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Executive Summary

Over the course of 10 weeks, our team of four senior User Experience (UX) design seniors worked to develop Felo, a childhood companion robot. Felo as a product line is aimed at younger children (roughly 3-12) in order to help them develop positive habits while they're young in order to take those skills with them into later development. Those skills primarily include goal setting and accomplishment, developing a healthy routine, responsibility, and empathy. The designers on this team include Daniel Benedict, Sam Klein, Mackinzi Blank, and Meshal Almazyad.

Before the quarter officially started, we began secondary research into various fields in order to identify a problem space ahead of time. We looked at various fields, including safety, leisure, and health. When we began the quarter, we had originally centered around the topic of health and fitness, and wanted to design something to help adults become motivated to stay active.

We developed and put out a survey that garnered over 120 responses across several languages, with questions mostly centering around fitness habits, motivation, and routines. We also conducted around 20 interviews on people who range from being extremely active in the fitness community to being not active at all, as well as a few fitness professionals. We affinitized over 300 data points and gathered four major insights/pain points relating to personal fitness: time, culture, motivation, and body image.

After thoroughly looking into these pain points, we discovered that a lot of the grievances from our research was a result of individuals feeling like it was "too late" to learn how to approach fitness, that they should have learned a long time ago, or that they don't know how to factor fitness into their current lives. This led us to shift our topic around week four from adult health and fitness to childhood fitness education.

We then conducted 10+ more interviews on parents who told us about their children's routines, habit, and development as they grew up, as well as developing another survey that gave us insights on over 50 children. Some of the most important insights from this phase of research were that parents felt that their children learned responsibility and empathy by having a pet in the household, and that children who grew up with a consistent daily routine generally met their goals frequently. This led us to develop the concept of Felo: a childhood companion that would help your child learn empathy and responsibility without the cost or inconvenience of a real animal, that also helped your child meet their goals by developing and encouraging routine with the help of parental input.

As our research continued, we defined the features, role, and form of Felo. We put out a form perception survey to better understand how people viewed different aesthetics of robots,

concluding that people generally trusted robots with rounder, cuter forms over more humanoid forms. After researching more children's products and other competitors, we developed the rounder, cone-like form of Felo's body.

Another major function for Felo was its ability to have add-ons that would allow it different types of mobility so that it could encourage children to be physically active by actually going outside and playing with them. We developed a "carriage" add-on which would allow Felo to roll around on different types of terrain and play outdoor games (such as tag). We have plans to develop different add-ons in the future, such as a drone or boat, in order to encourage different types of games or activities.

Felo's abilities reach past its small form; it is able to play haptic games such as hot potato, play audio, respond to speech (not with words, but with sounds), and communicate its feelings through its expressive face.

On the parents' side, there is an associated Felo app where parents can onboard their children and set certain routines and behaviors. They would be able to tell Felo about their child's needs and routines, and those would be reflected back as Felo's "needs." For example, if the parent wants their child to get 30 minutes of activity in a day, then Felo needs to play for 30 minutes. Or, if a parent sets a certain time of day to be designated homework time, then Felo will need to be in focus mode. These needs become the responsibility of the child, who learns how to empathize with Felo through its facial expressions and take care of it like a pet.

After we further developed the concept of Felo, we began user testing. We found that it was easy for our test subject to empathize with Felo's expressions, and responded to its needs appropriately. We also identified visual preferences including eye shapes and accessories.

We also tested the parent app, going through several iterations within the interaction design in order to ensure everything was intuitive and easy to navigate. In further development, we have many more opportunities to user test with both parents and children.

Looking into future development, our team will be focusing on further user research, development, and refinement of Felo's form and features as well as its associated app. We have many user testing opportunities over the break and many professional connections we intend to use to help us bring Felo to life, and with a team as strong as ours, develop a refined final product.

Meet the Team



Mackinzi Blank AZ



Daniel Benedict MN



Samantha Klein GA



Meshal Almazyad KSA

Overview

Felo is a robotic childhood companion that teaches children responsibility, empathy, and healthy habits like routine and goal achievement through interactivity, personality, and haptic feedback. Felo will help children learn how to take care of something that also cares for them and provides them with real-time, tangible feedback so that they learn healthy habits starting from a young age.

Our culture is surrounded by screens, and suffering for it.

Kids ages 2 to 5 [should] use screens for no more than one hour a day, not including time spent video chatting with family or friends.

American Academy of Pediatrics (2018)

"young people who spent seven hours or more a day on screens (not including schoolwork) were more easily distracted, less emotionally stable and had more problems finishing tasks and making friends compared to those who spent just an hour a day on screens (not including schoolwork)."

Time

Inactivity is rising, especially in youths.

23%

Globally, 23% of adults and 81% of adolescents (aged 11–17 years) do not meet the WHO global recommendations on physical activity for health.

World Health Organization

"...the Americas (39%) and the Eastern Mediterranean Region (35%) and had the highest prevalence of insufficient physical activity, while the prevalence was lowest in the Western Pacific (19%) and African (22%)"

World Health Organization

Education has never been more competitive and this is having a negative impact on children.

80%

"...[A study comparing] kindergarten teachers' attitudes nationwide in 1998 and 2010 and found that the percentage of teachers expecting children to know how to read by the end of the year had risen from 30 to 80 percent."

"For lasting effects, we need to focus on skills that wouldn't otherwise develop, do more to change a child's environment and provide ongoing support, especially during sensitive periods of development such as early adolescence."

The Washington Post

The Atlantic

People can set goals, but don't accomplish them.

80%

"of people give up on their New Year's resolutions by the second week of February because they don't have a solid plan in place"

CNBC

"According to the University of Scranton, a whopping 92 percent of people who set New Year's goals never actually achieve them"

-Marcel Schwantes

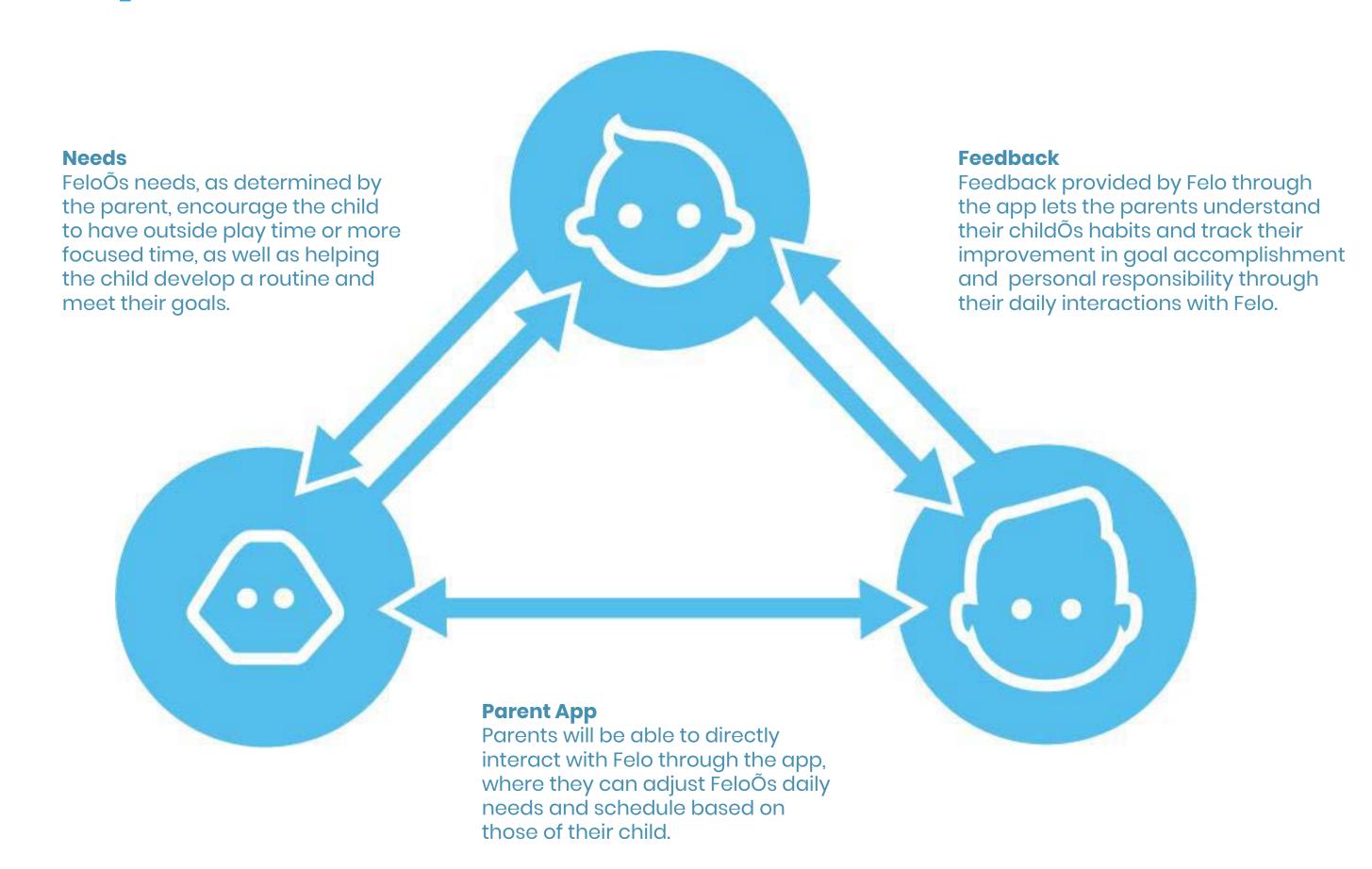
What is Felo?



Felo is a partner who can help form healthy habits in early development as a tangible, empathetic companion.



Ecosystem



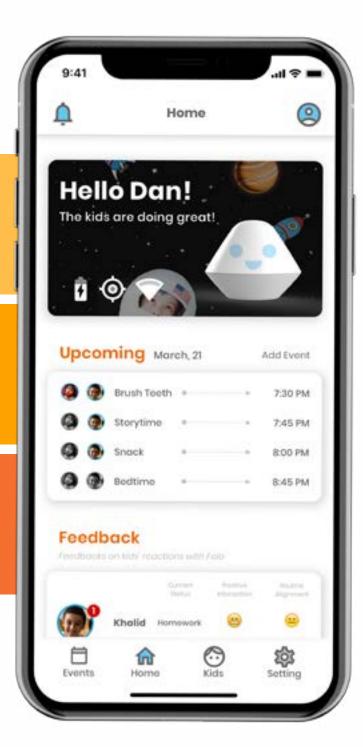


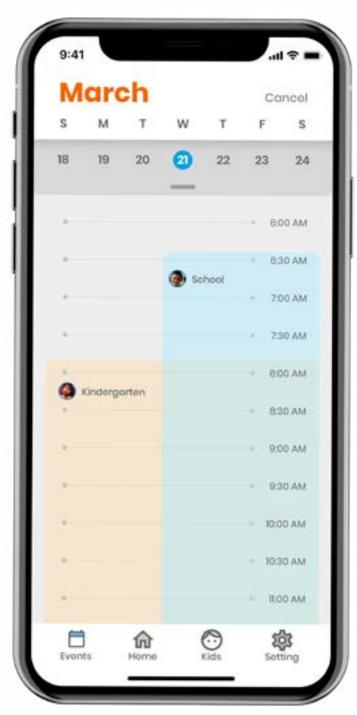
Companion App

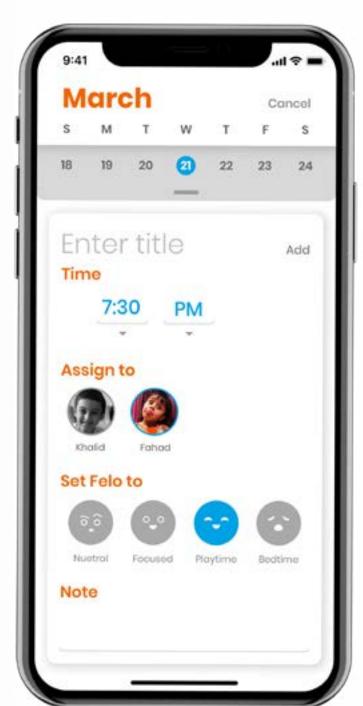
Record Accomplishments

Set Schedules

Assign Tasks

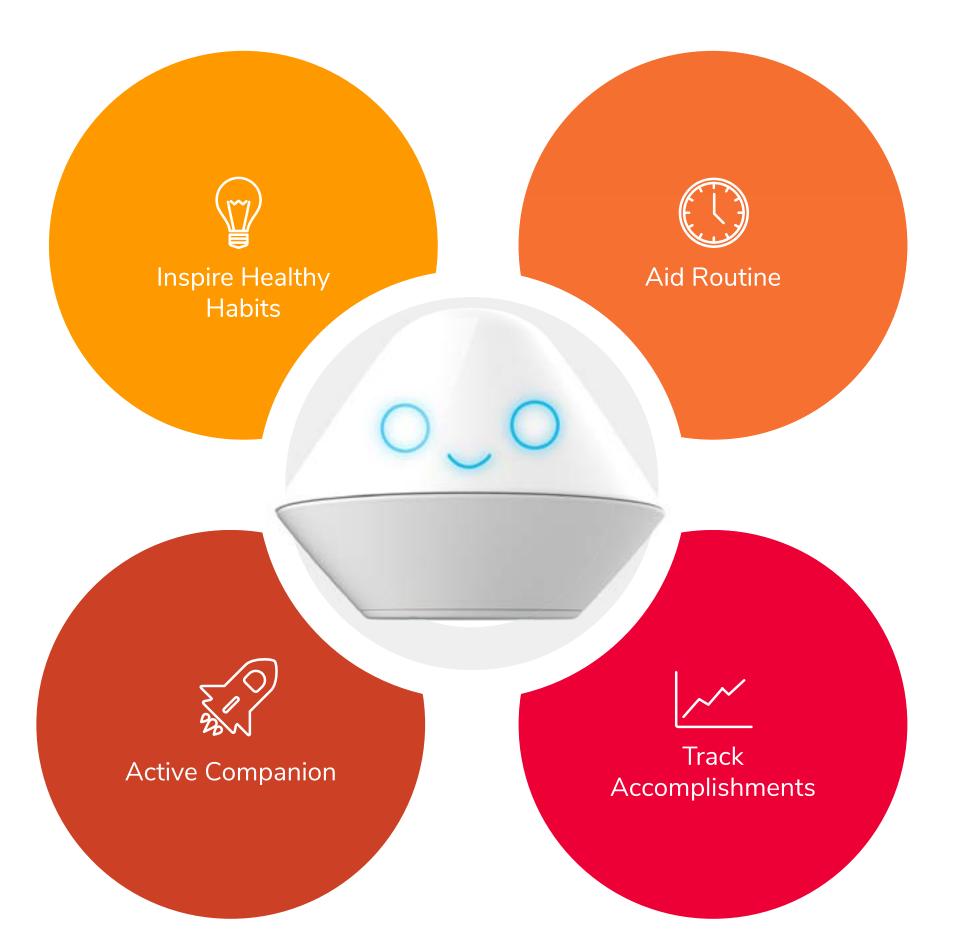








Core Functions



Felo aims to help you achieve a better lifestyles through many aspects of your life. Felo is able to be aware of your time commitments and can react appropriately for when its time to get things done.

Otherwise Felo loves to be active and play. Whether it's running around or playing an alphabet game. Felo can also help track how much progress from the games played.

Key Features



Emotional Support

A way for Felo to react to a child's mood.



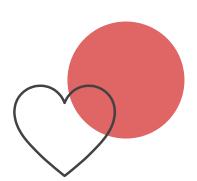
Contextual Awareness

Felo can modify routines and needs based on weather, season,



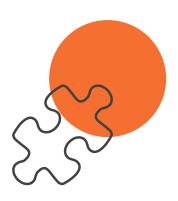
Games

A fun incentive to spend time with Felo instead of on a screen.



Personality

Felo is a unique type of personality.
This can be changed/customized.



