DIS STUDIO II PROJECT THREE

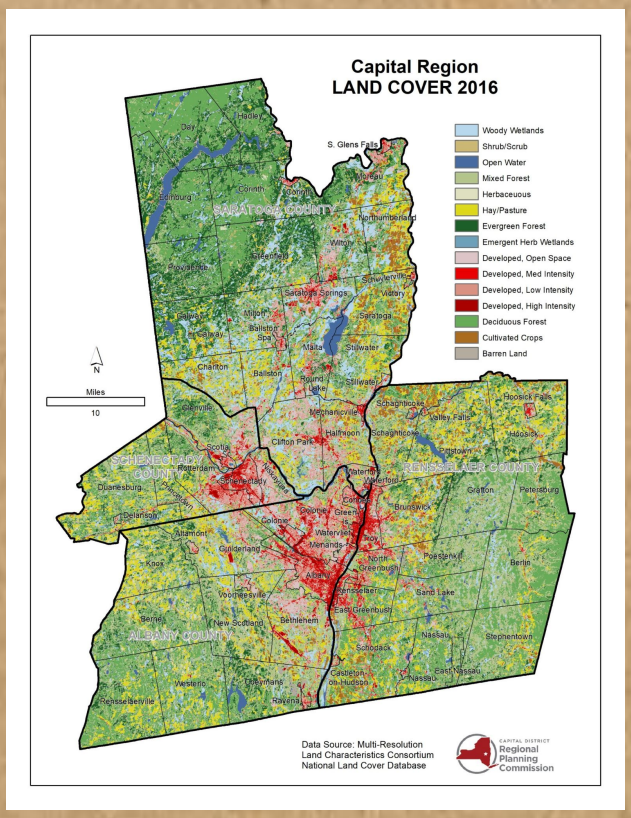
Bee & Bee

BEE HOTEL KIT

A bee hotel kit is made from all recycled materials, promoting and educating children and adults alike on the Capital District's native ecology and bee relationship.

Introduction

For this project chose to explore sustainable packaging and community interaction design through ecology and environmentalism. As we approached these unique areas of design we wanted to prioritize community engagement with native ecology and serve as an introductory resource for Capital Region families to introduce their children to the environment around them.



User Statement

The Bee & Bee is intended to teach people, mainly of ages 8 to 18 and all genders, native ecology and their relationship with bees. As the bee hotel kits are distributed in a classroom/home setting, income does not matter as much, assuming that the user has access to education and things that can be recycled or thrown out, as those can be components to make one's own bee hotel,showing that it is low tech. These include seeds, straws, and paper towel tubes, soup cans, or the like that would be able to hold the straws. The kit will not be made by users, so they do not need the materials to make the kit, but after the first bee hotel can make their own bee hotel. Since users would be given the Bee & Bee in a classroom, the minimum education level would have to be after kindergarten. It is assumed by then that they would have learned about bees assisting the pollination of flowers and other plants.

Physically the user would have to be able to tie a string around the bee hotel, lift the bee hotel, and tie the other end of the string onto a branch or a similar object. This would also imply that they could also need to be able to stretch and reach, as branches can be high and would mean that certain back or arm movements might be needed.

User Statement

The user group we targeted for the Bee & Bee consists of Troy's youth. This user group is largely made up of any adolescents in Troy, but ideally youth in Troy ages 8-18. Our goal with this user group is to introduce them to the values and ideals of environmentalism, sustainability, mutualism, and an overall connection to the natural environment around them.

Troy New York is a city situated on the Hudson River bed, in the capital region of New York. The city of Troy has a population of around 49,000 people and has a total of seven schools in its city's district. Troy features an interesting connection to the environment through community supported organizations. Through this project we partnered with Capital Native Plants, a plant store in Troy that specializes in selling native plants for landscaping and ecological restoration. For this project we used this organization as an environmental link into the community, as the founder and owner has many strong connections with both environmental organizations in Troy but also with youth programing in the area.

