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Encouraging Children to Actively Recycle: A mobile application to promote recycling in the Dominican Republic

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A mobile application to promote recycling in the Dominican Republic

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A Thesis Submitted in Partial Fulfillment of the Requirements
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Abstract

The Dominican Republic generates 14,000 tons of solid waste daily, 49% of this is recyclable, but only 5% is. This waste is causing health problems, affecting the tourism industry, and the quality of life of its residents. Problems of confusion, lack of motivation, and lack of prioritization of the activity, affect the decision-making process when recycling.

What if there was a way to motivate the Dominican population to recycle, and change the behavior towards this activity? Children learn new behaviors faster than adults. Why not use this opportunity to incorporate the engaging factor of design and technology to help improve the motivation level of the Dominican society, with the help of children as the promoters of good recycling habits?

To educate, motivate, and engage children and adults to actively recycle, a mobile application can be used throughout the country to raise recycling awareness memorably. This thesis explores behavioral design methods and the use of gamification and Augmented Reality to engage children with the application. The solution rewards real-world recycling actions and allows children to transform recycled materials into energy for virtual robots.

The application provides tips on how to separate and dispose of scanned materials. Users can share their knowledge with other children and adults, which can result in hopes of building a virtual recycling community. When using the application, children will be able to make recycling a habit, by implementing their learnings from interacting with the platform and integrate recycling into their life and its value to become a lifelong habit.

The final solution highlights the primary interactions of the mobile application in a demo format, built based off of feedback from primary user groups and design peers. This prototype demonstrates how design can be used to best leverage the full capabilities of mobile technology to affect real-world change.

Keywords

Behavioral design, mobile application, gamification, augmented reality, interaction design, design for children, recycling.

Introduction

Problem Statement

The Dominican Republic generates 14,000 tons of solid waste daily. Imagine filling up 400 long-haul garbage trucks every day, where 49% of its content can be recycled, but only 5% actually is (Checo 2016). The overwhelming amount of accumulated solid waste is affecting tourism, one of the most significant economic activities in the Dominican Republic, and it is becoming the leading cause of disease spreads (Sánchez 2017).

Even though knowledge in this matter and the infrastructure necessary to recycle are available to the public, people are still not motivated to make recycling a habit. Most malls and schools have included recycling stations at their facilities. However, because of the lack of interest and self-determination of the population, they end up filled with mixed trash, which later on, slows down the process at the recycling plants.

Studies and surveys on the psychology of why people do not recycle, state that the main three reasons for not doing the activity are: confusion, lack of motivation, and low prioritization of the activity (Schumaker 2016).

In hopes to solve this problem, I asked myself the following questions:

- How can digital interactions motivate to actively recycle in the Dominican Republic?
- How to change behavior and successfully create habits with interactive experiences?

Thesis Statement

This thesis aims to best leverage the full capabilities of mobile technology to change real-world behavior and address problems of confusion, motivation, and prioritization by using engaging visuals and interactions to educate, engage and show the impact of recycling actions in the real world.

Context

In the Dominican Republic, campaigns focused on promoting recycling, and environmental awareness have been implemented on multiple occasions in the past. Even though these campaigns have started to scratch the surface of recycling education and infrastructure for recycling is available to the public, the Dominican society is recycling only 5% instead of the 49% of recyclable materials (Checo 2016).

The Dominican government understands that there is an issue and has begun to address the situation. In 2017, the Dominican government started a campaign called Dominicana Limpia. It focused its efforts on bringing environmental awareness to kids and adults throughout the country by providing educational resources. In 2018 however, the plastic waste production got even higher and drew the attention of the international press. Coasts were seen filled with solid waste, in its majority, plastic bottles. The tap water in the Dominican Republic is not safe to drink, hence the majority of the water and beverages that people consume every day, come in plastic bottles.

If we could apply the engaging factor of technology to motivate kids and adults to be aware of benefits and consequences, by not only providing educational content but also engaging them, solid waste recycling numbers could have a positive impact.

Why do people not recycle?

This question drove the initial research efforts for this thesis. It is understandable that if the infrastructure is not available, it makes the whole recycling activity more difficult. However, if the infrastructure is present, and people have the basic knowledge of recycling benefits, why do people still not recycle?

Confusion and bias

People feel confused when it comes to recycling, the knowledge of what can be recycled or not affects user's recycling decisions. In England, for example, seven out of ten consumers admit being unsure about which plastic can be recycled (Dorking 2019). Another study states that 50% of its participants prefer to discard a recyclable material if they are unsure it is recyclable or not (Schumaker 2016).

Psychological behaviors govern the recycling activity; humans feel judged when recycling and are feel socially pressured to make the right decision when recycling (Mavropoulos 2009). It has also been found that humans are biased on how they recycle certain materials. A study made by an Associate Professor of Boston University, states that a person is more likely to recycle items that are directly linked to their identities like their name correctly written on a coffee cup or a flag than those that do not (Trudel 2016).

Low prioritization of the activity

Experts say that some people still think recycling does not make a difference (Schumaker 2016). That is an indicator that there is not a direct connection between communities and recycling benefits. It is necessary to show users that individual and group efforts are equally essential to impact their community positively to successfully create a recycling habit.

Lack of motivation

Recycling is a habit, and habits need triggers and rewards. If there are no immediate rewards for doing an activity, people are less likely to do it. (Eyal 2014). The lack of interest to recycle expands beyond third world countries. In the US, for example, where recycling is advanced, studies state that humans have to be genuinely motivated to do an activity that does not provide immediate rewards or have direct consequences (Schumaker 2016).

The recycling activity is not something that can be incorporated into people's lives from one day to the other. It is a habit, and it has to become part of a person's life gradually. In order to understand habits, I conducted secondary research focused on how to create habits and the psychology behind it.

The psychology of habit creation

A professor from Carnegie Mellon's Entertainment Technology Center dedicated to the study of the psychology of play, states how humans feel more in control when situations are perceived as 'wannas' instead of 'haftas' (Schell 2013). When activities feel more pleasurable, they can have better adoption in habit creation than those that are forced to the users.

There are three key components when it comes to change or create new habits: motivation, the willingness to do something, ability, the capability to perform, and trigger, the call to action. To connect with human behavior, we need to combine encouragement, social competition, and collaboration with effective loops (Fogg n.d).

Some approaches that are commonly used to trigger users into doing an activity are: appealing directly by incorporating social triggers, the use of gamification by providing rewards and data visualization, and engaging users across multiple interfaces and devices with multimodal design (Eyal 2014).

The audience

Children can learn new behaviors faster than adults, and their level of acceptance towards new habits is higher. Utilizing this ability to create new behaviors can have a more significant impact than targeting only adults. The 'Dominicana Limpia' environmental campaign, for example, focused most of its efforts on educating children in the classrooms. So, why not use this channel to bring a product that could make the experience more rewarding and fun for children.

Children are curious and very persistent when they are interested in a game or activity. Children in the concrete operations stage (from 7 to 11 years old) are starting to establish their personal culture and understanding of others. They enjoy making friends and imitating others' actions at school. (Weisz 2018). Children in this age group are also exposed to recyclable materials and smartphones, have better reading comprehension, and start to develop complex strategies to solve problems. They can serve as the perfect link to educate adults and friends about recycling habits.