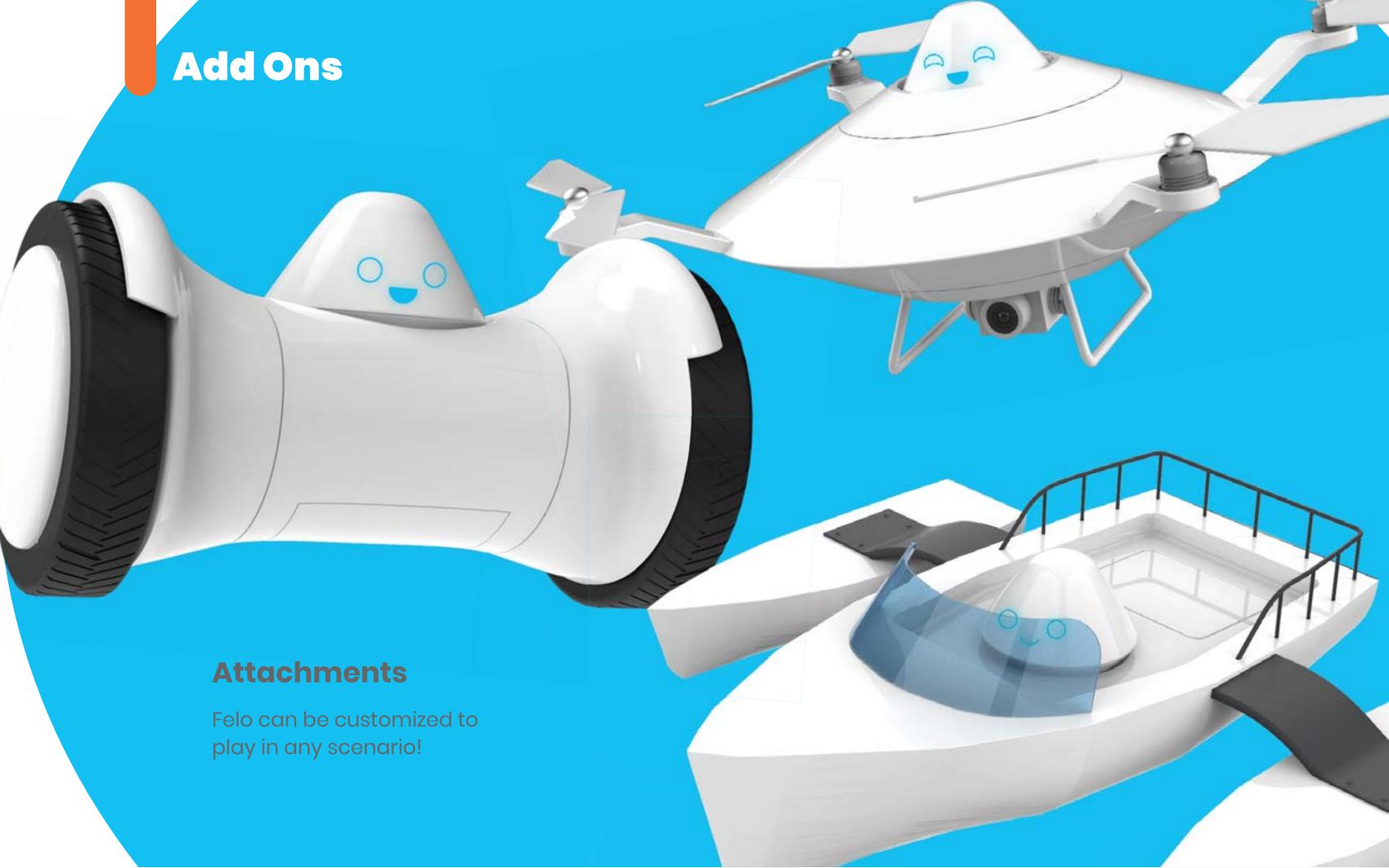
Kinetic Interaction

Felo can feel and move.



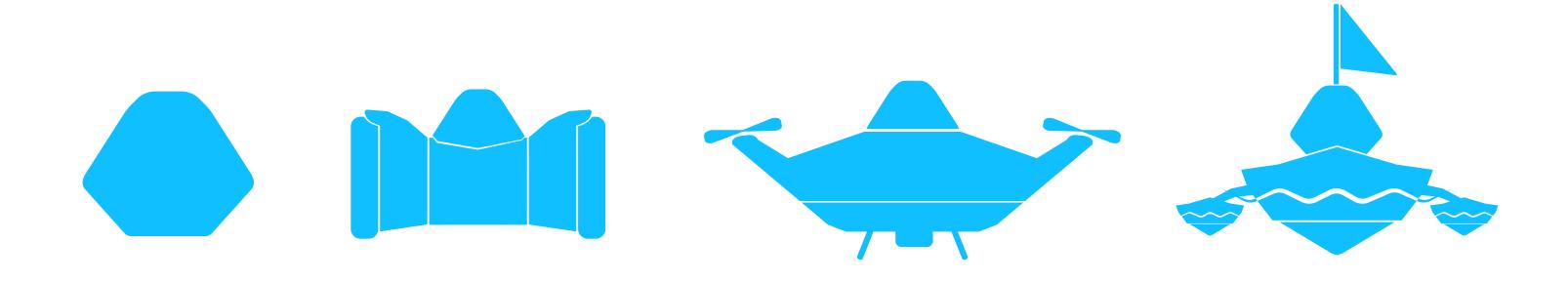
Needs

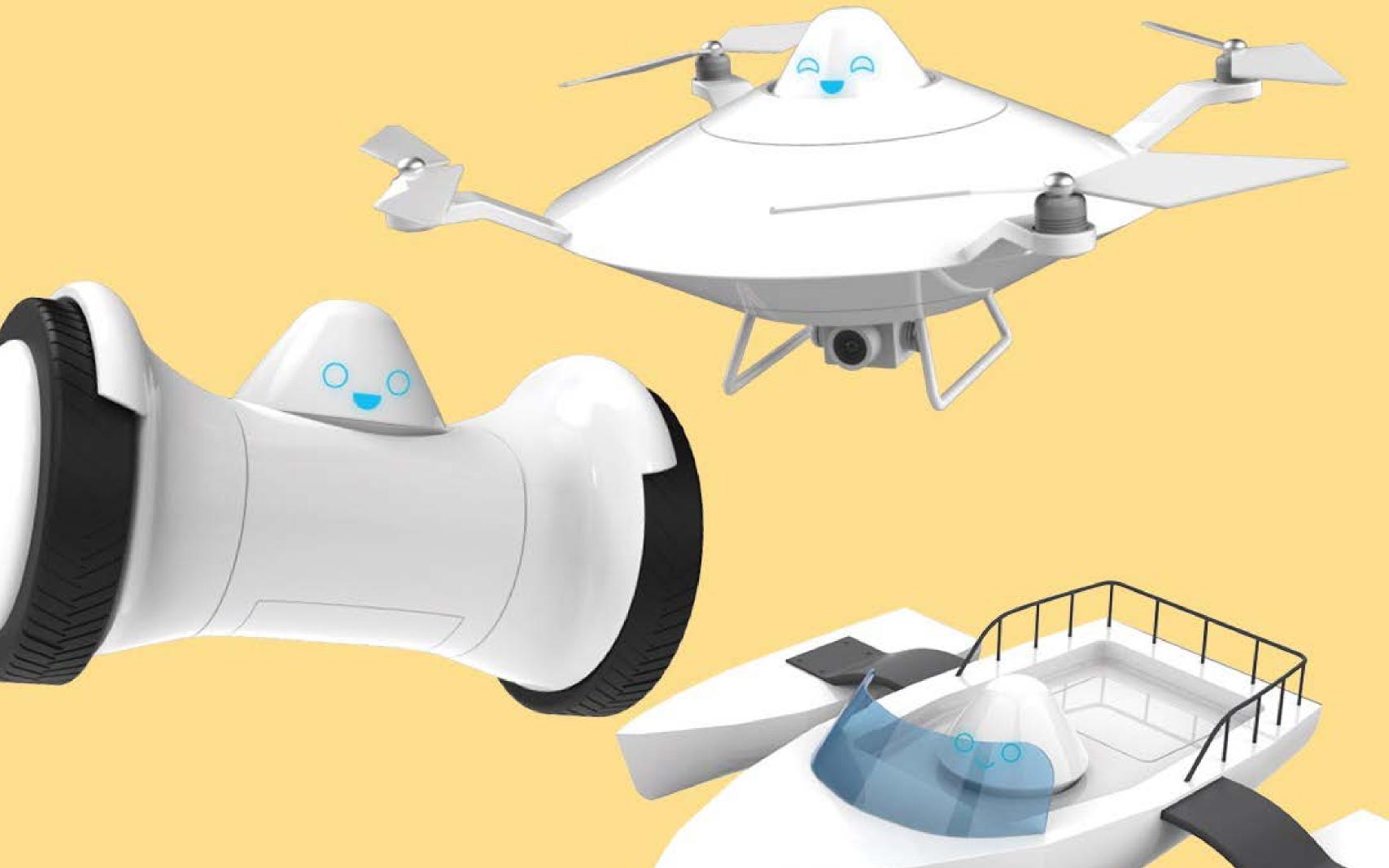
Desires of parents for the child which translate into activities



Add Ons

Felo features many different activities and they don't stop indoors! The many add ons for Felo allows for more fun outside, whether its zooming around on the ground, in the water, or even the air! Felo wants to get up and move and would love to have a companion to play with during all the fun.



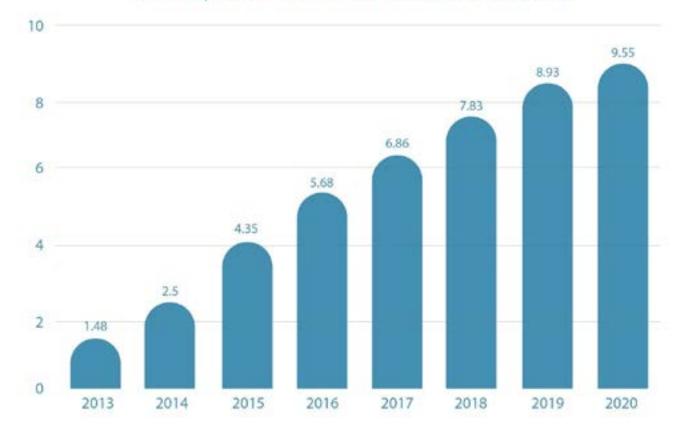


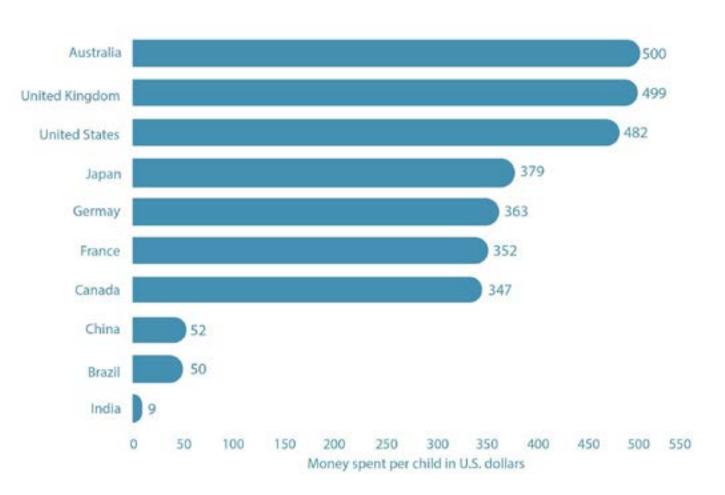
Market Stats

\$3.8 Billion market demand for robots
Forbes argues that childcare robots can aid with working parents and provide positive development opportunities for kids, as well as care and companionship for the elderly.

Smart toys are a worldwide growing market with parents paying as much as \$500 per child in Australia.

Smart Toy Revenue Worldwide in Billions of U.S. Dollars





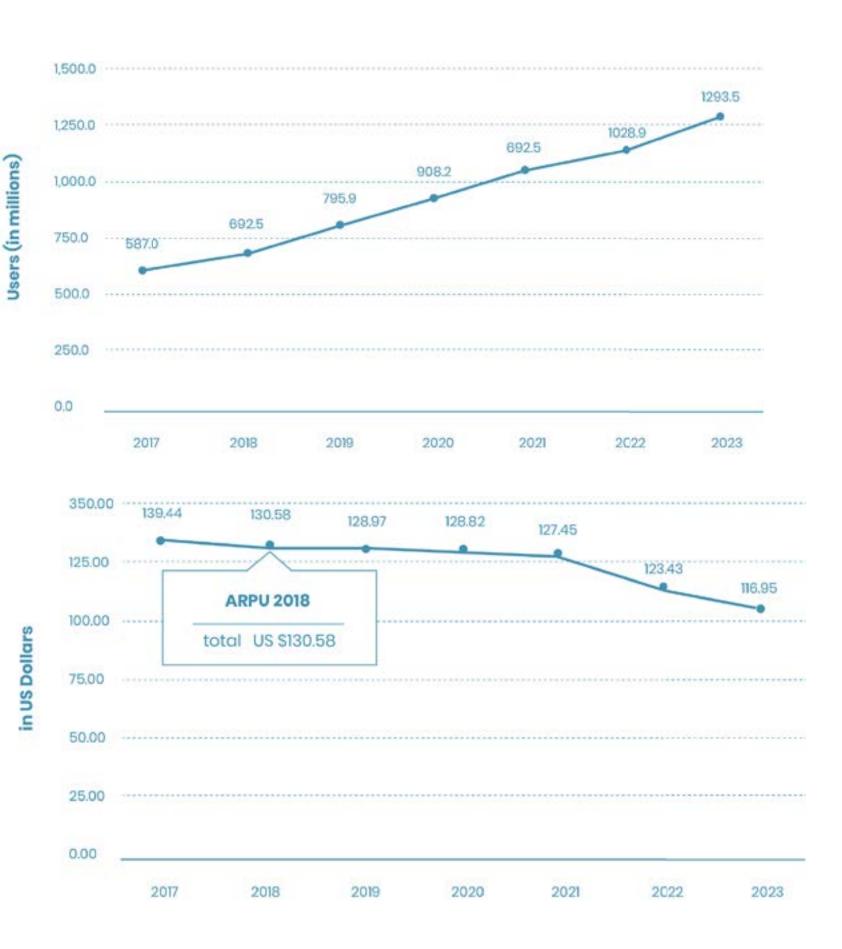
Market Stats

Reading Support

In the Toys & Baby segment, the number of users is expected to amount to 1,239.5m by 2023.

Reading Support

The average revenue per user (ARPU) in the Toys & Baby segment amounts to US \$128.97 in 2019.



Howwas Felo Made?

Discover & Define

People can set goals, but don't accomplish them.

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World Health Organization

Hypothesis

Individuals attempt to be physically active, but accessibility, community, and activation energy prevent follow through.

Primary Research

20+

Interviews

Survey Response 500+

Data Points 15-18 age range



Research Excerpts

"I feel **uncomfortable** going to the Gym alone. I want to be more active, but I feel **judged** when I'm trying to."

User 4

"I work, and I work, and I work, and even with success, I end up feeling more anxious than accomplished."

User 7

"I moved away from my friends and left my routine as well. I put on weight and got really unhappy with myself."

