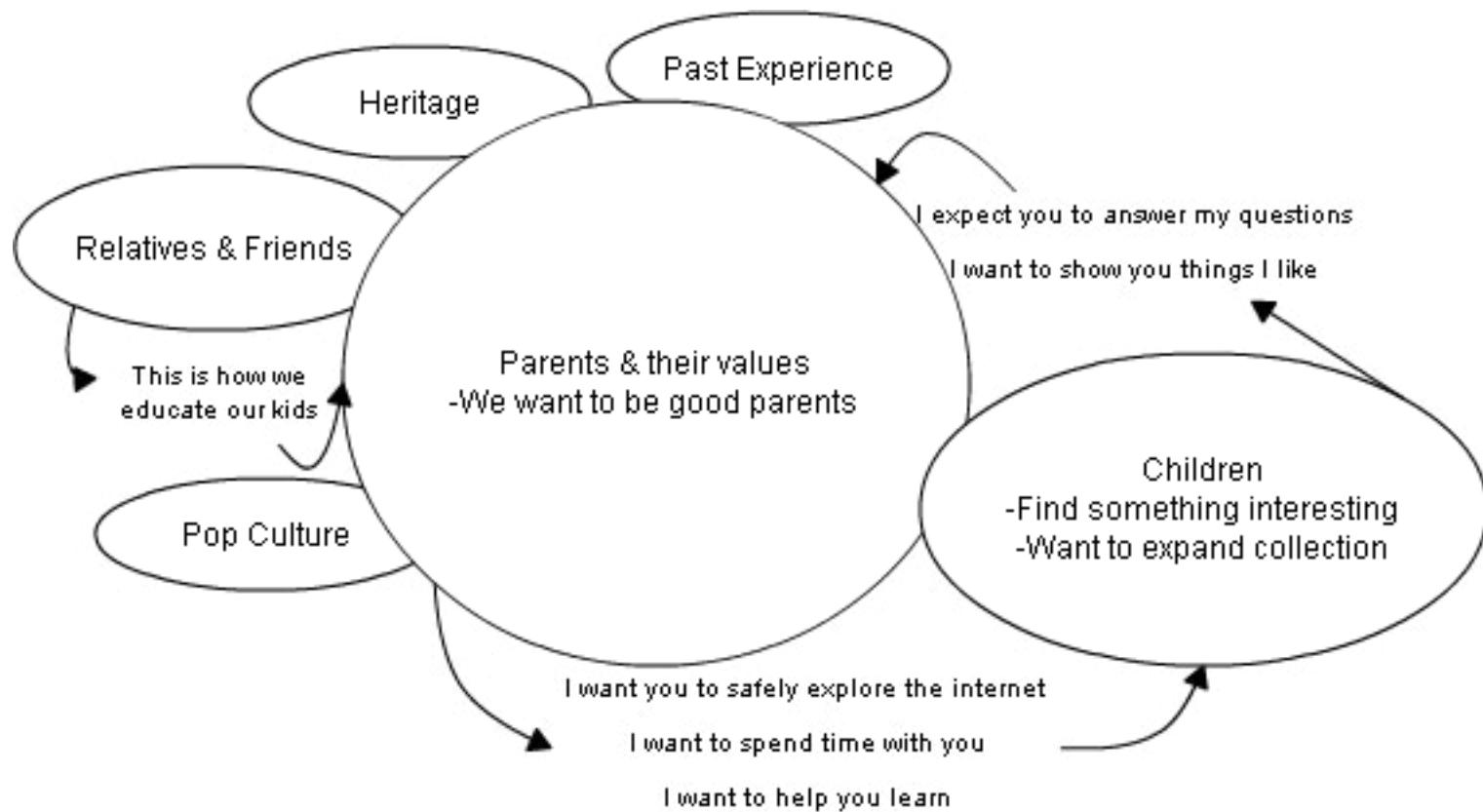
Created Flow, Cultural and Sequence models for each CI

Consolidated all models

Consolidated Flow Model



Consolidated Cultural Model



Contextual Design

Key Insights

Role of child as collector: Want to expand their collections

Parents want to be good parents: Opportunity to support this

Breakdown in flow: Parents don't always have the information they need to answer their kids' questions

Contextual Design

Lessons Learned

Not all models are relevant for each task: Physical and Artifact models not relevant to our observed task

May not have many breakdowns, depending on chosen task

Grounded Brainstorming

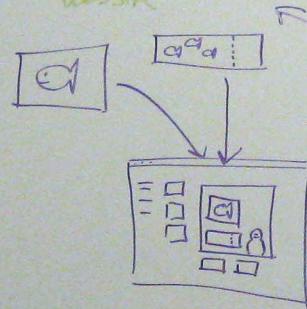
How can we support the parents as educators?

- trading card
 - provide the parents with questions + answers to ask in the context of this system

How do we actually bring them to the website?

- Card to write down code you got at the museum
 - input e-mail at a platinum interaction

ReefBot Web

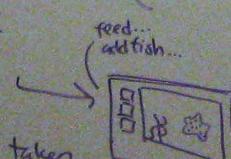


E-mail.

- Start with picture taken at ReefBot
 - go online & customize card
 - animations
 - fish
 - other environments as themes
 - Share with family

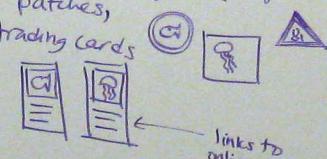
Take care of
something online

- virtual pet
 - virtual aquarium
 - could be based on
at aquarium pic taken



Collecting

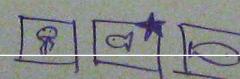
- pictures you take Reebut
 - search/collect for things in the aquarium (scavenger hunt)
↳ Start in aquarium and finish online



Featured Kid at
BeefBolt exhibit

- winner every week for participating in online experience

Photo Contest for pictures taken with ReefBot

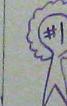


What catches their
attention + interest (kids)?

- movement / motion
 - color
 - shape
 - familiarity / ownership ("I did that!")

"Webcam" of what
ReefBot sees on website

Reward for
searching for info online



Videotaker
(like)

Recording at the

Design Process

Visioning

Final Concept

Receive code after taking photo at ReefBot exhibit; Write code on provided card with website address

Create a trading card online with the photo taken
(link from exhibit to online experience)

Create other trading cards to learn about
other marine life; Opportunity to create a collection

Visioning

Tie to Data

Follow-up phone interview

Strong staying power and discussion based around souveniers

Persona

Mother & Child

Meet Heather Miller

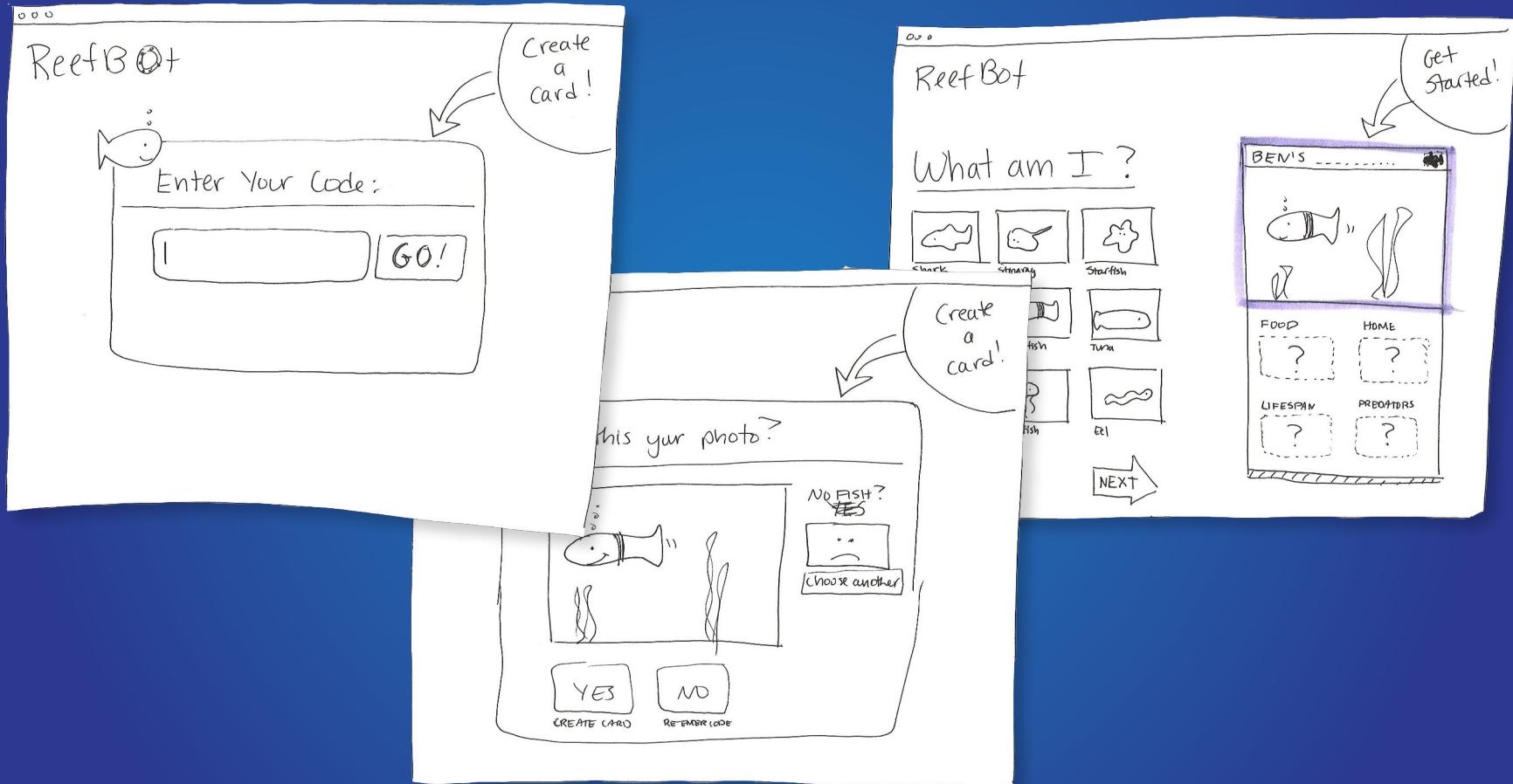
A part-time nurse who wants to be an active part of her children's lives