The solution

To educate, motivate, and show the impact of recycling efforts, this thesis leverages mobile technology to create habits, using Image Recognition, Augmented Reality, and social factors such as competition and gamification. The solution encompasses the following four main stages that link back to the main points of the problem statement:

Discover

Using Image Recognition technology, we can provide information about recyclable materials in real-time, and educate children by reducing confusion at the moment of disposing products. In the discovery phase, the solution raises awareness of the benefits and impact of individual efforts linked to a particular recyclable material. By allowing users to interact with the material in real-time, we are creating a connection between the real and the digital world.

Build

Children are already enjoying applications and games that focus on creation like Minecraft and Roblox. So, in order to leverage children’s interests, the solution includes creation tools that allow users to build and energize virtual robots with recyclable materials. The rationale behind this is to form an emotional connection with their creations, which can, later on, translate into a connection with the materials they recycle and become a motivator for doing the recycling activity.

Share

To engage children in an immersive and social level, the solution allows children to share robots with other friends by placing them in the “real world" with Augmented Reality. Other children can view and play with creations placed in specific locations around the city.

Reward

Currently, the action of recycling does not provide any immediate rewards or consequences. To create habits and change behaviors, the solution provides immediate rewards after every recycling action, along with long-term real-world prizes.

Design Process

The design process was internally divided into four stages: discover, define, ideate, and evaluate. Since the design process is naturally iterative, rounds of rapid prototyping and quick evaluations happened during the ideation phase.

Research and Comparative Examples

The first stage of the design process primarily focused on research about solutions that provide recycling information in engaging ways. I looked at interactive examples that used technology to educate users with collaboration or rewards. The Solid Waste Authority (SWA) in Palm Beach County, for example, does a great job of using interactive screens to show how their waste process works. They use a suite of games and videos to translate the recycling process into real-life situations. The visitors are challenged to become better citizens with the help of other kids and adults in the room. This example stood out for me and opened the door to think of recycling as a collaborative activity that can be enjoyed by adults and kids all together.

Other examples of interactive solutions for children, such as the National Geographic Kids website ‘Recycle Roundup,’ ‘Super Sorter,’ and ‘Life of a Can,’ all do an excellent job at showing differences between recyclable materials. However, none focused their attention on how to incorporate social factors to adopt a long-term habit. This seemed to be a gap in the market that could be fulfilled with my solution.

I also took a look at the advertising industry and what was done around recycling. Advertising, in general, prioritizes disruption and significant social impact. It was great to see examples like the Canadian Beverage Container Recycling Association's mobile app. It uses Augmented Reality and digital rewards to increase the likelihood of recycling, converting the recycling activity into a Pokémon Go-inspired game.

A more traditional advertising campaign like the Coca Cola #HappinessRecycled campaign during the Rugby World Cup of 2015, encouraged consumers to participate in the ‘Batak’ challenge. A recycling-related quiz game that encouraged participants to maintain sustainable practices at home in a memorable way.

Seeing these examples helped build a good sense of the use of games to engage consumers with different techniques. The main key takeaway of this analysis is that there is a gap in the market for digital solutions that are both educational and engaging. Most of the existing solutions do a great job at providing educational content but leave behind social aspects, as well as the connection with the real-

world activity, which are essential factors in the creation of a habit. On the other hand, advertising campaigns do a great job at engaging and making activities memorable but lack more robust educational content. I considered the idea of combining these two aspects to fill the market gap.

Children interests

To understand what kind of apps and games children prefer, I looked at the most popular games that children within the selected target audience use. Hundreds of millions of users utilize creation games like Minecraft and Roblox, most of them children. I talked with users of these games in the Dominican Republic, and asked about some of the reasons behind their usage. These children were clearly motivated by the freedom of creation that these types of games provided, along with the sharing features and social interactions that allow other friends to see what they have created.

Competitive behavior and recycling considerations

Some initial ideas for this project were focused on how to use competitivity as the main motivator for recycling actions. However, after analyzing the situation, receiving feedback, and doing secondary research, I understood that even though competitivity is necessary to motivate, it should not be the primary focus of the project. Studies show that competitiveness can increment the solid waste creation instead of reducing it (Trudel 2016). Encouraging the recycling activity in some ways could be counterproductive and could increase the likeliness of consumption (Catlin and Wang 2012).

Considering these challenges helped the project evolve from being a competition-based application into a more collaborative experience focused on creation and sharing rather than pure competition.

Defining Personas and Use Cases

To have a high-level understanding of who were the end-users of the application, and how to respond to their needs, I created three personas based on internal empathy map exercises. These reflected the primary and secondary audience main motivators, levels of technology usage, and recycling experience.

The primary target audience for the application are children between the ages of 7 to 11 years old with access to a smartphone. Their recycling experience is moderated and have learned about the recycling basics at school. Users like José use their phones mostly to play games or chat with friends on social media (Figure 1).

Younger children and parents compose the secondary target audience (Figure 2). Children like Julissa have less recycling experience but are exposed to technology because they play games on their parents'

devices. Parents like Julia are the decision-makers, they allow their younger children to play games on their phone, but control and download the apps that they use.

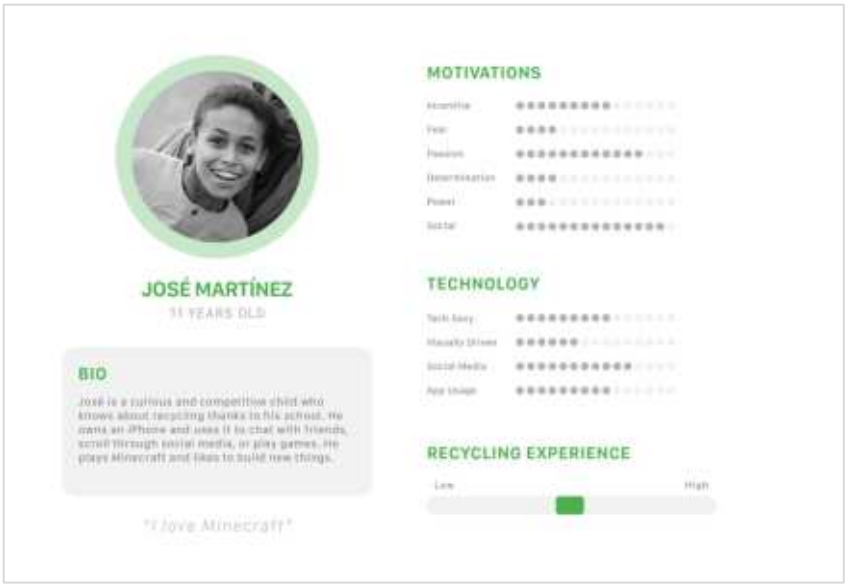

Figure 1. Primary Persona. (Image Source: Pexels, Pexels.com).

Figure 2. Secondary Personas. (Image Sources: Pixabay. Pixabay.com)

I created a high-level use case (Figure 3) reflecting the initial concept of a mobile application that rewards real-world recycling actions and allows the creation of virtual robots. The use case is portrayed as a day to day scenario for the primary persona and was built to address the following inquiries:

- How to avoid confusion at the moment of recycling an item?
- How to retain usage with creative tools and gamification?
- How to maintain users engaged with the mobile experience?
- How to show the impact of recycling efforts?