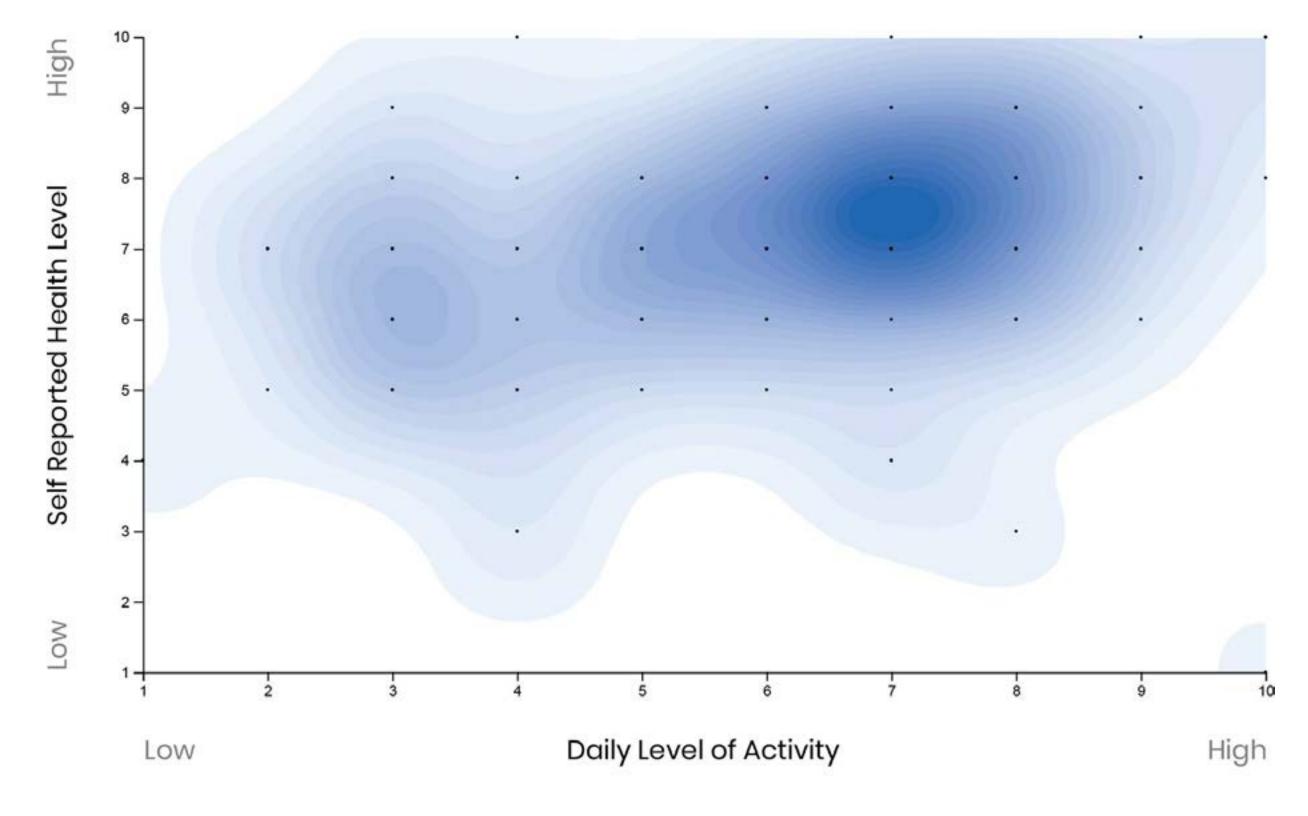
User 11

"I teach yoga to my coworkers a few times a week, but outside of class, **it's hard to keep in contact and keep them motivated**."

User 26

Research Excerpts

We confirmed that the majority of individuals who are happy with their fitness level also have a regular activity routine.



Research Excerpts

We **identified inhibitors** and **ideal scenarios** for those who struggle with physical activity.



Key Insights



Time

- Trainers as an ambassador for the fitness community.
- A strong Community affects level of involvement.
- Desire for support.
- Schedule impacts and conflicts
- Struggles with friends and focus at gym.
- Being Active is a lifestyle, not goal-oriented.



Motivation

- Homemade food is preferred for health.
- Expecting immediate results and facing the consequences.
- Exercise impacts mental state.
- Pills are fads that people follow.
- Internal struggle with body and gym.
- Body image impacts willingness to be active in public.



Community

- It can be difficult to find a place and plan that fit the user.
- Writing down goals can be motivating.
- People want working out to not feel like a chore.
- Digital stimuli can be positive.
- Routine plays a huge role in exercising.
- Digital communities can be empowering.
- Working out has a positive mental effect



Body Image

- · Working out is not just exercise.
- Learning how to measure success is important...
- People want to be better.
- Knowing your limitations.
- Misunderstanding of value working out.
- · Community pushes you forward.

Problem Statement

Around the globe, people are not living their most active, healthy lifestyles.

Individuals fail to stay motivated while pursuing fitness due to fear of judgement and scrutiny and a lack of a steady routine.



Education has never been more competitive and this is having a negative impact on children.

80%

"...[A study comparing] kindergarten teachers' attitudes nationwide in 1998 and 2010 and found that the percentage of teachers expecting children to know how to read by the end of the year had risen from 30 to 80 percent."

"For lasting effects, we need to focus on skills that wouldn't otherwise develop, do more to change a child's environment and provide ongoing support, especially during sensitive periods of development such as early adolescence."

The Washington Post

The Atlantic

Children are facing lifelong challenges in physical activity.

5.2%

Of adolescents aged 5 - 18 are achieving recommended levels of physical activity.

American Academy of Pediatrics (2018)

"To help children develop habits that will last a lifetime, **an active**, **healthy lifestyle must start early in life.** Physical activity has benefits at every age, and helps kids"

Caring for Kids

Our culture is surrounded by screens, and suffering for it.

Kids ages 2 to 5 [should] use screens for no more than one hour a day, not including time spent video chatting with family or friends.

American Academy of Pediatrics (2018)

"young people who spent seven hours or more a day on screens (not including schoolwork) were more easily distracted, less emotionally stable and had more problems finishing tasks and making friends compared to those who spent just an hour a day on screens (not including schoolwork)."

Time

Hypothesis

Children's exposure to high expectations, screen overloads, and a cultural shift away from physical activity are preventing healthy lifestyles.

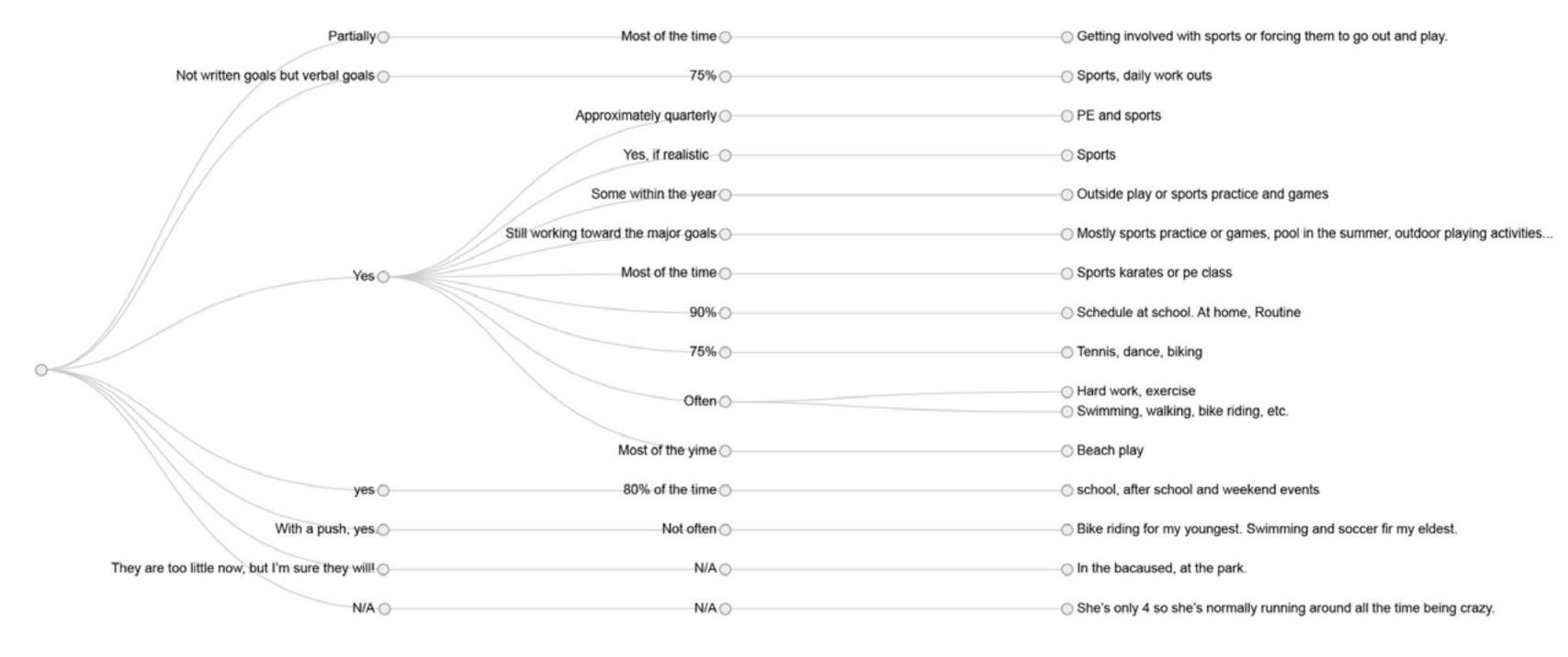
Primary Research

Additional Interviews

Survey Response 40+

Data about over 40 children (15–18 age range)

Primary Research





Research Excerpts

"I want to help with ideas and time management because it needs to get done, but I'm trying to step back and let them have that learning experience."

User 22, One Child

"Children seemed demoralized when they realized they were not getting the results they had anticipated, making them uninterested in the activity as a whole."

User 23, Three Children

"Having a pet made them learn how to love and care for something that is completely dependent on you."

User 25

"When chores are attached to a fur baby they love, and there's a more obvious reward for them, it makes it more worth it."

User 26

Key Insights



Routine

- Kids are growing up in a digital headspace that has no clear guide.
- Parents could benefit from a tool that helps them teach their children.
- Kids can build off of each other's energy.



Achievement

Kids are forming complex emotions and expectations, but without the awareness that adults have.



Responsibility

- Kids lose interest if they don't get the results they want.
- Kids are motivated to accomplish goals when they have a sense of control.
- Kid's focus can be streamlined.
- Pets are a positive impact on children.



Empathy

- Kids are in a short-term mindset.
- Healthy habits are formed at a young age.

Problem Statement

The children of the digital generation are not developing the empathy and habits necessary to live healthy, productive, lives.

How Might We

How might we foster a community of young individuals who know how to set and track progress towards goals?

How might we foster a community of young individuals who know how to set and track progress towards goals?

Archetypes



Determined

Primary Connection to World Physical

Primary Movement
Active and Determined

Primary Need

New Experiences &

Support

Judged asBusy, Demanding, Loud



Sensitive

Primary Connection to World Emotional

Primary Movement
Subtle and Thoughtful

Primary Need
Empathy & Connections

Judged as Shy, Wimpy, Hypersensitive



Social

Primary Connection to World Social

Primary Movement
Bouncy and Random

Primary Need Fun & Joy

Judged as Flighty, Hyperactive, Unreliable



Serious

Primary Connection to World Intellectual

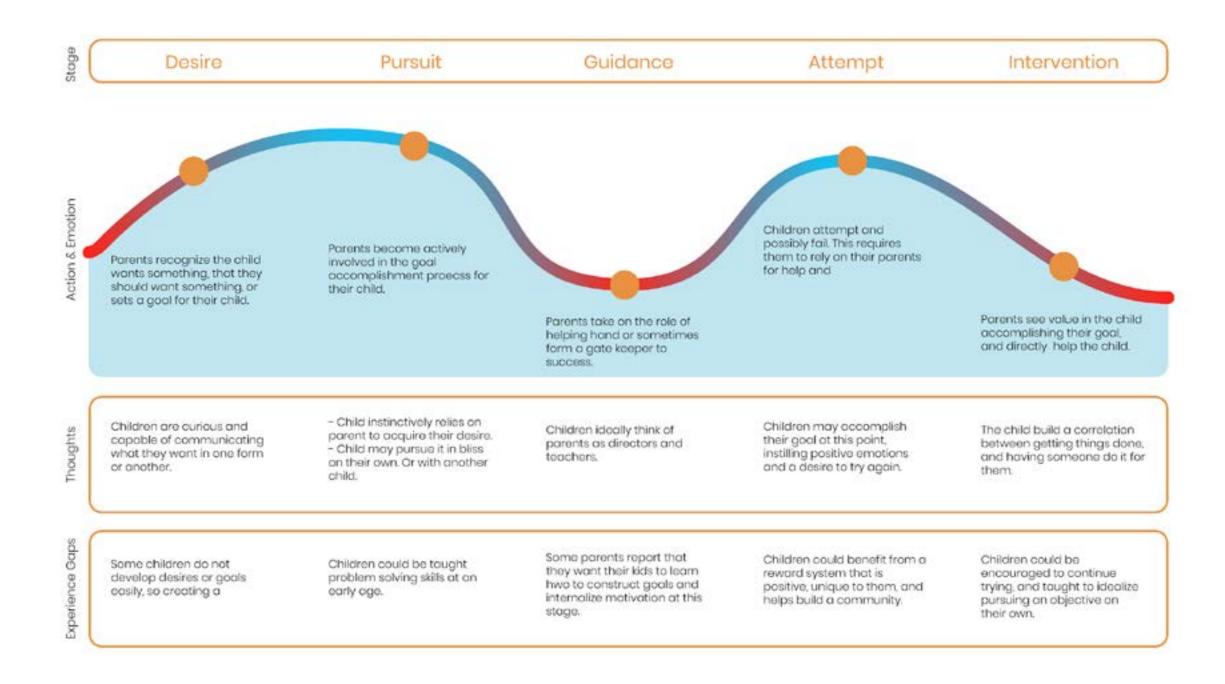
Primary Movement
Straightforward & Exact

