



TASK TURTLE

Designed by Tori March

RESEARCH

6

CONCEPT DEVELOPMENT

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FINAL FORM

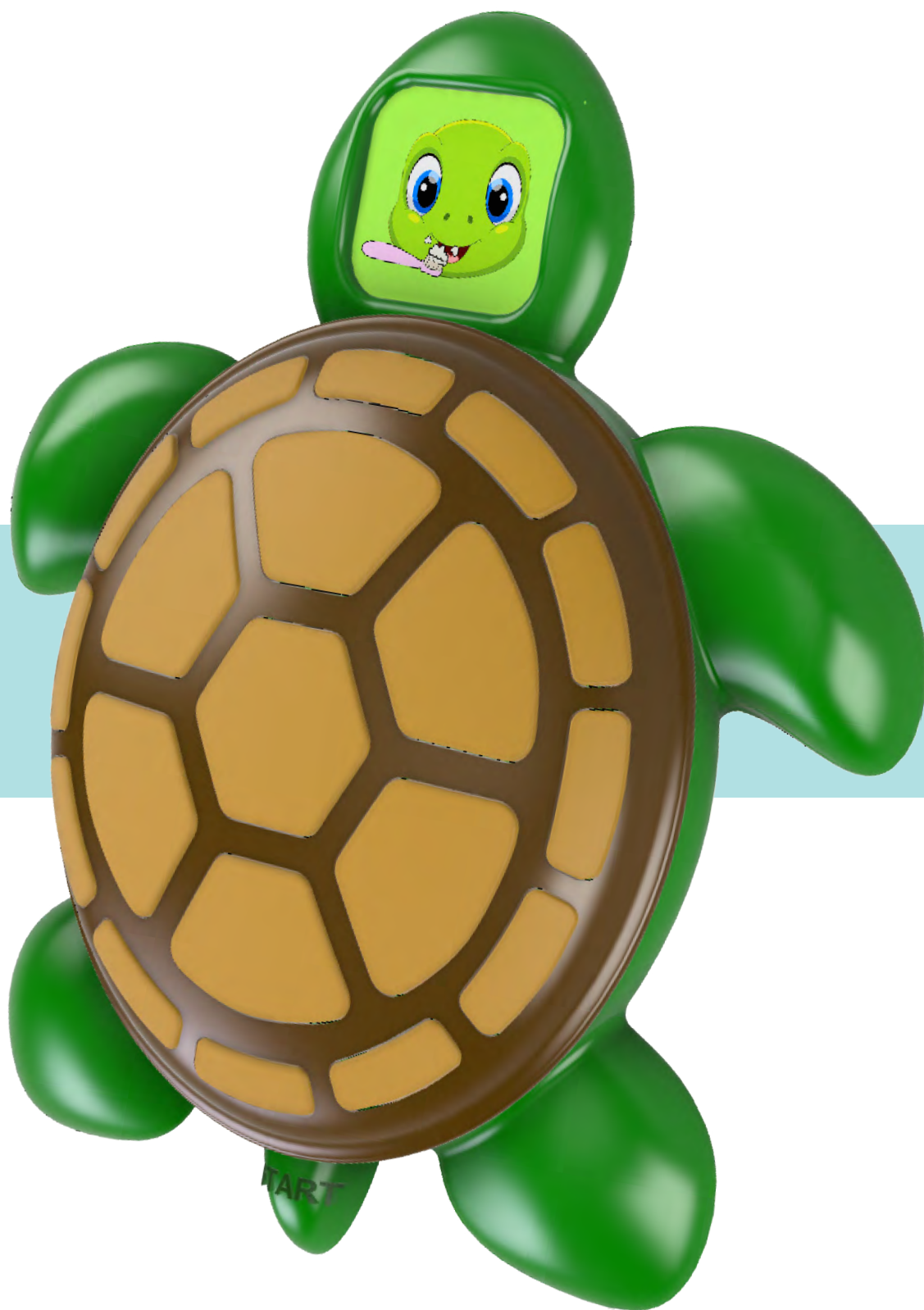
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A photograph of a family of four in a bathroom. A mother and father are smiling and brushing their teeth. A young girl is also brushing her teeth. In the foreground, a young boy is looking up at his father, who is holding a blue toothbrush. The father is also brushing his teeth. The scene is bright and cheerful, with white tiled walls and a white sink.

Hygiene Routine Device for Children

A bathroom device that improves childrens' hygiene through an task reminder. This device will be a buddy guide for children (years 4-6).

Market Opportunity

Children need a bathroom task reminder to stay on track and be more independent in the bathroom. This device needs to be water resistant because it is placed near the sink.



Consumer & Criteria

These are the requirements for the consumers who are the parents and developing children.



Parents

- No need to remind children of tasks
- Do not need to watch children
- Wants child to be more independent



Developing Children (Ages 4-6)

- Eventually needs to practice bathroom routine by themselves
- Safe product
- Enjoyable process
- Durable



RESEARCH

What problems arise in the bathroom

Parents controlling children's tasks make them want to defy the parent.

Some children feel embarrassed in the bathroom with a parent present.

Some children associate the bathroom with past fears or accidents.



Importance of Bathroom Hygiene

Develops good habits throughout life.

Causes bad hygiene habits that lead to body odor, greasy hair, stomach issues, pink eye or infections, heart disease, and bad self-esteem.



Children's Learning Habits

Task Turtle is made for children ages 4-6. Each age has different learning habits.



4 year old: responds well to **praise**, wants to know the rules and boundaries, and uses interactive educational toys



5 years old: parents should not criticizing poor technique and child defies in order to dawdle

“Choose toys that say positive things like ‘Good job. Let’s try again’ instead of ones that make negative beeping noises whenever kids get an answer wrong,” -Marianne Szymanski



6 year olds: learn by trial and error, will cheat to win, can use clock and counting, and consistency is crucial

naeyc[®]



Parents[®]



POPSUGAR. FAMILY

Psychology Today

Repetition

Consistent reminder device helps with repetition of tasks.

Becky J. laments, a Circle of Moms member, said “I have an almost-4-year old daughter who is very spirited and defiant. . . . When told to do something (put on shoes; clean up toys) **I have to tell her at least 3 times.** . . . I’m correcting her behavior every minute of every day it seems like.”



Survey Questions - Repetition

Research showed repetition was important, but to prove this knowledge I asked parents in a survey how they taught their children good habits and repetition was the top answer.

8. How do you make your child develop a habit?

Repetitive actions

10/17/19, 11:58 PM

Repetition and guidance

10/16/19, 1:23 PM

Repetition and rewards

10/16/19, 10:19 AM

repeating it

10/16/19, 9:24 AM

Repetition and reminders

10/16/19, 8:55 AM

Repetition and reward

10/16/19, 1:14 AM

3. How did/are you teaching your child how to do the bathroom tasks

Repetitive actions and positive reinforcement

10/17/19, 11:58 PM

By example and repeated directions. This is why we do this and how we do it...

10/16/19, 1:23 PM

Repetition and modeling

10/16/19, 8:55 AM

by showing her how while telling her what I am doing and then having her repeat what I did

10/16/19, 9:24 AM

Visual Reminders

Tasks are most effective with visual images of task being shown.



“It’s important that children can see the reminders and they are posted prominently where it makes sense” - psychedservices.com

Learning Methods

Children like to learn by:

- Watching, listening, and doing
- Bright colors and textures
- Playing games
- Experiencing things step by step



How do children learn?

- Children need to watch, listen, and do
- Go through things in stages
- Learn from playing
- Experimenting with textures or materials



Market Analysis

The market for educational toys is growing and there is a large consumer need.

Toy Industry

“Toy Industry Association pegged total industry revenues at \$22 billion”

- smallbusiness.chron.com

“The worldwide market for Educational Toy is expected to grow at a CAGR [Compound Annual Growth Rate] of roughly 5.2% over the next five years, will reach 34200 million US\$ in 2024, from 25200 million US\$ in 2019, according to a new GIR (Global Info Research) study”

-marketwatch.com

Amount of Consumers

Children: Average of 3.14 children in a household. There is a growing amount of children in a household since the 1980's. - statista.com

Parents: “As of 2019, the U.S. Census Bureau counted about 83.48 million families in the United States.” - statista.com



Toy Companies

These companies were found by asking parents where they buy their toys from and additional educational toy companies I researched. The Task Turtle would be sold at these companies.

Survey Questions

5. What children/baby toy companies do you

Fisher price, hasbro,

10/16/19, 9:38 PM

Fisher price

10/17/19, 11:58 PM

Playmobil Fisher price Disney melissa and doug

10/16/19, 1:23 PM

Fisher price, step 2, playmobil, disney

10/16/19, 10:19 AM

AC Moore

10/16/19, 2:55 PM

Melissa and Doug, fisher price, step 2, playschool, Disney

10/16/19, 8:55 AM



Additional children's toy companies for children ages 4-6 years old:



Competitive Analysis

These children's toys on the market meet the bathroom or checklist requirement, but do not incorporate both requirements.



Brush Your Teeth Reminder Sign

Company: Glide Slides

\$24.95

Pro: Easy to keep track of a task being completed

Cons: Not specific to the bathroom, too simple - does not meet every task, only a daily checklist



Homemade Chart

Pro: Free, can be customized, child friendly

Cons: Takes time to be made, not water resistant because it is made of paper



Toothbrush Holder Wall Mounted

Company: SULKADA

\$17.99

Pro: Waterproof, holds products that can be used by the child, designed for an adult, specific to the bathroom

Cons: No step-by-step checklist, not all of the products for children are there



Brusheez Kids Electronic Toothbrush Set

Company: Kohl's

\$24.99

Pro: Tooth brush timer, electric toothbrush, designed for a child, animal theme, specific to the bathroom

Cons: Does not include every task needed



Gobs of Jobs Activity Chart

Company: Crate&kids

\$79.00

Pro: Reward game for the child to be motivated, child friendly

Cons: Very expensive, loose pieces, will take time out of the bathroom process, not waterproof, not specific to the bathroom



Learn & Climb Toddler Chore Chart

Company: Learn & Climb

\$19.99

Pro: Waterproof, partially customizable, child friendly

Cons: Many loose pieces, will take time out of the bathroom process, not specific to the bathroom



Toothpaste Dispenser Automatic Toothpaste Squeezer and Holder

Company: iLifeTech

\$13.99

Pro: Specific to the bathroom, child friendly, waterproof

Cons: Only has a toothpaste dispenser and holder, does not go over all the bathroom tasks



Cartoon Yellow Toothbrush Holder & Automatic Toothpaste for Kids

Company: Meng Ran

\$16.85

Pro: Child friendly, waterproof, specific to the bathroom, designed for a child

Cons: Only has a toothpaste dispenser and holder, does not go over all the bathroom tasks



Two Minute Turtle™ Timer for Kids Toothbrushing

Company: Etsy

\$18.65

Pro: Timer for brushing teeth, animal themed, waterproof, no screen, sticks on wall or can be held

Cons: Only has a toothbrush timer, does not go over all the bathroom tasks, handmade

Competitive Analysis Graph

The features this device needs to have are water resistance, easy to follow steps, child friendly, and have an affordable price. This chart compares two of the most important aspects, which is price with the ability to guide child through tasks.

The trend shows that the most effective device can get pricey. My design needed to be affordable and allow children to complete tasks.

Price



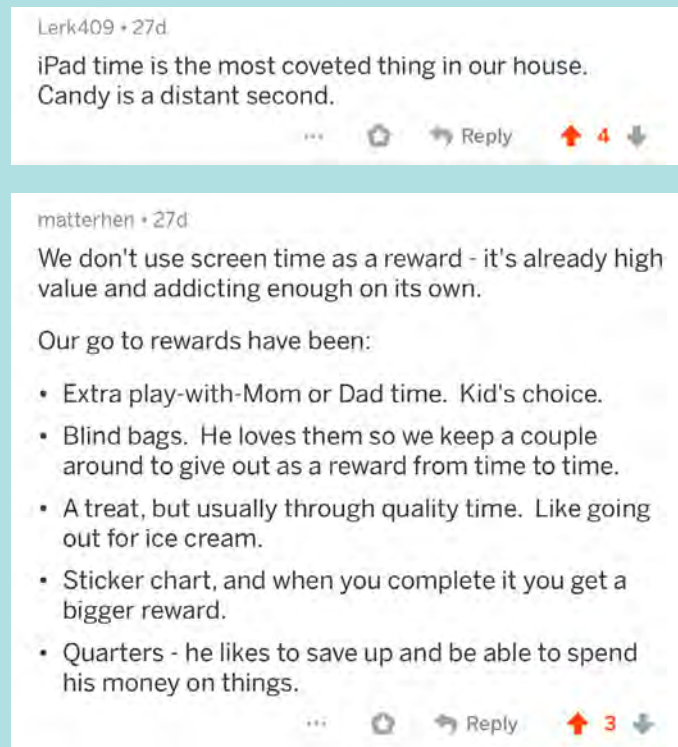
Task Completion

Goal Product



Reward Game Research

Initial designs led me to research reward games by asking parents on Reddit.



Common Rewards: sticker chart, point system, candy, screen time, quarter collection

Survey Questions - Reward Game

I noticed reward games were a trend in children's learning so I did a further survey that I sent out asking parents what reward games they did in a bathroom setting.

4. What reward or reward process do you do with your child when you want to get them to complete a task outside the bathroom?

Verbal reinforcement and prizes

10/17/19, 11:58 PM

stickers, small plastic animals

10/16/19, 2:55 PM

Food treats most of the time

10/16/19, 1:23 PM

Gets to put stars in his reward poster which will earn him special toys/activities

10/16/19, 10:19 AM

Elsa and Anna Popcicle

10/16/19, 9:24 AM

Verbal praise, repetition, small treats and special events

10/16/19, 8:55 AM

Small toys or zoo trip

10/16/19, 1:14 AM

Current Checklist Solutions

Further designs moved my research away from rewards and onto checklist and reminders. Currently on the market are these task checklist guides and reminders that help children complete tasks.

Alarm
Vibrating
Reminder
Watch



Reward
Chart



Reminder
Buttons



Why checklists are good for children

Helps prevent disorganization when there is an overwhelming amount of tasks.

Makes children responsible of completing all the tasks.

Prevents children from losing focus.

Form Research

Original designs moved from solid geometric forms, but after researching about how animals are beneficial to children I focused on designing an animal.



Why an animal?

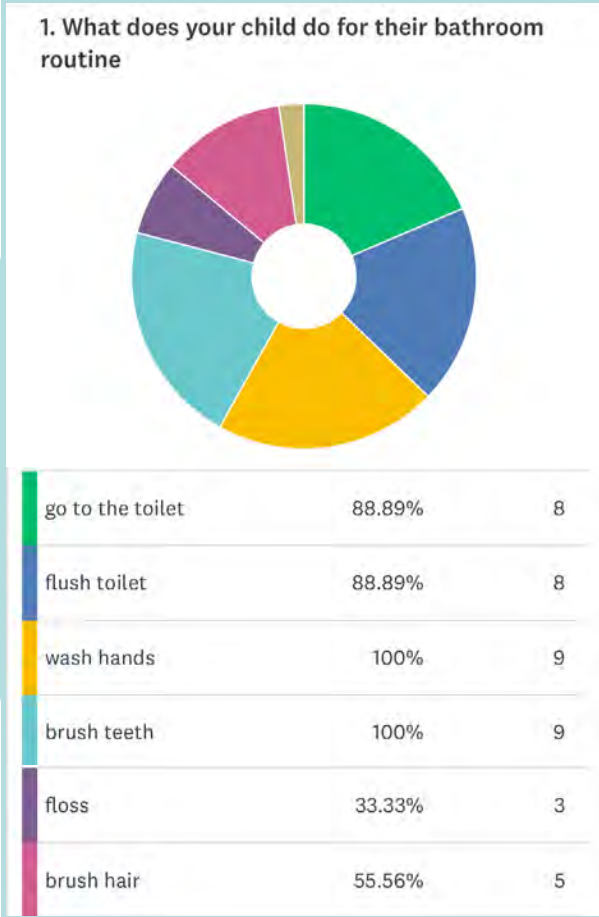
“They can project themselves to be imaginary characters and interact with each other on different levels.”

Animals “encourages **creativity and imagination,**” which allows children to share feelings with toy.

Children play with animals because they can **reenact scenes and situations.** Play time helps with creativity.

Bathroom Tasks

After collecting information from Facebook, Reddit, and a survey completed by parents, I selected 8 bathroom tasks that most children do. These are the tasks that are used in the Task Turtle.



Jorose85 • 63d

Morning after breakfast mine wash hands and face and brush teeth. Problems include not actually getting face clean (4 year old) and not wanting to give up toothbrush (2 year old)

Evening they potty, floss, brush, bath. No major problems with this one actually. It's been the routine their entire lives.

👍 🗨️ Reply 📌 2 ⬇️

MusicalTourettes • 63d

And floss, and bathe. Nothing consistently motivates my 4 year old.

Genevieve Sallemi

- 1. Bath
- 2. Brush teeth
- 3. Brush hair
- 4. Snuggle time and Read a book
- 5. Tuck in and sweet dreams!

2d Like Reply 📌 1

Final chosen bathroom tasks based off surveys and questions:



Going to the bathroom



Flushing the toilet



Washing hands



Drying hands



Brushing teeth



Flossing



Combing hair



Taking medication



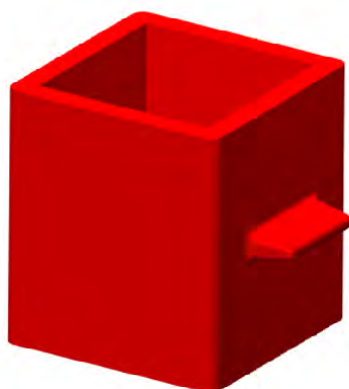
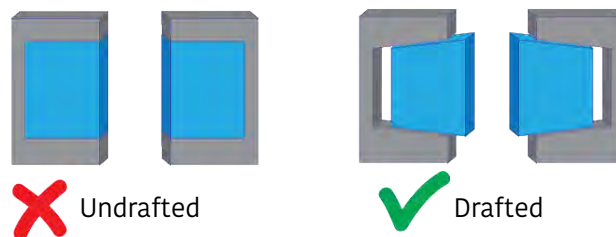
Research was needed to figure out how the turtle would be made. A lot of the form was based off the manufacturing decisions. It needed to be injection molded and have a mold that was possible to make as well as affordable.

Eric Schneider

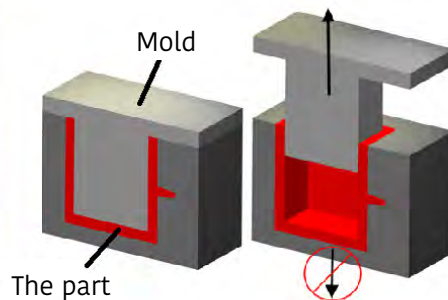
I worked with Eric on the manufacturing of the Task Turtle. He is a Materials and Manufacturing Specialist.

Injection Moulded Parts

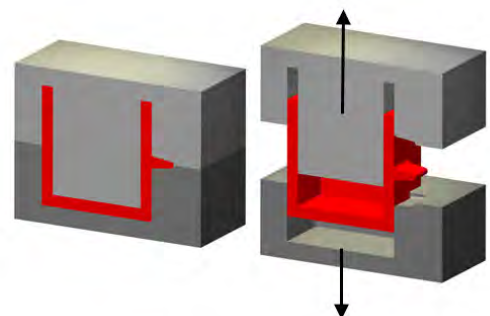
Each part has to be removed without getting stuck in the tooling. The mold has to be thin enough throughout so that it can cool evenly. This affects the wall thickness of the mold, which is 0.09 inches. I had to keep a good draft angle and avoid undercuts. Lip and groove was another aspect to add so it lock into a slot when being put together.



Simple external undercut



Mold cannot separate



New parting line allows undercut

How to Clean Bathroom Toys

With the bathroom being a wet and dirty place, I researched what materials and cleaning processes are used to clean a toy in the bathroom. Mold, mildew, and children's dirty hands can attach to toys. It is recommended to be cleaned every 2 weeks which is why the turtle can be easily removed from the wall to be cleaned. Toys with holes need to be cleaned a lot more thoroughly. Letting it dry fully will make the toys last longer. Since the task turtle is water resistant it can be cleaned with all of these options.