Meet Ben Miller

A curious 5 year-old boy who enjoys playing on the computer at school and home



Paper Prototype



Think-Aloud

The Task

At the exhibit, you and your child have taken a picture of a fish in the aquarium using a kiosk that controls the ReefBot submersible robot in the tank. The kiosk generated a code for the photo which you wrote down on a physical card that the kids can take home. Use this code to create a training card using the ReefBot website.

Think Aloud

Key Insights

Some questions are not clear.
(e.g. What am I? Where do I live?)

Subtle things like lack of default answers.

Users find the trading card interesting.

Think Aloud

Lessons Learned

Difficult for kids to understand and perform Think-Alouds

Should have arranged parent participants ahead

Time limitation—We had to ask students to role play as parents

Keystroke Level Modeling

CogTool

Tested paper prototype

Compared the time to click and drag a sticker
to see whether drag affects the efficiency of the task

Result

The time for drag is 37.604s and click is 35.752s

The difference is not significant (4.9%), keep drag

Design Recommendations

Competitive Research

Tech Museum

Lasting experience
beyond the museum

Uses an RFID tag to put what
users create in the museum
online in a personal gallery



Competitive Research

American Museum of Natural History

“Ology” cards - trading cards with pictures of exhibits in the museum or online. Card has wiki links and other notes