Figure 3. Updated use case responding to competitive behavior downsides and primary inquiries.

Design Ideation and Explorations

Using the previous use case, I created paper prototypes to get early reactions of navigation and flow. The feedback received helped mold the thinking behind the final navigation and interaction model.

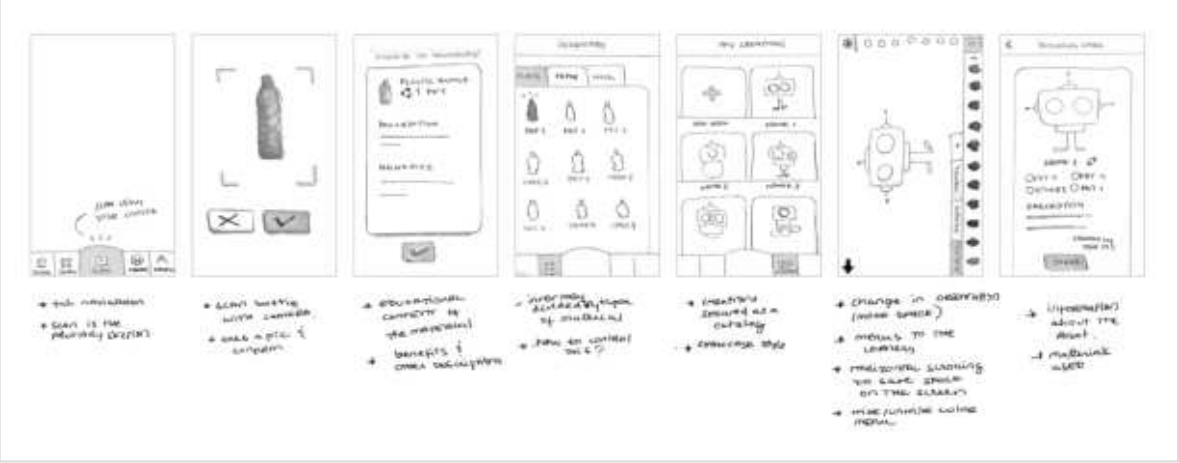

Figure 4. Paper prototypes of the initial approach.

The approach's objective is to educate, motivate, and engage with creation tools, rewards, and social triggers. The mobile application concept allowed users to discover and learn about recyclable materials, scan real-life bottles to transform them into energy bottles, build and customize virtual robots, share creations with friends, and receive virtual rewards with recycling actions.

The Radar: Providing real-time benefits to drive decisions.

The Radar section's goal is to educate about recycling benefits and serve as a decision-making tool at the moment of recycling. The Radar uses Image Recognition and Augmented Reality to scan bottles and show real-time information about a bottle before recycling (Figure 5). I decided to make the Radar section the landing screen of the application to provide instant access to scanning and the identification of the materials.

Solving for multiple scans

In the Dominican Republic, the convention is to collect recyclables and bring them to recycling centers, malls, or schools. An everyday use case for this is to have multiple bottles in a queue to scan. The initial approach for the Radar interaction (Figure 4) required to take a photo to see an educational card about the material. That concept did not exploit the full capabilities of AR nor allowed for faster scanning. Keeping this in mind, I evolved the concept to show information on top of the physical bottle. Also, I included a bottle counter to indicate the ability to scan multiple bottles in one session (Figure 5).

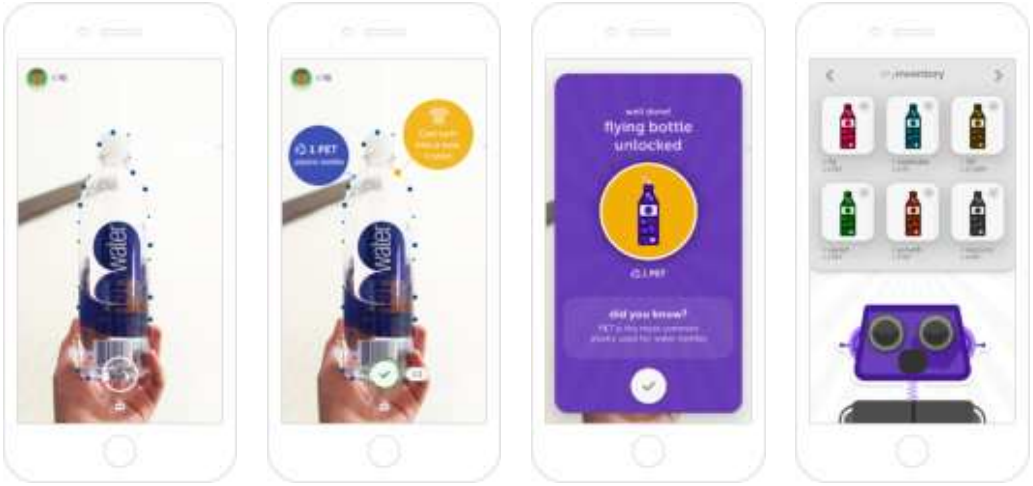

Figure 5. Evolved concept of Radar interaction. Real-time benefits are shown on top of the physical bottle. Initial examples of immediate rewards and energy bottles inventory drawer.

Maintaining interest with rewards

Since the recycling activity does not offer any instant gratification, I decided to provide virtual rewards with each scan of a bottle to build a habit. The rewards are different with every scan, ranging from building parts to energy bottles (Figure 5), with the hopes of driving users' curiosity to use the application every time they have to recycle an item. This technic of keeping rewards as a surprise is commonly used to maintain the interest of collectible toys for children.

To reassure that children are near a recycling bin when scanning, I introduced the idea of having QR codes on the recycle containers. In order to successfully receive a virtual reward, the user has to scan a recycling bin after the bottles to confirm the recycling action.

Energy levels as an emotional trigger

I introduced the concept of energy levels for the robots built in the app, creating a need to energize the robots in order to play with them. To keep the robots energized, users have to feed them energy bottles that they receive when scanning real-life bottles (Figure 5).

The Rebotts Lab: Leveraging creation tools to inspire and engage

Children are currently engaged with digital solutions that allow them to make and share creations with friends. In hopes of retaining children engagement with the app and appeal to their interests, I decided to use a robot lab thematic and created the Rebotts Lab section. In this section, users can build and manage their virtual robots called Rebotts. These robots are created with the parts they unlock with their Radars.

In the Rebotts Lab, users can mix and match parts, change colors, and add their own textures to make each creation unique. (Figure 6).

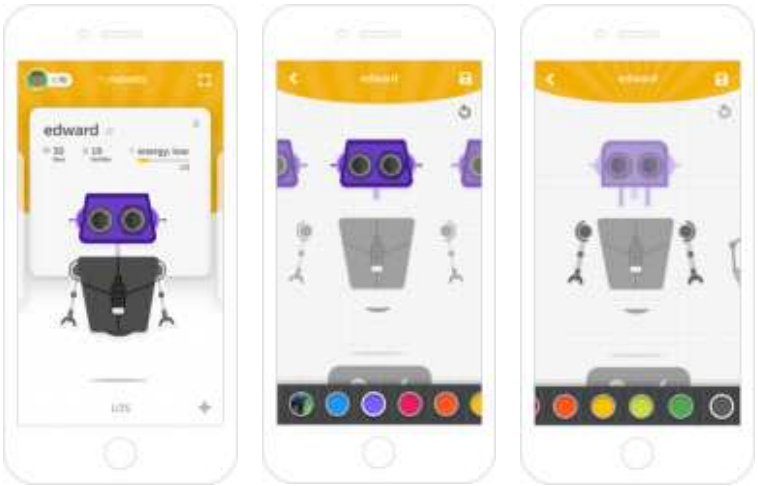

Figure 6. Rebotts Lab. Building a Rebott with horizontal carousel interaction.