Cleaning methods:

Soap & Water with scrubbing is good for cleaning outside surfaces



1 cup of vinegar in a bowl of water



1/4 teaspoon bleach in 1 quart of cool water



Hydrogen Peroxide with 50/50 water mix



How are they different?
1) Motivation or goal
- changing
2) Methods
3) Scale: Mass vs. Minut
- media coverage
- type of wrapping

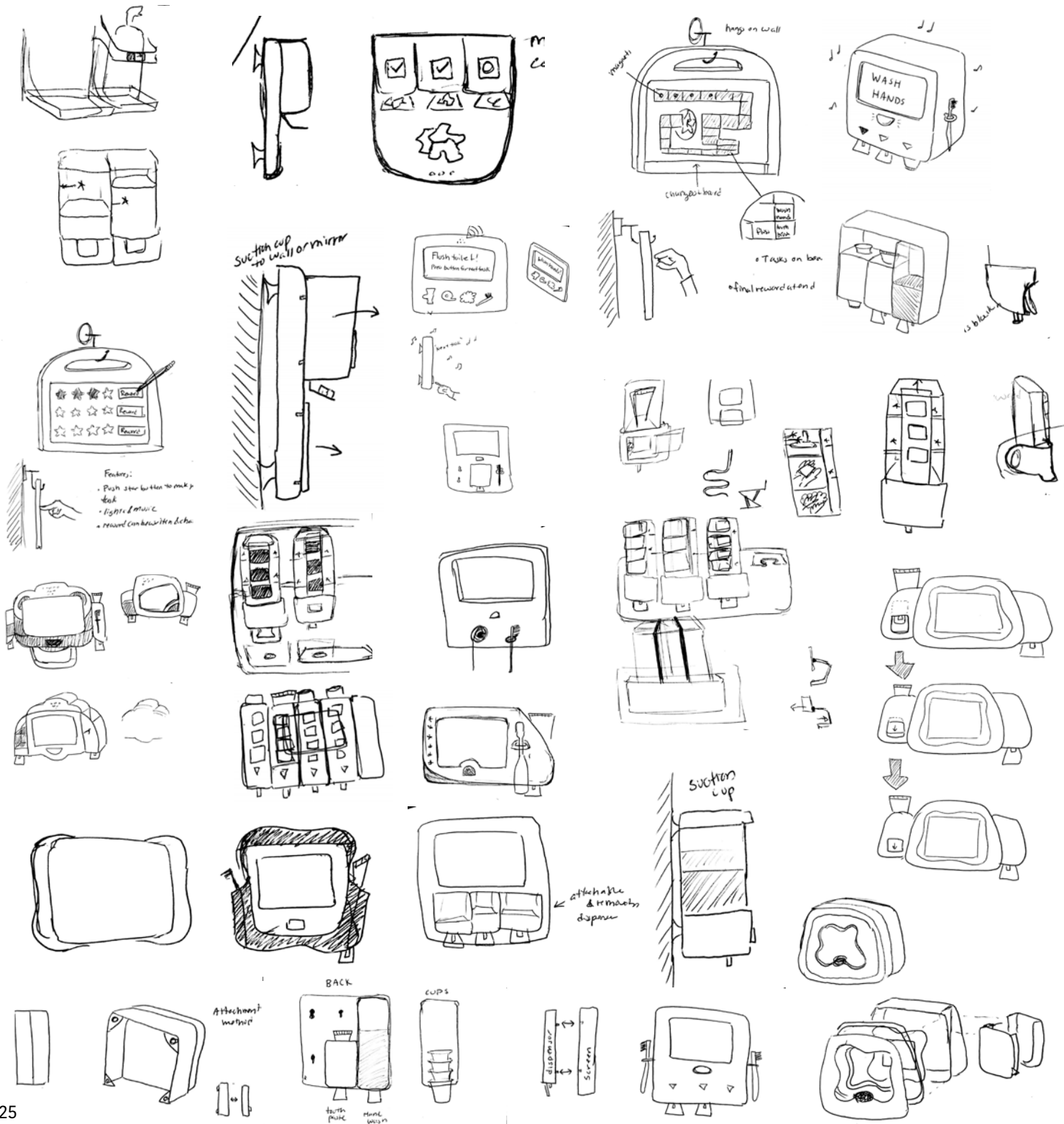
When do they
stop using help

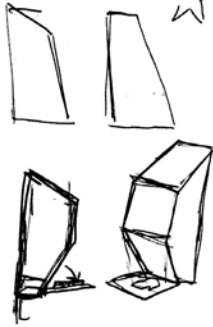
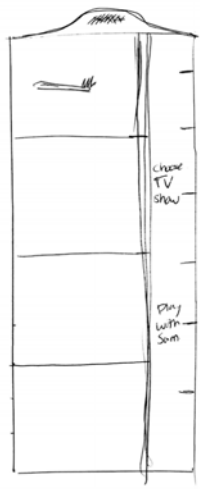


Concept Development

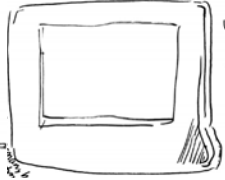
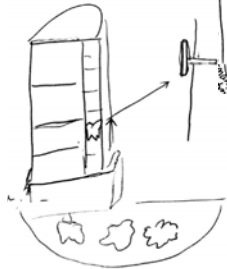
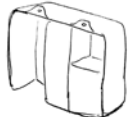
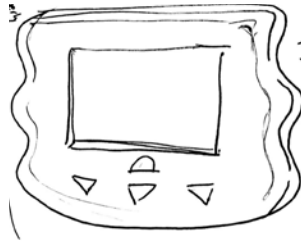
Initial Sketches

These sketches begin from the start of my design to my final concept. It includes reward games, dispensers, step-by-step checklists, and animals toys.





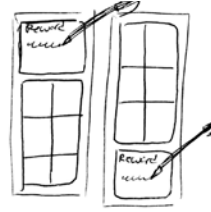
so many tangents



lights



music tubing child in bathroom



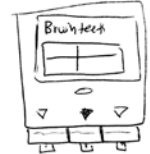
Smell? Sound? taste?

mini cube

Supp align



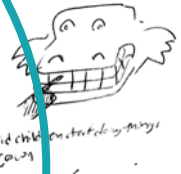
mechanical



Storybook



no screen display?



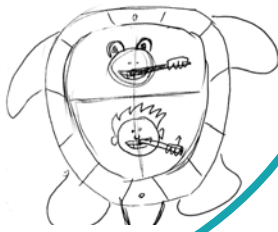
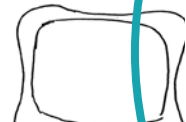
idiot children controlling things



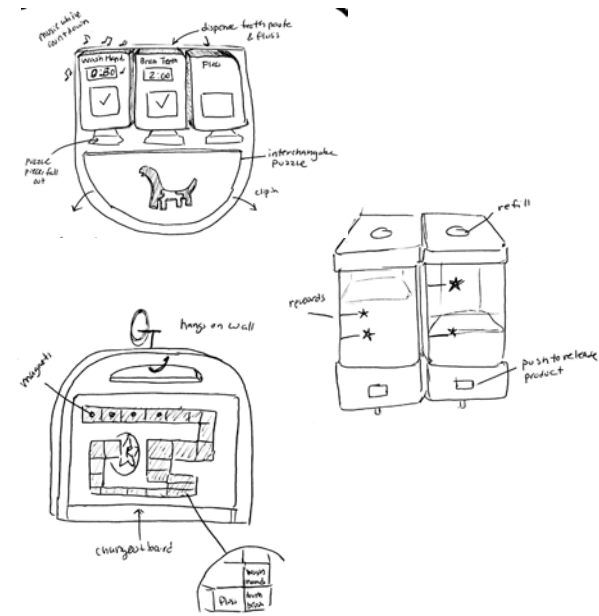
dataset



inside fork allow for different fork sizes

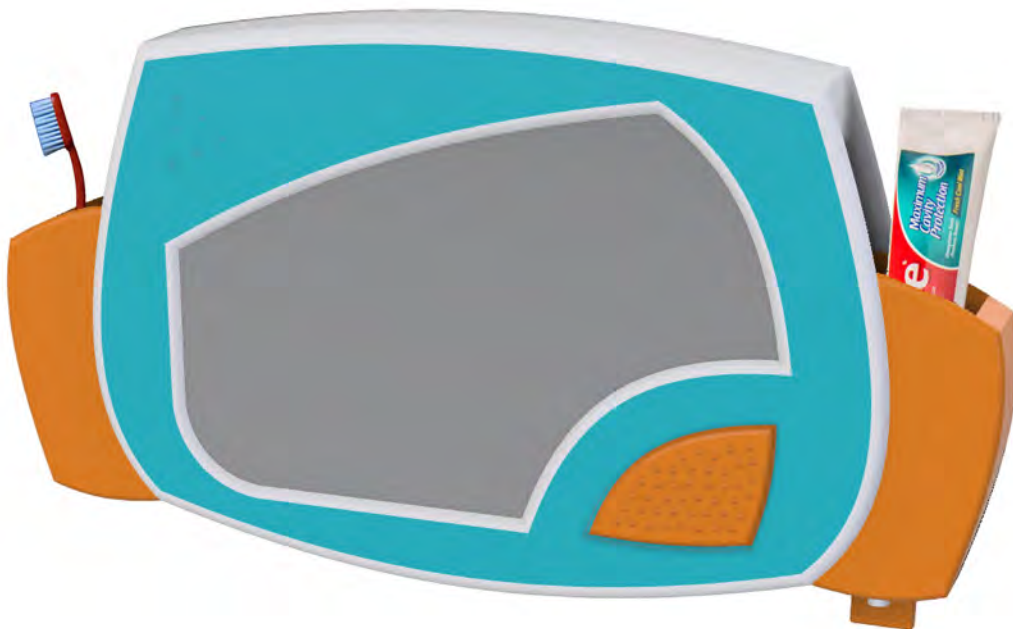


Initial Design



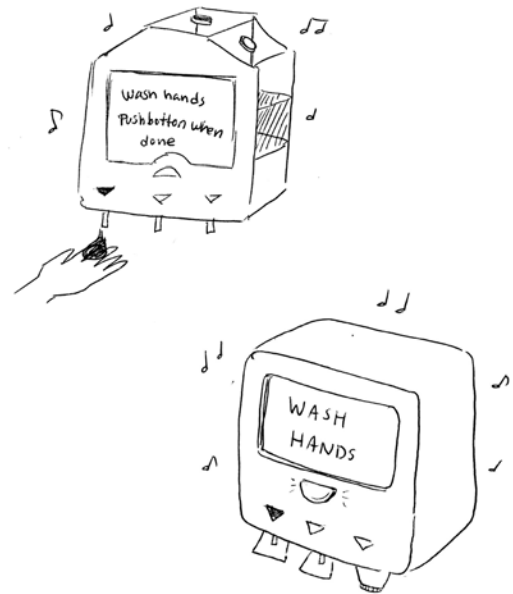
Reward Game

Initial designs involved reward games, including puzzles, check points, and a game board with a dispenser.



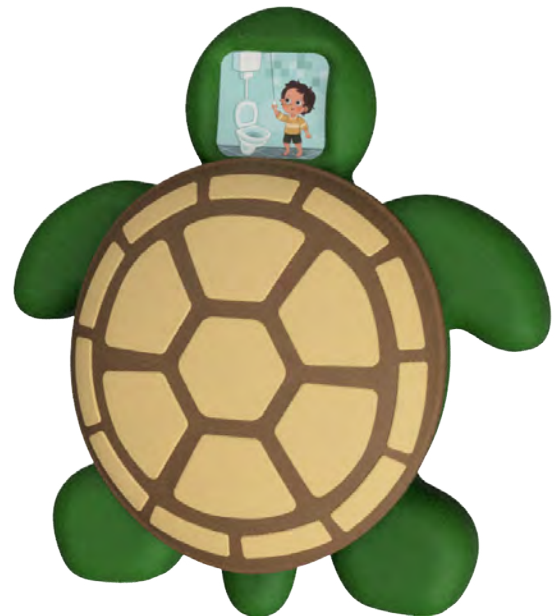
Task Guide Device

Later designs made me keep the visual steps, music games, and screen displays with a dispenser, but have a more child friendly look.



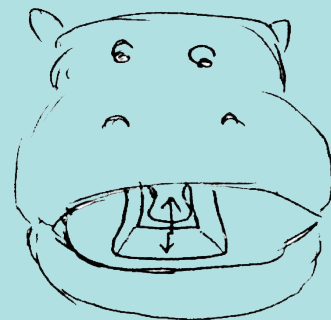
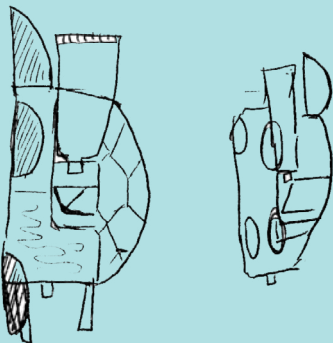
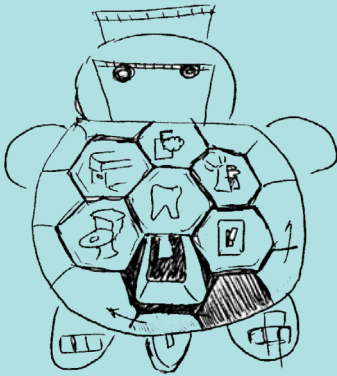
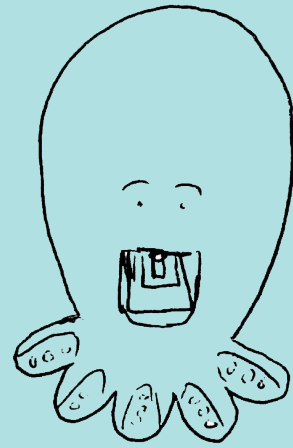
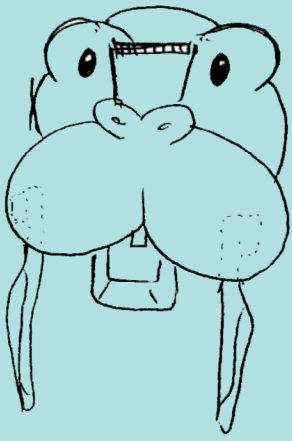
Visual Task Icons

Further designs involved visual steps, music games, and screen displays with a dispenser.



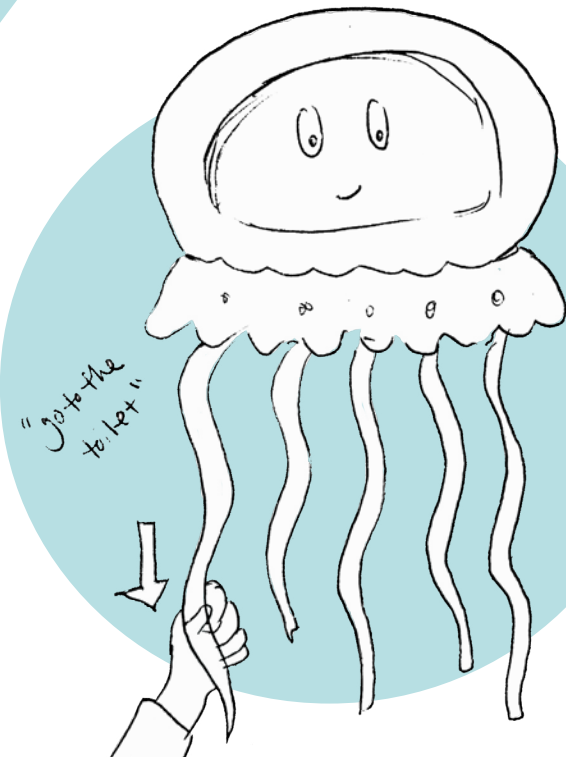
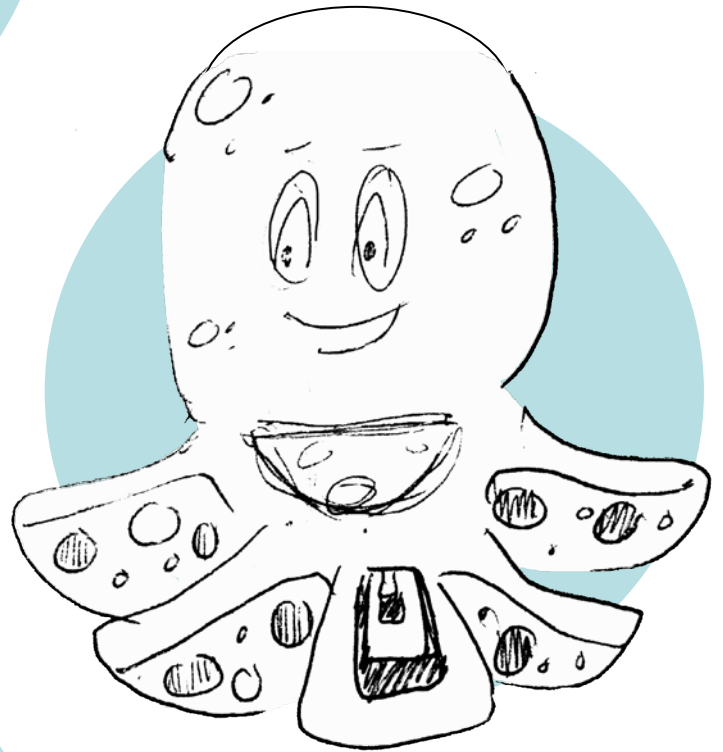
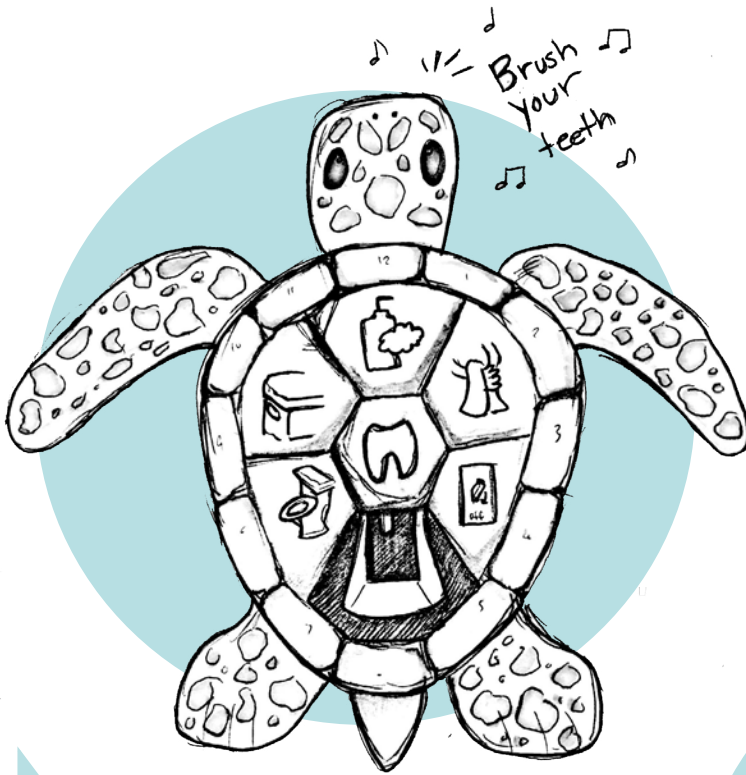
Turtle Task Device

Additional designs involved visual steps, music, screen displays, and a dispenser with a turtle theme.



Form Development

I drew many different animals and choose to work with the turtle, octopus, and jellyfish because they are water animals for the bathroom environment and have options for buttons placements.



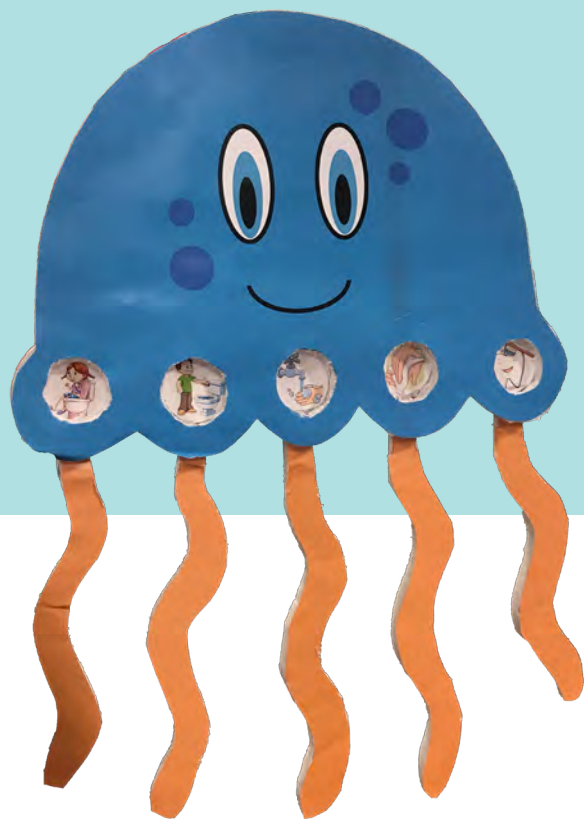
Working Models

Working models were tested at a daycare with 15 children and 2 additional children to decide the final form.



Octopus

The tentacles have buttons, which are different task visuals.



Jellyfish

The tentacles are pulled down, and different task visuals are shown.



Turtle 1

The shell has different buttons with task icons on it. There is a toothpaste dispenser on the bottom.



Turtle 2

The shell has different buttons with task icons on it. There is a mirror for the child to watch themselves with a turtles face also brushing its teeth.



Turtle 3

The shell has different buttons with task icons on it. There is a mirror for the child to watch themselves with a turtles face also brushing its teeth. There is also a toothpaste dispenser on the bottom.

Networking



Sweet Dreams & Fairytale Daycare

Director: Paige

Daycare center for children
where I tested 15 children.





Yuhan Zhang

Mother of two children and has child bathroom experience. I am working with her children to test the working models and collect opinions on the design.