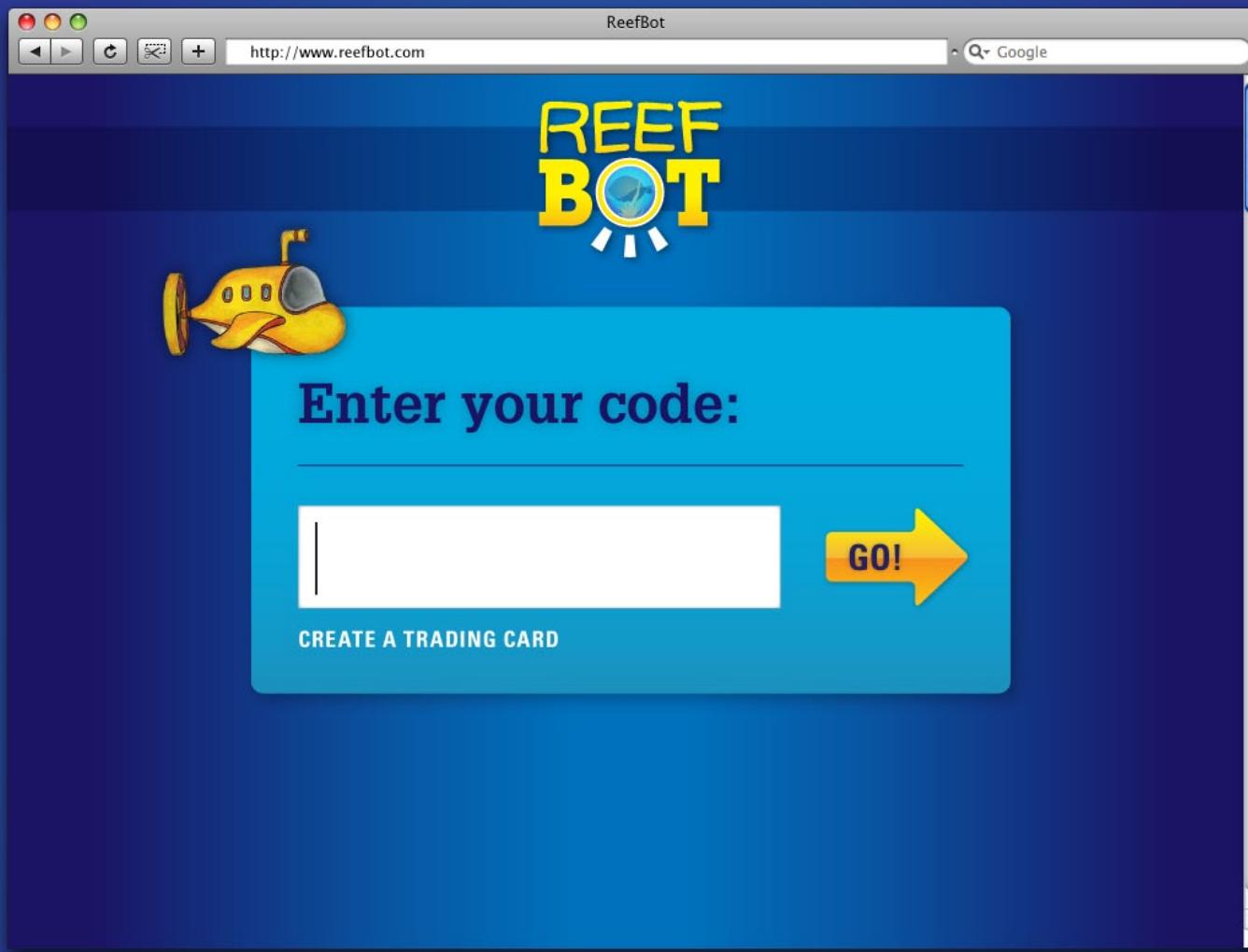


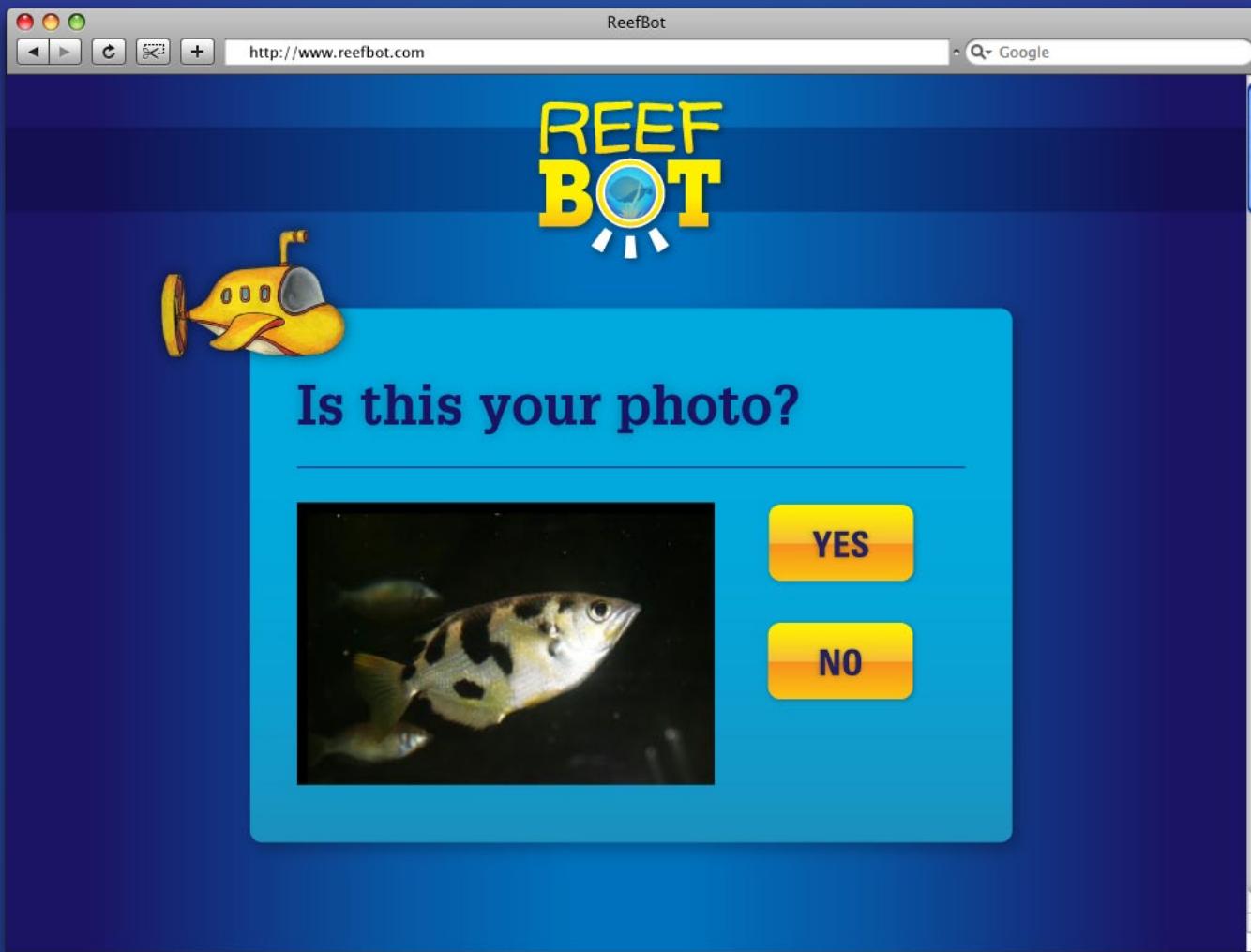
Competitive Research

Carnegie Museum of Natural History

Kiosk in the near future which would send pictures to a user's email

Bonus - free emails for the museum's marketing team





ReefBot

http://www.reefbot.com

Google

REEF BOT



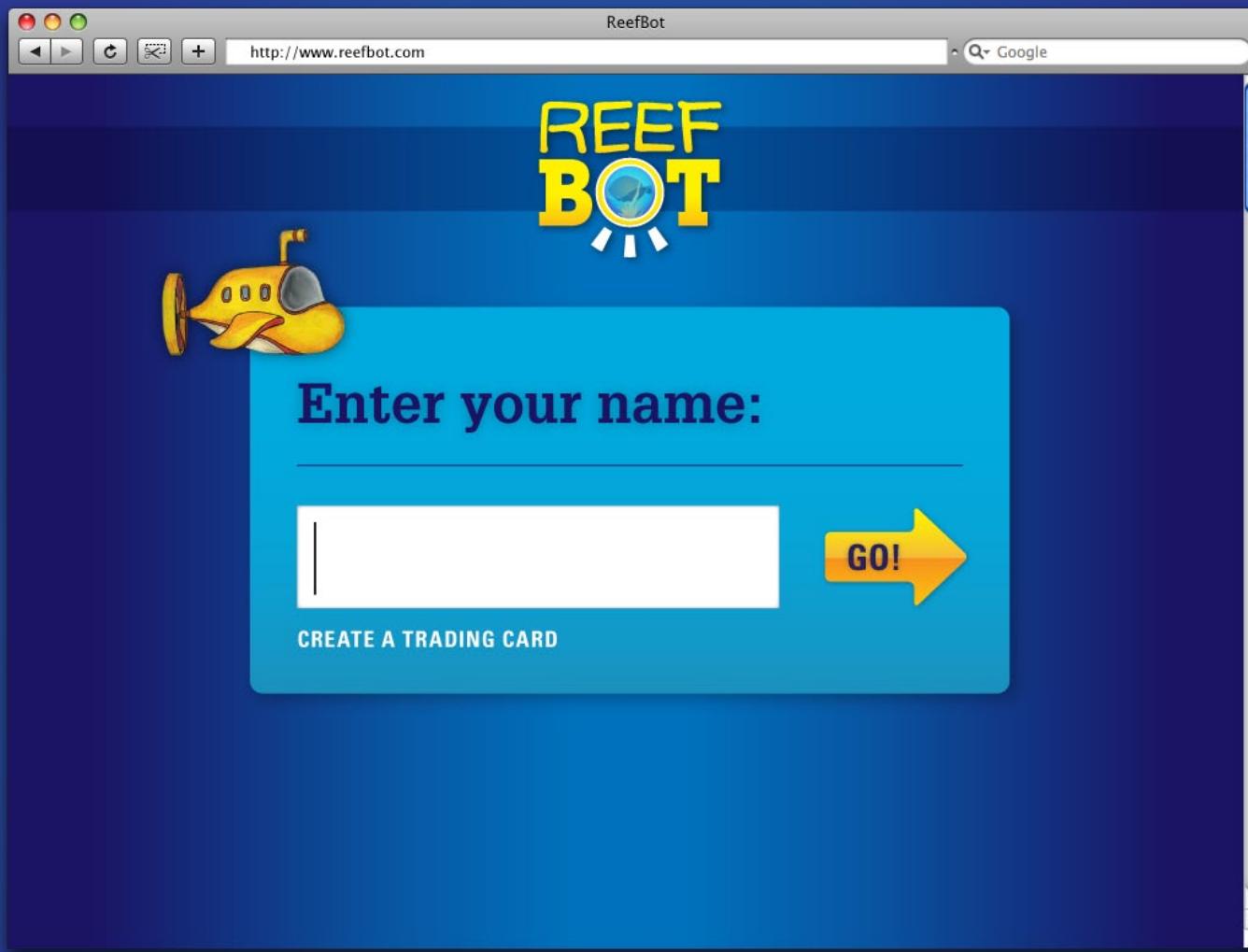
Time to create your card



GO!

DON'T LIKE YOUR
PHOTO?

CHOOSE ANOTHER





Identify your fish

SELECT THE PICTURE THAT MATCHES YOURS



West Coast
Sea Nettle



Zebra Shark



Red Discus



Arapaima



Pot Bellied Seahorse



White Blotched
River Stingray



Electric Eel



Blacktip Reef Shark



Caribbean Staghorn
Coral



Banded Archer Fish



Longnose Gar



Glass Catfish

What am I?

BEN'S

?



FOOD

HOME

?

?

LIFESPAN

PREDATORS

?

?

NEXT

ReefBot

http://www.reefbot.com

REEF BOT

Find out what your fish eats

DRAG THE STICKERS ONTO YOUR CARD

Brine Shrimp Marine Worms

Squid Sea Turtle

What do I eat?

BEN'S BANDED ARCHER FISH



FOOD HOME

LIFESPAN PREDATORS

BACK NEXT

What do I eat?

BEN'S BANDED ARCHER FISH



FOOD HOME

LIFESPAN PREDATORS

ReefBot

http://www.reefbot.com

REEF BOT

Find out where your fish lives

DRAG THE STICKERS ONTO YOUR CARD

Europe

South America

Australia

Asia

Where is my home?

BEN'S BANDED ARCHER FISH



FOOD

HOME

LIFESPAN

PREDATORS

BACK

NEXT

ReefBot

http://www.reefbot.com

REEF BOT

Find out your fish's lifespan

DRAG THE STICKERS ONTO YOUR CARD

1	5
1 year	5 years
10	20
10 years	20 years

How long do I live?

BEN'S BANDED ARCHER FISH

FOOD

HOME

LIFESPAN

PREDATORS

BACK

NEXT

?

?

ReefBot

http://www.reefbot.com

REEF BOT

Find out your fish's predators

DRAG THE STICKERS ONTO YOUR CARD

Octopus Shark

Sea Star Crab

What am I afraid of?

BEN'S BANDED ARCHER FISH



FOOD HOME

LIFESPAN PREDATORS

10 ?

BACK NEXT

ReefBot

http://www.reefbot.com

REEF BOT

Good Job!

Now give your fish a name:

What is my name?

BEN'S BANDED ARCHER FISH

?

FOOD	HOME
LIFESPAN	PREDATORS
10	

BACK

NEXT



You're Done!

Do you want to:

CREATE MORE

SHARE

PRINT

SAVE

Create more cards!