Balancing customization and functionality

One of the challenges of this project was to find the right balance between what the user could and could not customize. I explored multiple design patterns to build a Rebott within the app. The following three concepts are the ones that stood out the most:

1. Build Rebott from scratch. Edit parts one by one.
2. Build Rebott from scratch. Zoom in and out to edit parts separately.
3. Build Rebott from given parts. Horizontal carousel to edit all parts on the same screen.

I roughly tested physical mockups of these concepts with other design students to receive quick feedback. From this, I learned that the interaction of separately editing the Rebotts parts felt cumbersome because the users had to go back and forth in order to complete the building process. In contrast, the horizontal carousel made more sense to users since all the edits were made on the same screen.

The zooming in and out option was challenging because of the high cognitive load from all the menus and visual elements that it required. Typically, creation game patterns are designed for large form factors like tablets, computers, or consoles. However, one of the goals of the Rebotts app was for it to be mobile and accessible outside the house to scan and get rewards at any time. To accomplish this requirement, the intended form factor for the app is a smartphone; this limited the real state for menus at the moment of editing Rebotts.

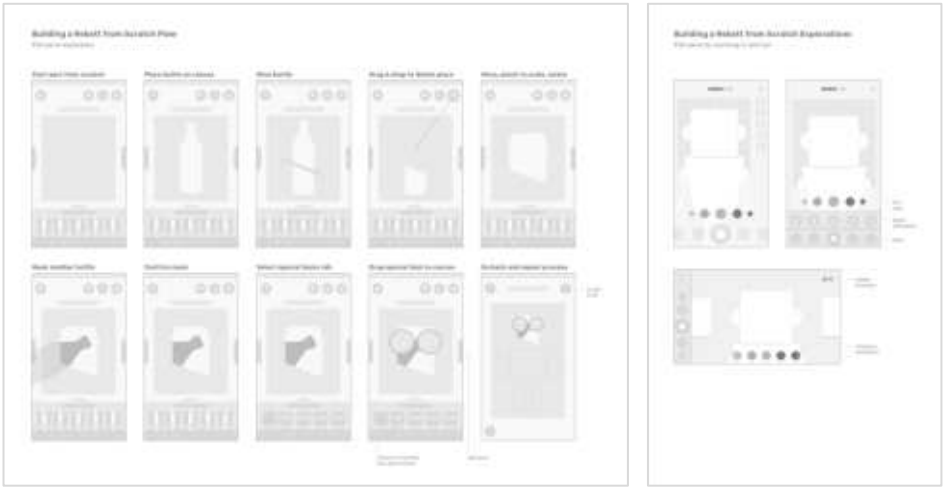

Figure 7. Wireframes of concept one and two. High cognitive load and several steps were required for these concepts.

Making parts from scratch in the app, also created a complicated system that could become frustrating to use for the selected target audience because of all the steps that it required, the interaction needed to be more straightforward.

Keeping feedback and form factor considerations in mind, I decided to select the horizontal carousel interaction for building a Rebott. It allowed users to see the overall look of the Rebott right away and provided the ability to combine parts, colors, and textures in a much simpler way.

Using Augmented Reality as a social trigger

Children in the operations stage (7 to 11 years old) are starting to understand the concept of others and act like their peers. To leverage this behavior, I included social triggers within the app to increase usage and engagement.

Using Augmented Reality and Geotagging technology, children can pin their Rebotts in the AR environment with their cameras. Other users then, can find and interact with the Rebotts pinned in AR. To pin a Rebott in the AR environment, the user can drag the desired Rebott to the top of the screen from the Rebotts Lab. When the user drags it up, the UI changes to indicate that releasing the Rebott will pin it in the AR environment for others to find.

When placing an element in AR, visual cues are required to indicate that the system is scanning the environment and finding a surface to place the Rebott, I included this as well as part of the initial prototypes (Figure 8).

The initial approach for the AR experience included the idea of helping the Rebotts declutter their virtual space. This concept evolved later on after evaluating the solution.

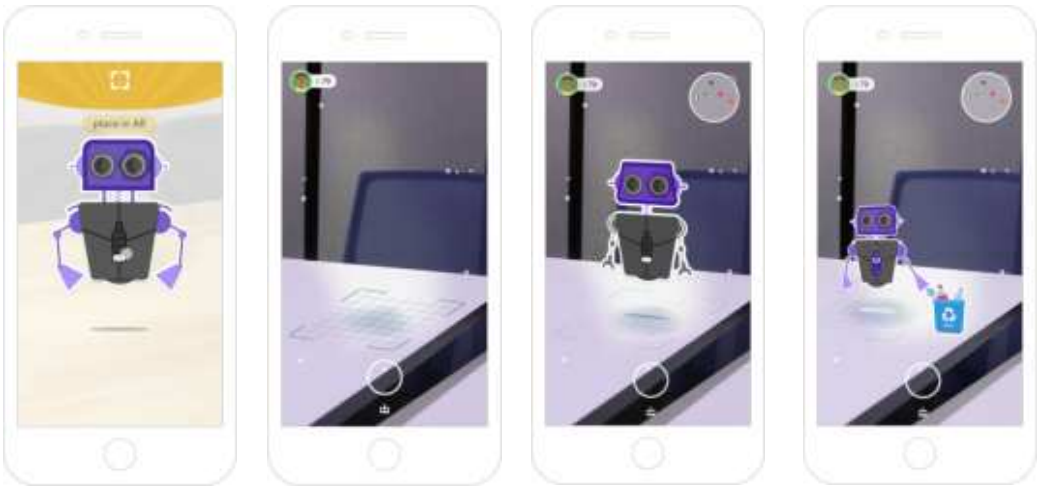

Figure 8. Placing Rebott in AR environment exploration.

MyCity: Creating awareness with a virtual community

To show users' impact and help them understand the value of their recycling efforts, I included the 'MyCity' view on the profile section. This view allows children to see friends' progress and conceptually link their individual and group efforts. In this section, users can also access their settings, profile information, energy bottle count, Rebotts count, list of their friends, and prize progress.

The MyCity view concept evolved later on to rafter evaluating the solution to reflect the user's progress in a better way.

Figure 9. Profile section explorations.

Using Rebotts as navigation controls

The way children interact with a mobile experience is different from adults. Children are curious and love to explore. When they interact with a new interface, their typical behavior is to touch everything on the screen to discover what the interface elements do. When designing for children, motion and affordances play a significant role in showing functionality and navigation. (Gibson et al. 2016).

In order to leverage children's exploring behavior, the interaction model for the Rebotts app is based on making the Rebotts the protagonists of the overall experience. Using them as navigation controls by dragging the character to trigger different actions that are directly related to the Rebott, like feeding energy bottles or placing them in AR (Figure 10).