User Statement

For users of this project we targeted an Earth Day clean up event hosted at Frear Park in Troy. This event served as a goal location to distribute these kits to users as there would be many student environmental groups, community organizations, and other environmentally conscious individuals available to test and use this product.

While the application of this product can be widespread, the goal destination of its application would be either in public or private spaces, outdoors, 3ft off the ground, and near native flowers.

The bee hotels would interest people who have interests in the environment and conservation, as this involves bee conservation and indirectly flower and plant conservation as they are pollinators. This is also indirectly targeted to those who are not averse to bees, as the bee hotels would attract bees. Geographically, users would have to be in an area that has flowers or ground that could grow them, as bees are around flowers to pollinate them and thus would allow the bee hotel to come into use.

Research Plan

For our research plan, we formulated as a team a set of six questions we wanted to explore through our user testing sessions. We formulated our first question “How do people interact with this product and the idea of the concept as a whole?” to better understand if this product was even something that would be feasible or wanted by our users. To answer this question we made specific goals to discuss with users, with both the rough and detailed prototype, whether they could see themselves utilizing this product. For our second research question “How easy is this product to understand?” we had users perform an unguided walkthrough of the product and see if they could accomplish the construction of the Bee hotel on their own. The third question we asked through our research plan was “How easy would this product be to assemble?” we asked this question to understand if this product would be feasible for children to assemble potentially on their own. We aimed to test this through the same unguided product walkthrough, in order to get the est understanding of the ease of use the product delivers.

Research Plan

The fourth research question we asked “How much would this product cost to assemble?” we geared more internally at our own process, and explicitly towards our detailed prototype. Because we initially did not intend to charge for these kits, we wanted to stay as cost conscious and low as possible. We aimed to test this through an internal review and breakdown of our expenses after final prototype is complete. The fifth question we asked was “Did the user learn anything after interacting with this product?” we wanted to ask this question to understand if this product did infact complete its purpose of educating. We aimed to answer this question through apost unguided walkthrough interview. Finally, we asked the research question “How does this product affect the dynamics between individuals, community, and nature?” as one of the goals of this product was to increase connection to environment and nature, we wanted to make sure that the product could actually achieve this. Through a post unguided walkthrough interview we could achieve this understanding with the user.

Research Plan

Research Questions

1. How do people interact with this product and the idea of the concept as a whole?
2. How easy is this product to understand?
3. How easy would this product be to assemble?
4. How much would this product cost to assemble?
5. Did the user learn anything after interacting with this product?
6. How does this product affect the dynamics between individuals, community, and nature?

Research Question	Rough Prototype	Detailed Prototype
Question 1		
Question 2		
Question 3		
Question 4		
Question 5		
Question 6		