Primary Need Respect

Judged as Critical, Know-it-all

Identifying Experience Gaps

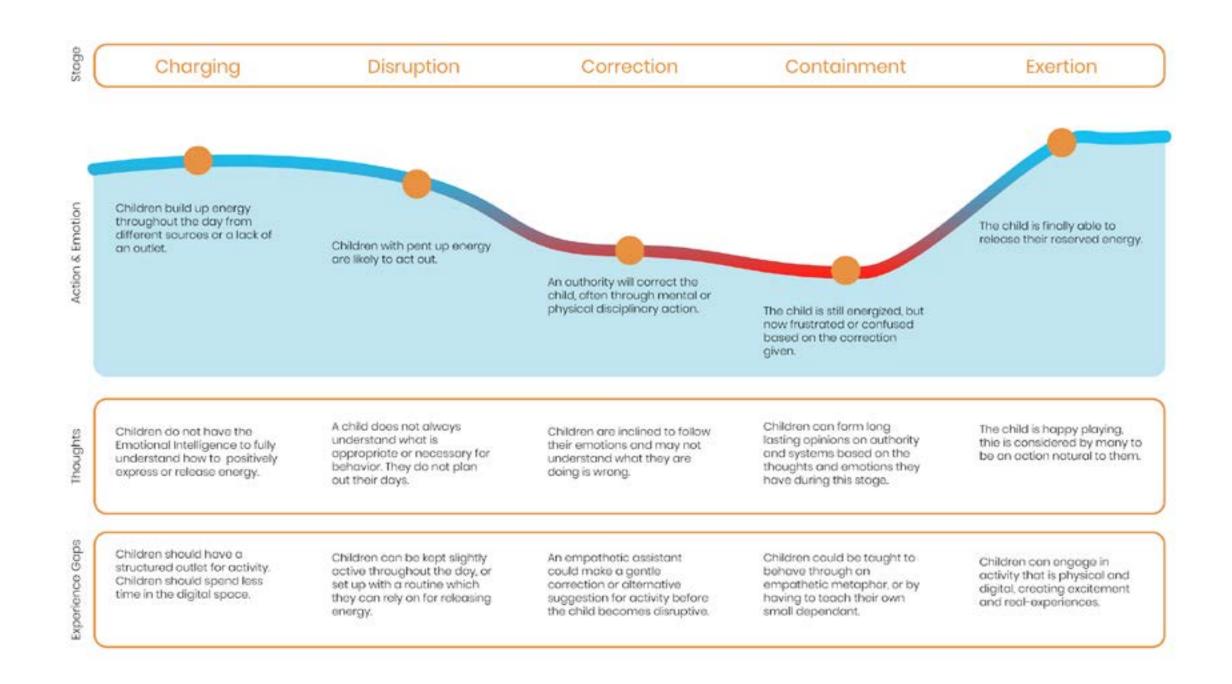




Identifying Experience Gaps



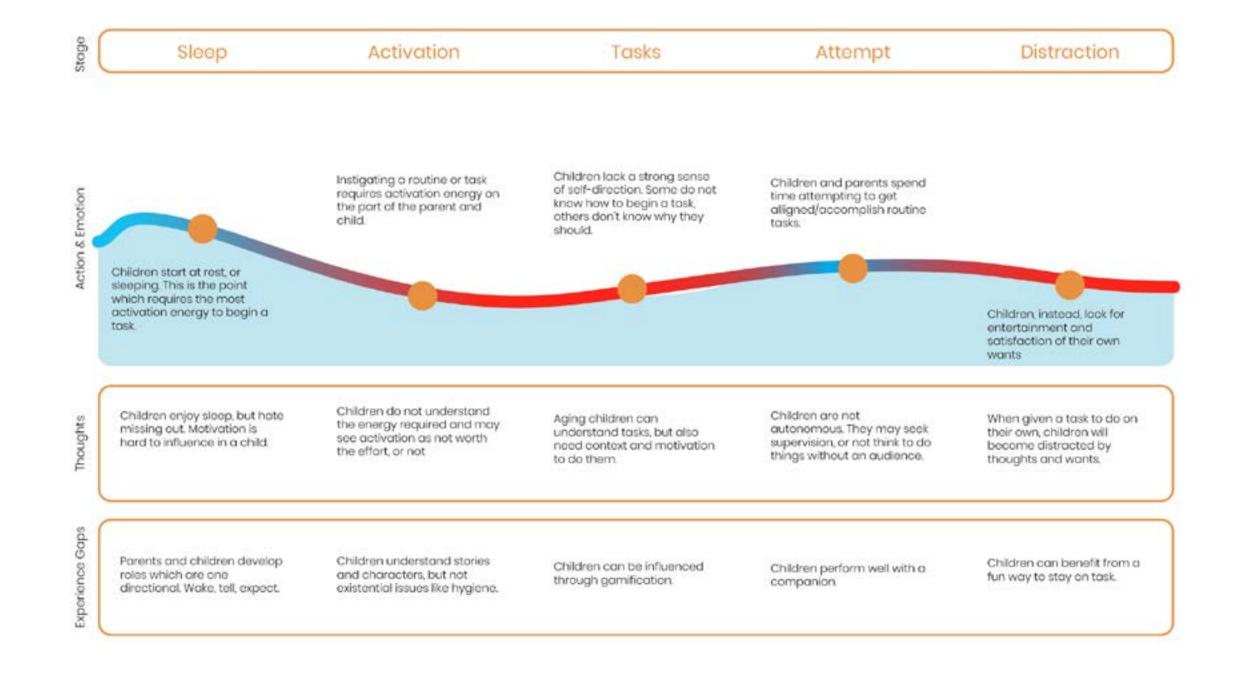
Determined Child



Identifying Experience Gaps



Serious Child



How was Felo Made?

Design

Practices used during our user testing for the physicial form of Felo involved the following: wizard of oz, card choices, followed by a small interview.

Users were aware it was a phone but were still emotionally invested in the well being of its emotions.

Major Points
Touchable/petable
Cute, Friendly
Needed context (i.e. Face)

User Testing Feedback
"I want to go outside and play catch!"
(User #3)

"I want it to play music." (User #4)



User Testing: Protocol

Part 1: Preferences

Users were presented with a card-sorting like exercise where they will choose which visual aspects of Felo they prefer. Variables include basic body shape, eye type under two contexts, mouth types, and accessories.

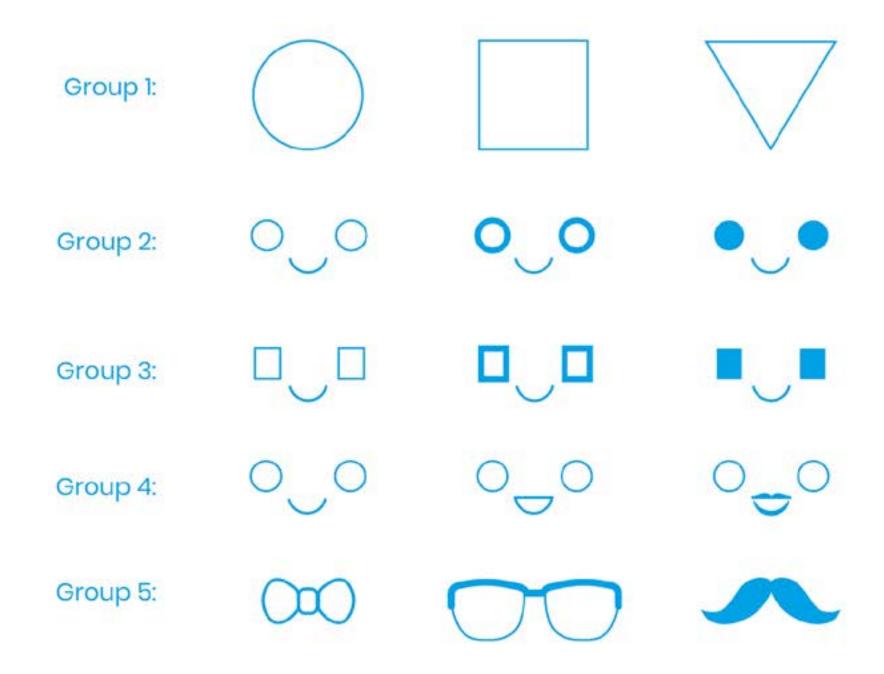
Part 2: Physical Form

Users were presented with Felo's basic physical form to assess their interest and determine what they think the form might be used for, or if they could attribute a personality to it.

Part 3: Empathy

Users were presented with Felo's facial expressions and asked to identify and respond to various expressions, context given when appropriate.

Part 1: Preferences (Choices)



User 2 Age: 6



Part 1: Preferences:

Shape: User preferred round shape

"Faces are a circle and I wouldn't want another shape"

Eyes: User preferred closed eyes, and thick outlined square eyes

"That's how I draw them!" and "I liked the shape (inner eye) best."

Mouth: User preferred mouth with lips

"It looks like lipgloss, and I like pretty things."

Accessory: User preferred the bow,

"Because I like bows, and it makes it look like a girl!"

Part 2: Physical Form

User was interested in touching it, liked the smooth exterior. Was interested in taking it apart (form was not sealed shut), when told it wouldn't break, thought it was a ball and wanted to throw it.

Part 3: Empathy

When presented with a sad Felo, child stated that she would ask what was wrong, then would try to cheer him up by playing with him and talking to him. When presented with a happy or neutral Felo, child stated she would also be happy, and that she'd want to talk to it, or go outside to play catch with it. When presented with a tired Felo, child stated she would give it a blanket and put it to bed on a couch, because he can't sleep in a bed because he's not a person.

User 3 Age: 5



Part 1: Preferences:

Shape: User preferred round shape

"because I like it the best and it looks cool"

Eyes: User preferred open eyes with a thick outline, but closed squared

"I like them the best" and "because I think they're cool with no white"

Mouth: User preferred closed smile

"Because he's smiling! ... He looks happier in this other one."

Accessory: User preferred bow

"Because it's so pretty!"

Part 2: Physical Form

User was interested in touching it. Thought it would make a noise. Then, thought it was a hat.

Part 3: Empathy

When presented with a sad Felo, child stated that he would ask why it was sad, then would tell it a joke to cheer it up.

When presented with a happy or neutral Felo, child stated he would have fun with it, and be happy and laugh. Would want to play ball with it, but wouldn't want it to "hit his head."

When presented with a tired Felo, child stated he would give it robot

food to make it energized.

Preferences Summary

100% of children tested preferred rounded forms for the body

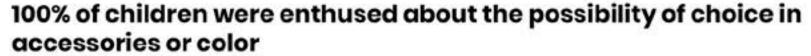
Reasoning included:

- "It's the best shape"
- "It's the shape of people"



Reasoning included:

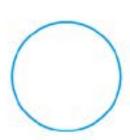
- "It looks lazy and I like being lazy"
- "It looks the most friendly"



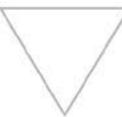
Reasoning included;

- "I like bows and pretty things"
- · "It looks smart and I want to be smart"
- Positive reward association

Age range: 3-10



















Cognitive Reaction Summary

100% of children tested correctly identified emotions displayed by Felo, though the "tired" emotion required more xontext

Examples:

- Happy/neutral was correctly interpreted and responses included wanting to talk or play
- Sad was correctly interpreted, and responses included wanting reasoning, to talk, and to cheer him up

100% of children tested responded to Felo's emotions appropriately

Responses included:

- "If he was sad I would talk to him and find out why"
- "If he's happy I want to go outside and play"
- "If he's tired I'd plug him in"

80% of children displayed curiousity about Felo's capabilities

Questions included;

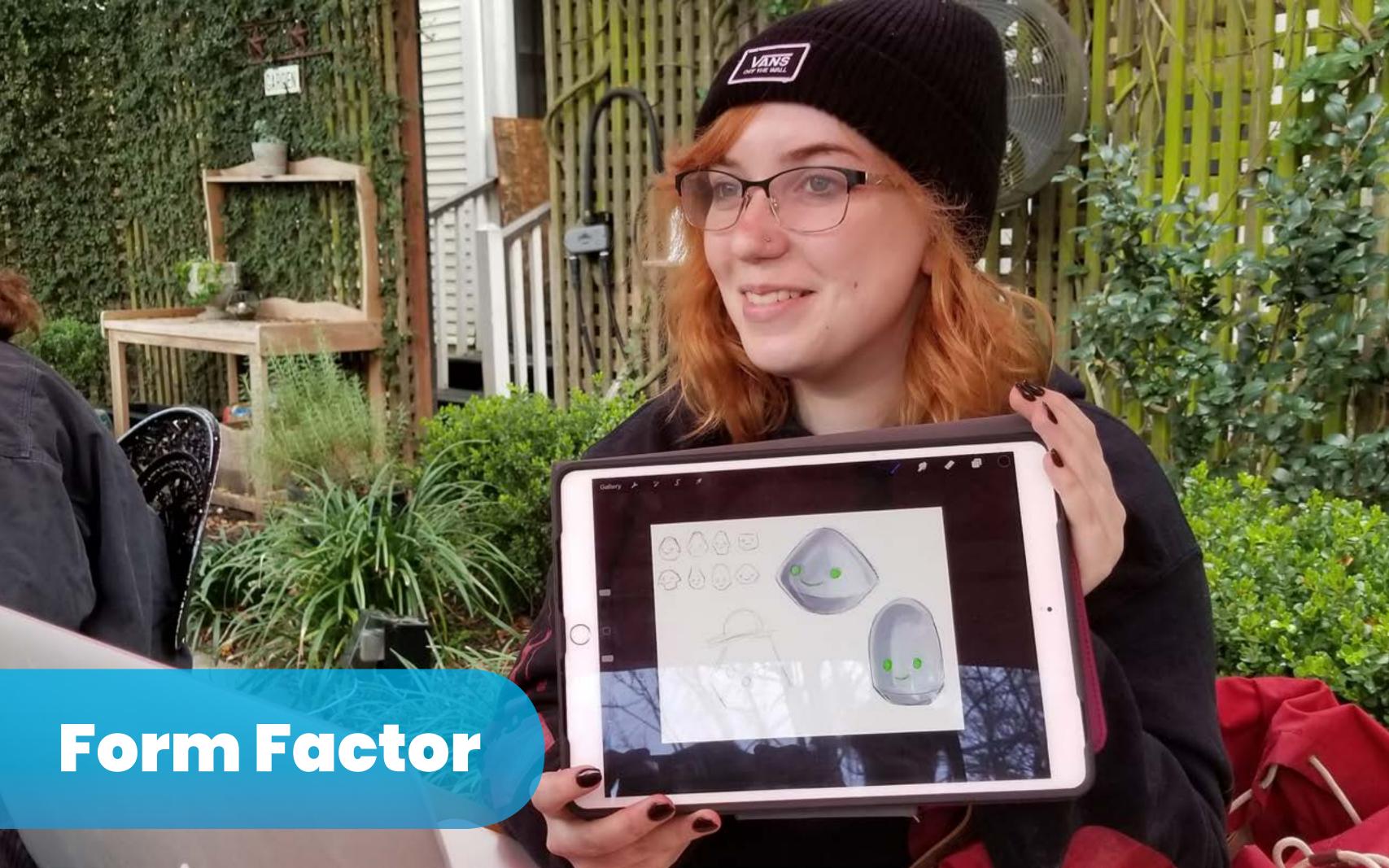
- Can he play music? Does it talk back?
- · What's inside of it? Can it be taken apart?