Initial Form Based Testing

Location: Sweet Dreams & Fairytale Daycare

The octopus, jellyfish, and turtle were tested at the daycare to figure out which animal was the favorite.



Second Favorite Choice



Least Favorite Choice



Favorite Choice

Chosen Animal: Turtle

The turtle was the chosen animal after collecting responses from Facebook and Reddit from parents asking their children what their favorite animal was.

kangsyxyn • 8d

These are adorable!! I love the turtle and hippo!

...

Reply

2

CptCptJaneway • 1d

Turtle!

...

Reply

3

Lauren DiPalma

I love the turtle maybe without the water at the head

1d

Like

Reply

1

Caryn Held

Jackson likes the turtle

1d

Like

Reply

1



StephAch • 1d

You can see the tasks better on the turtle but I like the octopus. But I'd make the tasks bigger and more kid friendly images.

...

Reply

3

Genevieve Sallemi

I love the turtle but the octopus is fun to look at and very well organized, more like a checklist

1d

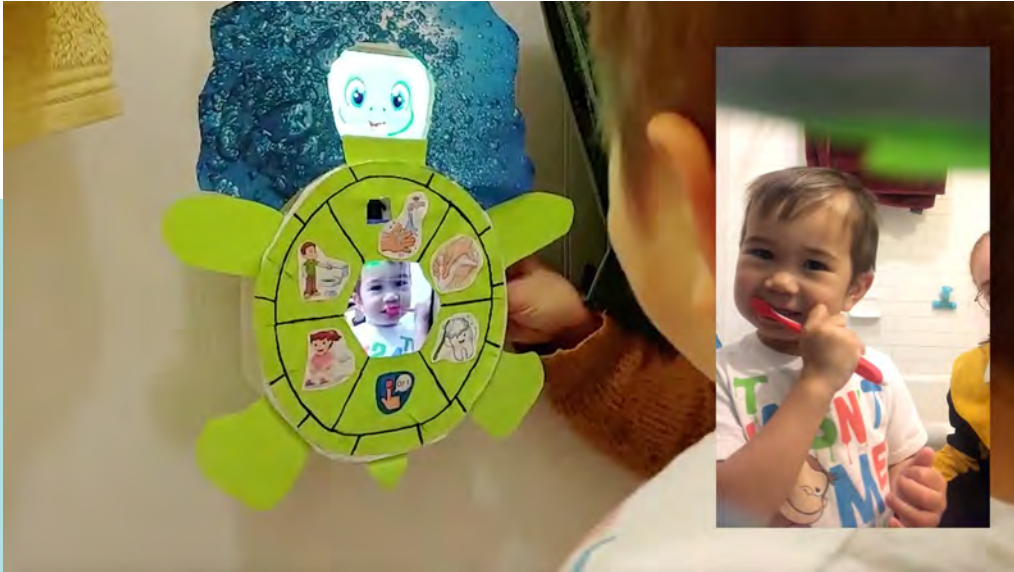
Like

Reply

1

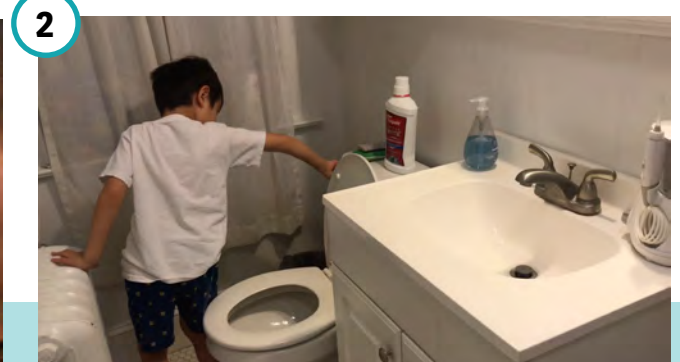
Interface Testing

Eddie and Luke Zhang tested out the turtle working models.



Eddie is 3 years old. After testing the turtle working models on him it was clear that he did not enjoy the camera to watch himself because he became shy. He also needed assistance to follow all the tasks, which helped determine the correct age group for the turtle.

Luke is 6 years old and he was able to follow all the tasks and seemed to enjoy pushing the buttons and completing the tasks. Luke was able to get his own toothpaste without using the dispenser so I removed the dispenser. I decided to design for older children.



Interface Testing

I tested a turtle working model at Sweet Dreams & Fairytale Daycare and the children were able to complete all the tasks, but they were not interested in the mirror. They enjoyed pressing the buttons.

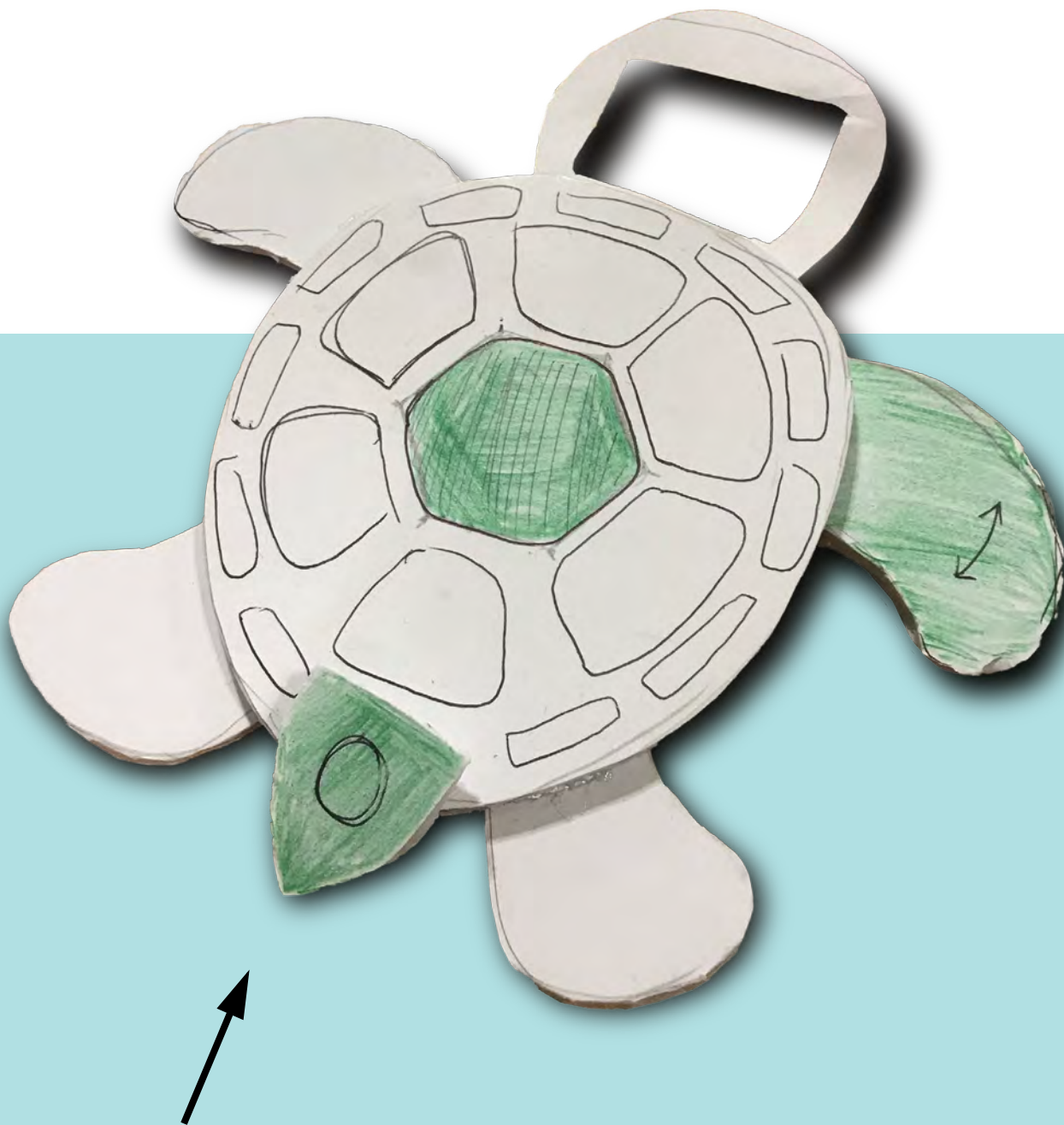
With further designs I got rid of the mirror because the turtle would be placed next to the mirror so it would not need a mirror on the turtle.





Starting Button

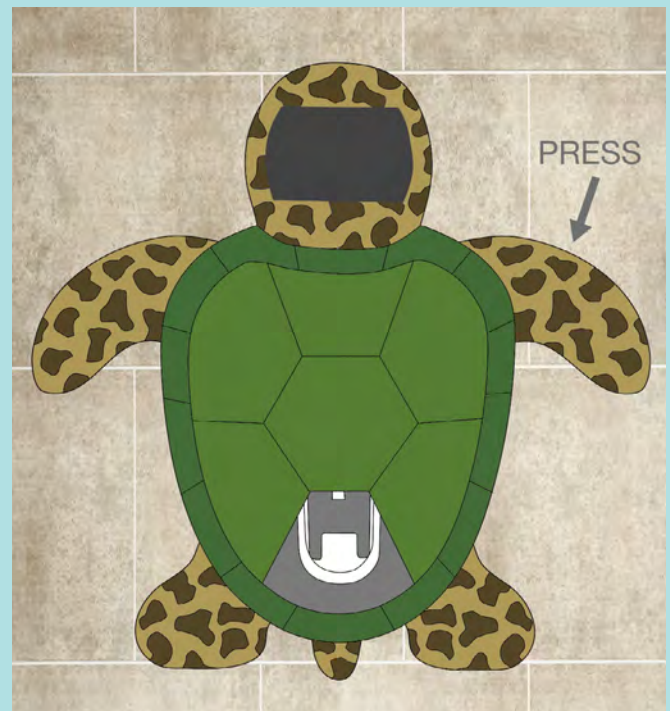
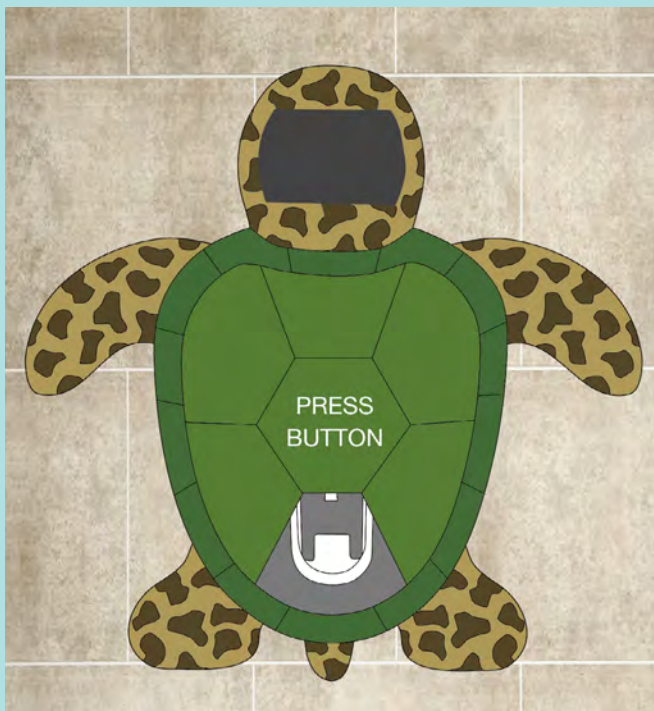
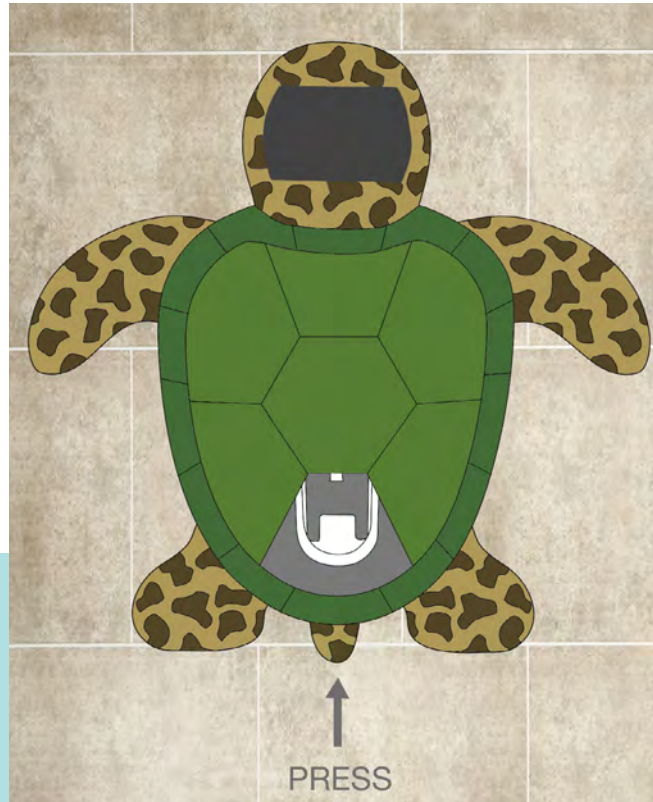
After solidifying the interface I had to determine how to make the turtle start. I chose 3 different options: touching the tail, moving the arm, or pressing the center button in the shell. I made a physical model for the children at Sweet Dreams & Fairytale Daycare to test out and they chose the tail as their favorite starting method.



Pushing the tail was the favorite choice

App

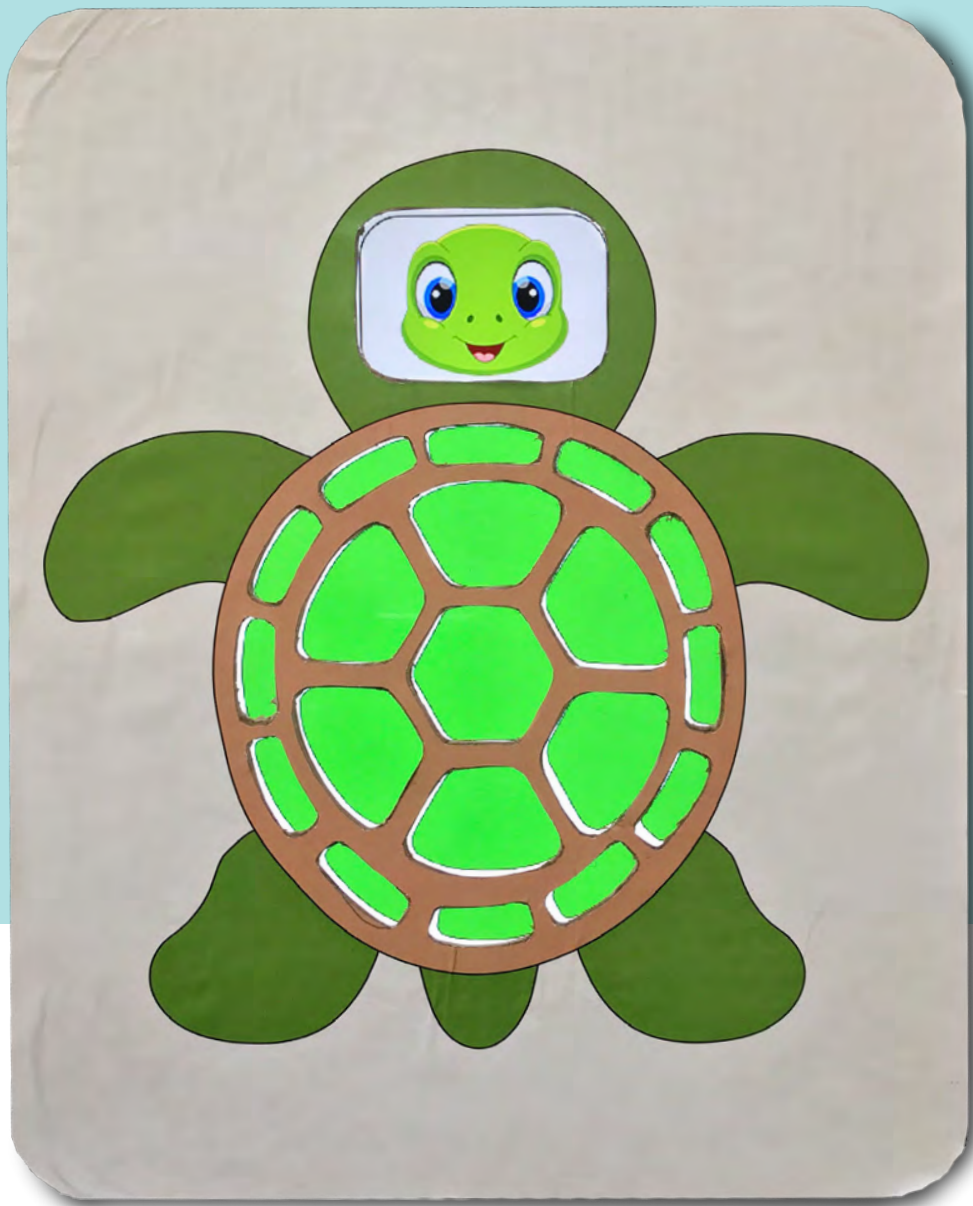
With the physical model, I made an app the children at the daycare could use and they also liked pressing the tail.



Testing the Functioning Turtle

The interface needs to allow the child to have a reminder buddy while making them complete the tasks. I made an app that was covered in a foam core box to get rid of the iPad aspect so the child can focus on the tasks. I tested this user interface model on the children at Sweet Dreams & Fairytale Daycare and they were able to complete all the tasks proving the interface was effective.





iPad in foam core structure.

3D Print Form Testing

I printed out my last 2 final design forms. Due to COVID-19 I was unable to test these turtles on Yuhan's children and Sweet Dreams & Fairytale Daycare to find the favorite form. To further my design after this event pasts, I will test these forms on children.

Turtle 1

This design has a boxier form with 11 lit up buttons on the outside of the shell and a smaller screen display.



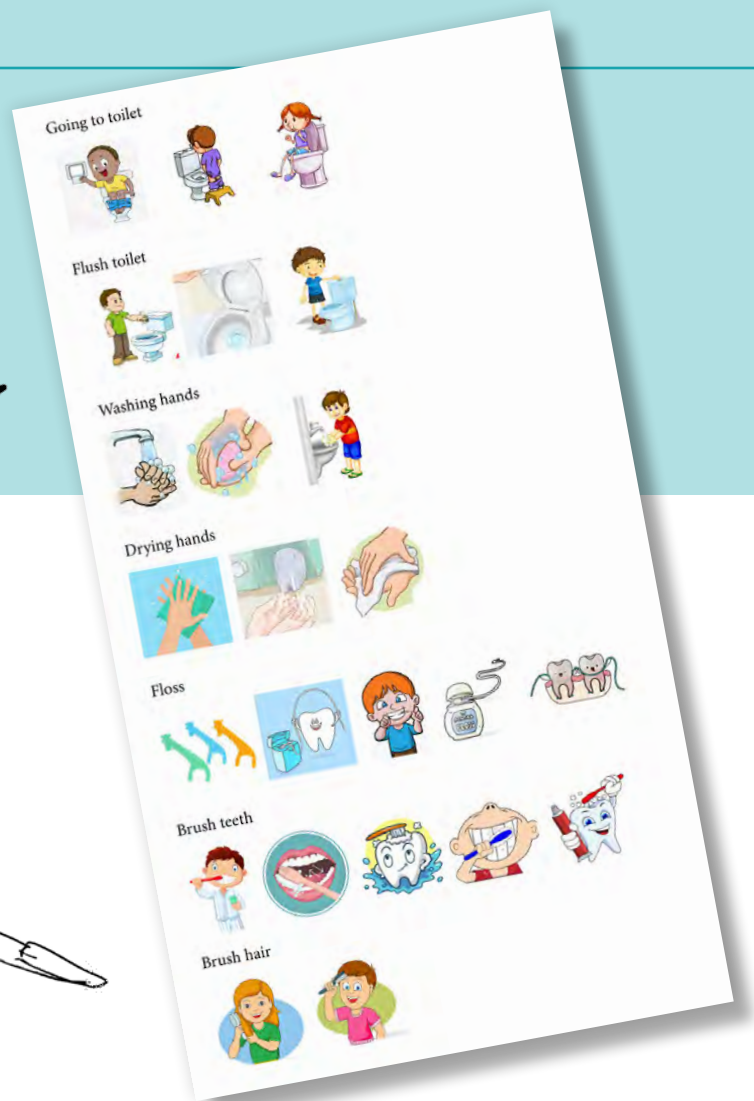


Turtle 2

This design has an organic form with 12 lit up buttons on the outside of the shell and 7 inner shell buttons. The screen display is larger and the turtle has a wall attachment on the back.

Task Icon Testing

I went to Sweet Dreams & Fairytale Daycare to ask children what their favorite icons were to put on the Task Turtle. I handed them this paper and had them circle their favorite icon.



Drawing iterations off of the favorite choices:



Task Icon Final Choices

The children at the daycare chose these as the favorite icons. With these results I slightly altered the design or keep it the same. Taking medication was the only icon I forgot to add.