Timeline

Tuesday April 4th

Pin Up presentation

Wednesday April 5th

Rough Prototype Build Day

Tuesday April 11

Rough Prototype Due and in class user testing

Wednesday April 12

Second Round of User Testing

Friday April 14

Third Round of User testing

Tuesday April 18

Detailed Prototype Due

Wednesday April 19

Second round of User testing

Friday April 21

Third Round of User testing

Tuesday April 25

Final Project Presentation

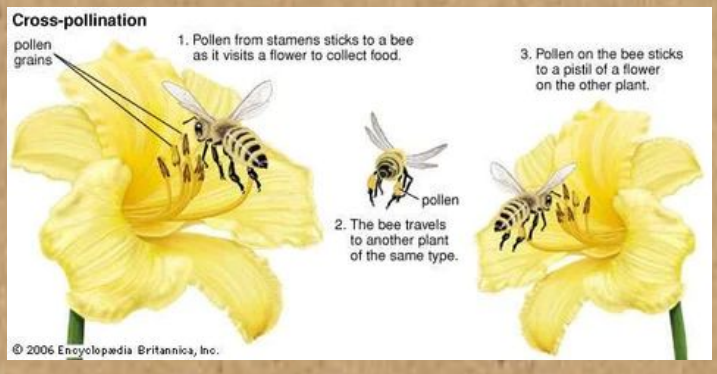
Concept/Ideation

When we began this project we started by brainstorming different ways to connect Troy youth to the native landscape around them. Through our brainstorming process we were heavily influenced by "Zine" culture and an environmental activist trend of "seed bombing". Both of these influences emerge from a community supported format of ecological support, education, and connection and we felt closely aligned with both the goal and aesthetic of this project. We were drawn to the bee hotel idea when we examined the larger ecosystem at play and wanted to understand how Troy's youth could partake in supporting this native environment. We decided that bee hotels served as a very practical and influential way for Troy's youth to engage in early ecological support and form a connection to the Capital district's native ecology. Bee hotels also offer a relatively low level of craft, making it a great option for youth in Troy to construct on their own or with parental help, also introducing a level of personal connection to nature that many other activities cannot.

Concept/Ideation

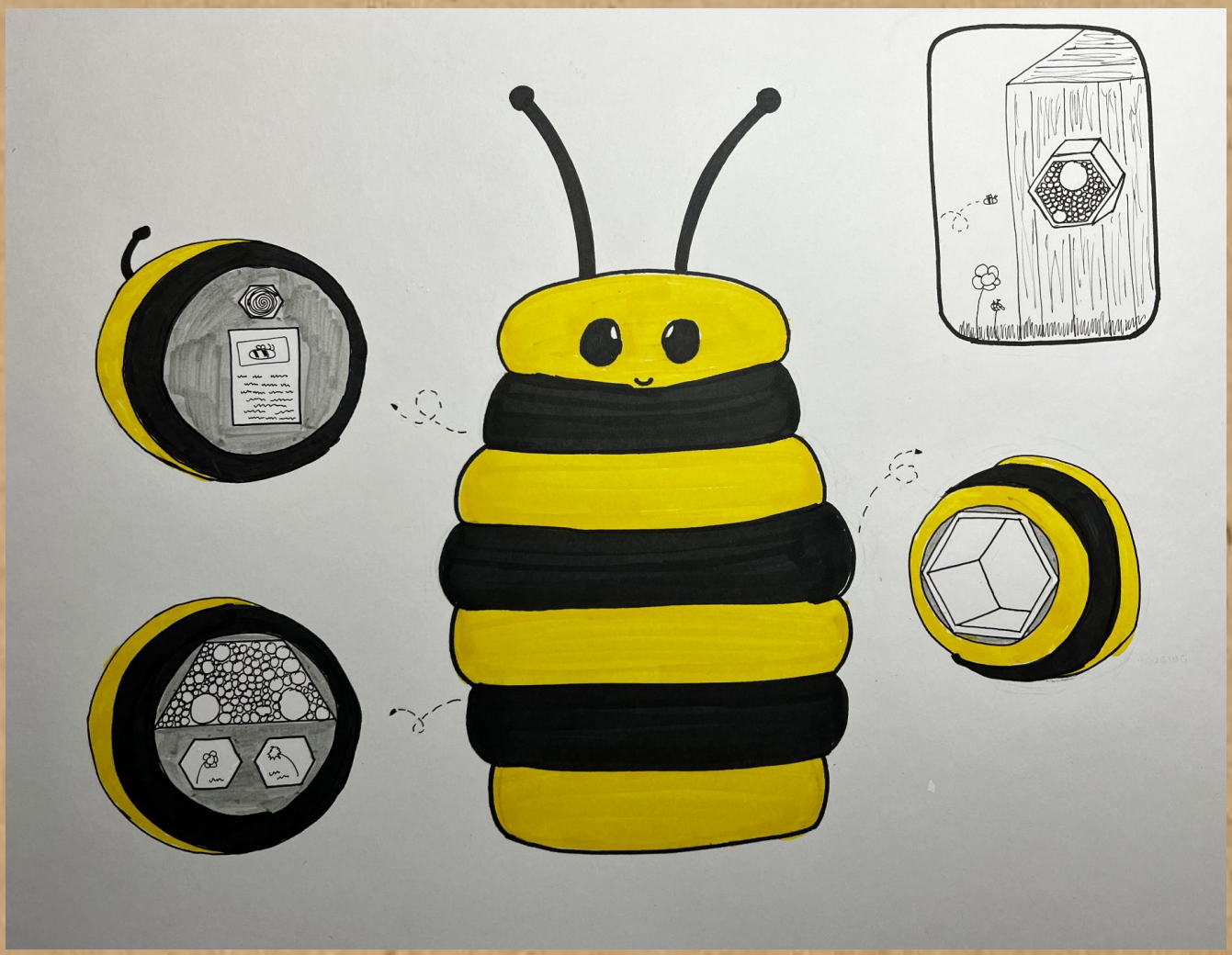
When we decided this project would consist of a kit, we wanted to make sure that the users would also leave this project with an understanding of Bee and environment interreliance and the ability to produce more kits without the reliance of the initial products in the kit.