Age range: 3-10

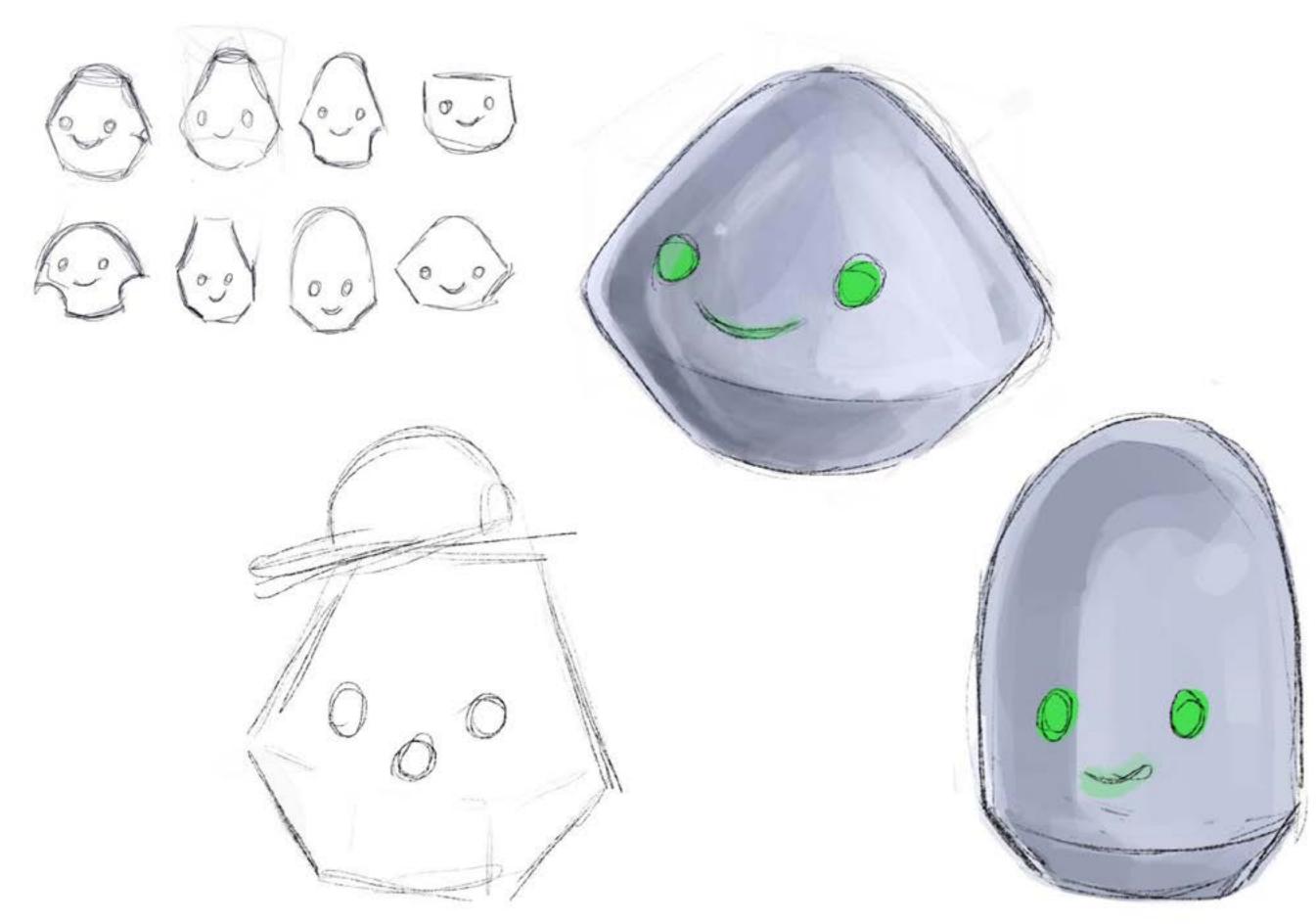




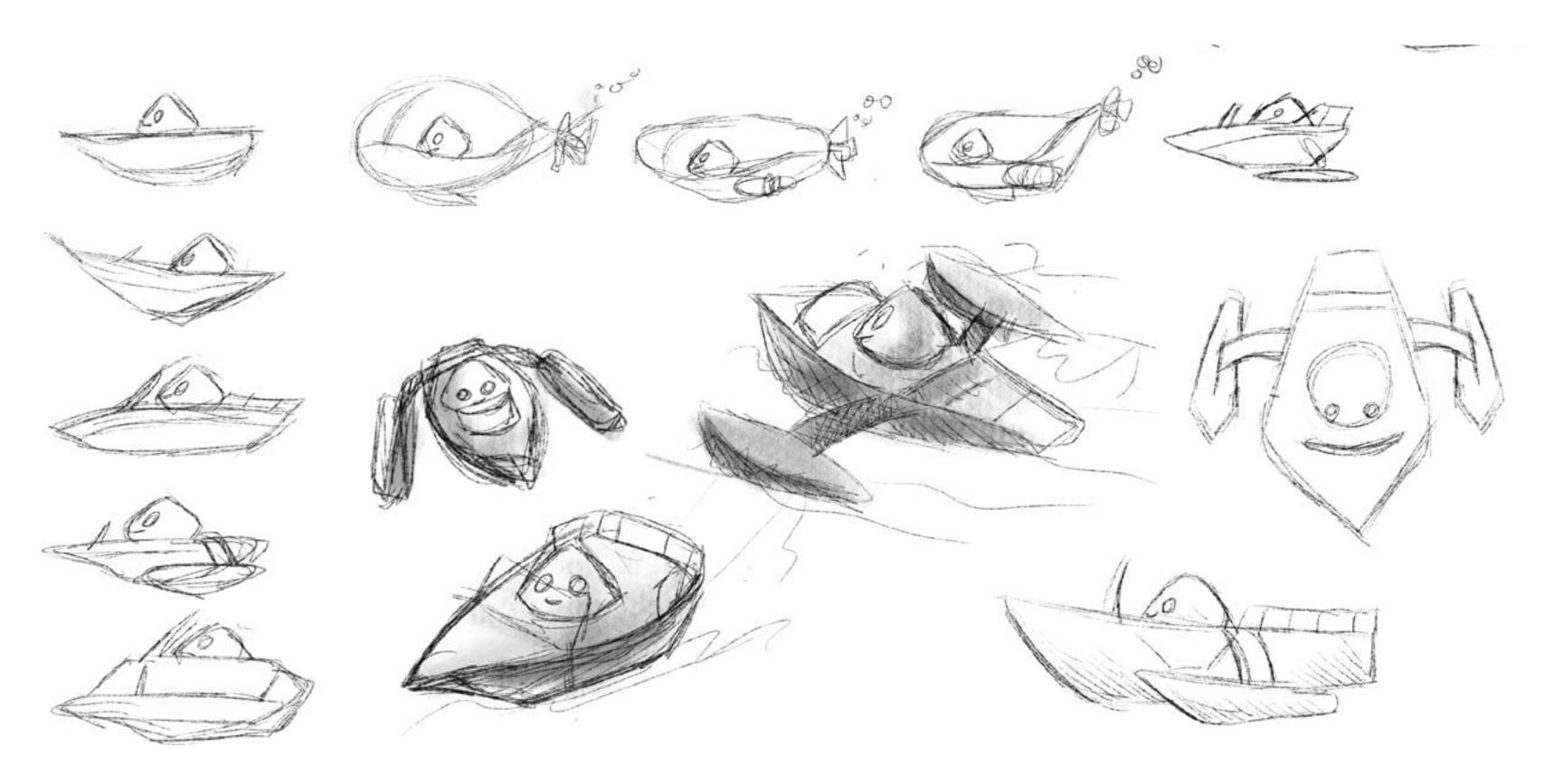




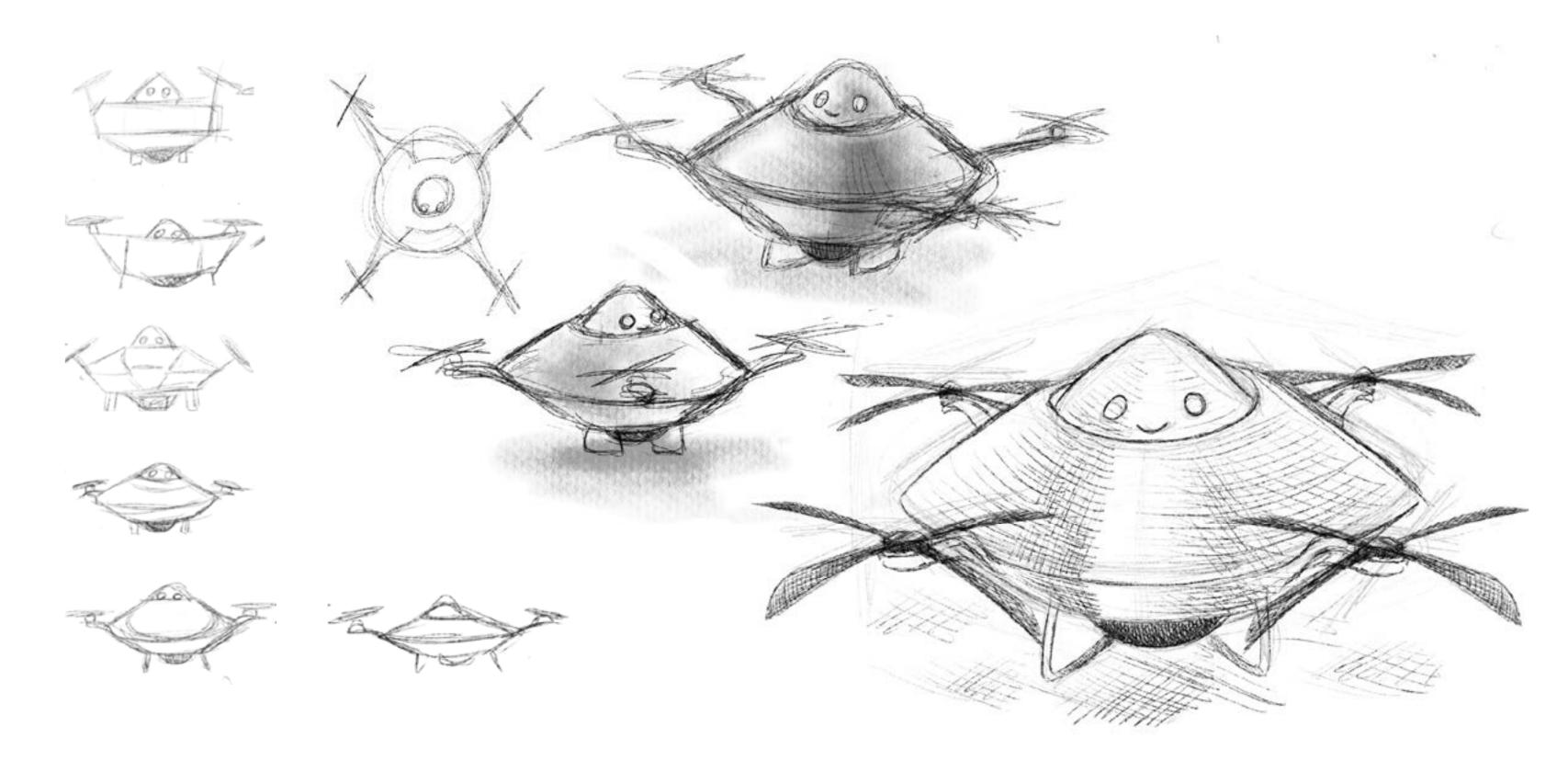
Form Factor

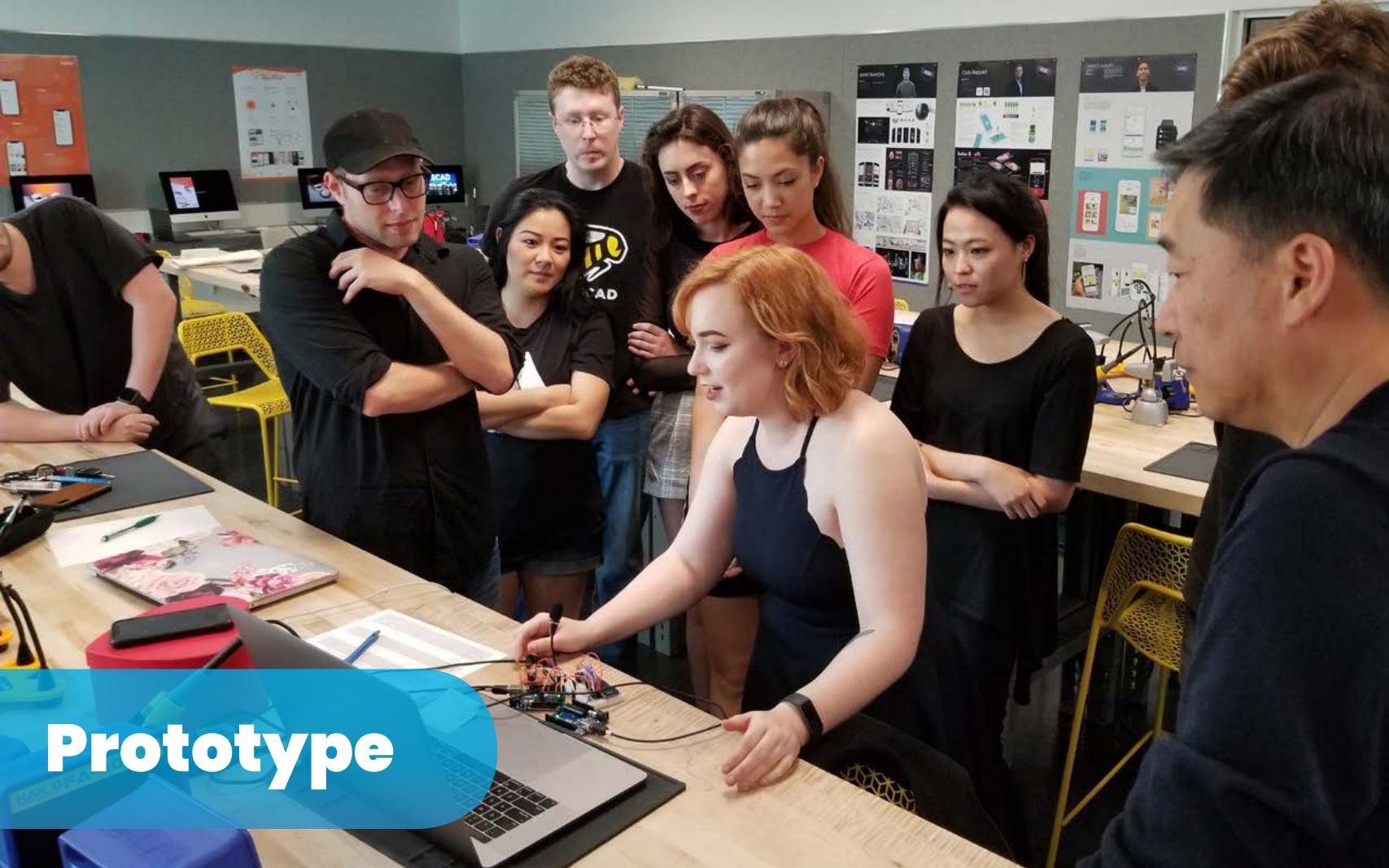


Form Factor

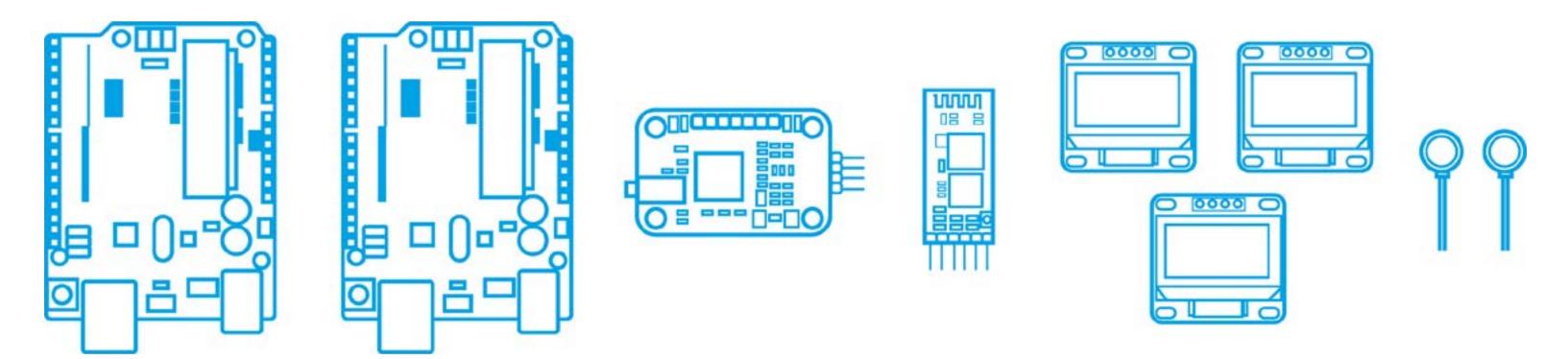


Form Factor





Prototype

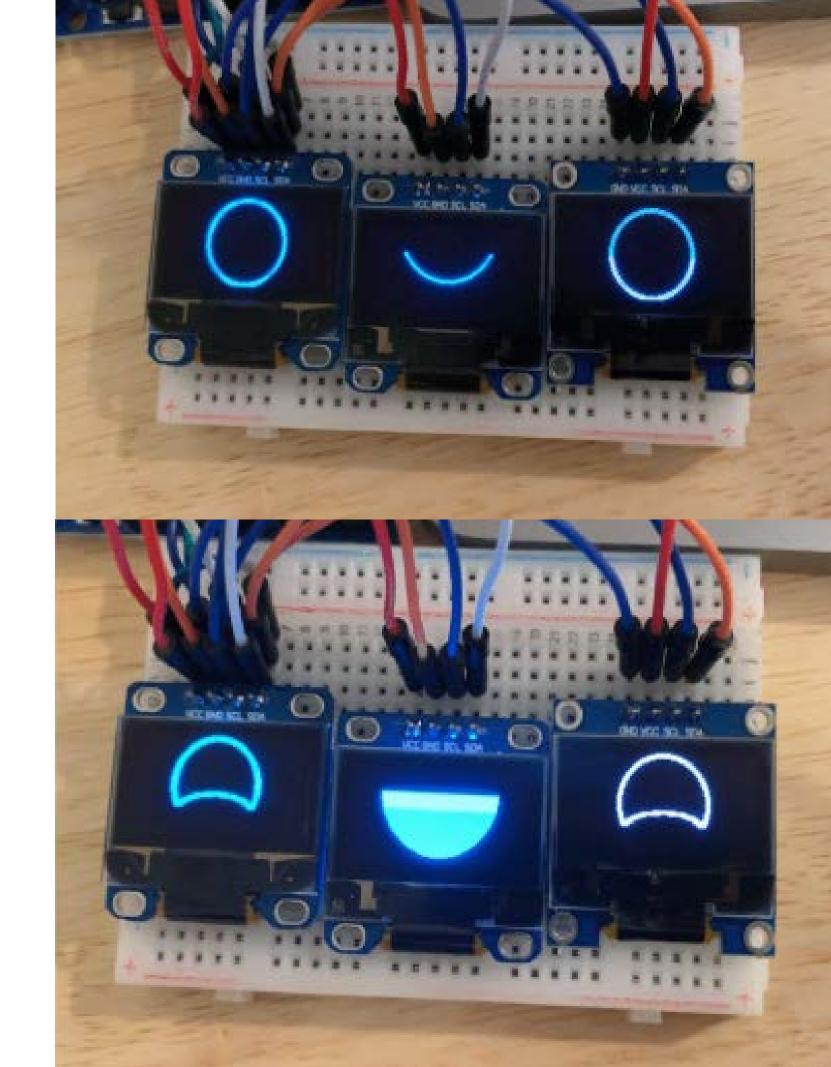


Felo's interior was designed and coded using arduino components.