Since the dragging gesture is not discoverable right away, it requires onboarding to notice the interaction. I used the character's eyes to hint functionality and ability to drag up or down.

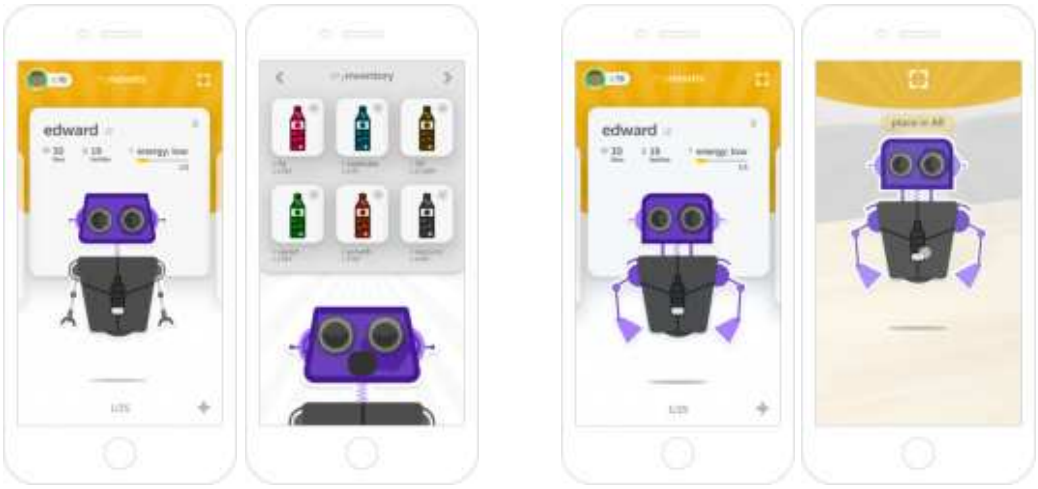

Figure 10. Drag down to open the energy bottle inventory or drag up to place in the AR environment.

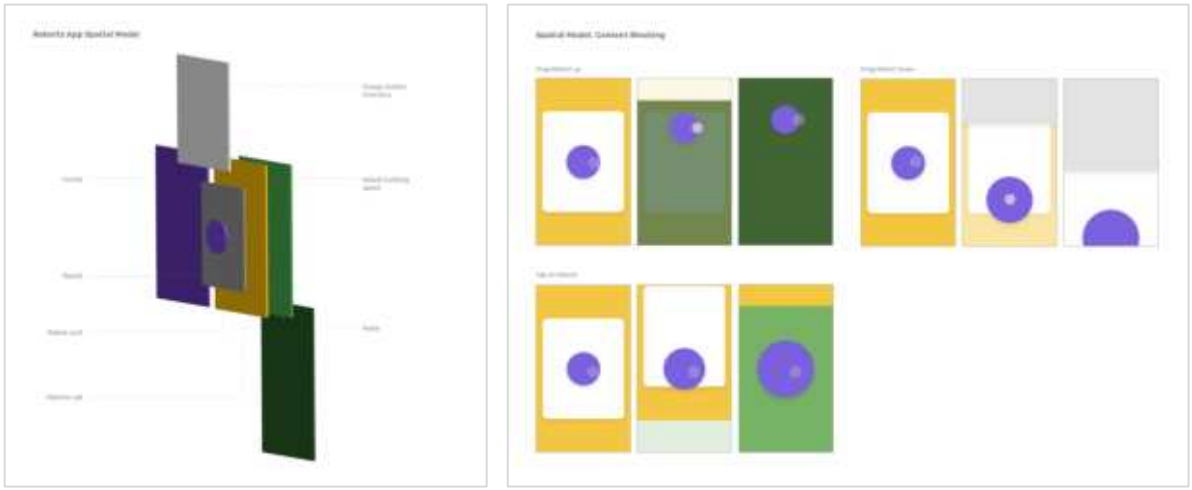

Figure 11. Rebotts app spatial model diagram and content blocking of the spatial model. The action of dragging the Rebott down pulls down the inventory of energy bottles. Dragging the Rebott up pulls the radar to place the Rebott in the AR environment. Tapping on the Rebott enters the building mode.

Validating the solution

I exposed the solution in a website format to parents, children, and students at the Imagine RIT event of 2018. The overall result from that experience is that the visual style was greatly accepted by the children and parents as well as the customization section. The app concept was presented to 15 children between the ages of 6 to 13 years old, nine girls, and six boys. 13 out of 15 children smiled and were surprised

about the customization of the Rebotts; they liked the idea of being part of the creation of the characters in the app. A 12-year-old girl mentioned that building her own characters would motivate usage and keep kids hooked. She would have preferred to build any type of character, not only robots. 2 of the parents mentioned that their kids do not have phones yet, but they own a tablet and have access to their smartphone. A 10-year-old child loved the overall look of the Rebotts and wanted to use the app right away. Parents overall understood the primary goal of the application and positively said they could download the app for their kids.

Other feedback received from faculty and other design masters students at the Thesis Showcase of 2018 was focused on pushing the recycling messaging and how to avoid overproducing waste to earn real-life prizes.

Presenting the project at these events was a great way to expose the overall concept to primary and secondary target audiences.

Figure 12. Explaining the solution to a design graduate student at the Thesis Showcase event of 2018.

Results

After hearing feedback at Imagine RIT from potential users and design peers, I decided to make some adjustments to the UI and polish the AR interaction. The final flow of the application shows more emphasis on the educational content provided on the AR experience to push the recycling messaging in all sections. In addition, the points system was added to the AR experience to alleviate the need of recycling and overproducing waste to get more real-life prizes.

Final scenarios

In the final iteration, the Radar section included the location of recycling bins nearby. The counter interaction evolved to be more of a switch interaction between bottles and bins to allow users for faster multiple scanning. A loading animation was added to the prototype to include a branding moment and excitement before receiving the virtual reward.

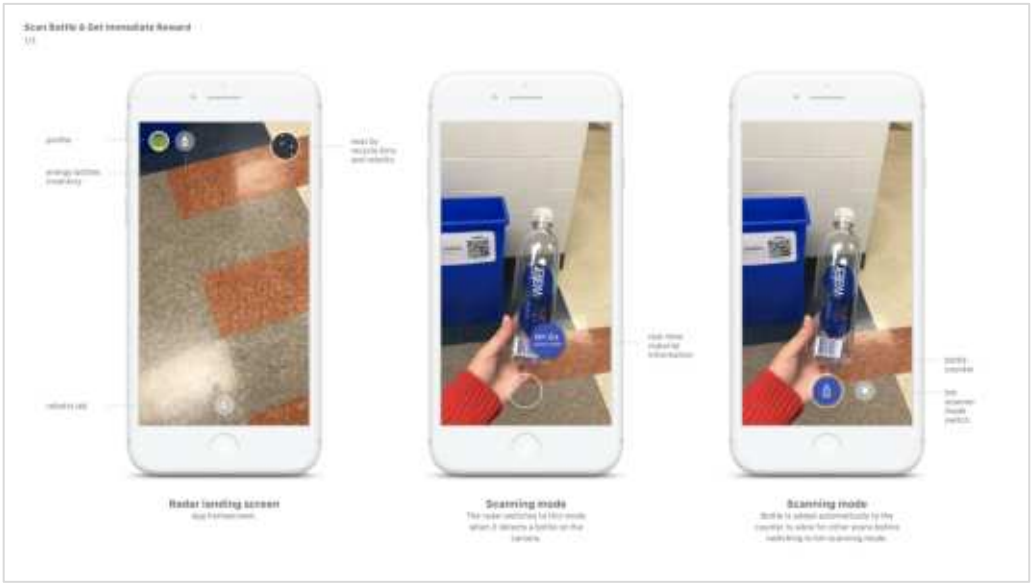

Figure 13. Scan Bottle & Get Immediate Reward 1 of 3.