BEN'S BANDED ARCHER FISH



Nemo

FOOD



HOME



LIFESPAN

10

PREDATORS



BACK

Recommended Next Steps

Heuristic evaluation on digitized prototype

Think-aloud test on digitized prototype with kids

Implementation and more user testing

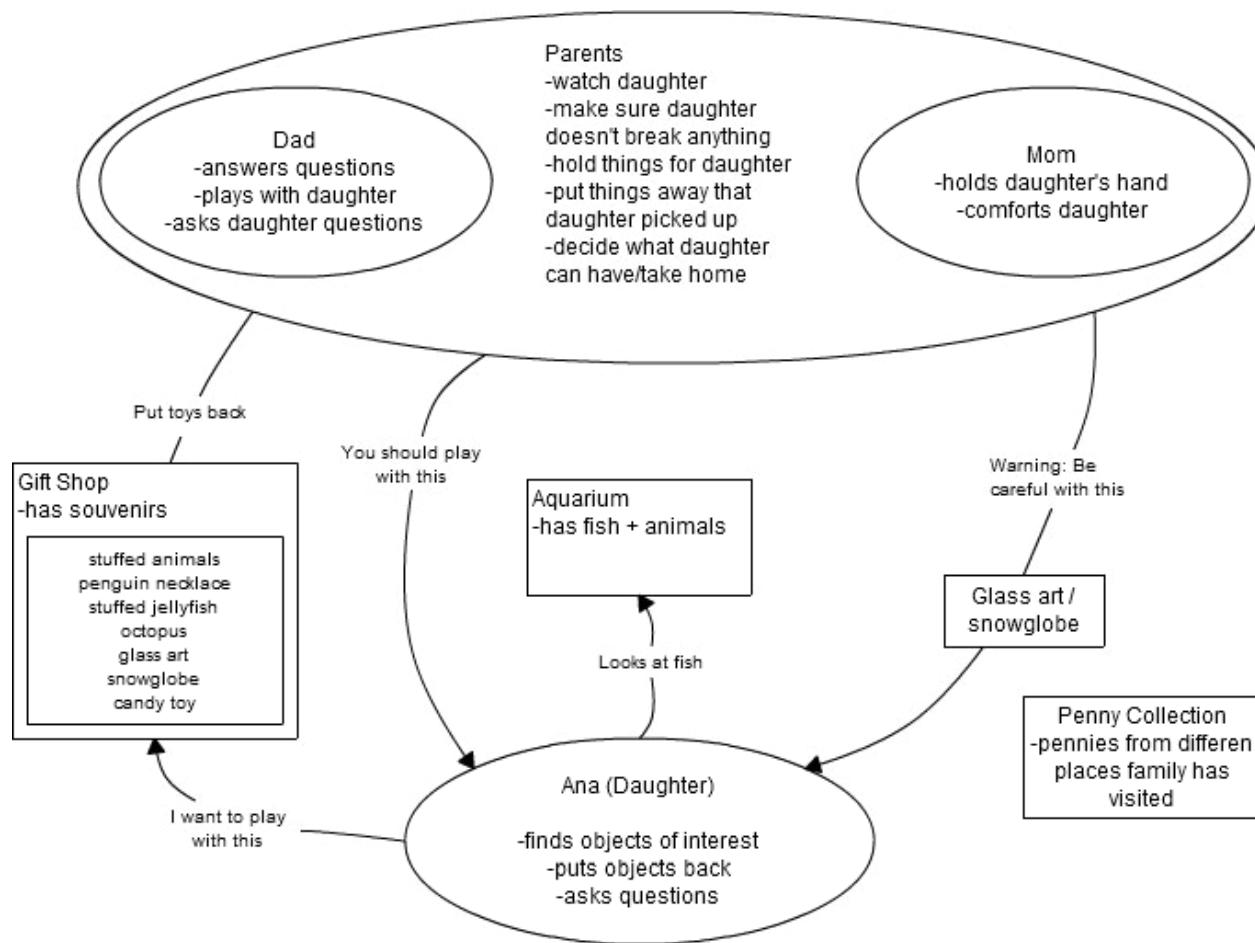
Confirm if this experience supports parent/child interaction,
look for opportunities to better support this

Integrate supporting information and links to other educational
resources on the back of the cards

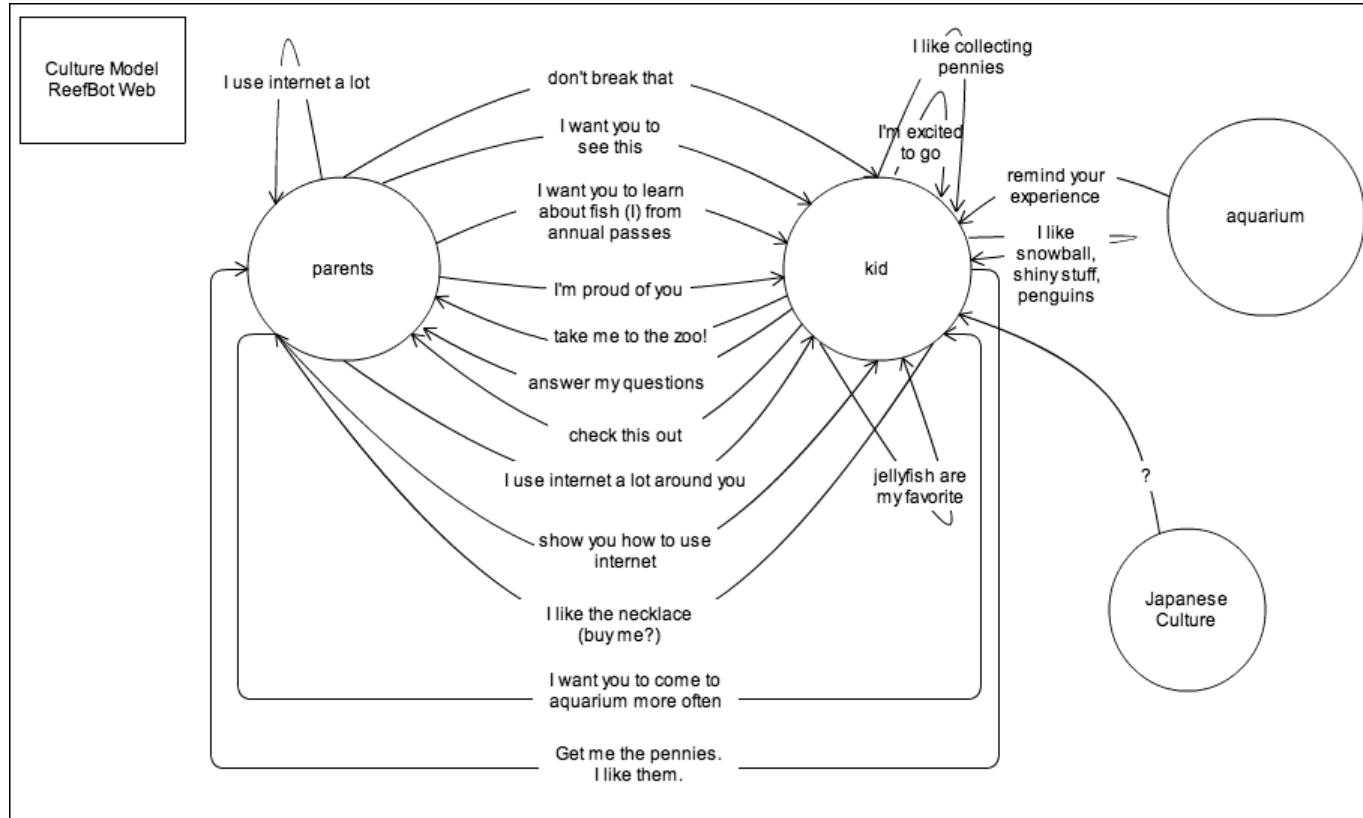
Questions?