Prototype

What can Felo do?

- Hear your voice (Multiple commands, varied voice recognition)
- React to you (Fully functioning facial animations with vibrations)
- Connect to your phone



App - Mid Fidelity

Major Points

Navigation, hierarchy, content

User Testing Feedback

"I'm just not sure what's going on" (User 7)

"What is this supposed to be?" (User 9)



App - High Fidelity

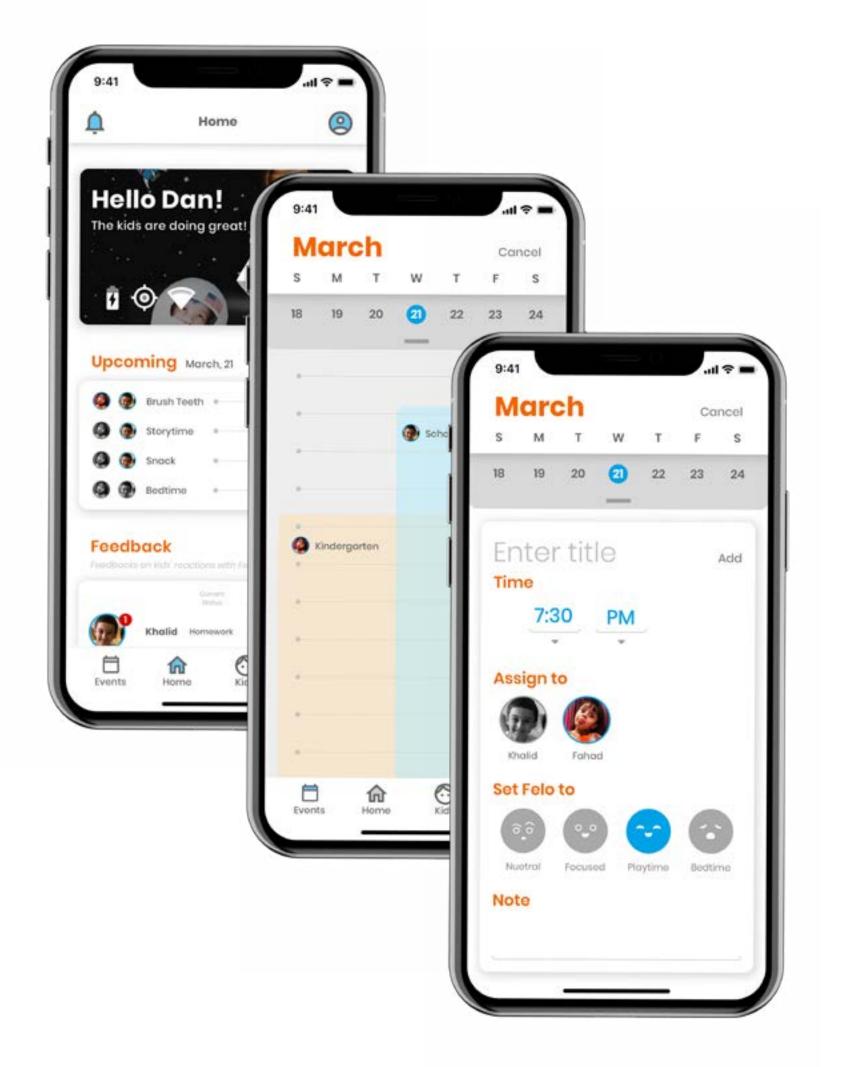
Major Points

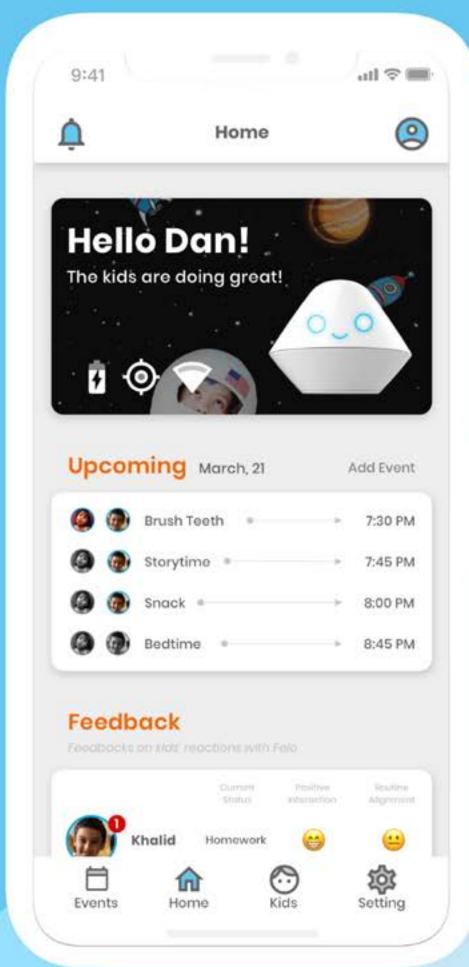
Main takeaways were aesthetic based and less on the intractability of the interface.

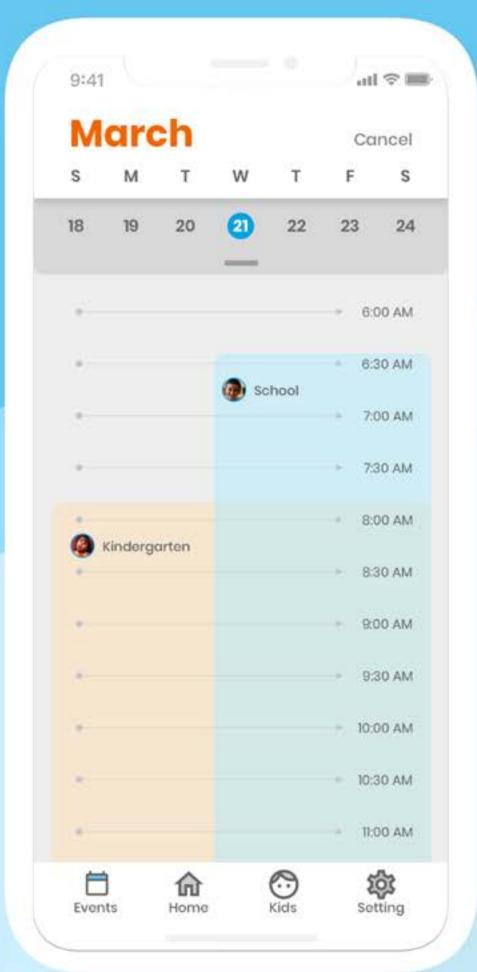
User Testing Feedback

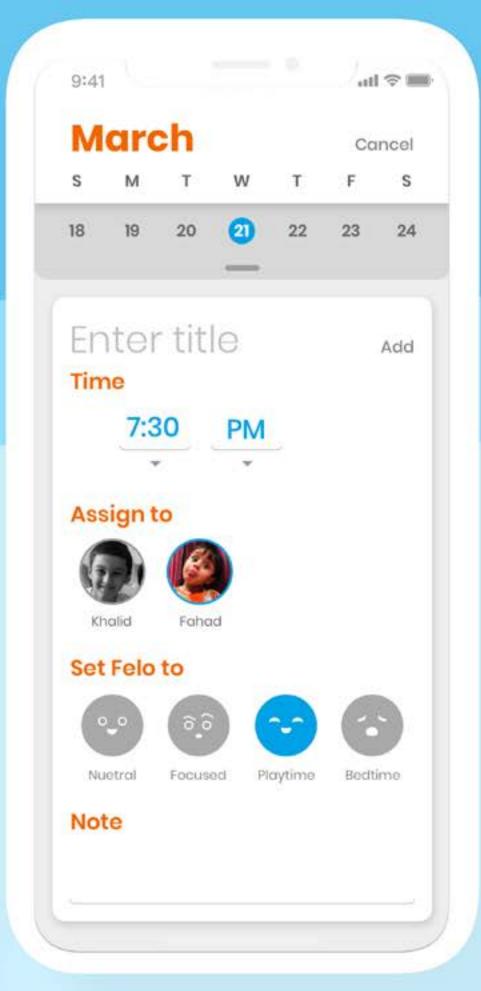
"The pure black icons are a bit intense."

(User 29)

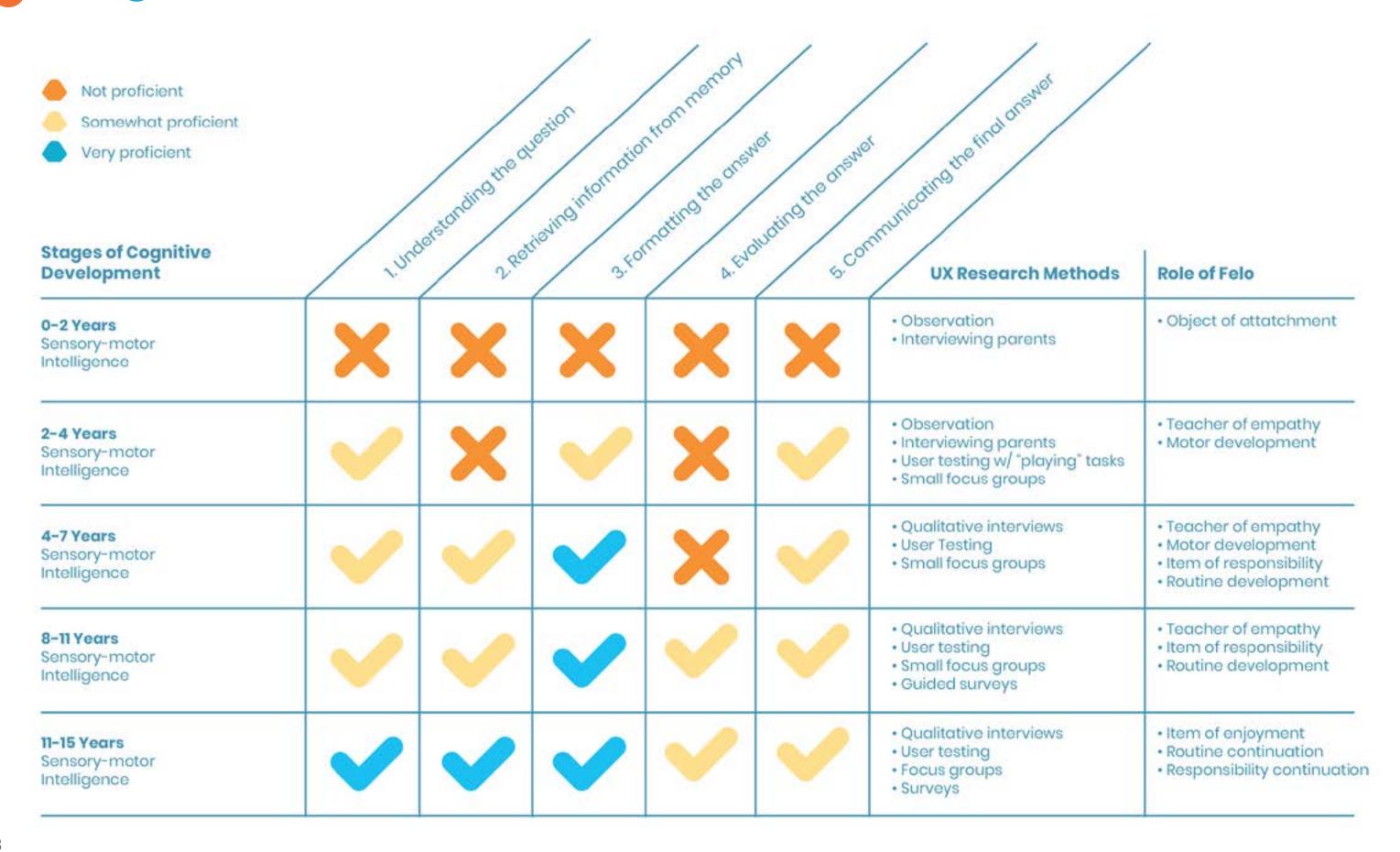








Target Audience

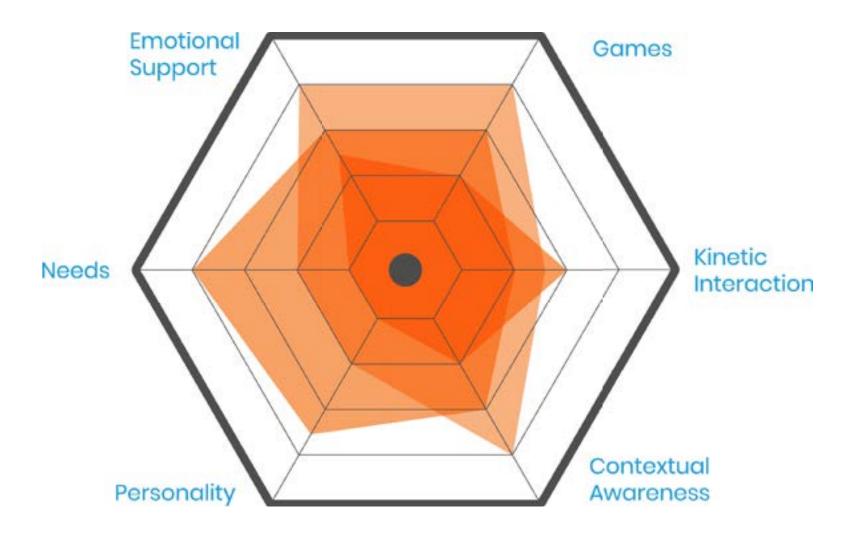


Adaptable Functionality





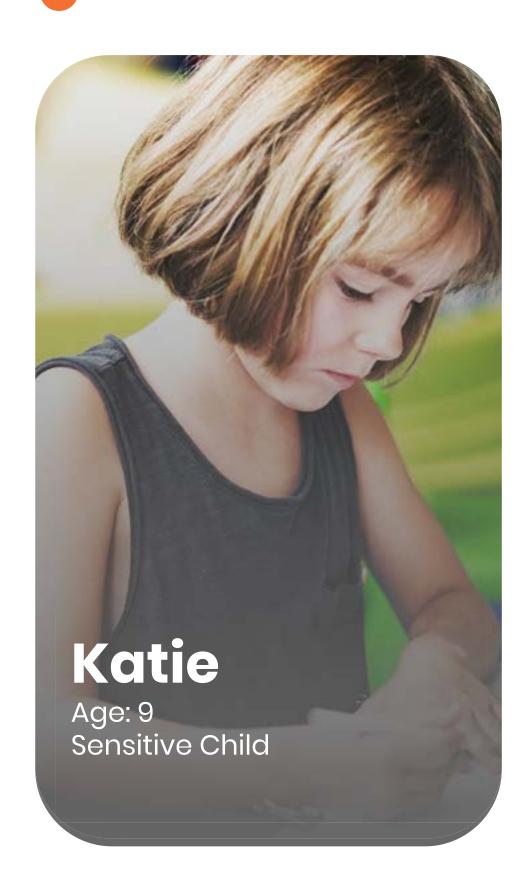




At the earliest stages of development, Felo is a watchful companion. Children in this age group lack the ability to interact in a cognitive manor. Felo can be used to set tone, decorate, or relay information to parents.

Approaching 2 years of age, and into the late 3rd year children are able to understand questions, format responses, and communicate. Felo changes its behavior based on this change and is able to provide more services to the child. The child and Felo will be able to build a relationship. If Felo has been present in the child's environment before this time, it will use existing data models to shape interactions. And so on.

Persona



Biography

Katie is very self-aware around her peers and lacks confidence to express herself in front of others. She is very passionate and craves close relationships.