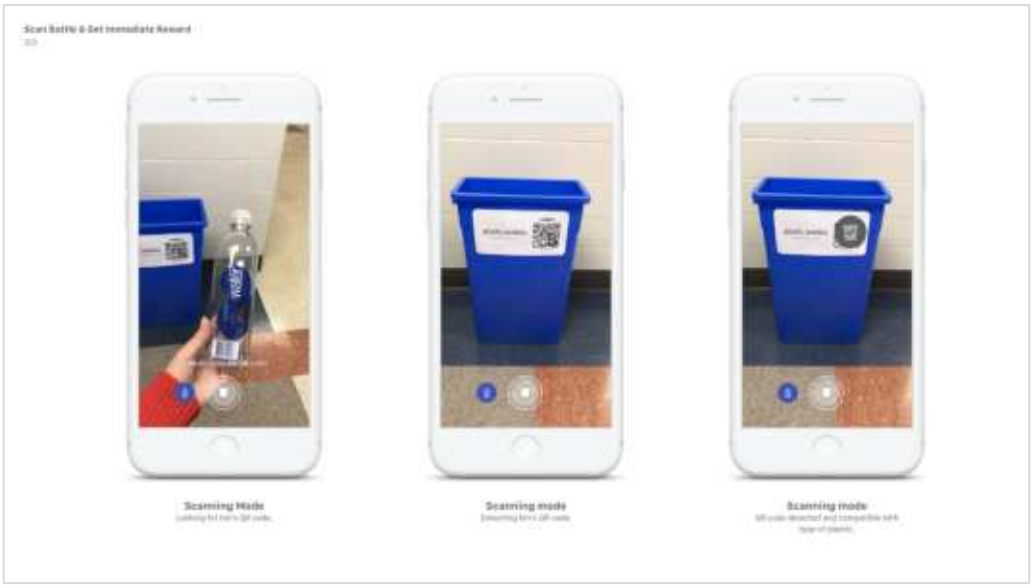

Figure 14. Scan Bottle & Get Immediate Reward 2 of 3.

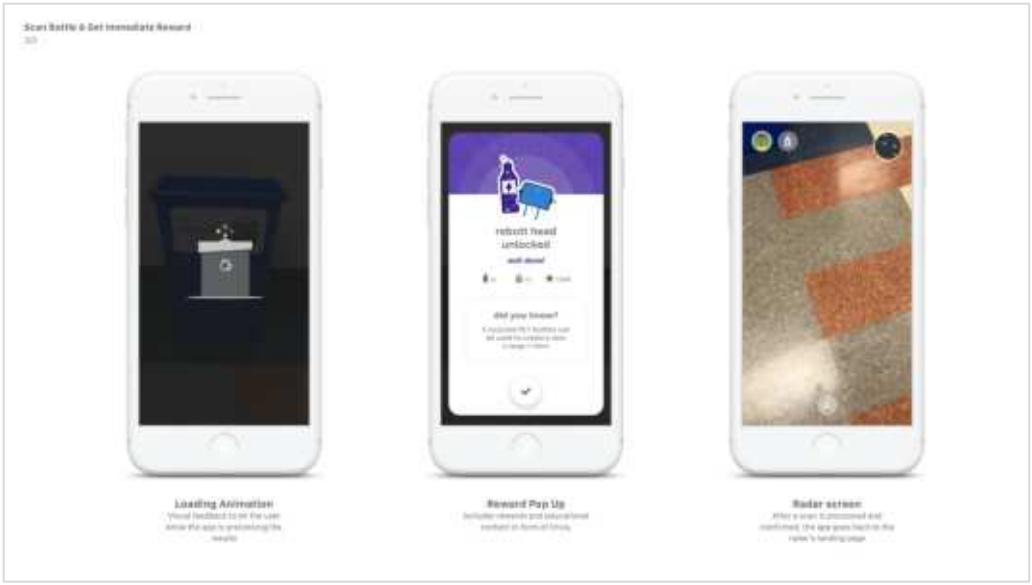

Figure 15. Scan Bottle & Get Immediate Reward 3 of 3.

The Rebotts Lab had minor UI changes to make the app visually consistent throughout. In this final iteration, the Rebotts look visually tired or distressed if they have low energy levels and look happier if their energy level is full. A visual element was also included on Rebotts torsos to show energy levels related to the colors of the energy bottles.

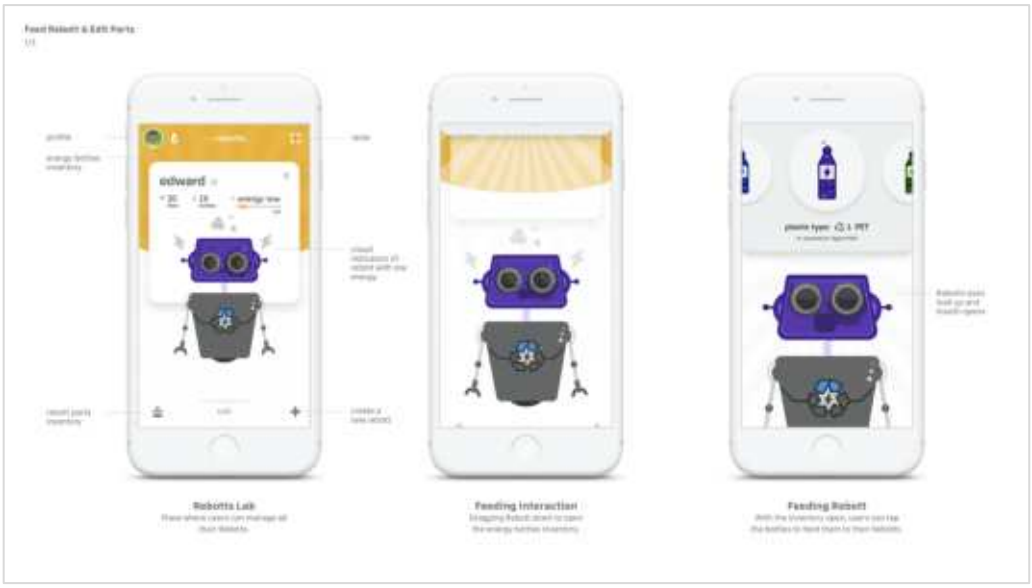

Figure 16. Feed Rebott & Edit Parts 1 of 3.