Appendices

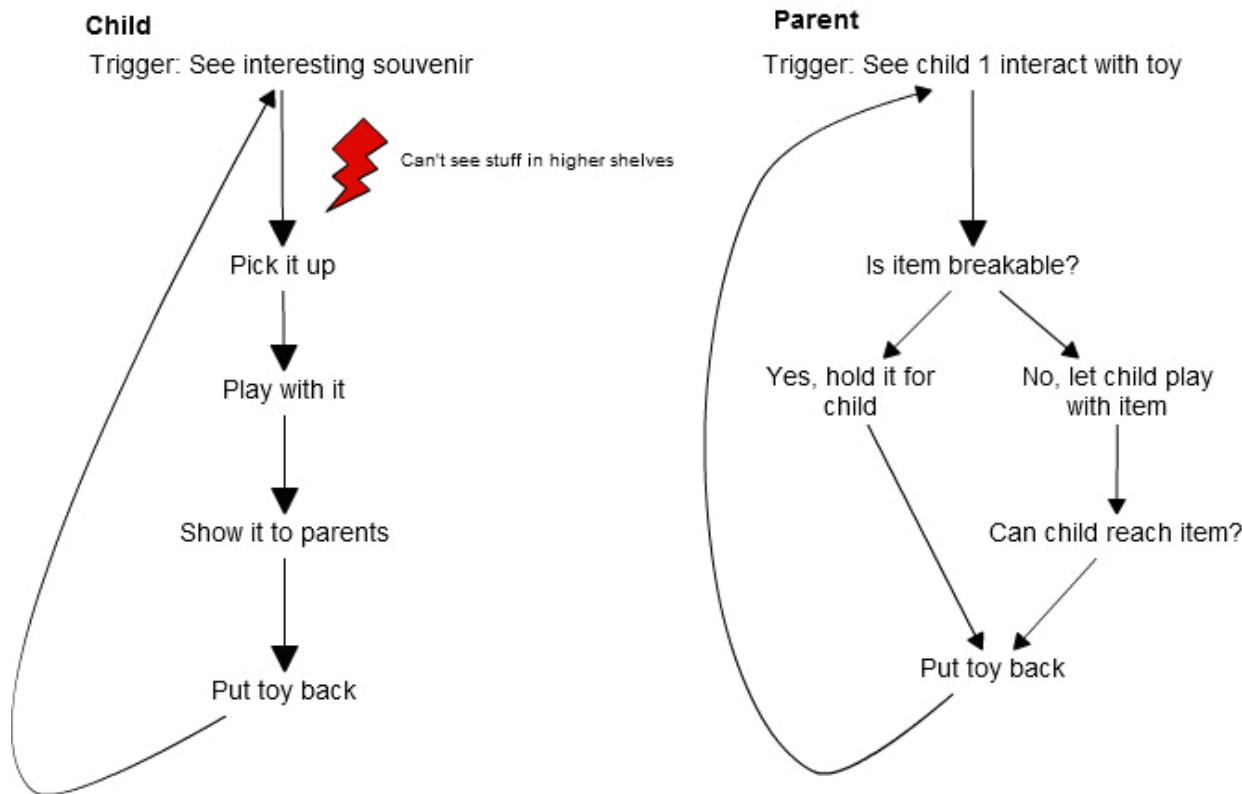
CI #1: Flow Model



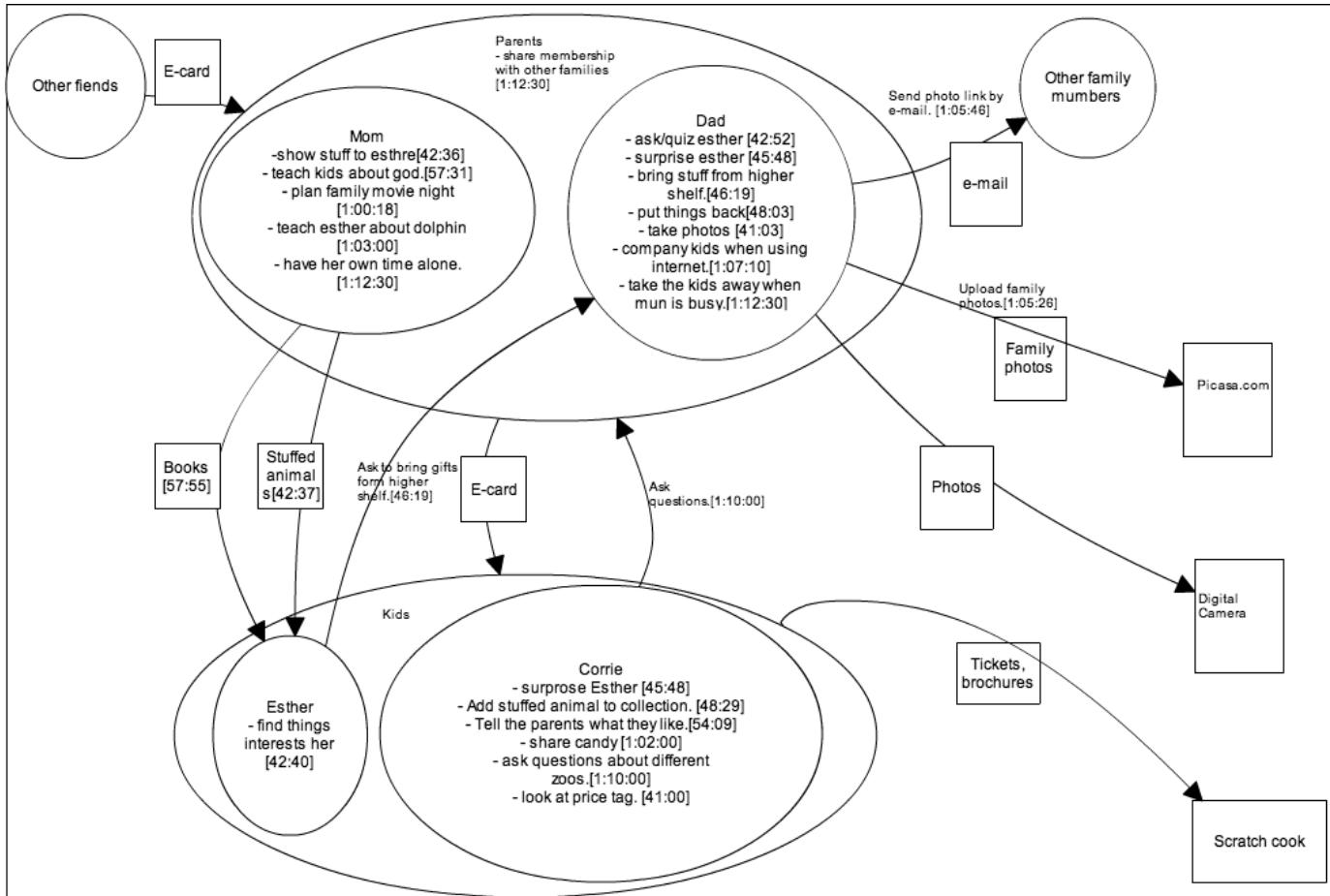
CI #1: Cultural Model



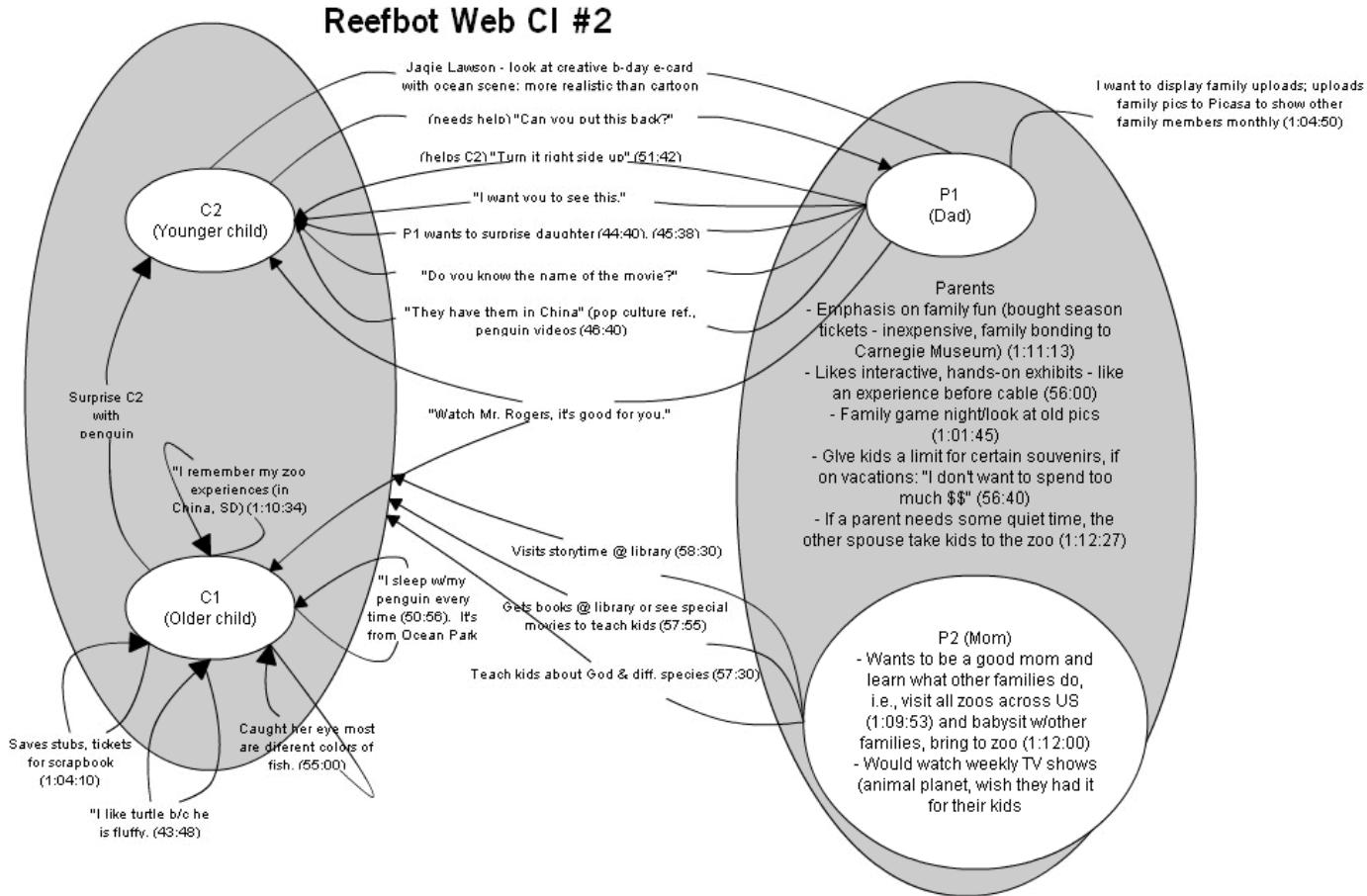
CI #1: Sequence Model



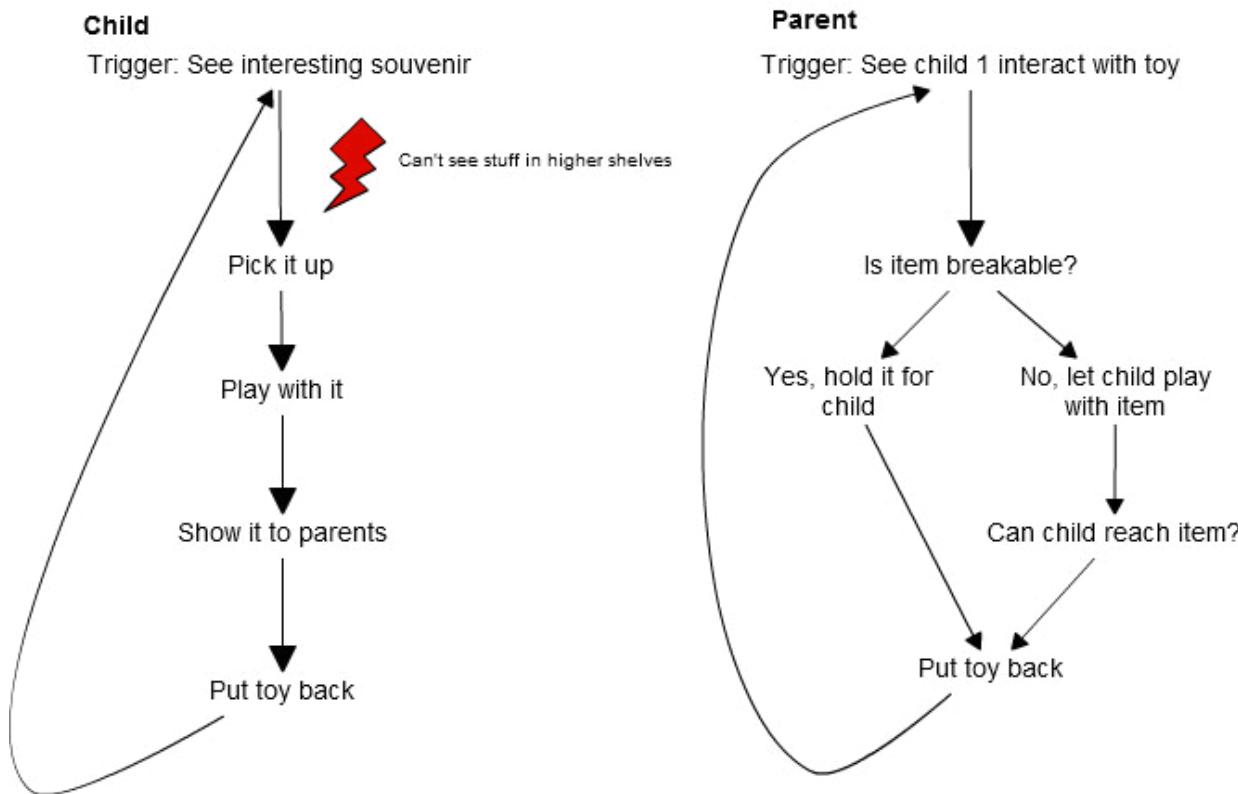
CI #2: Flow Model



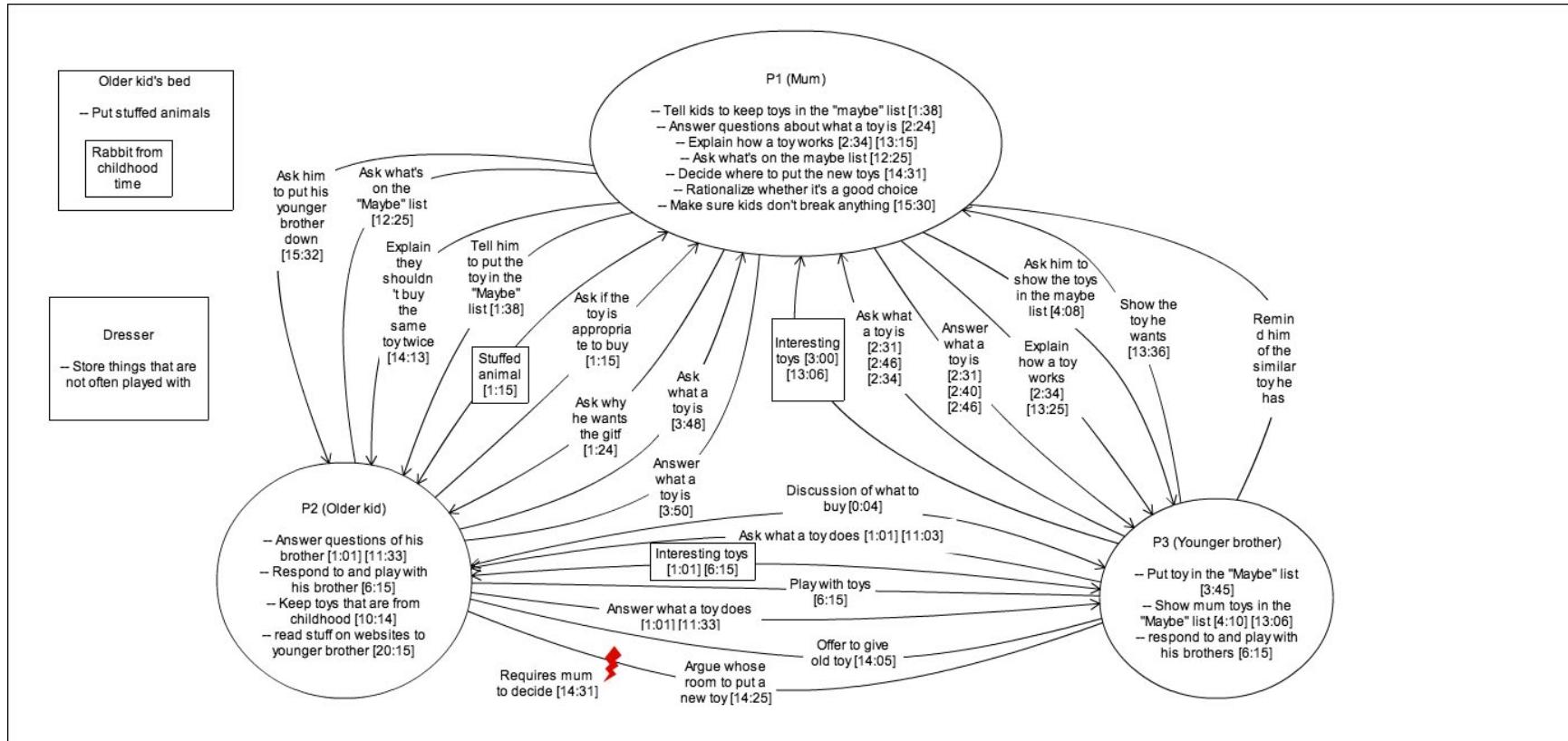
CI #2: Cultural Model



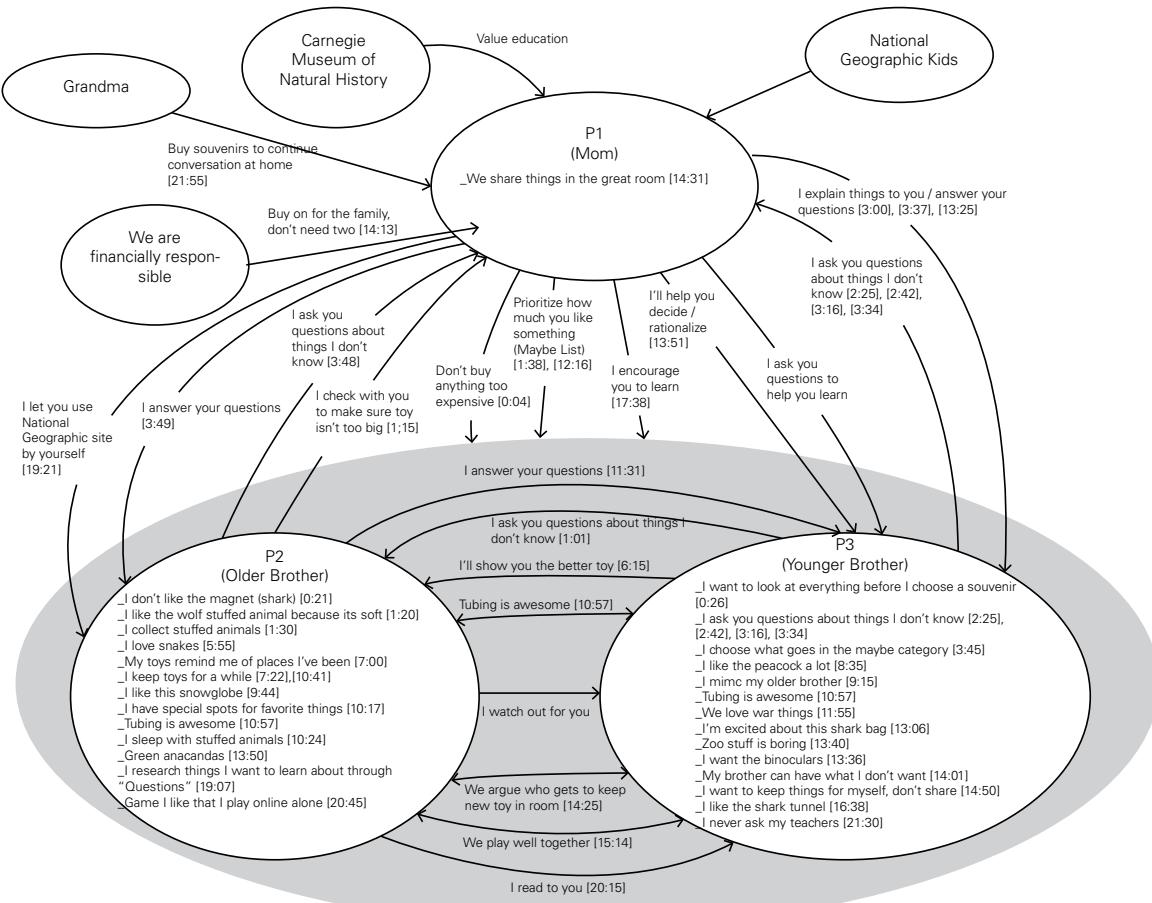
CI #2: Sequence Model



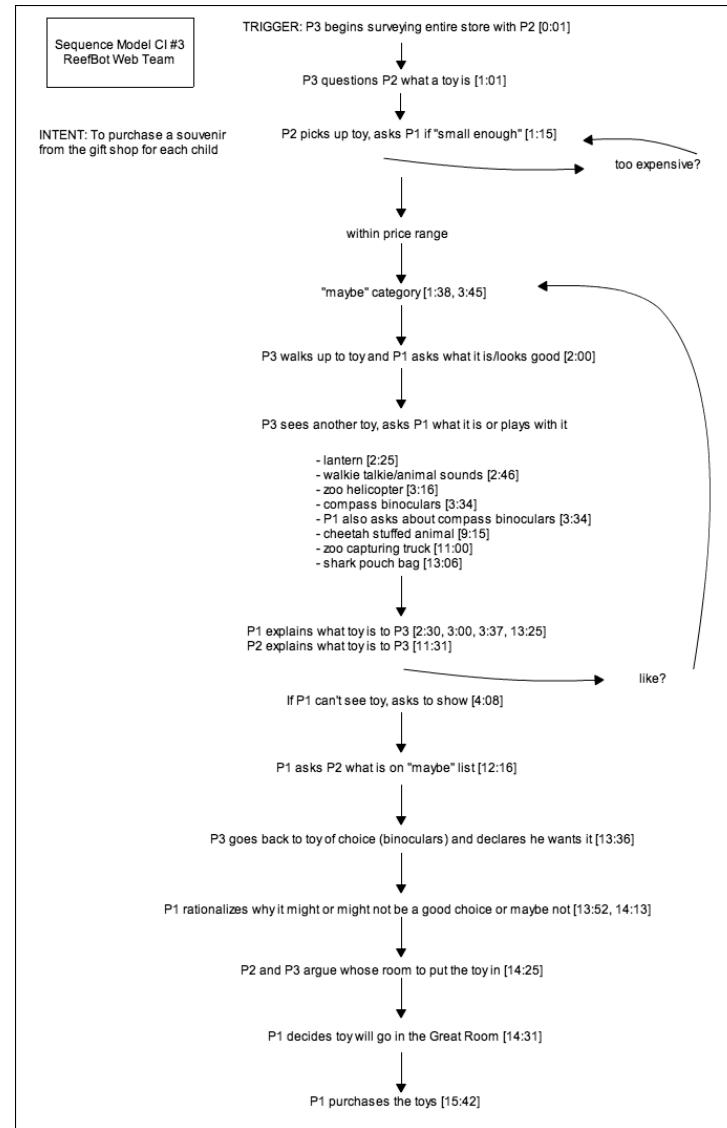
CI #3: Flow Model