Motivations

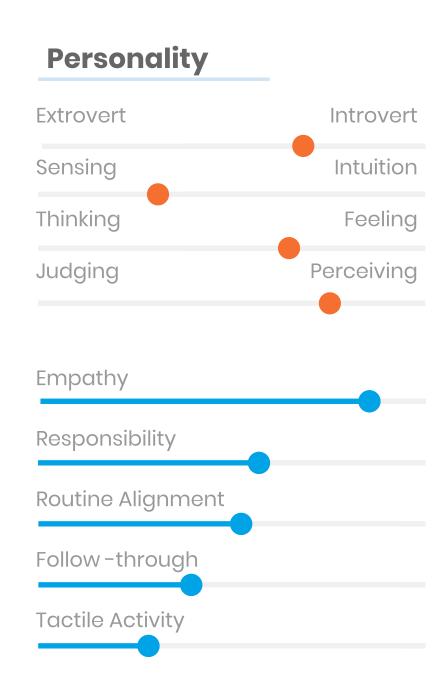
- Being accepted by her peers.
- Having a sense of community.

Stressors

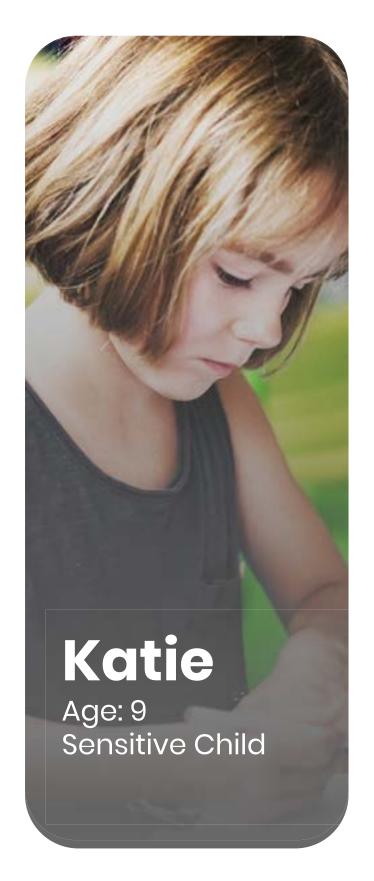
Not being liked by others.

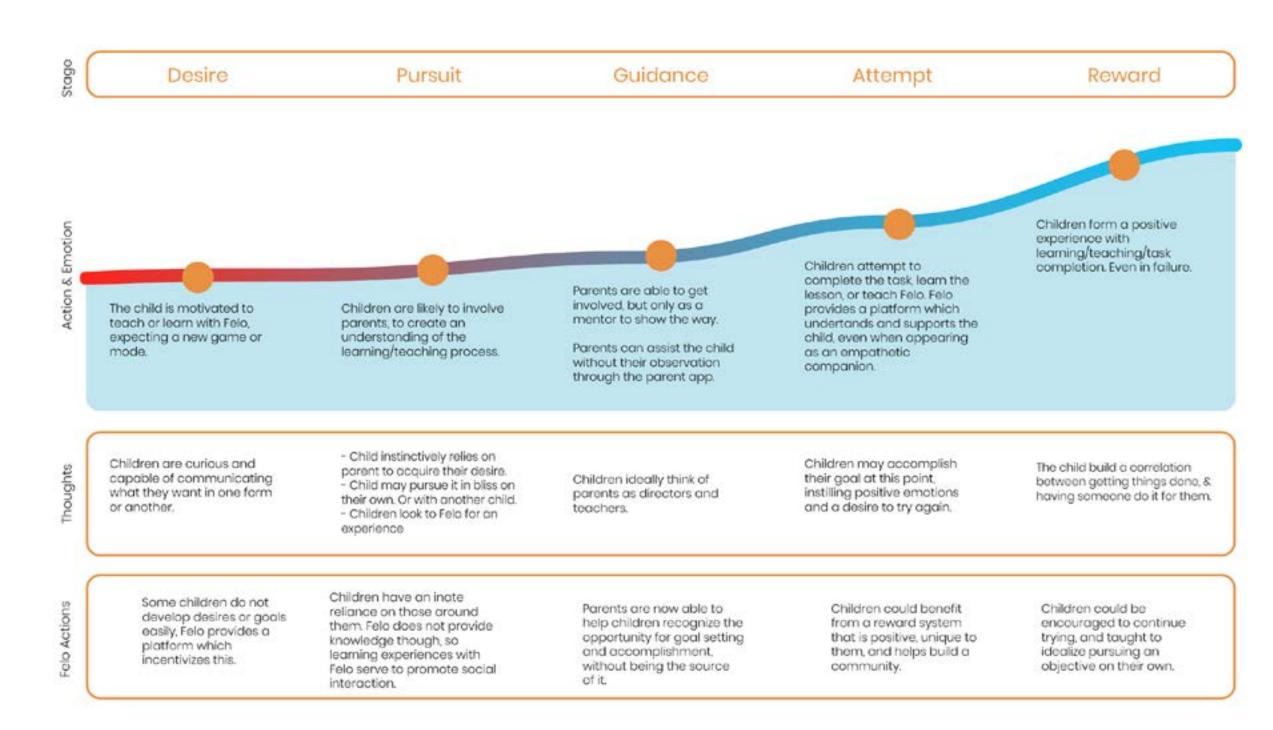
Fears

Being called on in class and not knowing the answer.

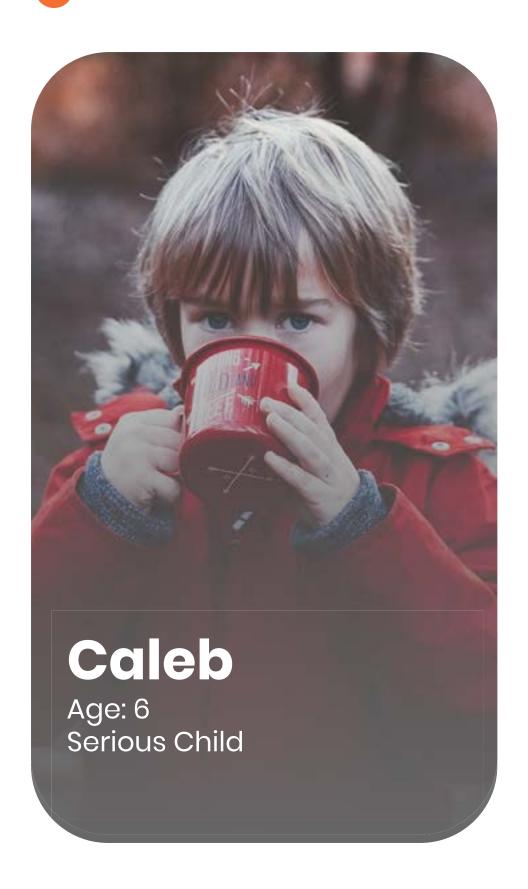


User Journey





Persona



Biography

Caleb is very exact and appreciates it when others takes his ideas seriously. Yet he can sometimes belittle others in fear of not being understood.

Motivations

- Be perceived as smart and competent.
- Being respected.

Stressors

Following rules made by adults.

Fears

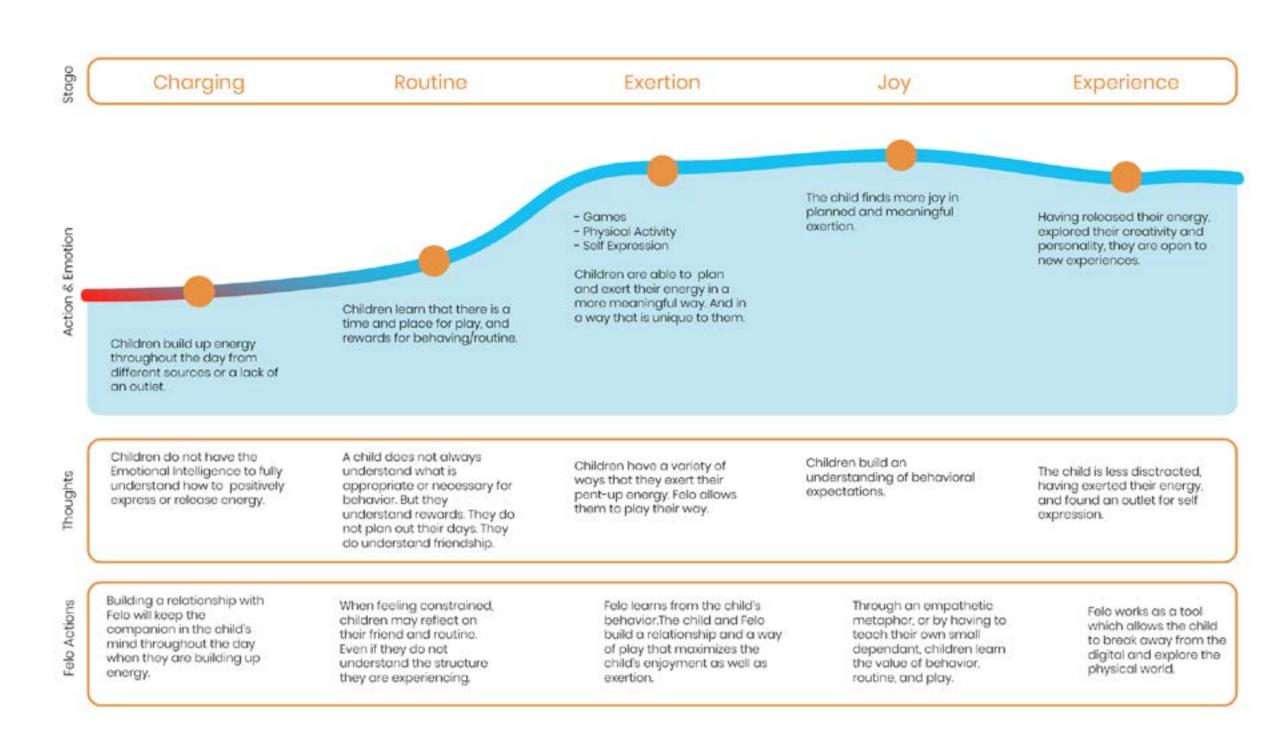
Being belittled because of his age.

Extrovert Introvert Sensing Intuition Thinking Feeling Judging Perceiving

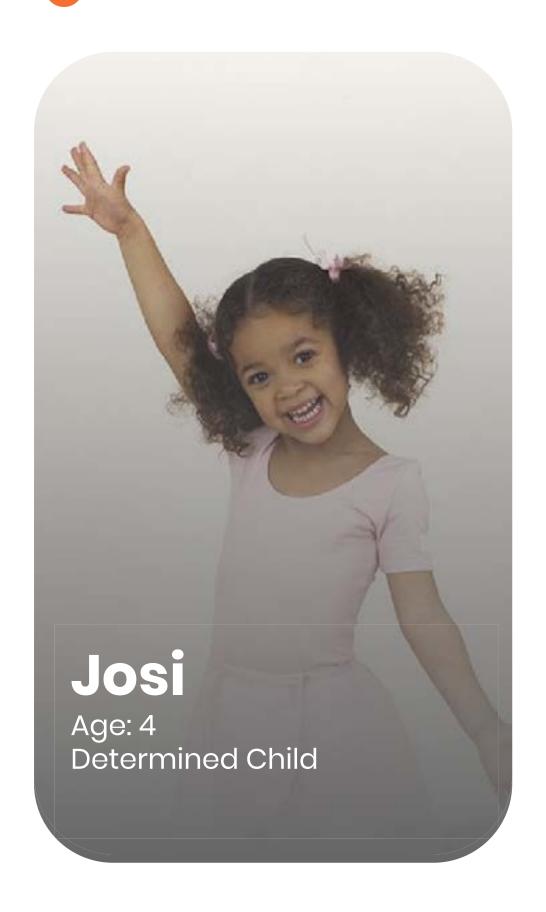


User Journey





Persona



Biography

Josi is very active and is constantly finding new things to do. However, he is independent to a fault and will reject much needed help from others.

Motivations

- Accomplishing goals on their own.
- Discovering new experiences.

Stressors

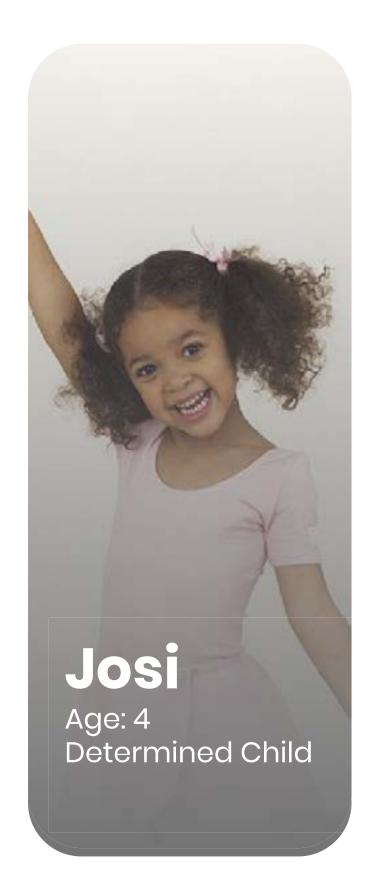
Having to sit still for long hours.

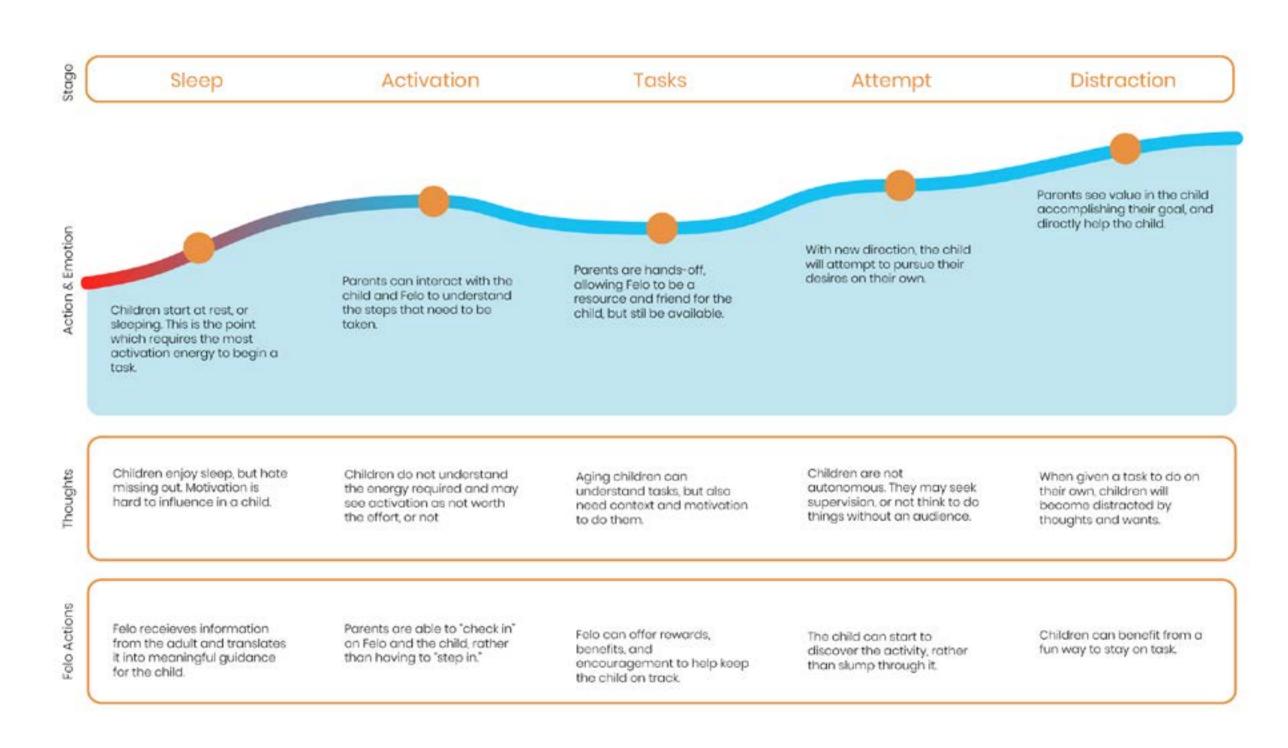
Fears

Obstacles keeping them from their goals.