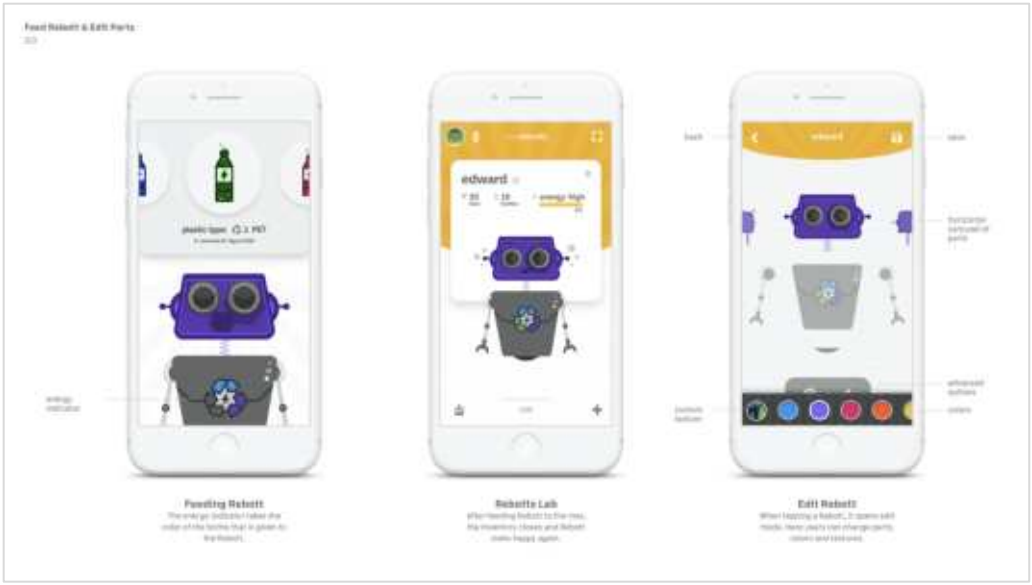

Figure 17. Feed Rebott & Edit Parts 2 of 3.

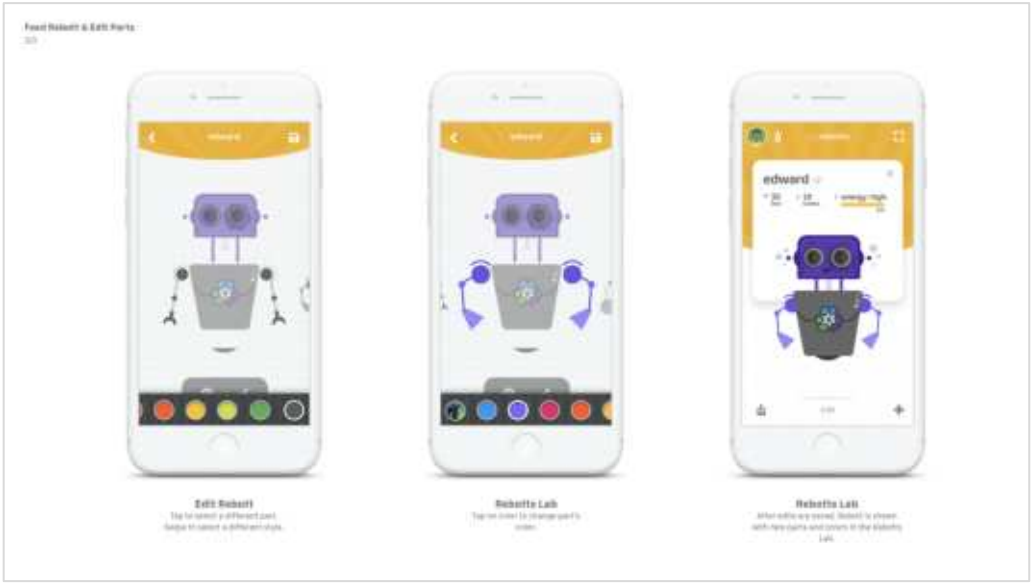

Figure 18. Feed Rebott & Edit Parts 3 of 3.

A mini game was added to the AR experience focused on sorting materials to reinforce the recycling messaging. Placing the Rebott interaction was also polished to show better transitions between the 2D and 3D environments. Points were included as rewards after finishing playing with other Rebotts to reinforce the real-prizes model and steer away from depending only on scanning bottles and overproducing waste to get real-world prizes.

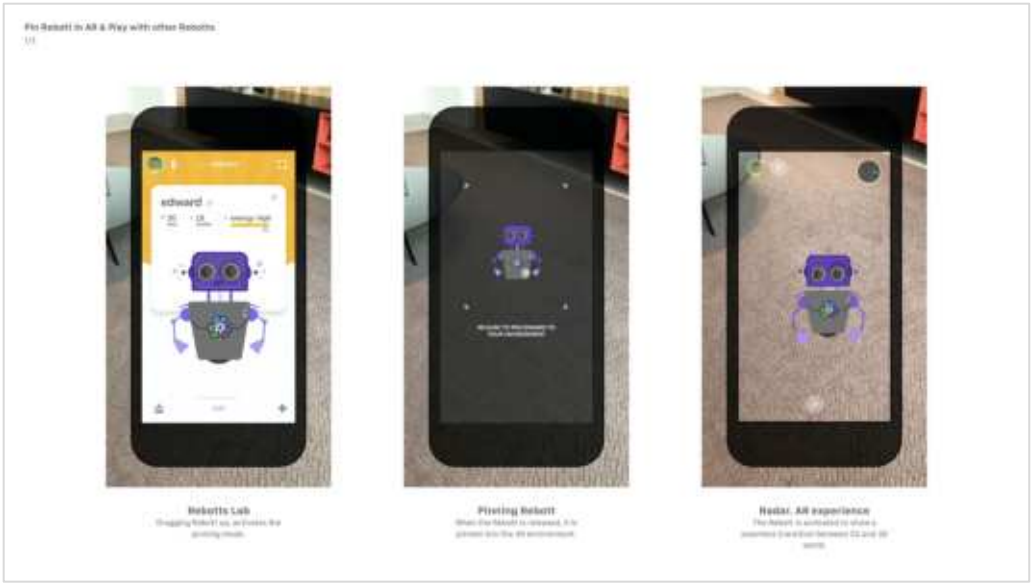

Figure 19. Pin Rebott in AR & Play with other Rebotts 1 of 3.

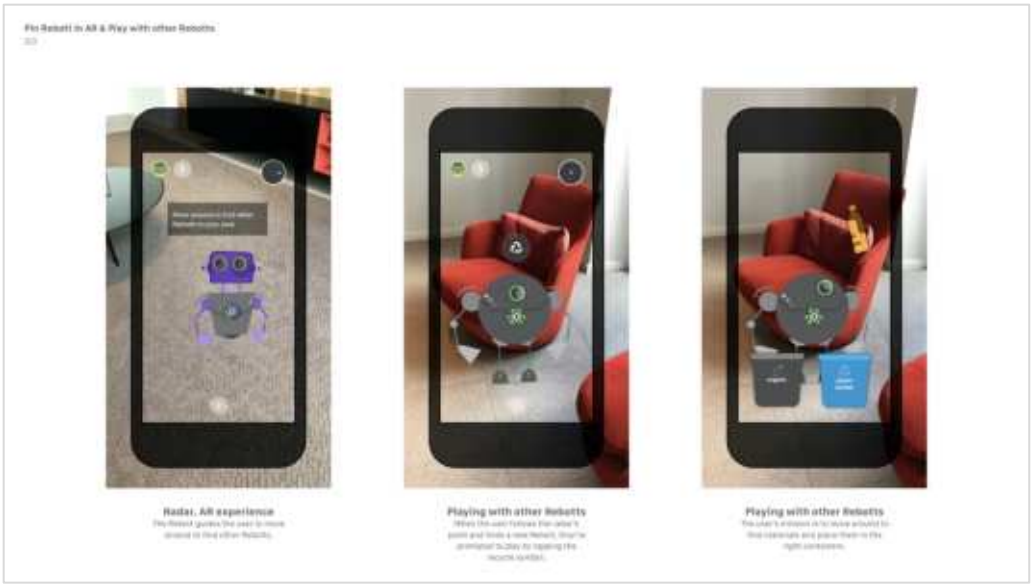

Figure 20. Pin Rebott in AR & Play with other Rebotts 2 of 3.