Going to the bathroom



Flushing the toilet



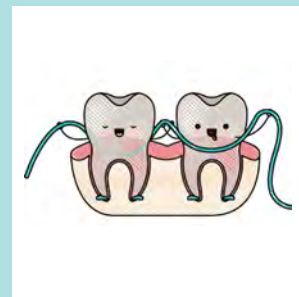
Washing hands



Drying hands



Brushing teeth



Flossing



Combing hair



Taking medication



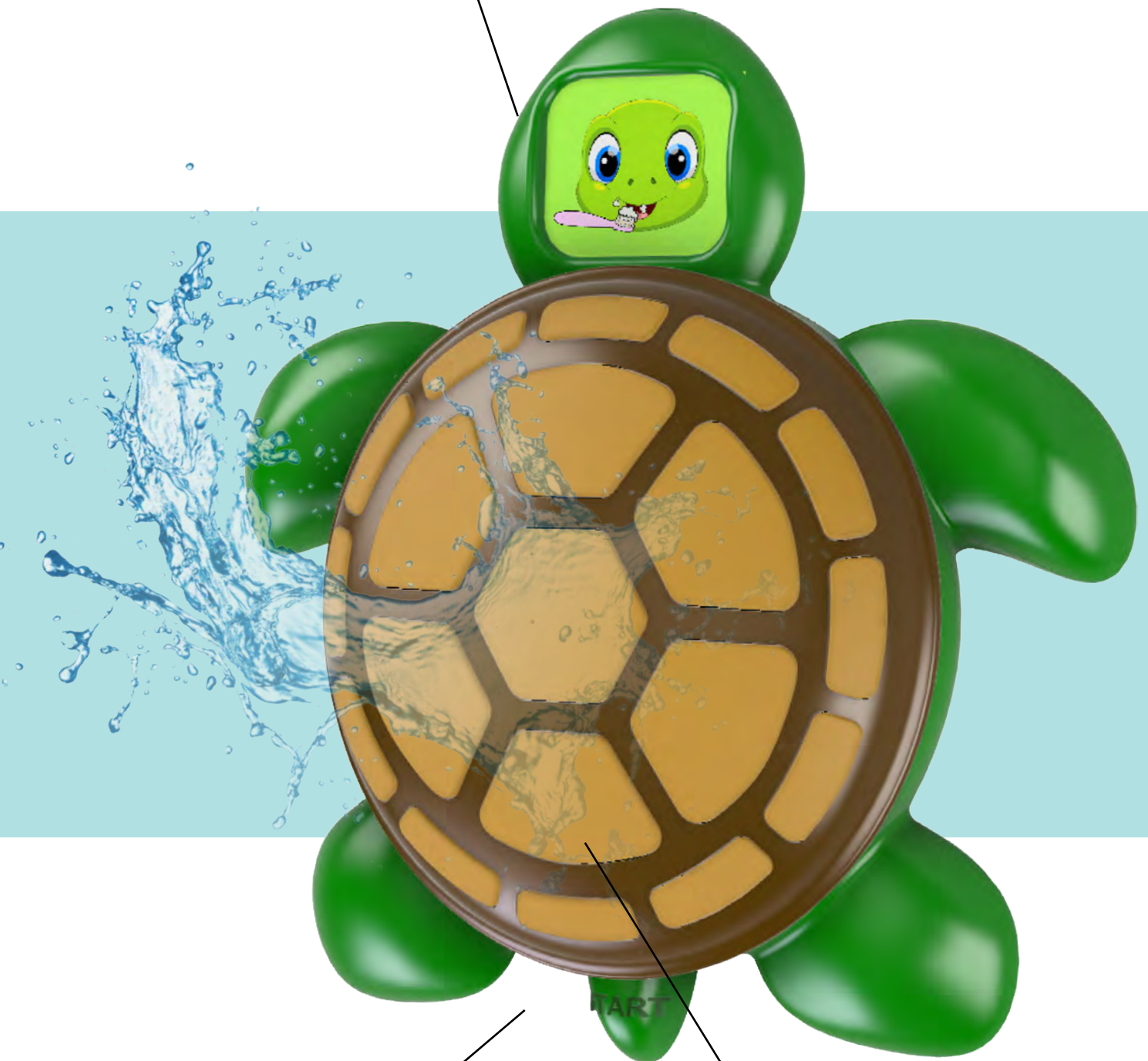
Final Form

LCD Screen with turtles face and task icons

Images are displayed on screen so child can have a visual image of the tasks.

Water Resistant

Placed near the sink, next to the mirror so it needs to be water resistant

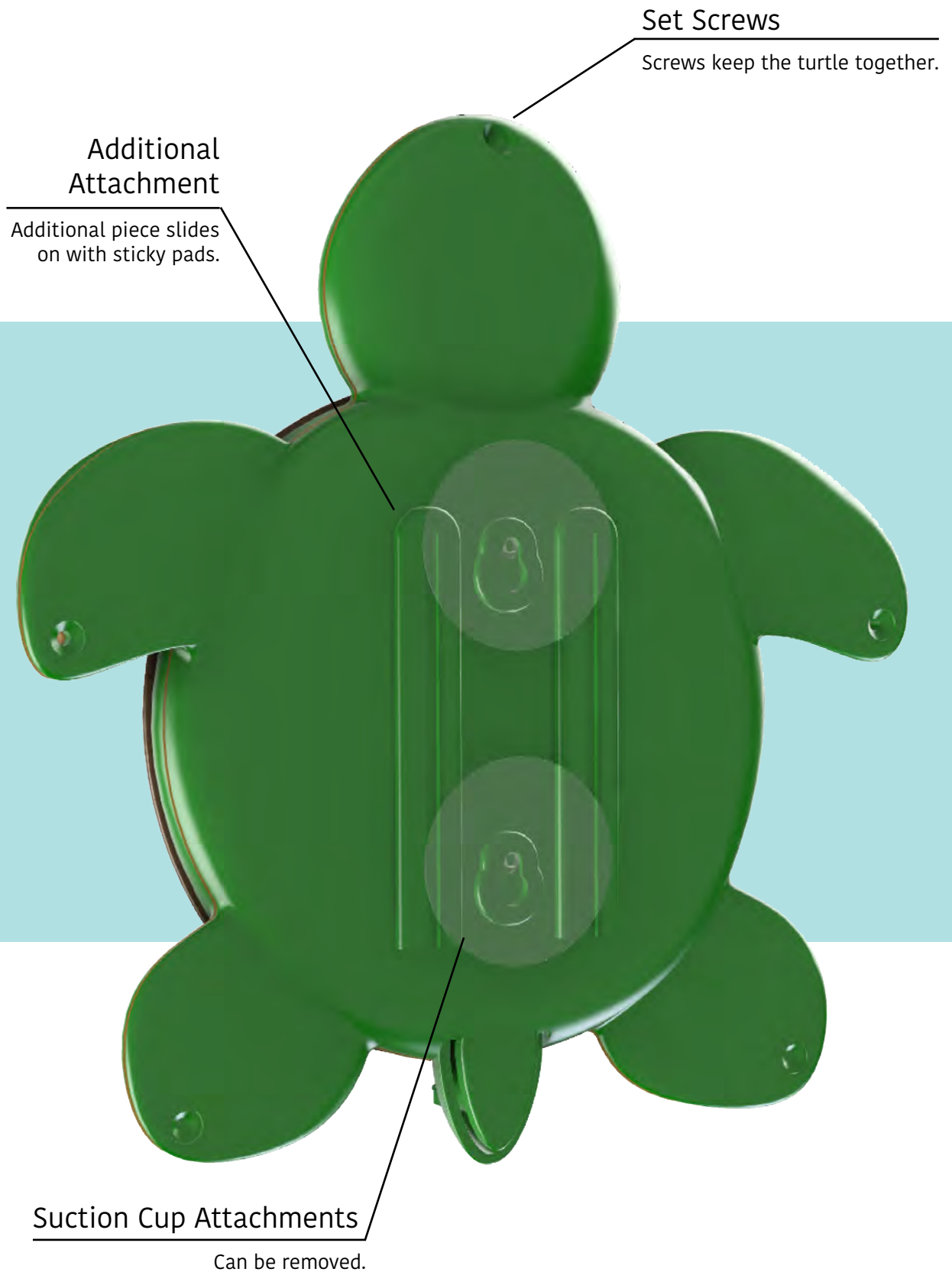


On/Off button

“START” is written on the tail to indicate how to turn the turtle on.

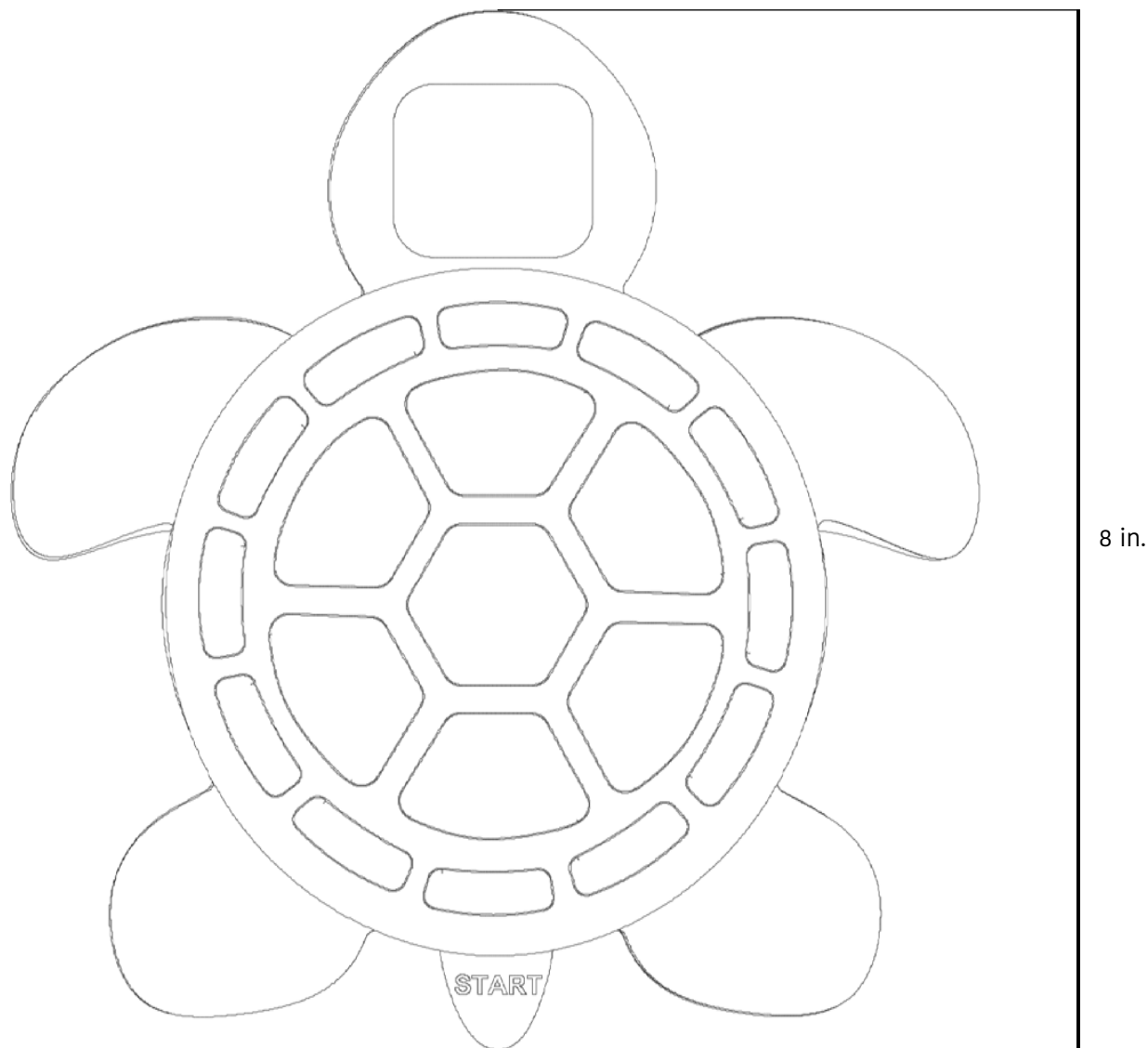
Interactive Task Buttons

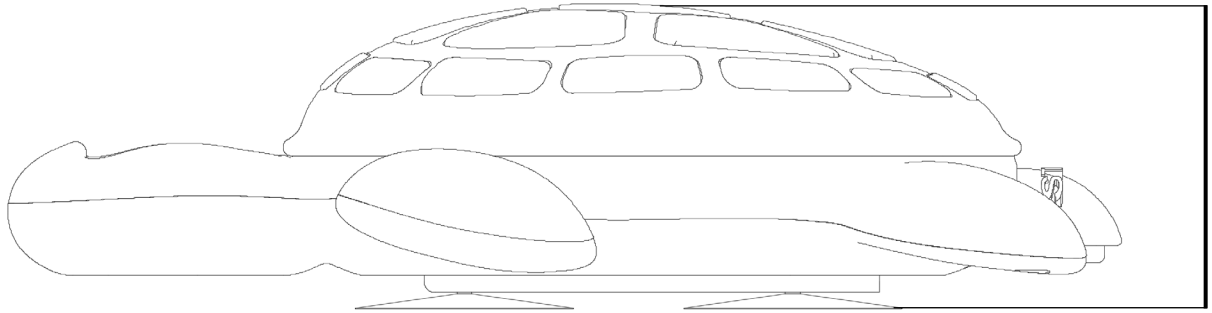
Buttons light up to move through the different tasks.



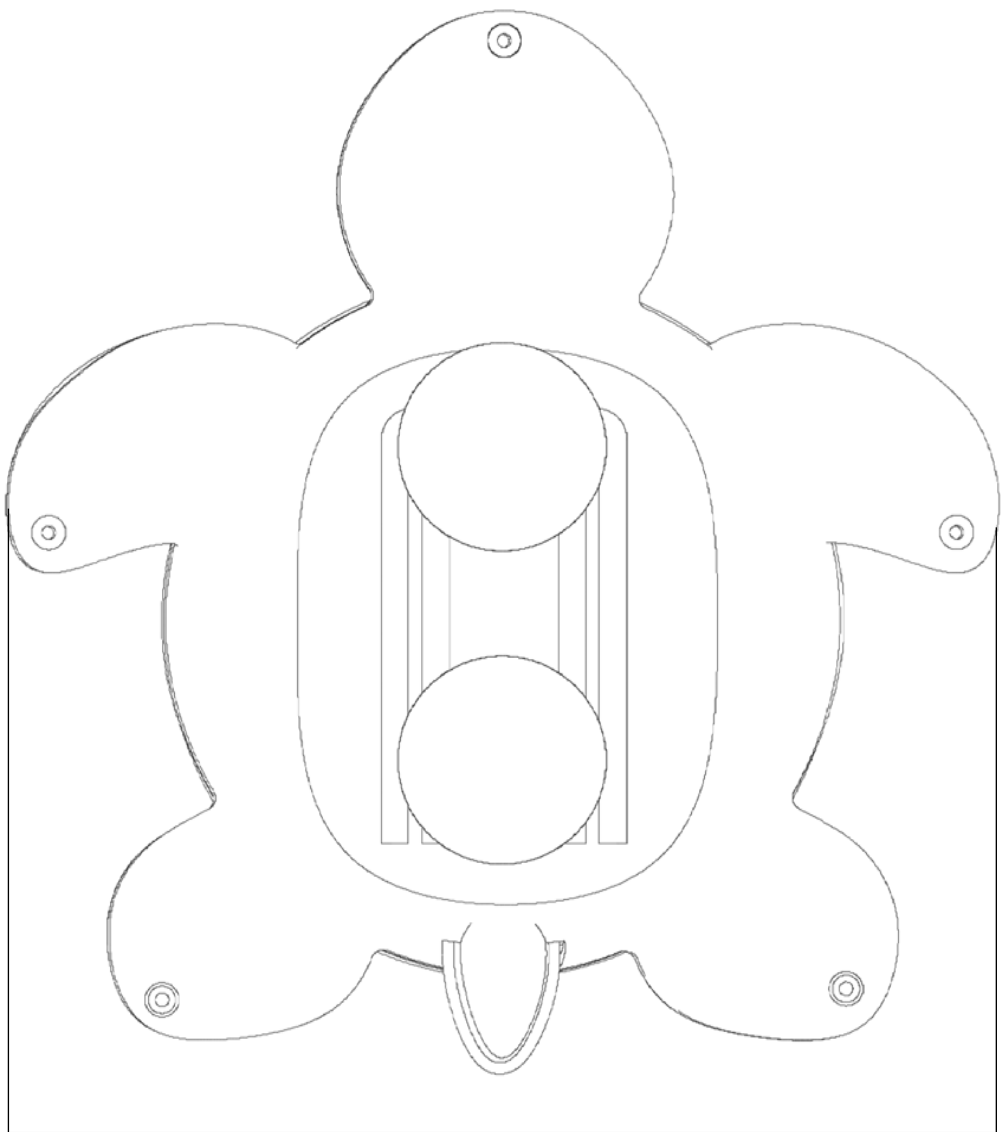
Orthographics

The size of the turtle fits the bathroom wall, has large enough button for the children to press, and has a big enough screen to see the images. This was all confirmed through testing on children.





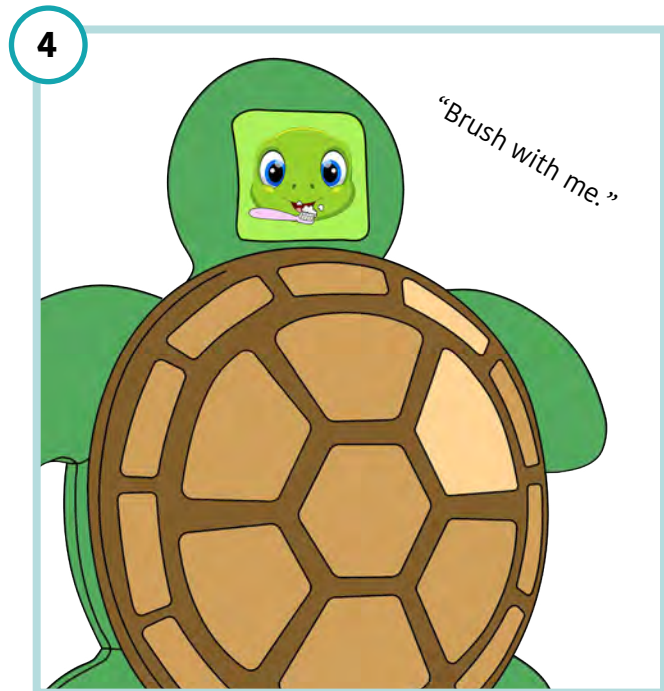
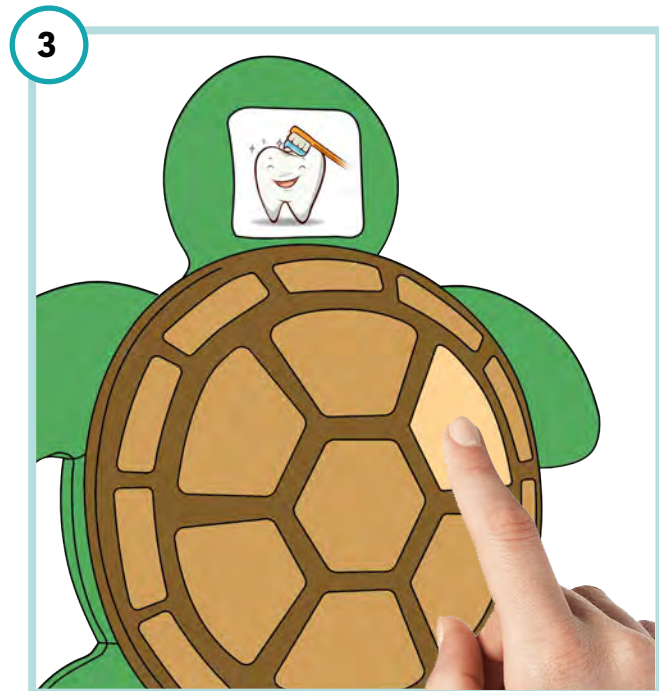
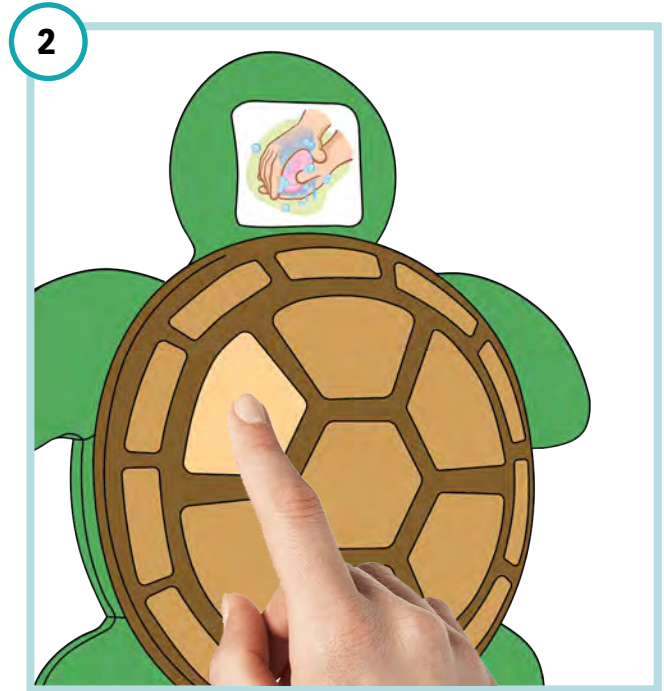
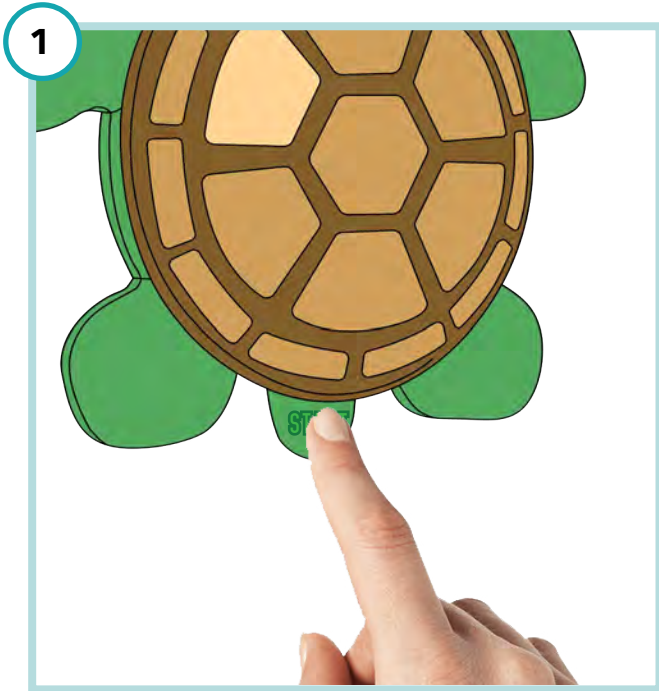
2 in.