For this project, we also had a goal to keep as much of the packaging not only compostable, but also beneficial. We aimed to do this through the use of seeded packaging and by using as little chemicals and glues as possible.



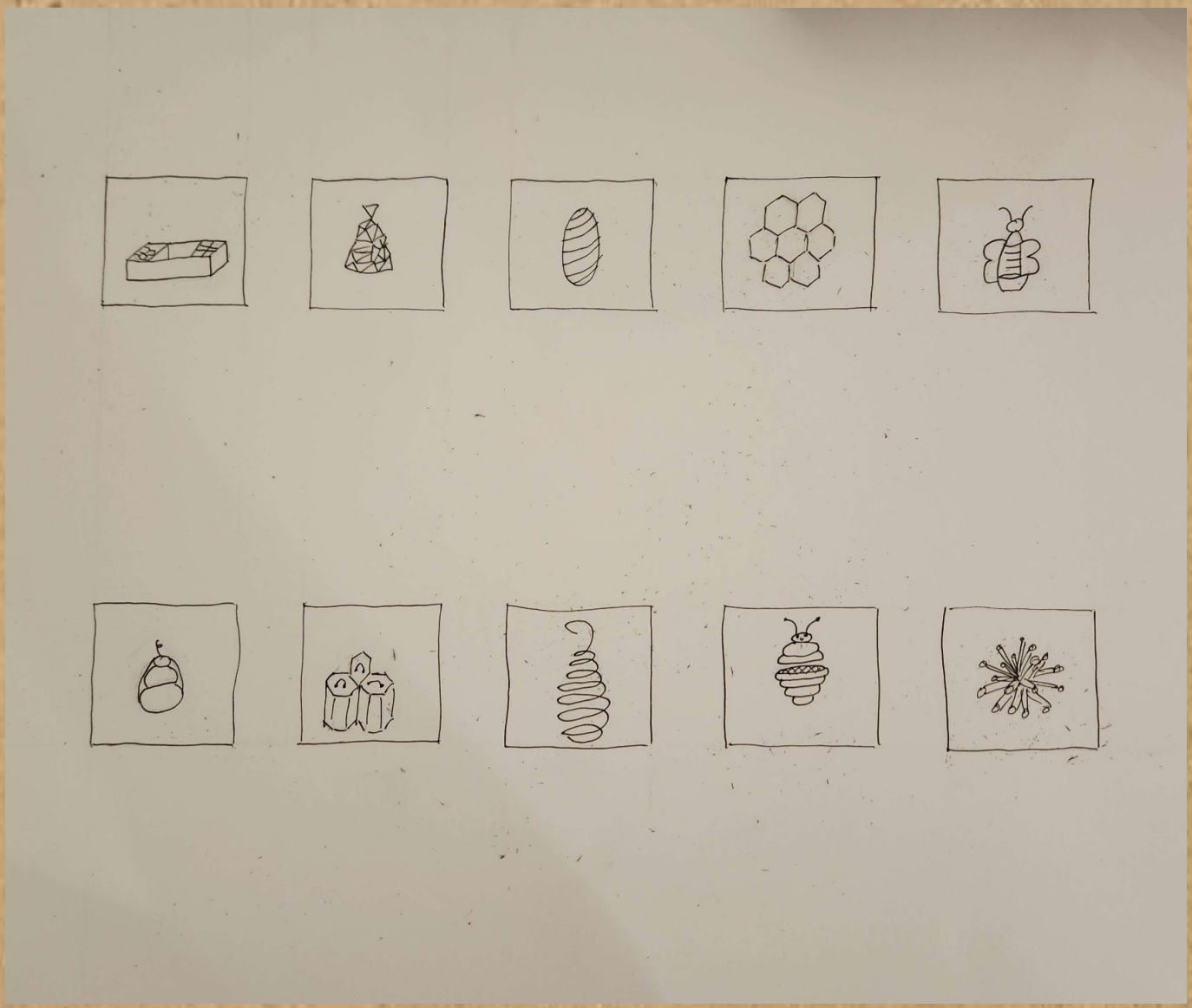
Bee Mutualism

Pin Ups



Our first design featured a whimsical bumble bee design made from wood, held together by a continuous piece of rope, and also functioned as the housing for the Bee Hotel.

Thumbnails



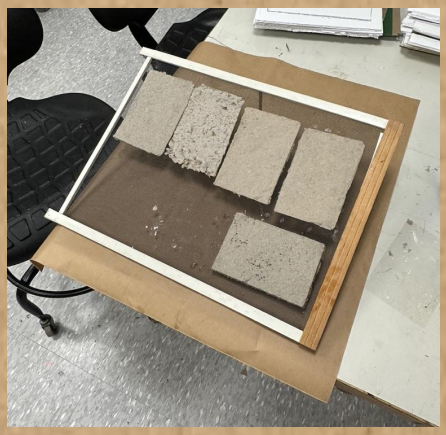
Our thumbnails, explore a few different methods of packaging design, as we tried to explore a natural bee aesthetic.

Mood Boards

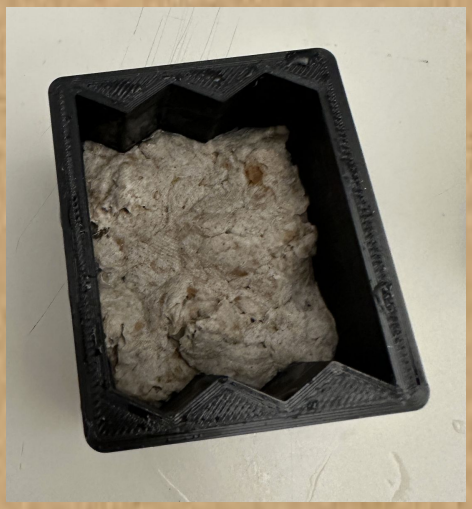
For our mood boards, we focused on a very natural aesthetic, and explored more creative sustainable packaging design. We also wanted to explore the "zine" aesthetic and bring some of these aspects into our design.

Rough Prototype

Zine on seed paper



Seed paper test

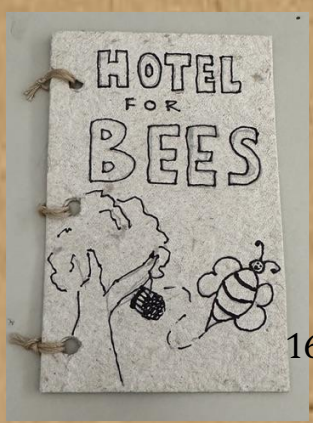


Paper pulp test

Materials prototypes of seed paper

Rough Prototype

Our rough prototype consisted of a series of different recycled seed paper iterations and paper pulp packaging tests. This prototype tested various methods of paper manufacturing and allowed us to find a method best for material construction. We also tested processing the paper into a quality ready for zine production, in which we achieved relatively high fidelity for. In this prototype we processed recycled paper, water, and native wildflower seeds in order to create different seed paper iterations. To iterate we tested different thicknesses, drying methods, pulp consistency, and a few tests adding pva glue.