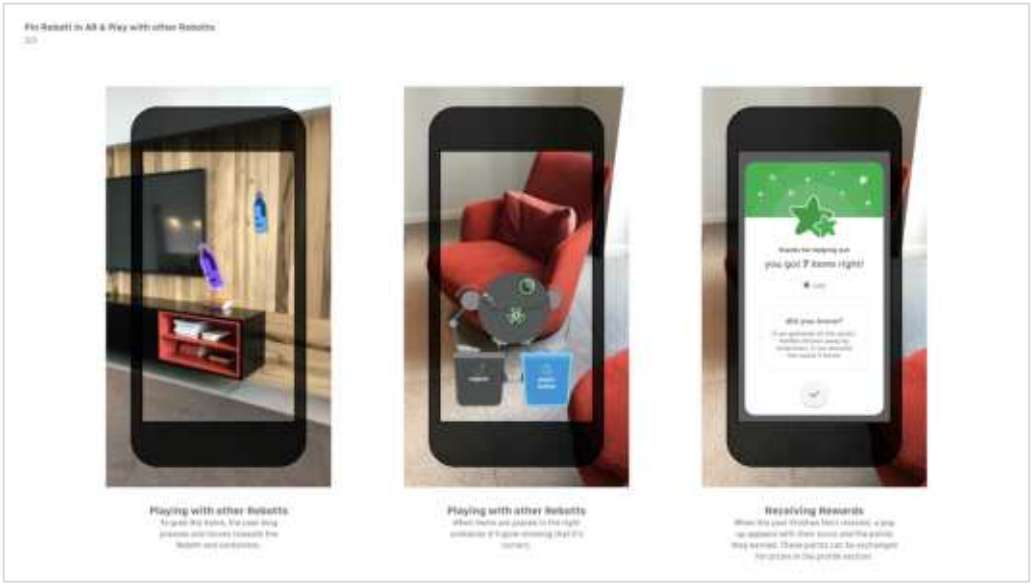

Figure 21. Pin Rebott in AR & Play with other Rebotts 3 of 3.

The profile section changed to provide better visualization of points progress and emphasize real-world prizes. The city illustration on this iteration shows progress in a radial bar that gets filled up with a green city and is updated once the user reaches a certain amount of points.

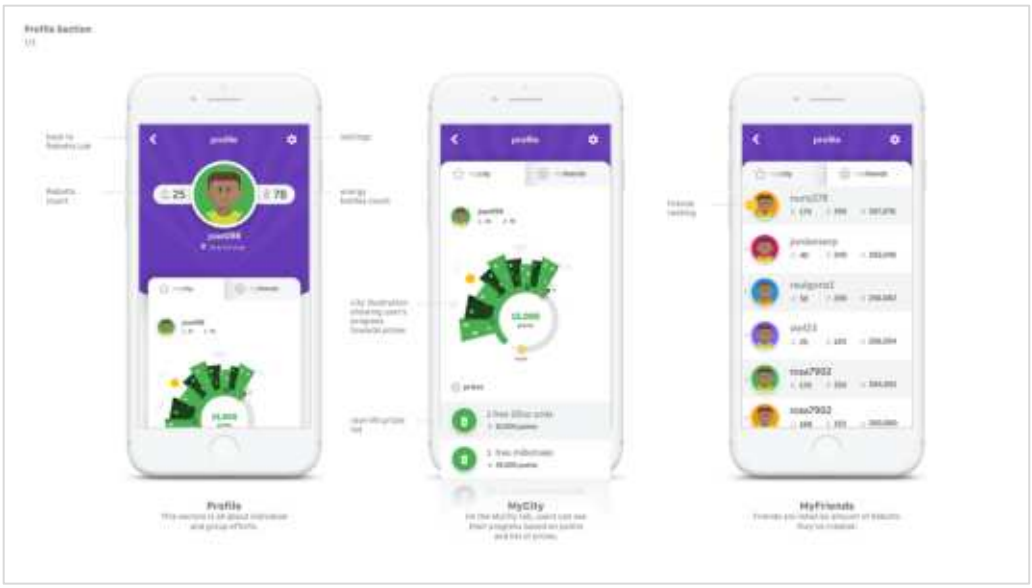

Figure 22. Profile Section 1 of 1.

Further Evaluations and Discussions

By providing immediate rewards, a connection between the real and digital world, and the inclusion of children in creative activities, we can create a long-lasting impression to create a habit. Further explorations include evaluating if, with this model, the user can be engaged for more than 21 days, a habit can be created, and the overall goal of the application would be fulfilled. By implementing this application successfully, we can demonstrate how mobile technology can change real-life behavior by educating and engaging children to make recycling actions.

Next steps

Seasonal bundles of parts and energy bottles can be launched in the future to maintain interest after using the application for a more extended period.

Image Recognition technology keeps evolving, and elements such as aluminum, glass, and paper can also be included as recycling items in the app. For this case study, only bottles were studied, but the system was created to be scalable and include other types of materials in the future.

Conclusions

Currently, recycling actions do not provide instant gratification and are harder to convert into habits because we do not see direct consequences linked to them. Current digital solutions and campaigns that try to raise awareness of recycling benefits, leave behind social factors and do no link the real-life activity to their experience.

This thesis followed an iterative design process and rapid prototyping techniques to address problems of confusion, lack of motivation, and lack of prioritization of the recycling activity. With a mobile application that uses engaging visuals and interactions to help educate, motivate, and show the impact of recycling efforts in a memorable way. This thesis had, as a result, a demo that highlights the primary interactions of the mobile application. The final solution provides real-time information to drive recycling decisions, maintains user's interest with rewards and real-life prizes after every recycling action. It leverages creation tools to engage the selected target audience, uses Augmented Reality as a social trigger, and creates awareness of individual and group efforts with a virtual community.

By leveraging the full capabilities of mobile technology and behavioral design methods, we can affect real-world behavior with the hopes of creating long-lasting habits that can positively affect recycling numbers in the Dominican Republic.

Source of Imagery

Figure 1. Boy photograph

Figure 2. Girl photograph

Figure 9 and 22. Boy illustration

iPhone mockup

Demos and Website Links

Demos

Scan Bottle & Get Immediate Reward Demo

Feed Rebott & Edit Parts Demo

Pin Rebott in AR & Play with other Rebotts Demo

Website

Website shown at Imagine RIT and Thesis Showcase Event of 2018

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