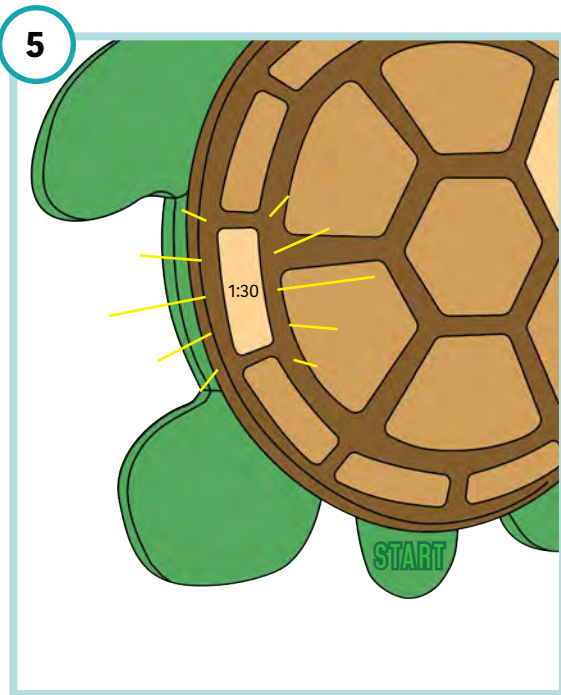


7 in.

How It Works

This is the general process of how the child will use the Task Turtle.



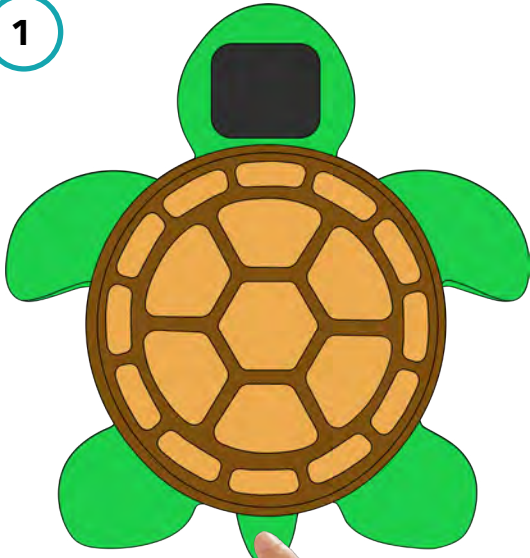


- 1 Press the “START” button to turn the turtle on.
- 2 Press the lit up button to move through the tasks.
- 3 Press the lit up button to start the brushing teeth timer.
- 4 Turtles face will brush its teeth with child as it says motivating phrases.
- 5 The shell will light up on the outside being the 2 minute timer for brushing teeth.
- 6 The turtle is next to the mirror so the child can watch themselves with the turtle.

How It Works

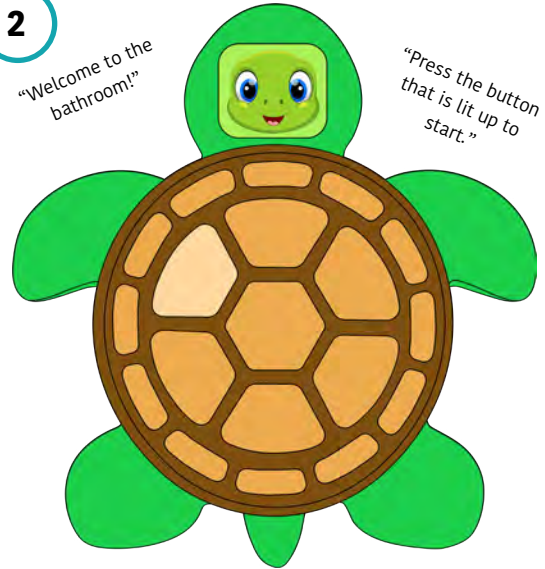
This is the in depth process the turtle goes through when being used by the child. Phrases are said during the different task to remind or praise the child.

1



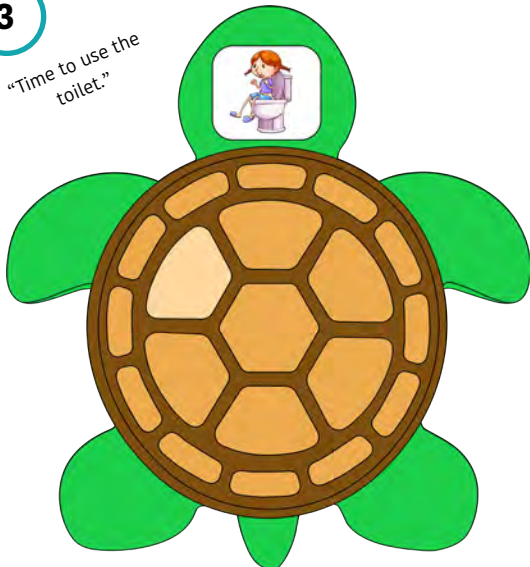
Press the tail to start the turtle.

2



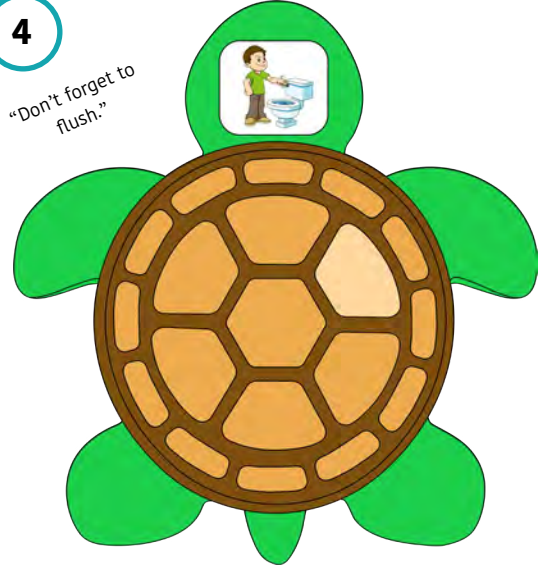
The turtles face is the starting screen.

3

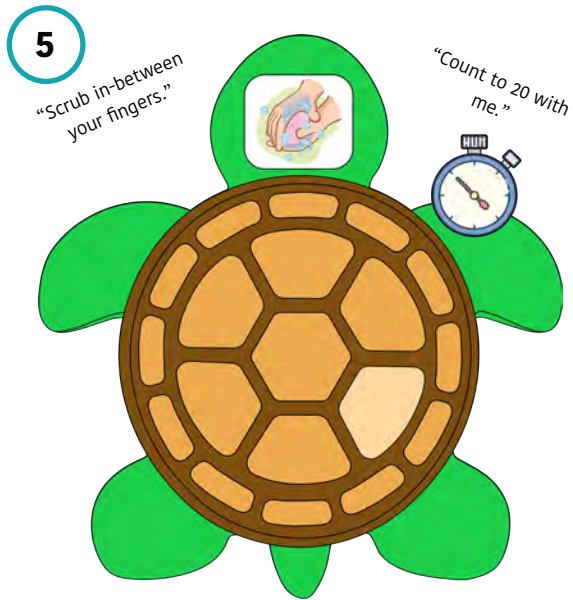


Going to the bathroom.

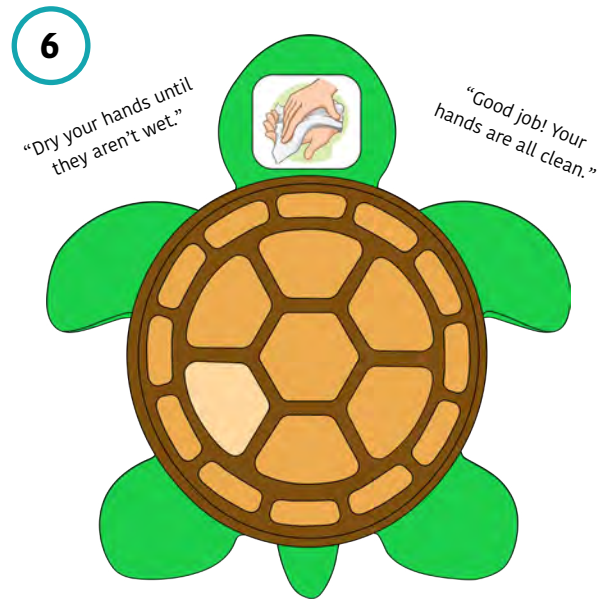
4



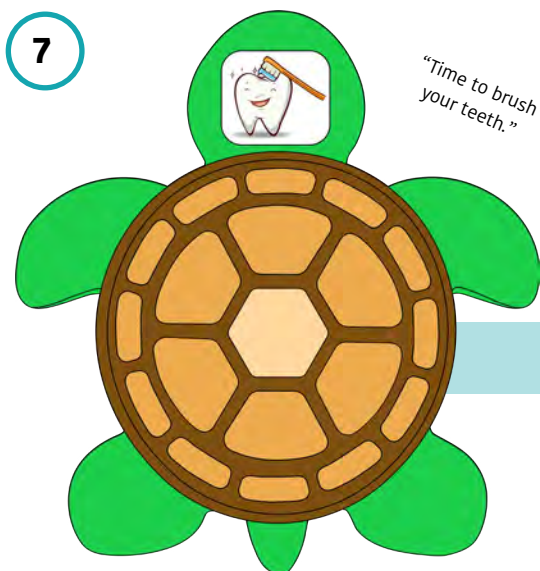
Flushing the toilet.



Washing hands. A 20 second timer lights up around the turtle shell.



Drying hands.

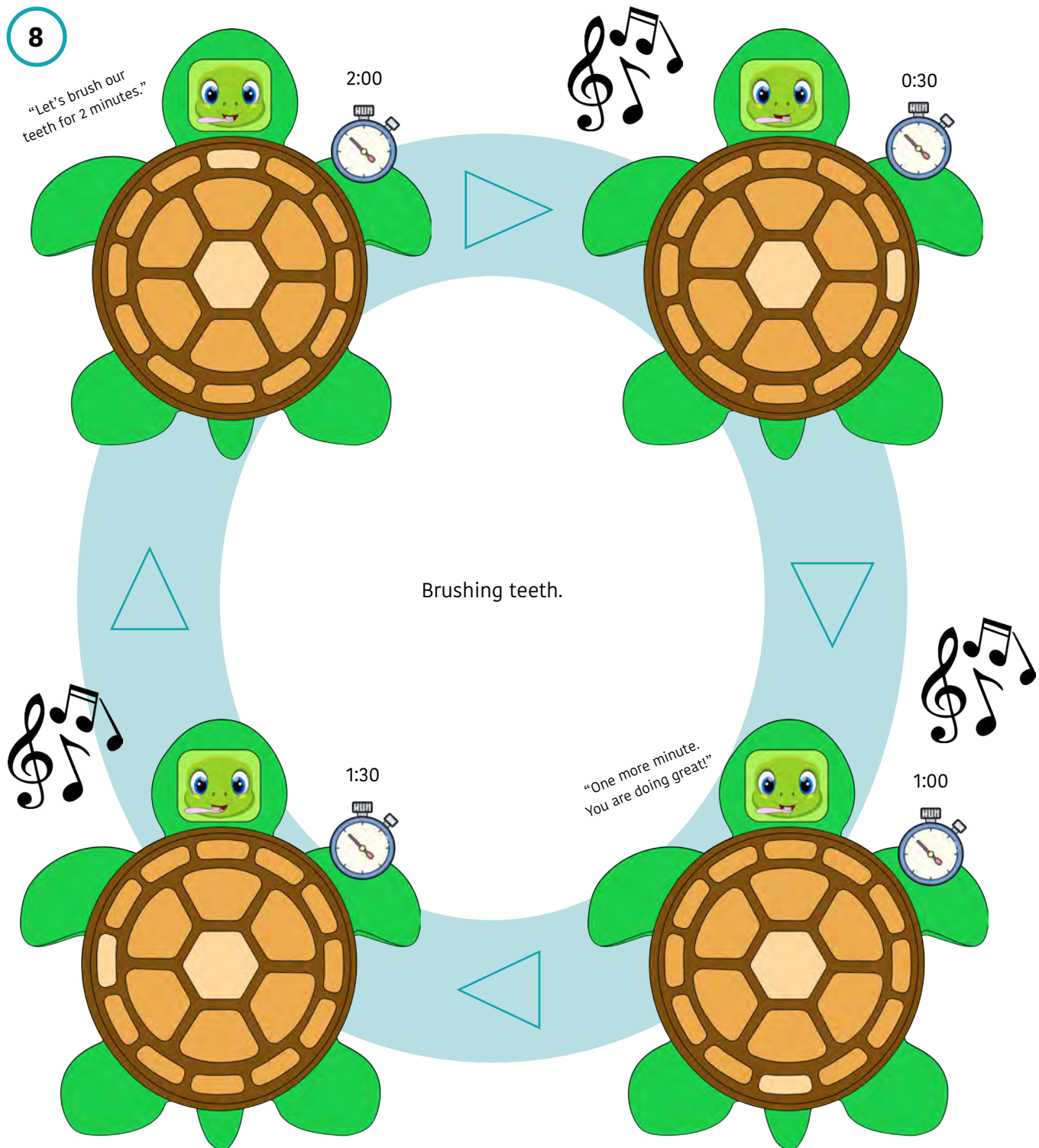


Brushing teeth.

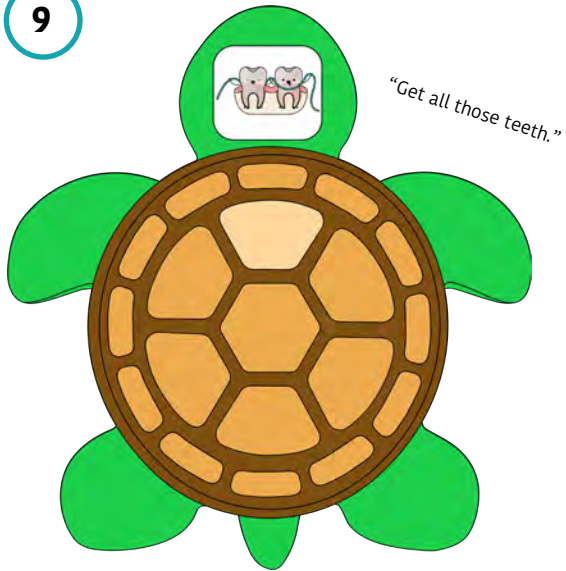
The process continues to the next pages.

How the Timer Works

The timer is used for washing hands and brushing teeth. There is a light that moves around the outside of the shell. Music is played and the turtles face brushes its teeth with the child. The child is reminded how much time they have left.

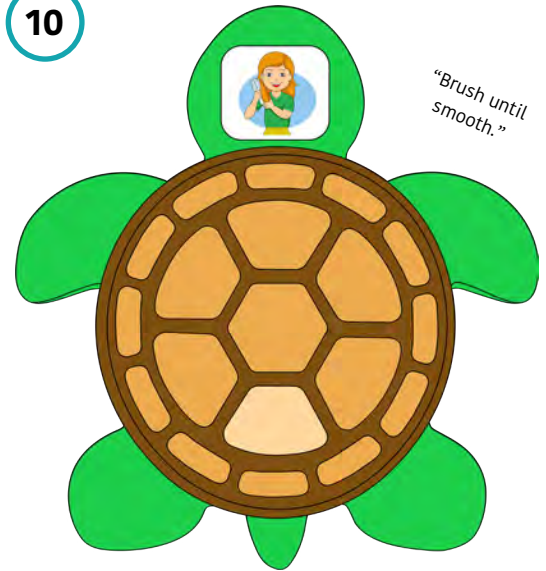


9



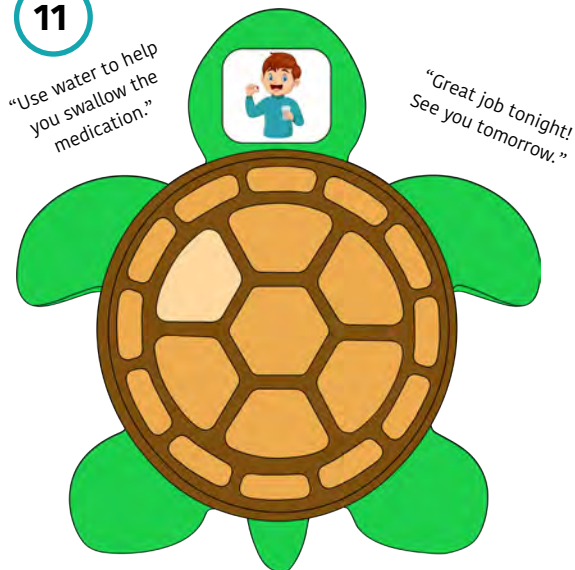
Flossing.

10



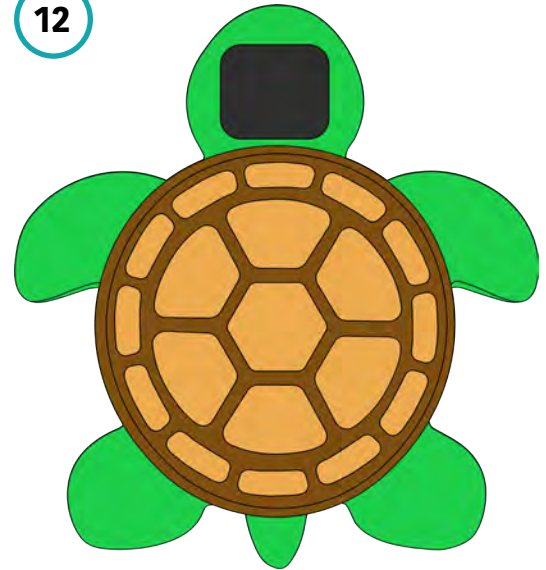
Combing hair.

11



Taking medication.

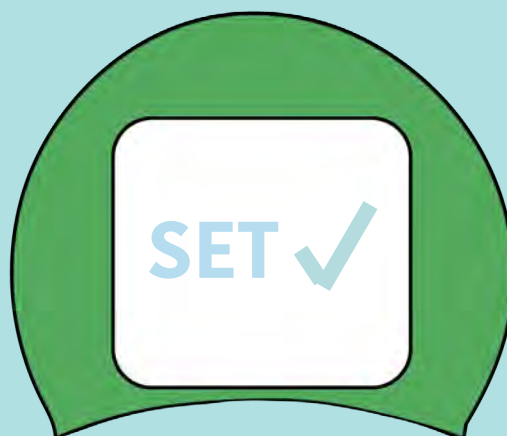
12



The screen with automatically turn off when the last task is completed by having the child press the lit up button.