Personality Extrovert Introvert Intuition Sensing Thinking Feeling Judging Perceiving Empathy Responsibility Routine Alignment Follow -through Tactile Activity

User Journey

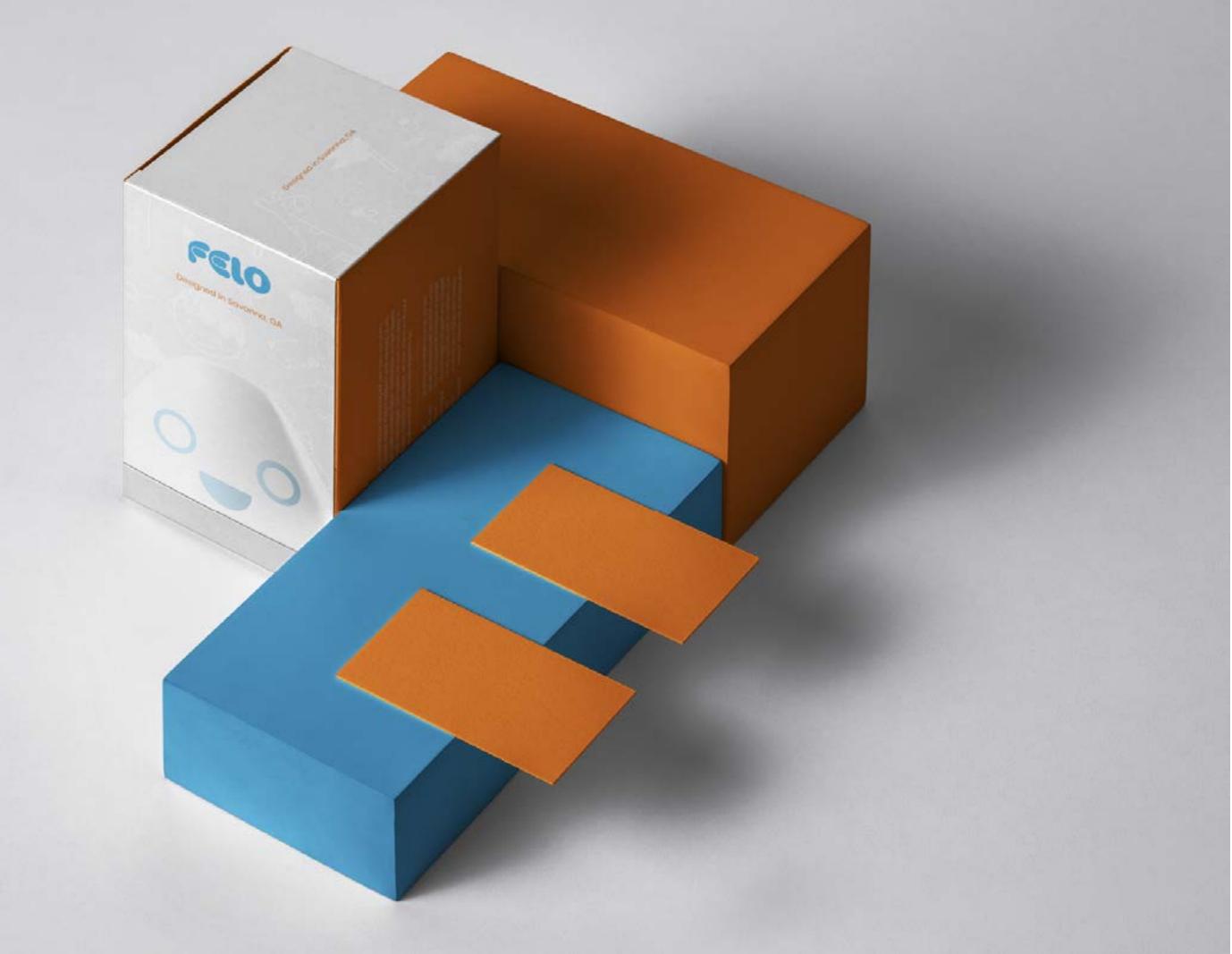




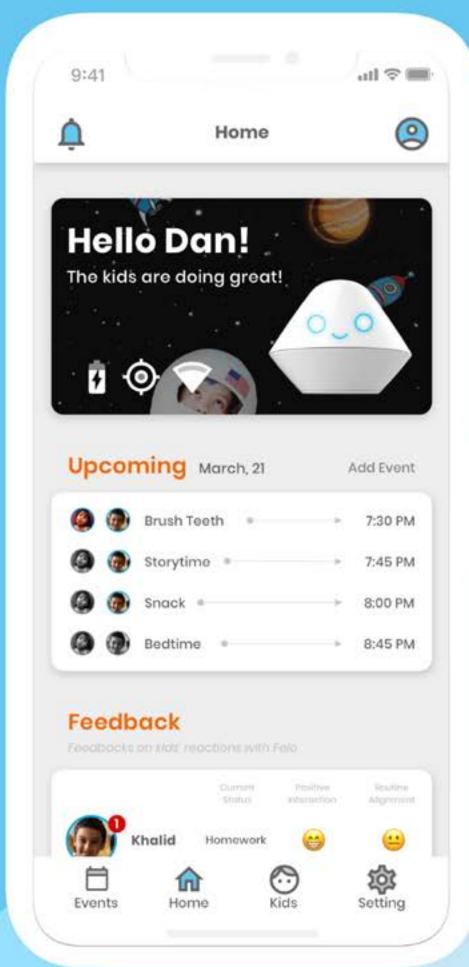
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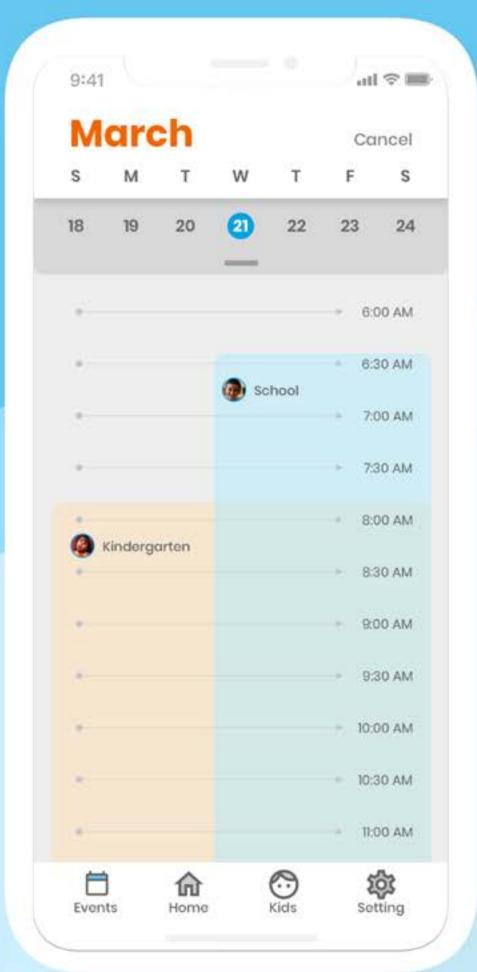
Website: myfelo.com Instagram: @hello_felo

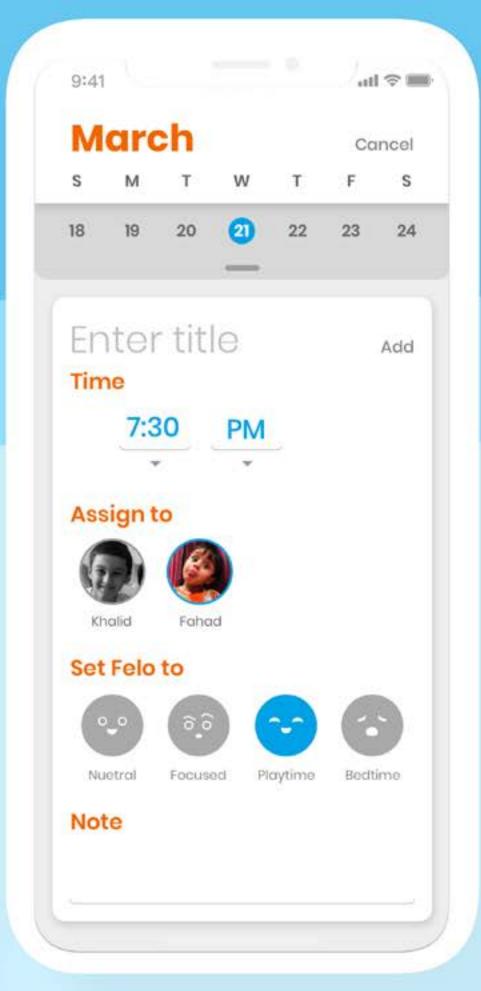




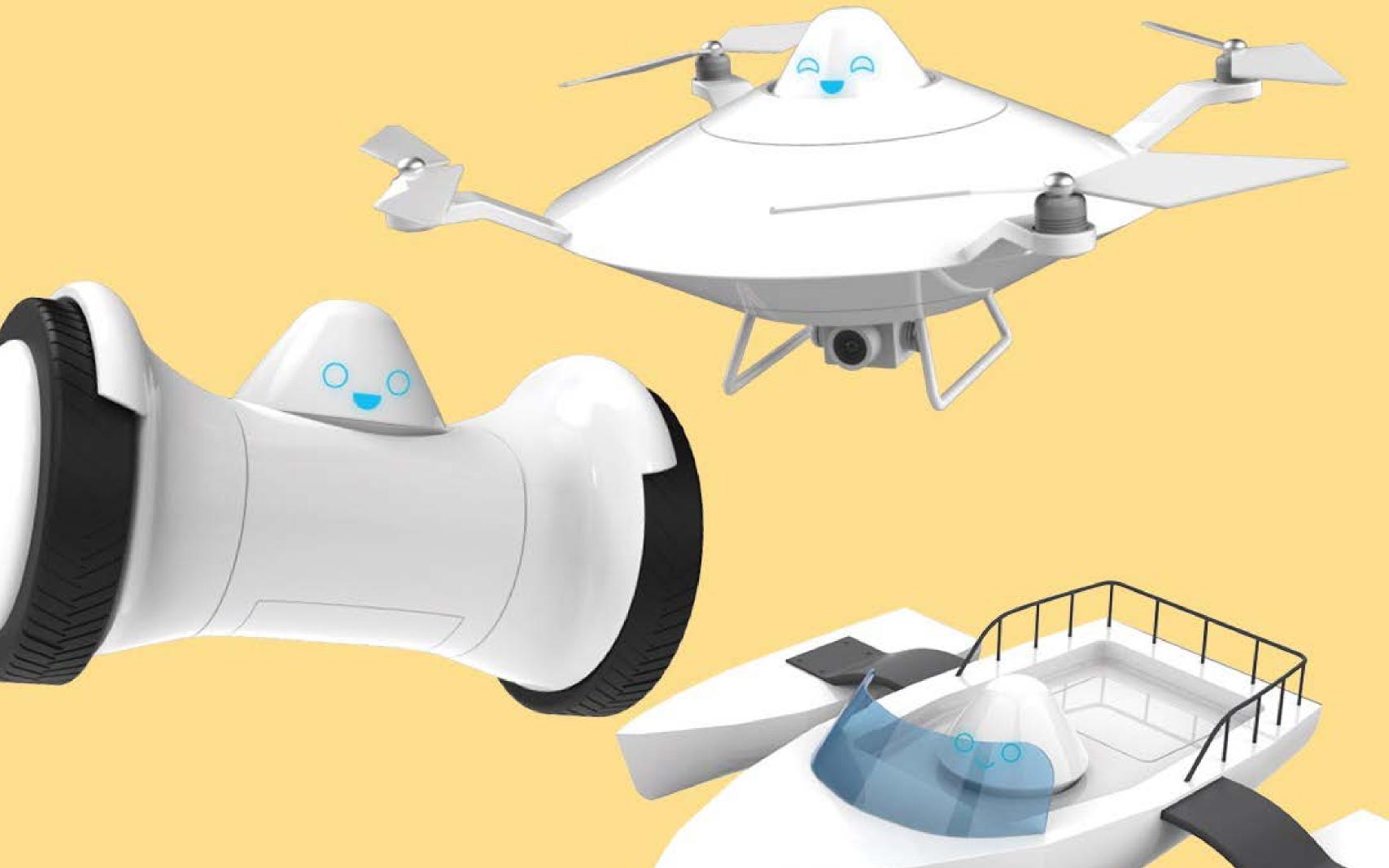


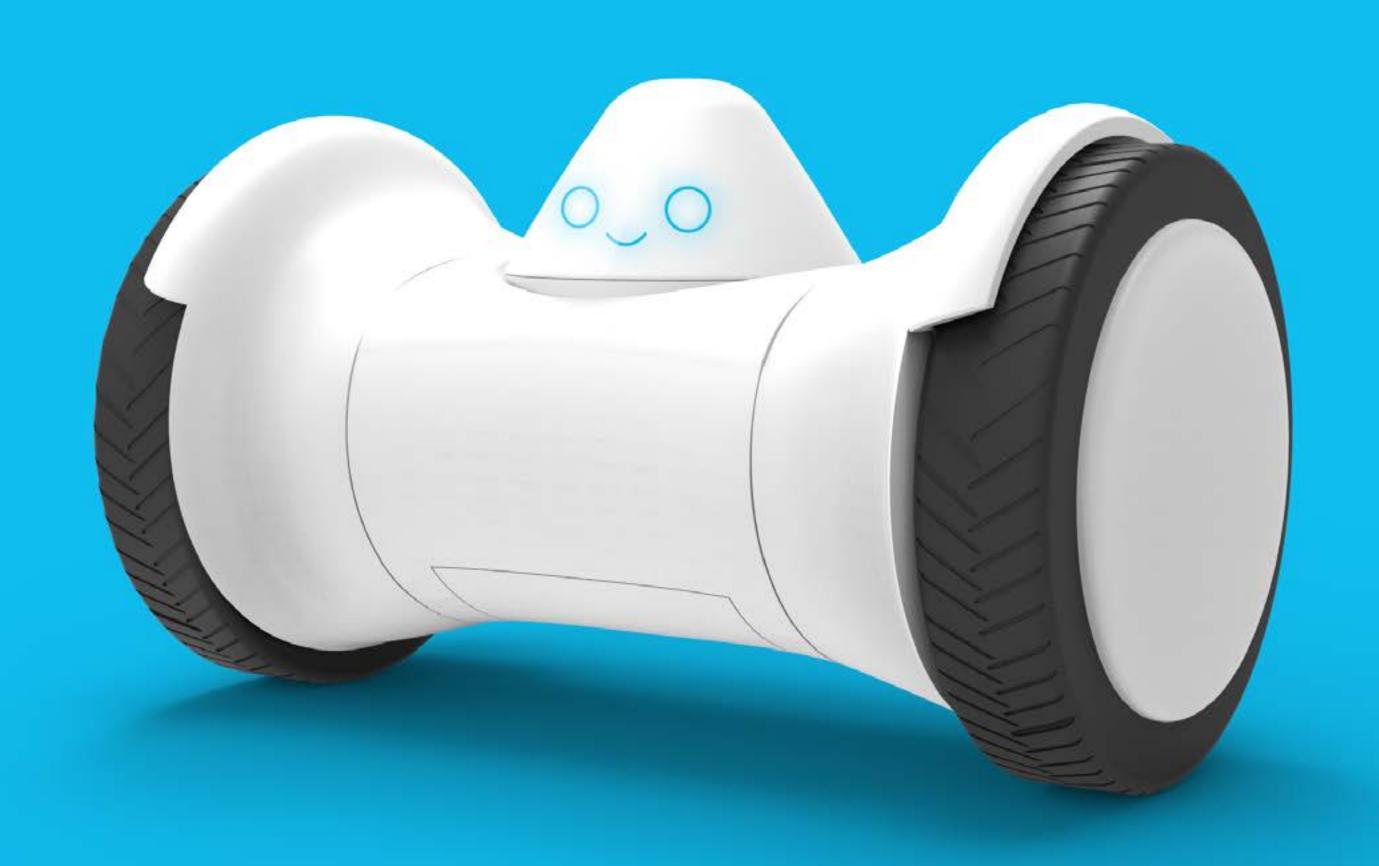














Thank You.