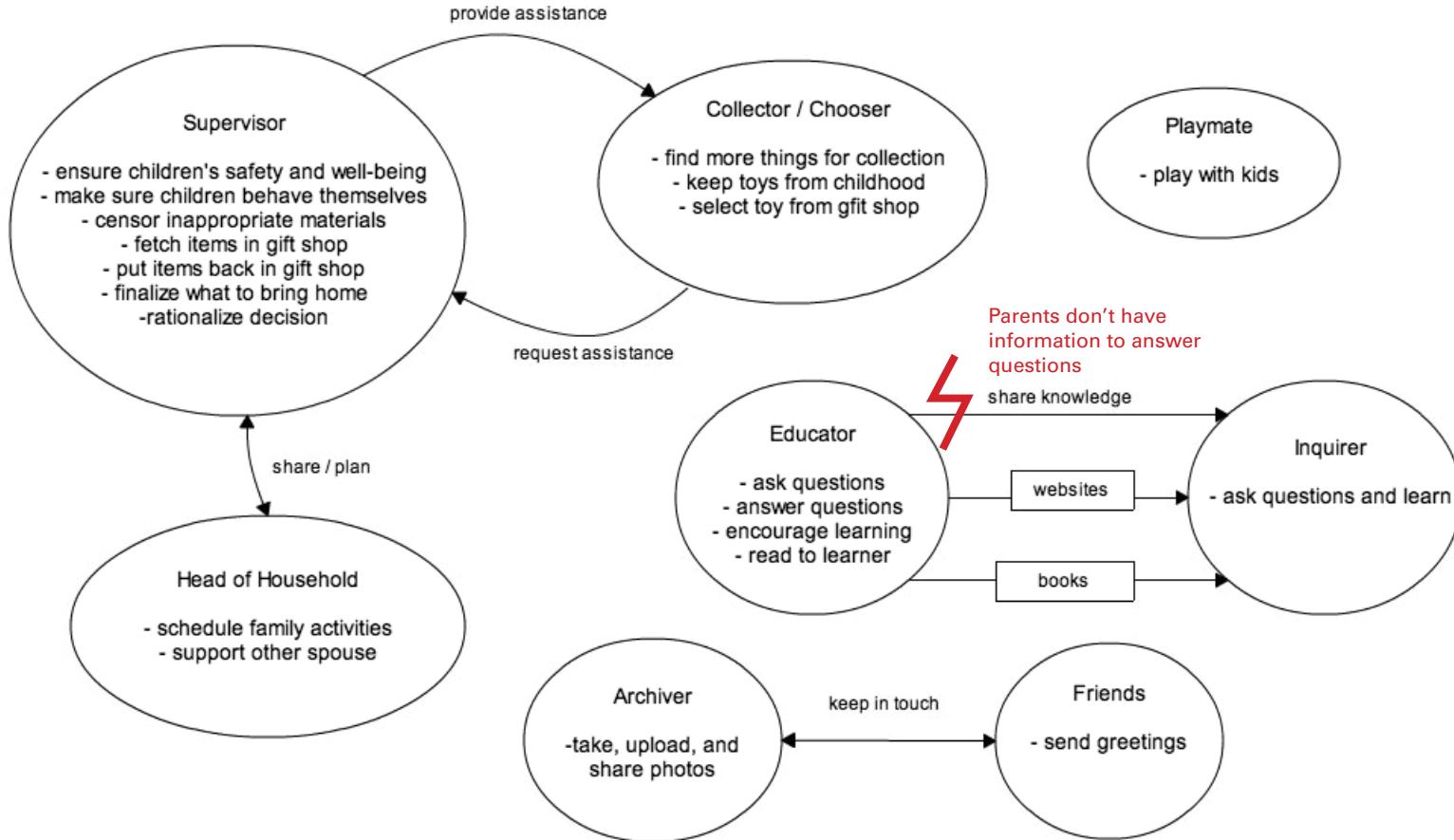
CI #3: Cultural Model



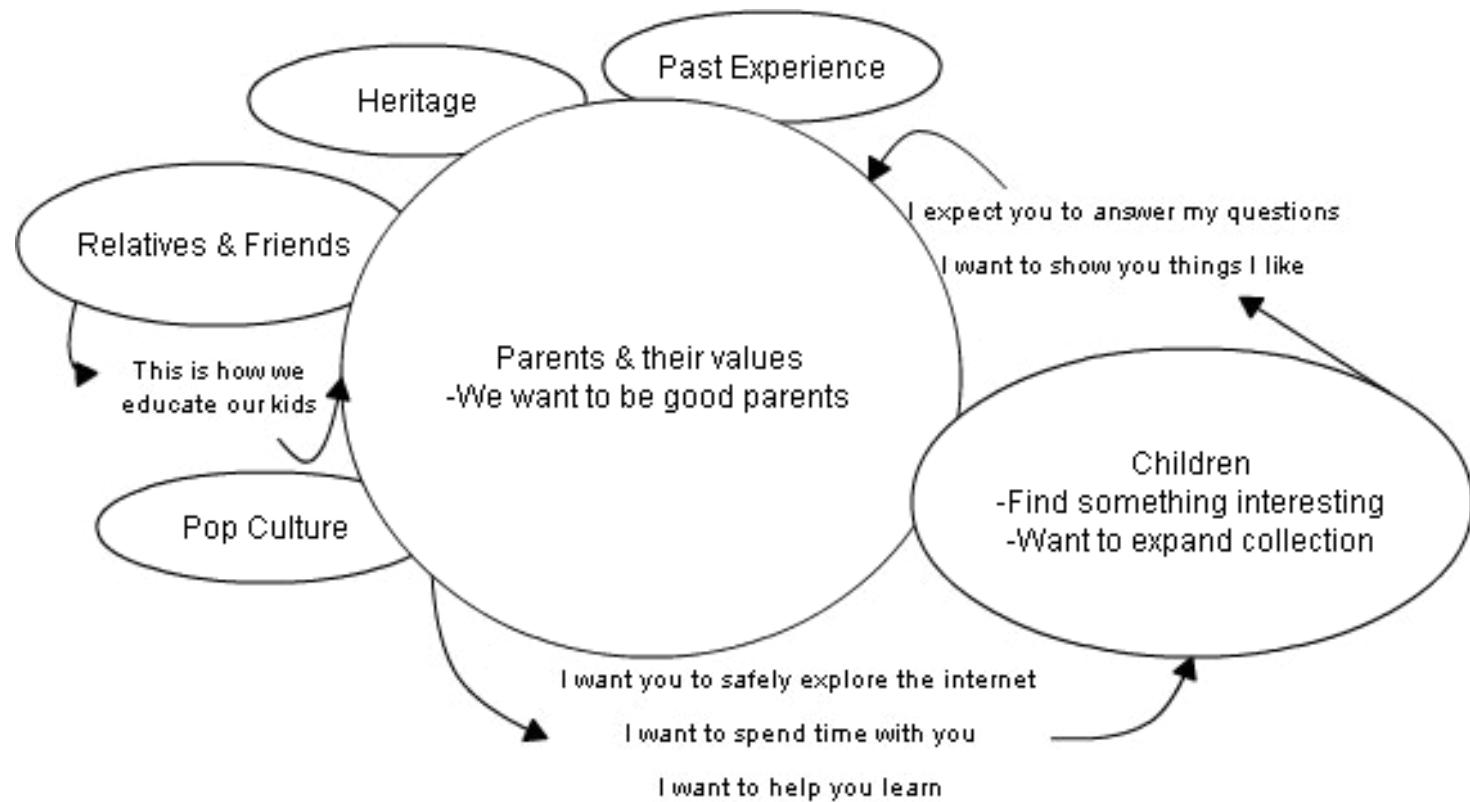
CI #3: Sequence Model



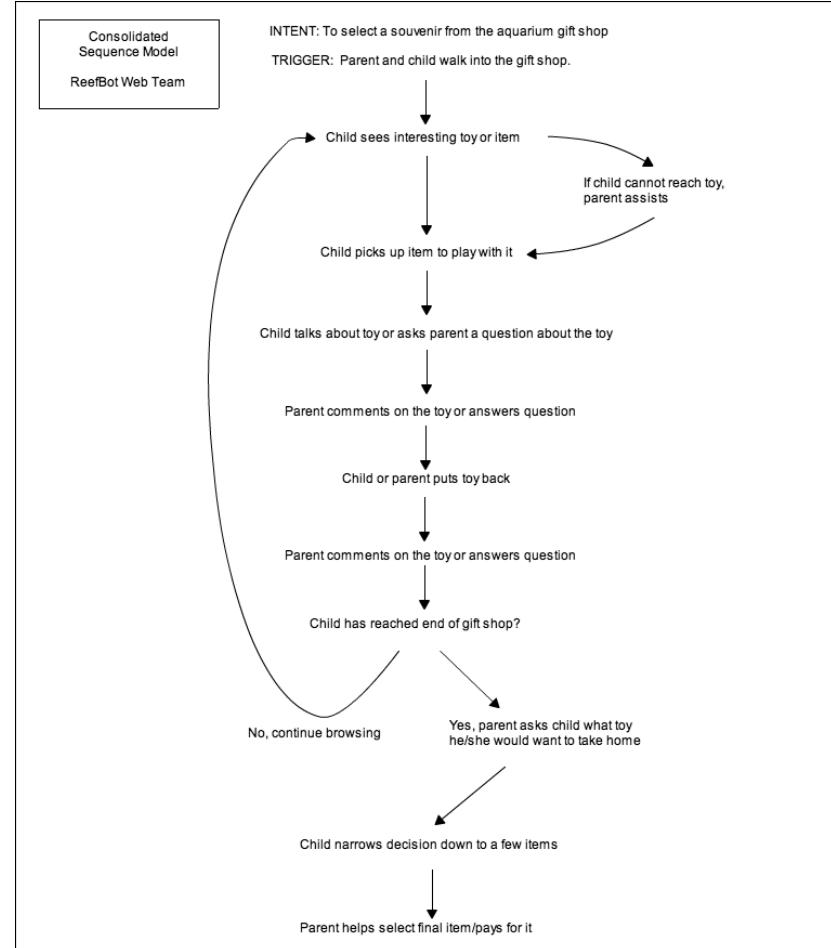
Consolidated Flow Model



Consolidated Cultural Model



Consolidated Sequence Model



Persona: Heather Miller

A part-time nurse who wants to be an active part of her children's lives

Age: 29 years old

Background: Caucasian

Location: Pittsburgh, PA

Family: Husband Ryan (31) is a financial analyst for Mellon Bank; 2 Children: Ben, 5; Sarah, 17 mos.

Employment: Part-time Nurse at UPMC

Income: \$15,000



Persona: Heather's Goals

End Goals

Find opportunities to educate her kids

Get validation for being a good parent

Spend quality time with her kids

Experience Goals

Feel like a good parent

Bond with her children

Life Goals

Provide the best education and home for her children

Be an active part of her children's lives

Persona: Ben Miller

A curious 5 year-old boy who enjoys playing on the computer at school and home

Age: 5 years old

Background: Caucasian

Location: Pittsburgh, PA

Education: Kindergarten

Hobbies: Little League baseball, robots, playing with GI Joes

Favorite Food: Mac ‘n Cheese



Persona: Ben's Goals

End Goals

Learn something interesting

Play with robots

Experience Goals

Instant feedback

Find something fun to play with

Life Goals

Have fun