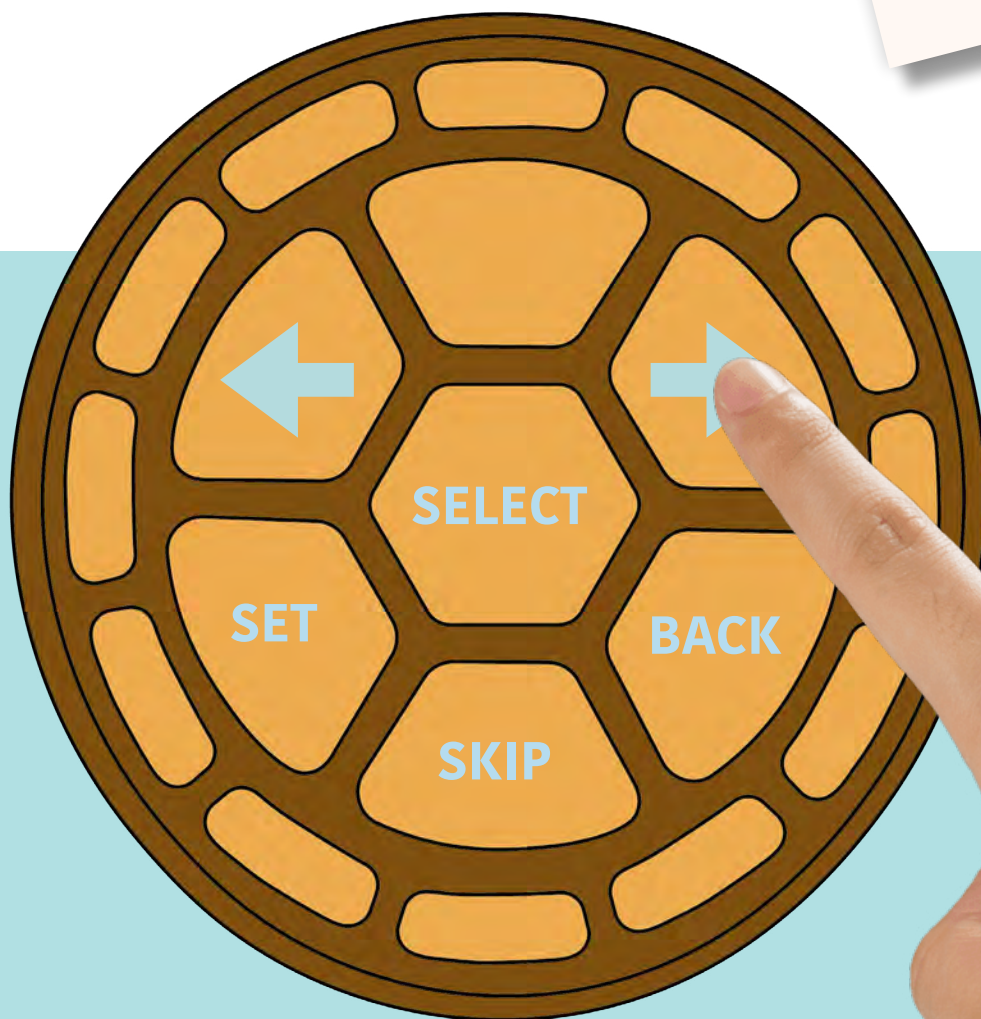
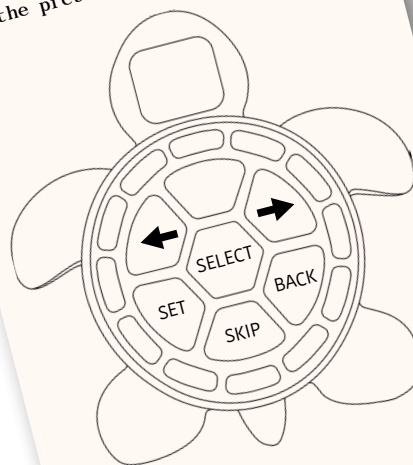
Customizability

This customizable option is used by the parent to choose the icons they want their child to do. The parent will select icons and a choice of gender then set the turtle for the children to use.



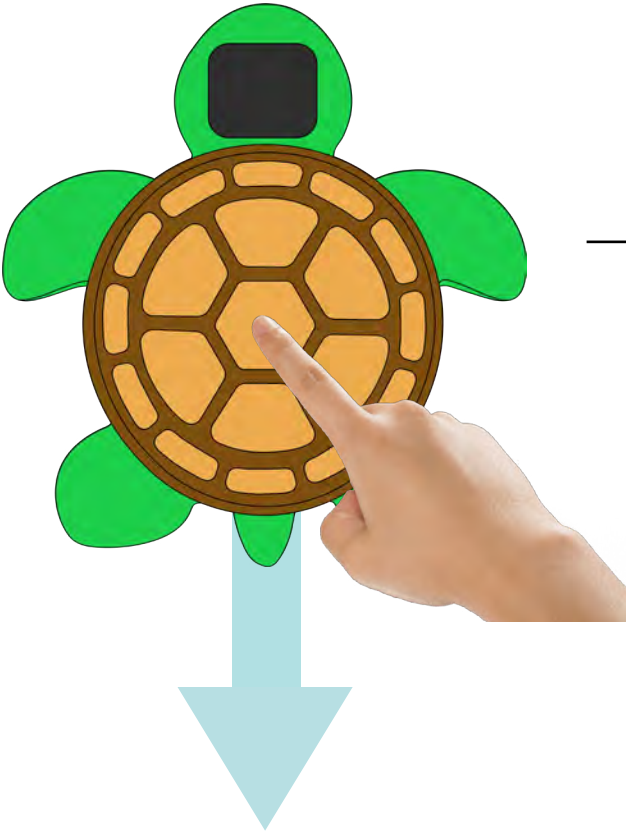
On the instruction manual for the Task Turtle there will be a drawing with the words and images below that are not actually visible on the turtle shell. The drawing will indicate where the parent should press to move through the different options.

Instruction Manual
Use the picture as a reference



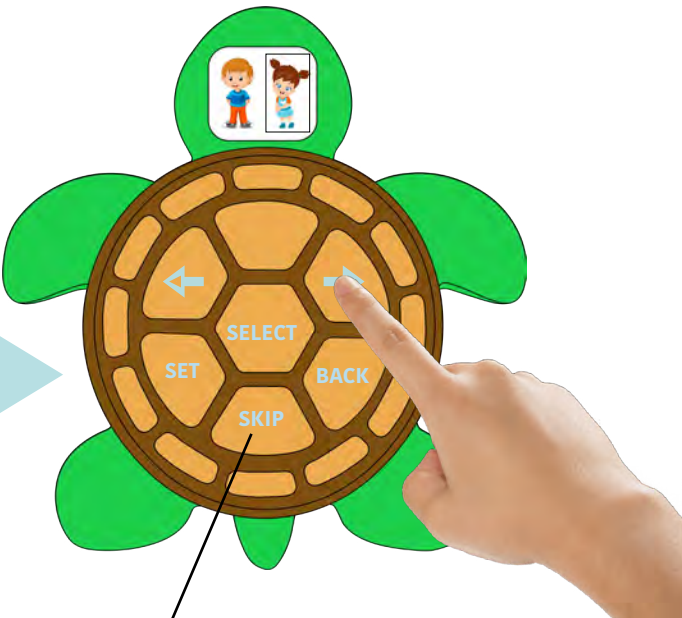
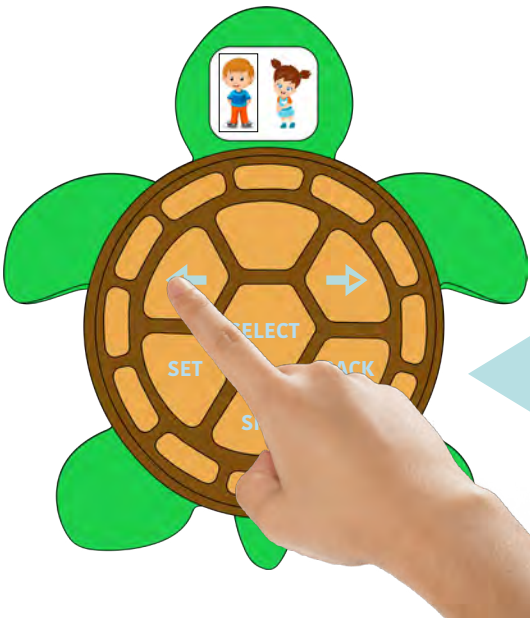
Customizability

This is the exact process the parent will go through when customizing the turtle.



In the instruction manual it will say
“Press and hold the center button for
10 seconds to customize the turtle.”

There is a choice for having either
female or male icons, but if the parent
does not want the icons to have a
specific gender they can press skip and
have it randomly choose a girl or boy
icon.



“SKIP” button to not select gender

The parents can press “SELECT” for all the task icons they want their child to do. Pressing “BACK” will bring the parent to the gender choice slide.

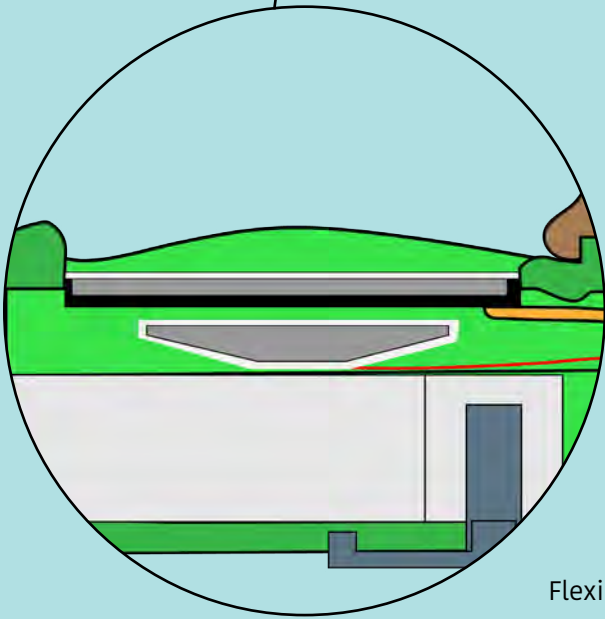
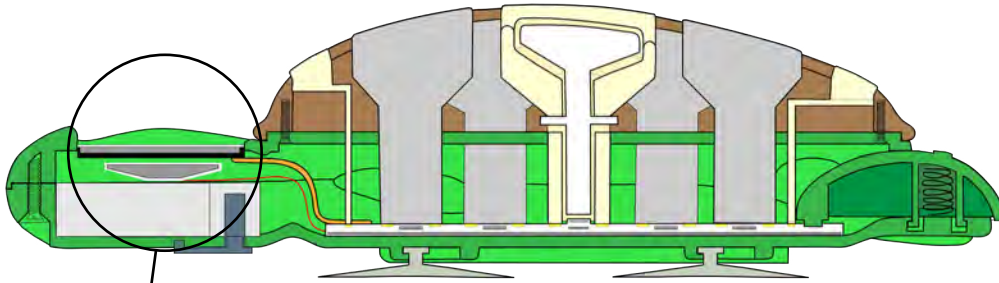




Manufacturing

Manufacturing

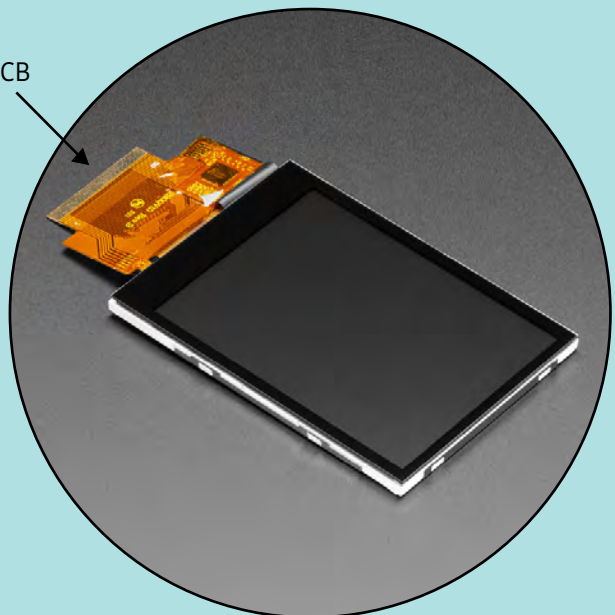
Section View of the Task Turtle explaining all of the mechanics, structural considerations, and materials.

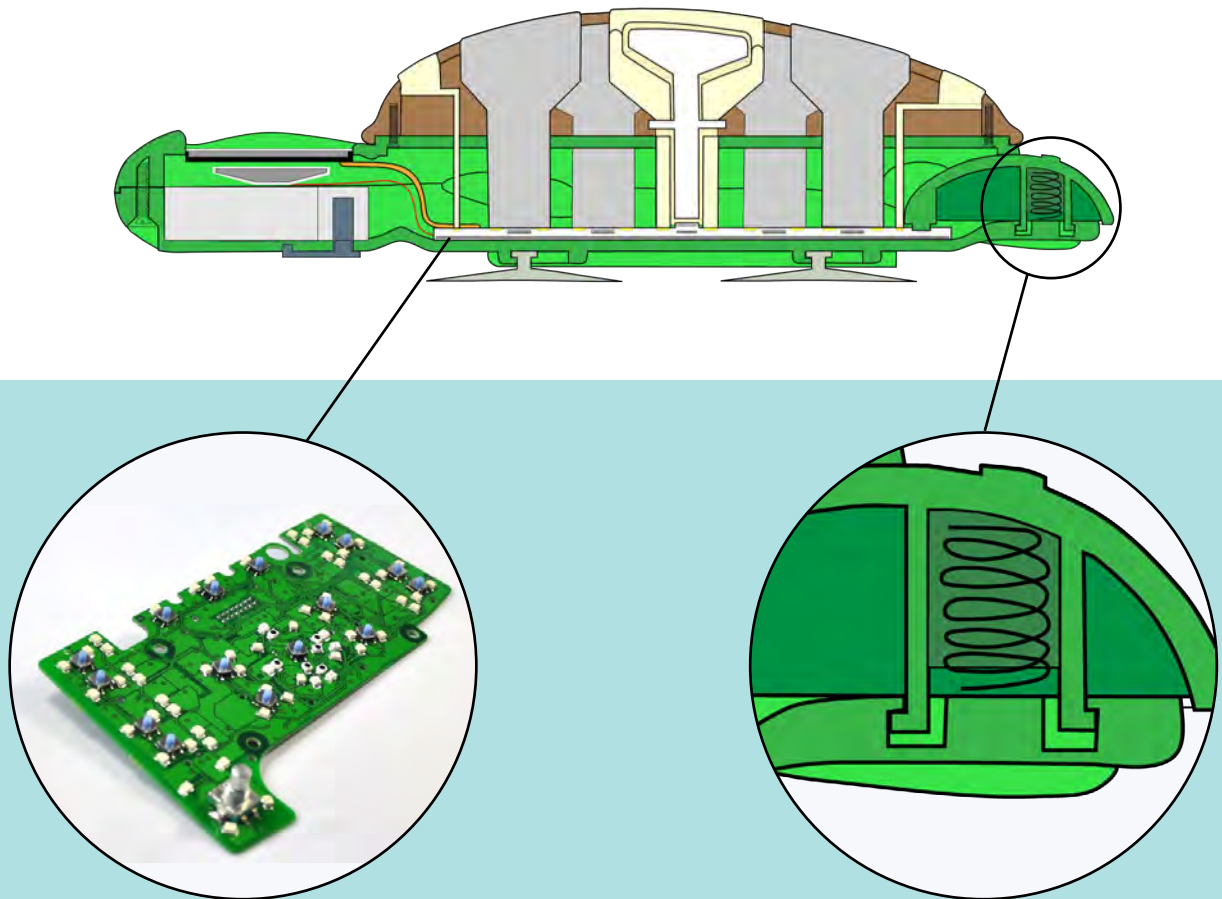


TFT Display LCD Screen

The LCD screen is covered by a screen protector and has a rubber gasket to keep it water resistant. There is a flexible PCB connected the screen to circuit board.

Flexible PCB



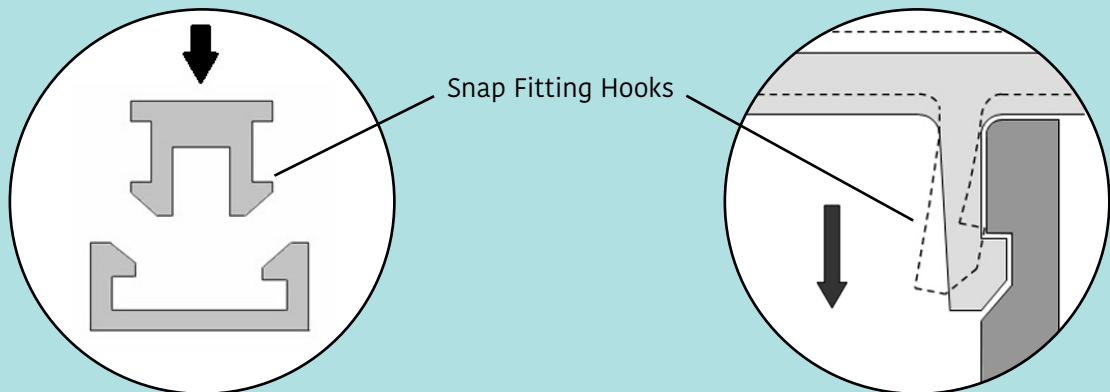


Circuit Board

The circuit board is where all the buttons and electronics are and it is covered in silicone to be water resistant. The circuit board is attached to the inside of the back mold.

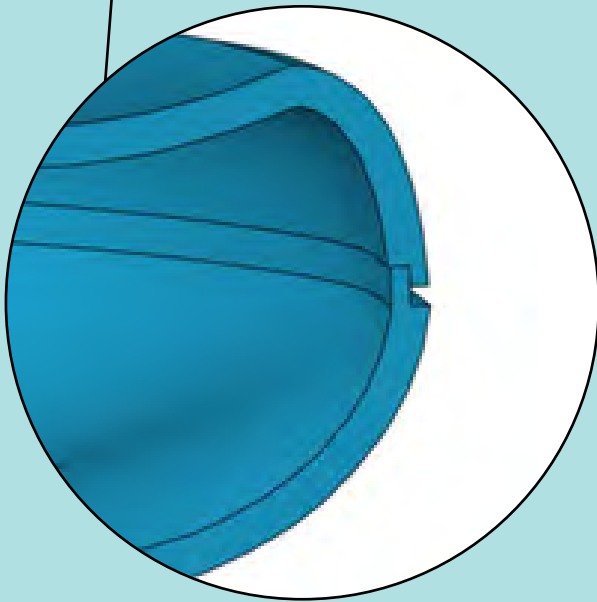
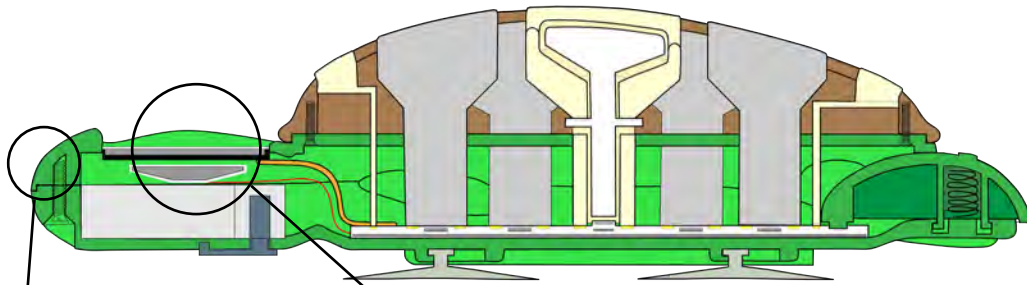
Snap Fitting Hooks

The snap fitting hooks all the tail piece stay attached to the bottom mold. There is a spring that allows the button to be pressed.



Manufacturing

Section View of the Task Turtle explaining all of the mechanics, structural considerations, and materials.



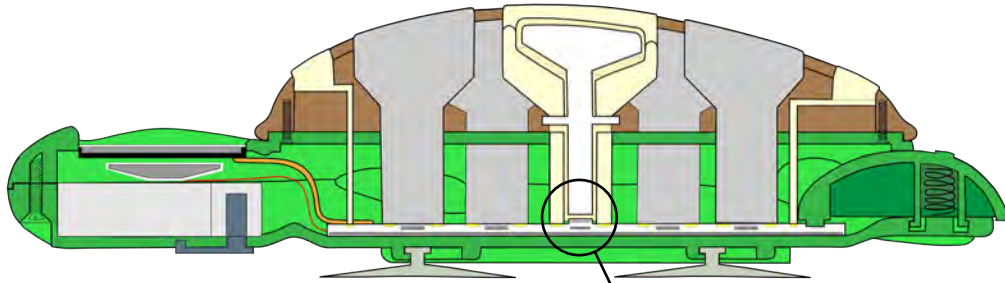
Lip and Groove

Lip and grooves are helpful for keeping the turtle water resistant because “not only do they help to align the assembly, but they also help to seal it and keep it closed.” - engineersrule.com



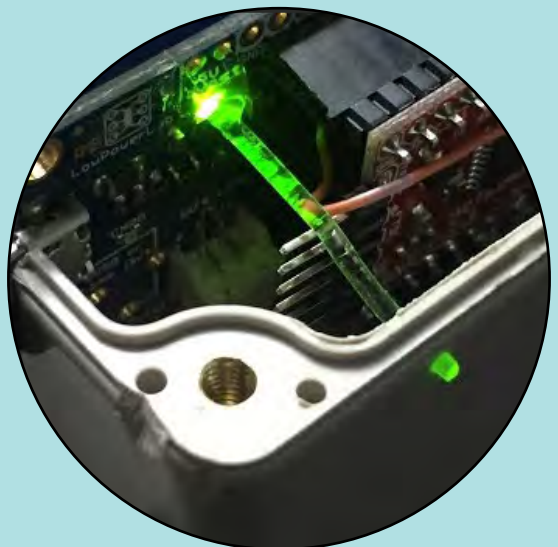
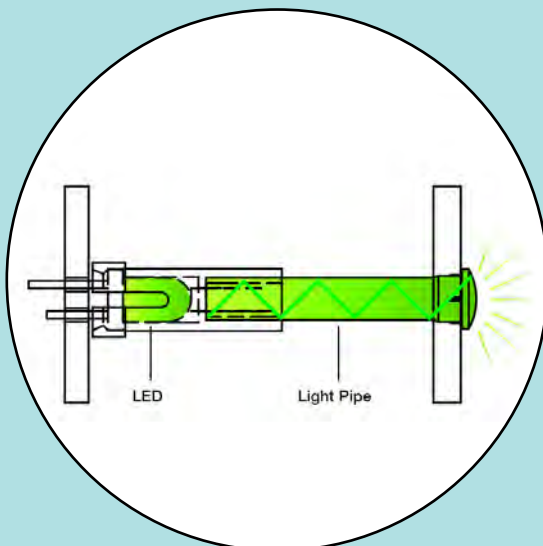
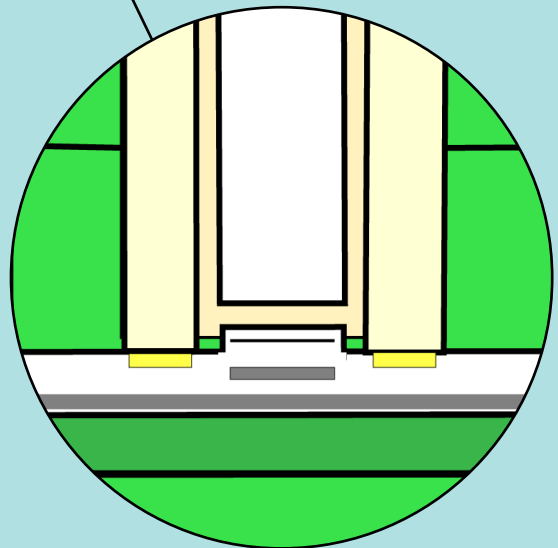
Water Resistant Speaker

The water resistant speaker is in a rubber gasket to prevent any water from coming in. The wires are connected to the circuit board. This speaker is placed behind the LCD screen so it sounds like the voice is coming from the turtles head.



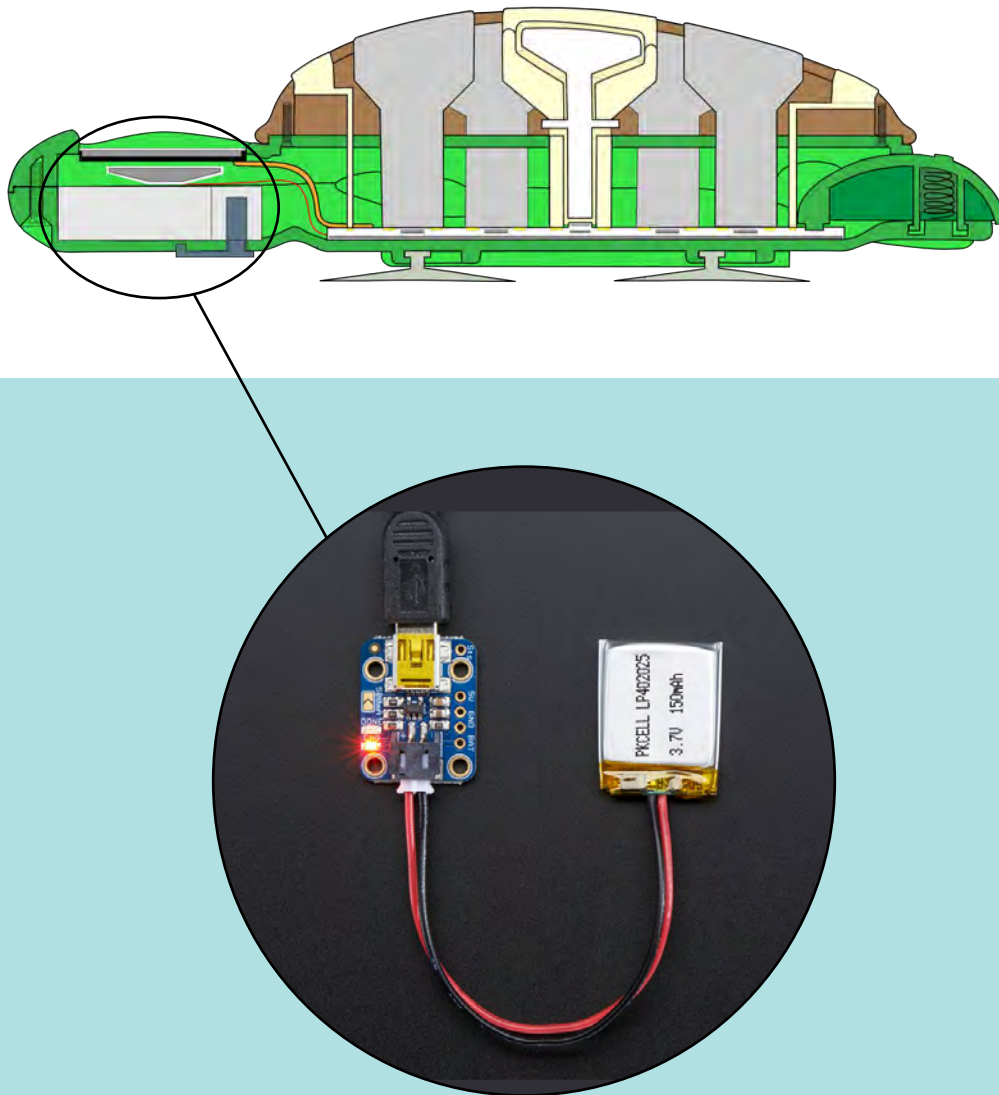
LED Light Pipe

There is an LED on the circuit board and the button has a clear acrylic tube that goes up to a tinted silicone that disperses the light when lit up.



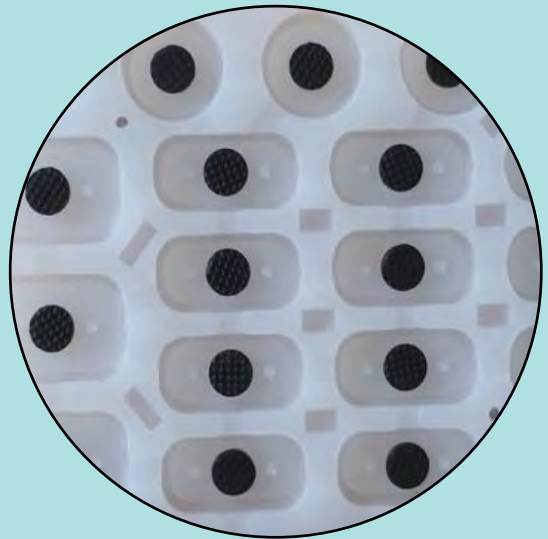
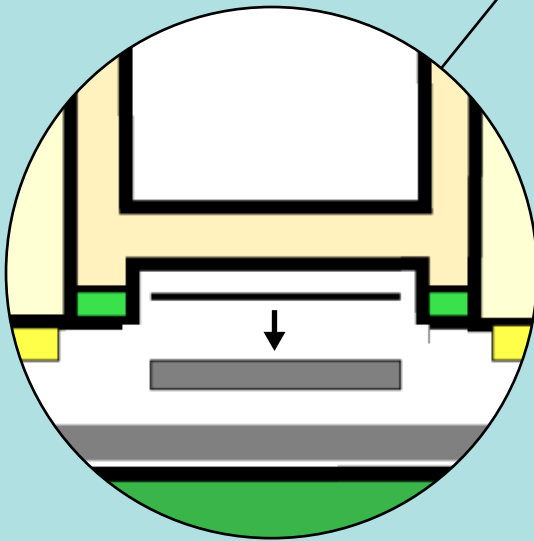
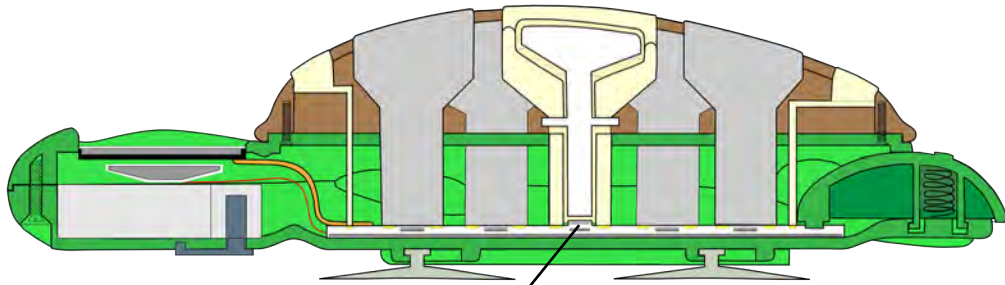
Manufacturing

Section View of the Task Turtle explaining all of the mechanics, structural considerations, and materials.



USB Battery Charger

A USB charged battery is used to power the turtle. Many people have USB chargers so this is easiest way to charge the device. The charging port is in the back of the turtle, but it can be removed from the wall to be charged. It is placed behind the speaker so that it does not get in the way of the buttons.



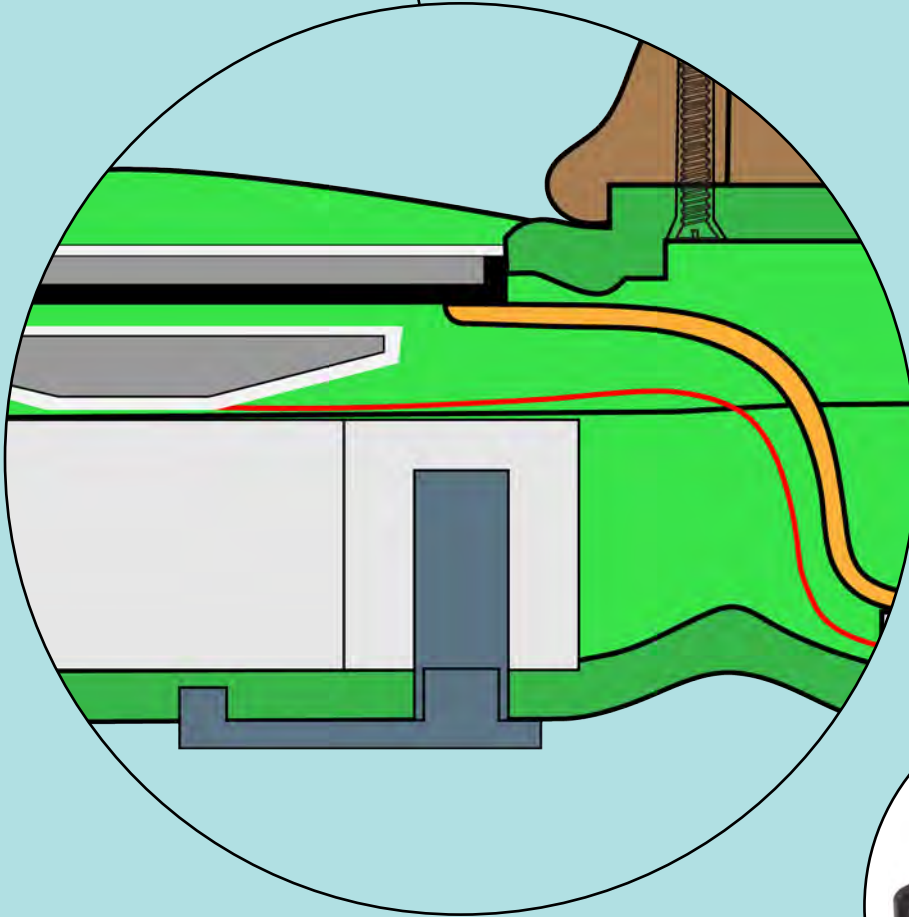
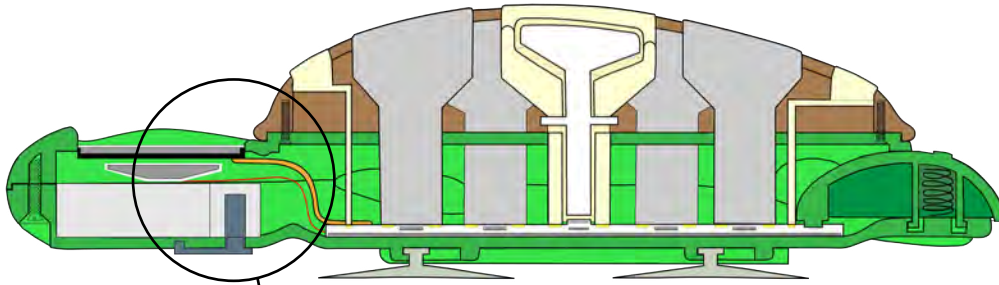
Silicone Rubber Carbon Dot Pads

There is a silicone rubber carbon dot pad that covers the circuit board to keep it water resistant. When a button is pushed, the carbon pad in the silicone cover is pushed onto the circuit board making the button connection.



Manufacturing

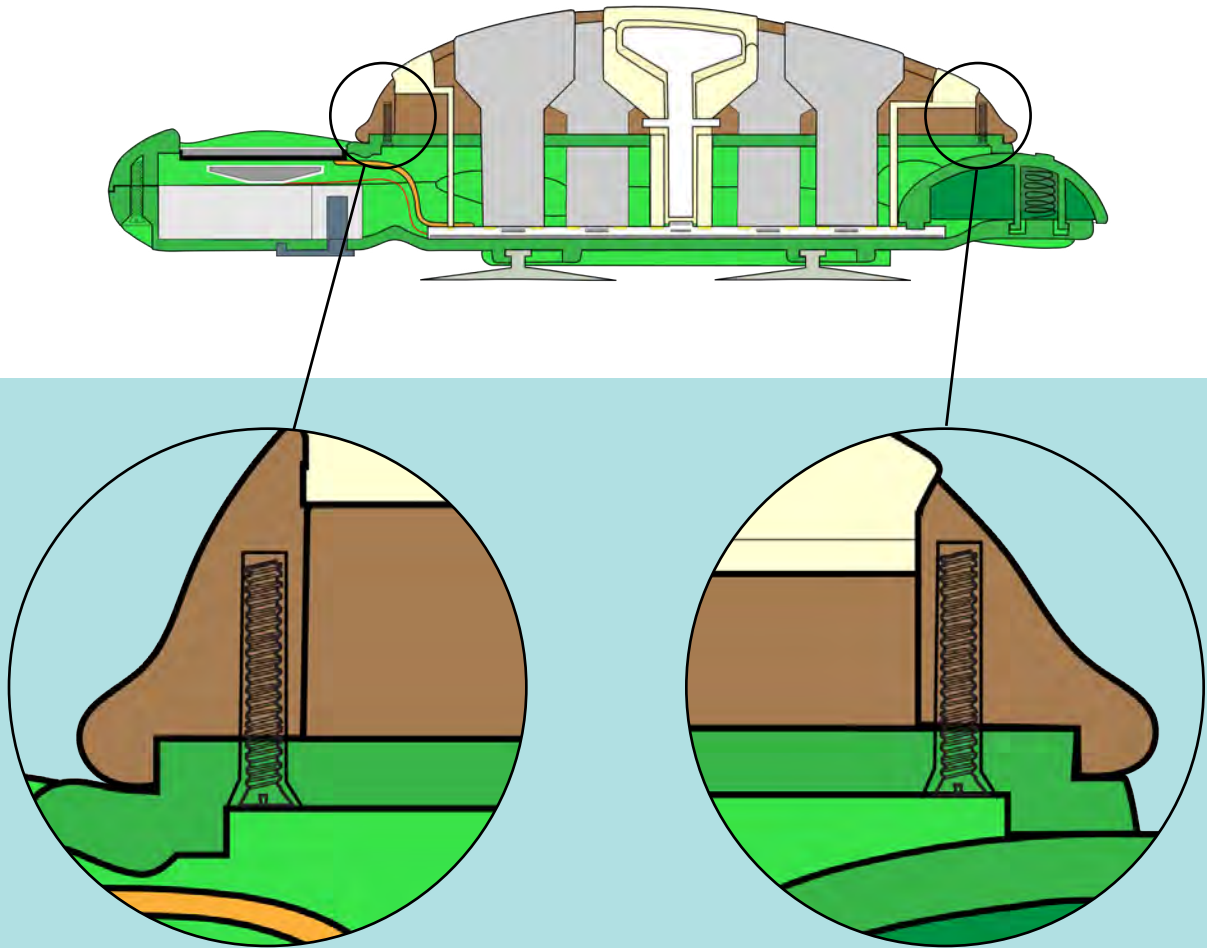
Section View of the Task Turtle explaining all of the mechanics, structural considerations, and materials.



Protective Cover for USB

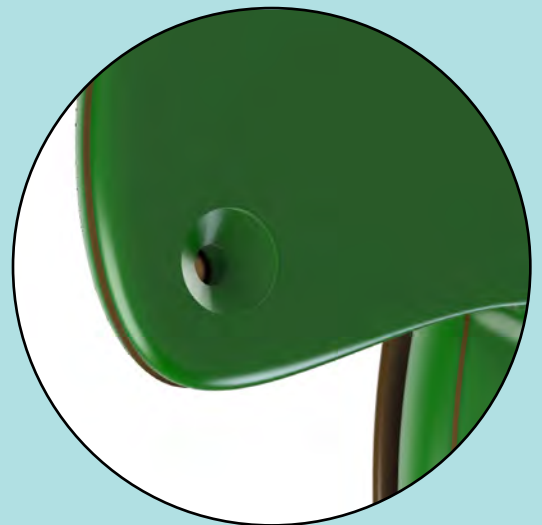
The protective cover for the USB helps prevent water from getting into the USB charging port.





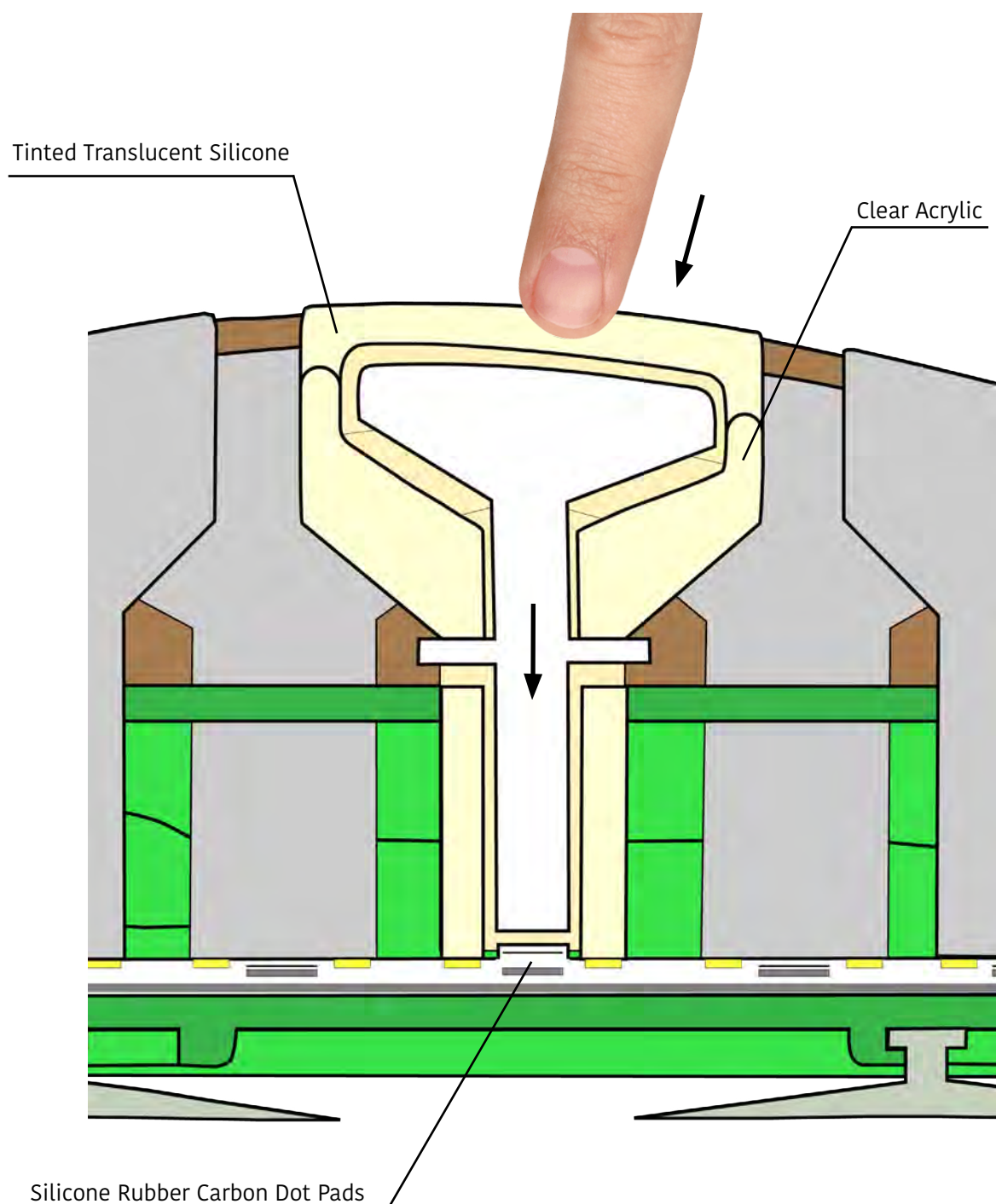
Set Screw

There are set screws connecting the shell to the top body mold, which is not visible because it is inside the turtle. There are also set screws connecting the top body to the back body which is visible on the back of the turtle.



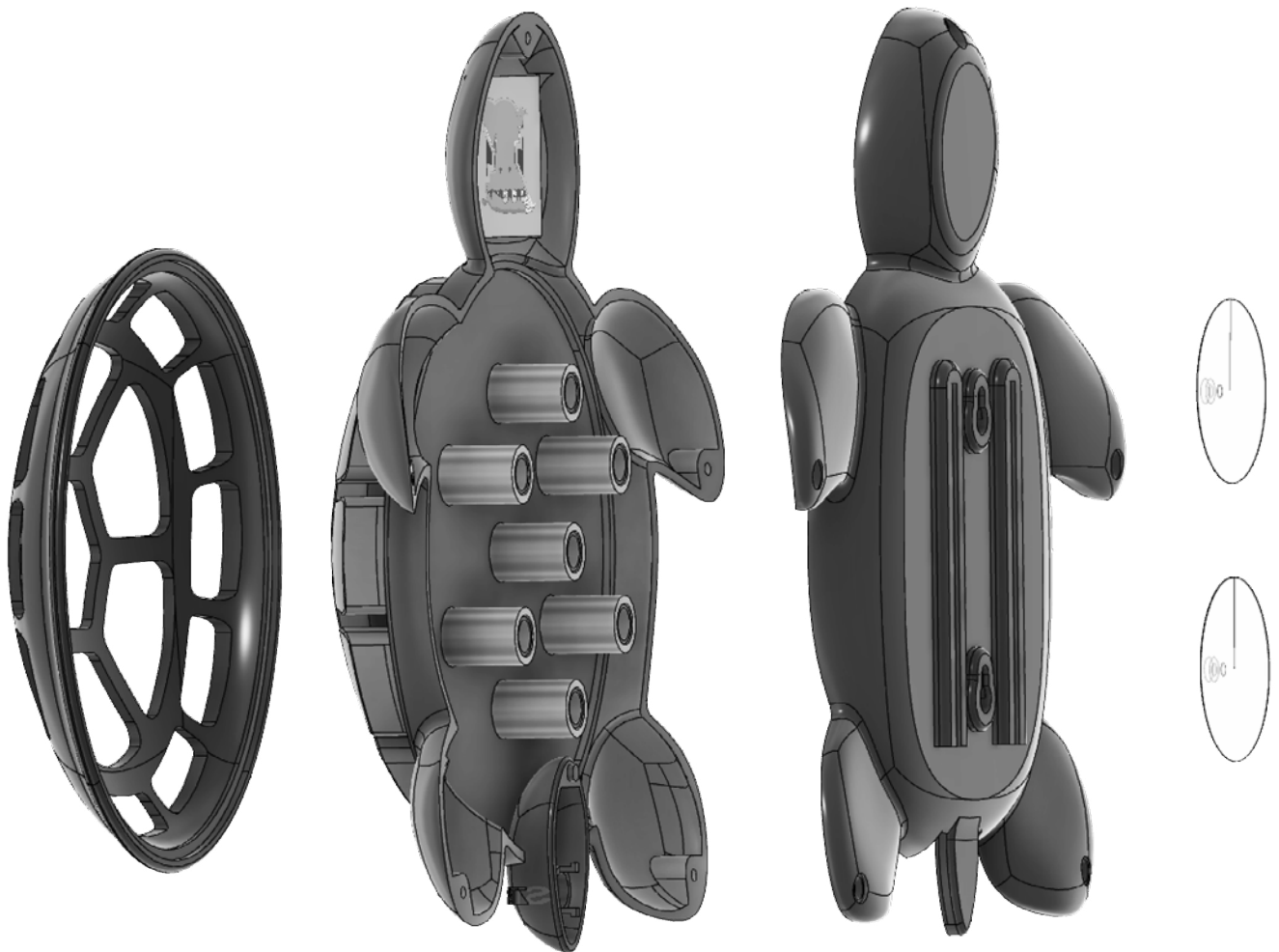
Button

The buttons are connected to a circuit board on the back of the device. The outer button is a tinted translucent silicone that is molded over a clear acrylic light pipe that moves down to LEDs that surround the button on the circuit board. The circuit board is covered by a silicone rubber carbon dot pad to make it water resistant. There is an inner structure that when pushed will press the carbon pad, pressing the button on the circuit board.



Manufacturing & Materials

The device is made of an easy to clean ABS plastic structure that has an injection molded shell with ribbed interior. There are set screw connections keeping the parts together and a lip and groove around the perimeter.



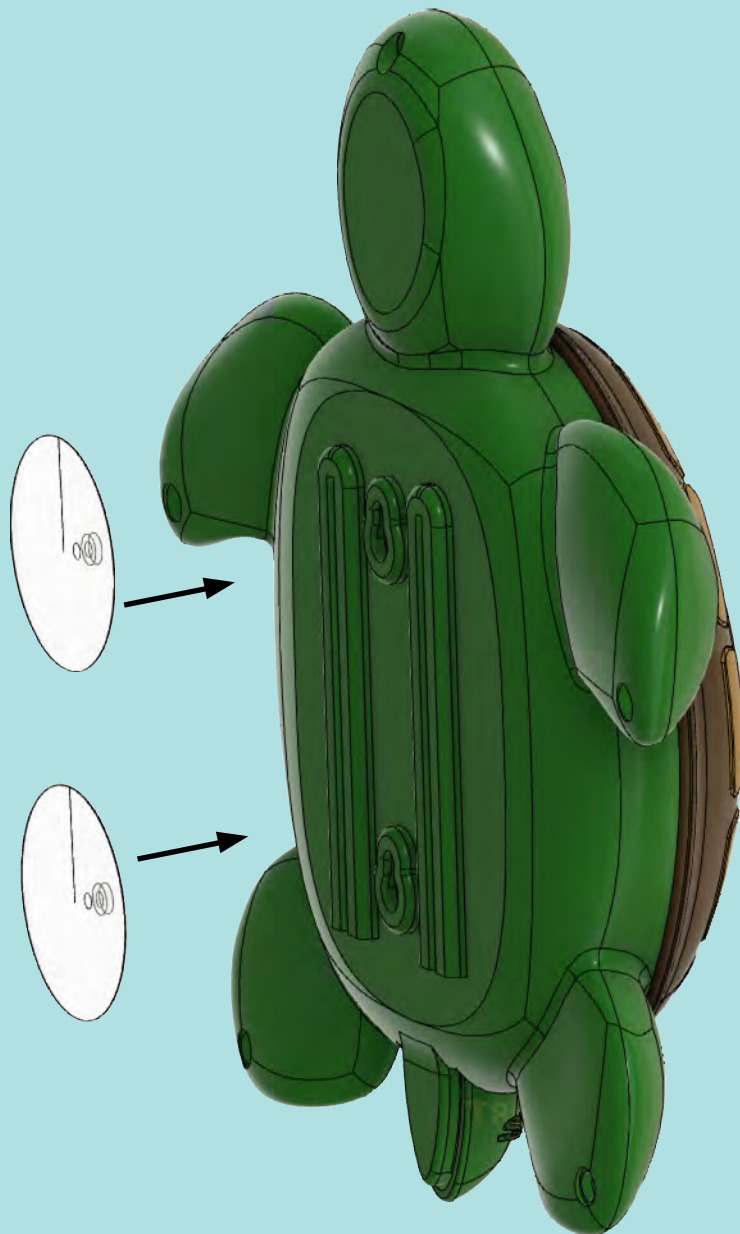
There are 3 main molds, which include the shell, top body, and back body piece. There is also a tail mold and each button is their own silicone overmold. There is also an option for suction cups or an additional attachment piece to allow it to go on the wall.

Attachment to Wall

There are two options for attaching to the wall so the parent can change the location of the turtle easily.

1 Suction Cup Attachment

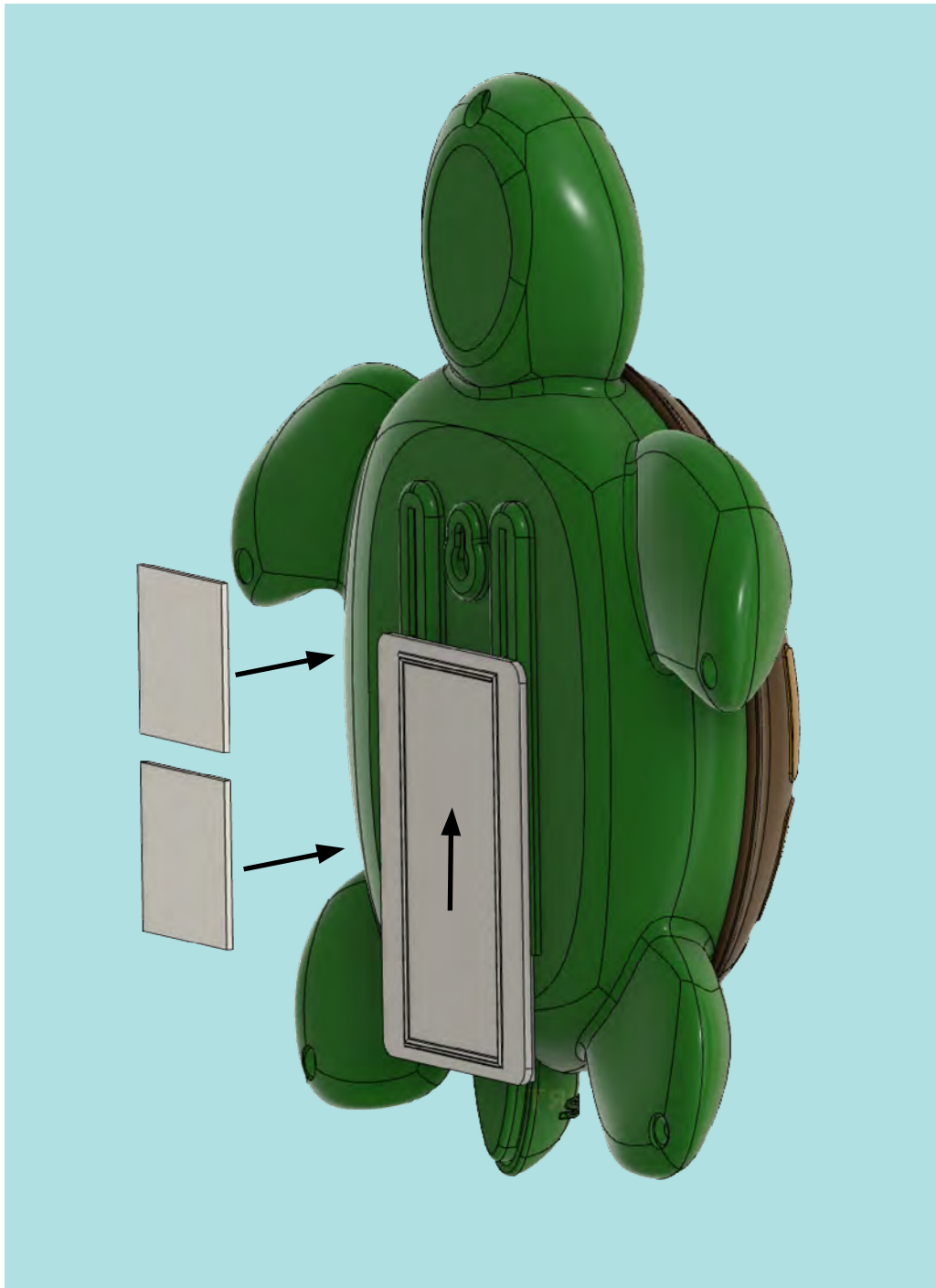
This attachment method allows the parent to be able to put the turtle on the mirror or smooth surface without having to use a sticky backing.



2

Adhesive strips with silicone gel to attach device to wall with additional attachment piece

This attachment method allows the parent to keep the turtle more permanently on the wall, but still be able to remove the turtle to be able to charge it because the USB charging port is in the back.




Pricing

I had to compare the pricing of other electronic toys on the market to find a general toy price.

Electronic toys on the market:

These electronic toys show what electronic toys specific to the bathroom or learning can cost.



A green LeapFrog My First Learning Tablet with a black screen displaying various colorful icons for learning and play.

\$19.99

LeapFrog® My First Learning Tablet™ in Green



A blue elephant-shaped toy with various interactive features like buttons, a clock, and a small yellow chick on its back.

\$29.99

Busy Body Elephant in Blue



A blue and white electronic spray water boat with a small figure on top, shown next to its packaging.

\$11.57

Baby Bath Toys for Kids - Electronic Spray Water Boat Bathtime Fun Tub Toy



A green and blue digital turtle-shaped bath water temperature tester with a small screen on its back.

\$9.99

Summer Infant® Digital Turtle Bath Water Temperature Tester

Final Pricing

After looking at the material cost and the cost of process of making it, I figured out the manufacturing retail cost and wholesale cost.

Material Cost:

\$4.75: Silicone
\$0.05: Electrical Wire
\$0.25: Springs & Screws
\$3.75: LCD Screen
\$2.00: LEDs
\$2.50: USB Battery
\$2.75: Speaker
\$1.95: Circuit Board
\$5.00: ABS plastic

Initial Tooling Cost:

| | |
|---------------------------------------|--------------|
| Top Body Mold: \$6,359.17 | \$3.80 /part |
| Bottom Body Mold: \$5,623.60 | \$3.77 /part |
| Shell Mold: \$5,623.60 | \$3.33 /part |
| Tail Mold: \$5,623.60 | \$3.27 /part |
| Total costing with tooling and parts: | \$21,551.42 |
| Total parts costing: | \$14.17 |

Manufacturing Cost: \$5.00

Material Cost: \$23.00

Labor Cost: \$8.40

Total Parts Cost: \$14.17

Factory Cost (FC): \$50.57

The Shipping Rate: 3,000 stores/online stores x 15: 45,000 products / \$3,500 = \$0.08

Tariff Cost: \$6.50

Customs Brokerage Fee / Commercial Insurance / Warehouse Fee / EDI Processing Fee: \$3.30

Landing Cost: \$9.88

Manufacturer Retail Cost: \$60.45

Wholesale: \$90.66

The wholesale price is very high, but with further manufacturing and material research with an official company will help find the lowest price for materials to lower the manufacturer retail cost & wholesale.

Online Resource Links

These are all the links used for research.

<https://smallbusiness.chron.com/industry-analysis-toys-77091.html>

<https://www.statista.com/topics/1484/families/>

<http://theguidefortoys.com/Blogs1/How-To-Clean-Bath-Toys.htm>

<https://www.engineersrule.com/lip-groove-design-made-easy-solidworks/>

https://www.adafruit.com/product/1905?gclid=Cj0KCQiAnL7yBRD3ARIsAJp_oLZpX-UygHWY7doPKbmoUJmynQ-UG6h5oCjOzJJxj7QfYYi73wWzgSRQaAoIDEALw_wcB

<https://www.naeyc.org/resources/topics/play/toys>

<https://funmontessoritoys.com/blogs/stories/5-reasons-animal-figurines-play-is-beneficial-for-a-child>

<https://www.creativechild.com/articles/view/5-educational-benefits-of-stuffed-animal-toys>

<https://www.healthychildren.org/English/ages-stages/toddler/toilet-training/Pages/Emotional-Issues-and-Bathroom-Problems.aspx>

<https://www.psychologytoday.com/us/blog/school-thought/201502/study-finds-habits-in-children-take-root-age-9>

<https://centerforparentingeducation.org/library-of-articles/child-development/child-development-by-age/>

<https://raisingchildren.net.au/school-age/development/development-tracker/5-6-years>

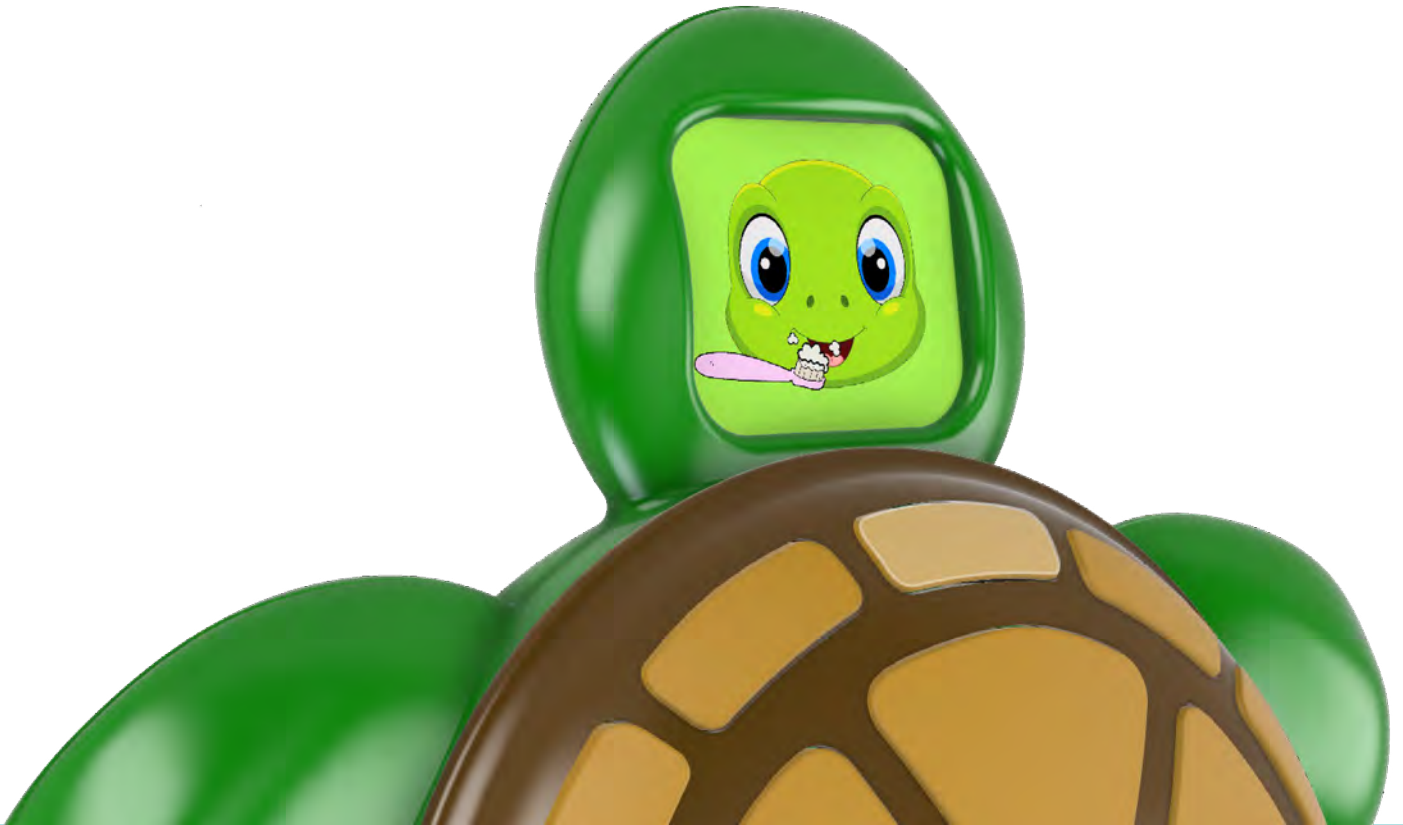
<https://kidshealth.org/en/parents/discipline.html>

<https://www.target.com/p/kenson-parenting-solutions-i-can-do-it-reward-chart/-/A-51467493>

https://www.amazon.com/Brush-Your-Teeth-Reminder-Sign/dp/B075Q61FG1/ref=sr_1_1?keywords=bathroom+hygiene+chart&qid=1569195513&s=books&sr=1-1-catcorr

https://www.crateandbarrel.com/gobs-of-jobs-activity-chart/s502554?localedetail=US&a=1552&campaignid=1818350877&adgroupid=70975511953&targetid=pla-305912429715&pla_sku=502554&pcat=HSW&ag=baby&scid=scplp502554&sc_intid=502554&gclid=Cj0KCQjw5zsBRD8ARIsAJfI4Bi6So0FwCHUfO8ktT3rCacmrz4AqYQLTmAwqzbLfwS-JXUVwWJayQ0aApX4EALw_wcB

<https://www.amazon.com/Kids-Reward-Chart-Behavioral-Tasks/dp/B01MRLINN5>



TASK TURTLE