User Test 1

This first user test was focused on testing the seed balls and a “seminar”/”event” context for the product. Here, a group of students were taken around troy with our first model of seed balls, which were made of clay, dirt, and a small amount of seeds. Instructing the group was very easy, which was greatly helped by the readability of the ball. The ball seems to be so synonymous with throwing that the shape acts like a signifier. I didn’t even have to mention where to throw the balls, the users seemed to intuitively know where to throw the balls given the name (seed ball) and the fact that the balls were made of dirt and mud. The event also seemed to be enjoyed by the users, with a few users mentioning wanting to do something like this again. One issue, however, was that the clay material felt very rough and didn’t feel like it would properly spread the seeds. This sentiment seemed to come up even in users who didn’t report this, as they would repeatedly throw the same ball fearing their first throw didn’t work.

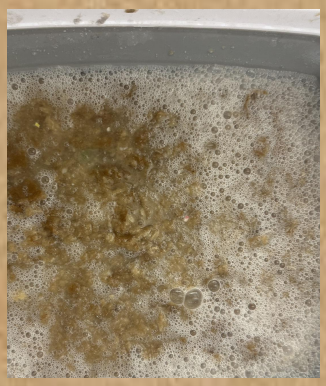
User Test 2

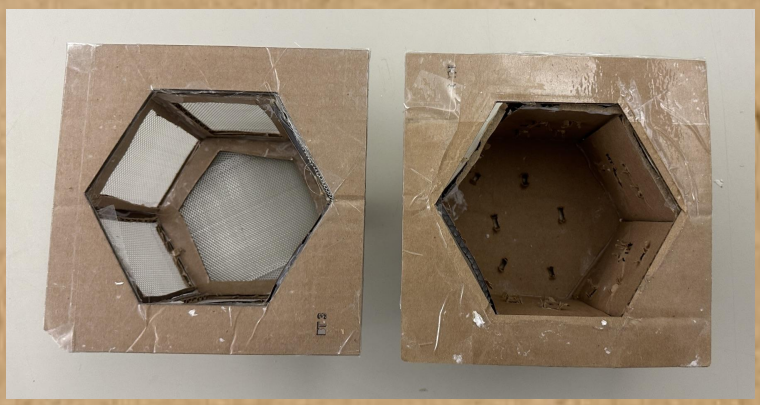
This test was focused on how easy the seed paper is to grow for our user group. This paper was given to user who grew the paper at home. The paper was placed in a moist environment, and covered. The user watered the paper twice a day for three days. Sprouting happened relatively quickly. The user reported being surprised with how fast the seeds sprouted given they had only kept the paper for three days and it was already growing. This test, along with our own tests with the seed paper, showed that the paper should be able to grow if it is place in the ground, which will provide the shade and moisture that was so helpful for the growing of the paper for this user.

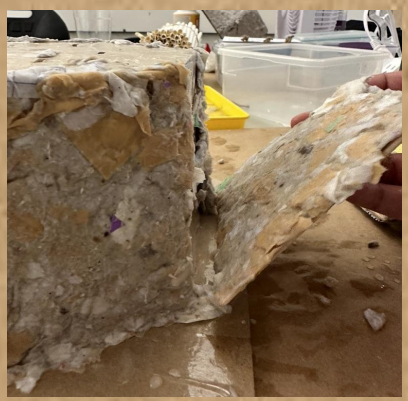
User Test 3

This user test was focused on our second user group, the bees. Here, we placed a model hive near the top of the 87 field cliff (over the ground, not hanging over the cliff). This assessment was part user testing and part materials testing, seeing if our wax covered hive could stand up to the elements, which it was able to. Unfortunately the bees have not taken residency inside the hive in the past week. Since no one in our group speaks bee, we spoke with someone with bee experience, Rhonda Rumsey van Heuveln of Capital Native Plants. She mentioned that it would probably work better if we placed the hive on lower tree branches or, more importantly, placed it in an area where flowers are more abundant, which will make the hive more obvious to passing bees.

Detailed Prototype Construction







Detailed Prototype

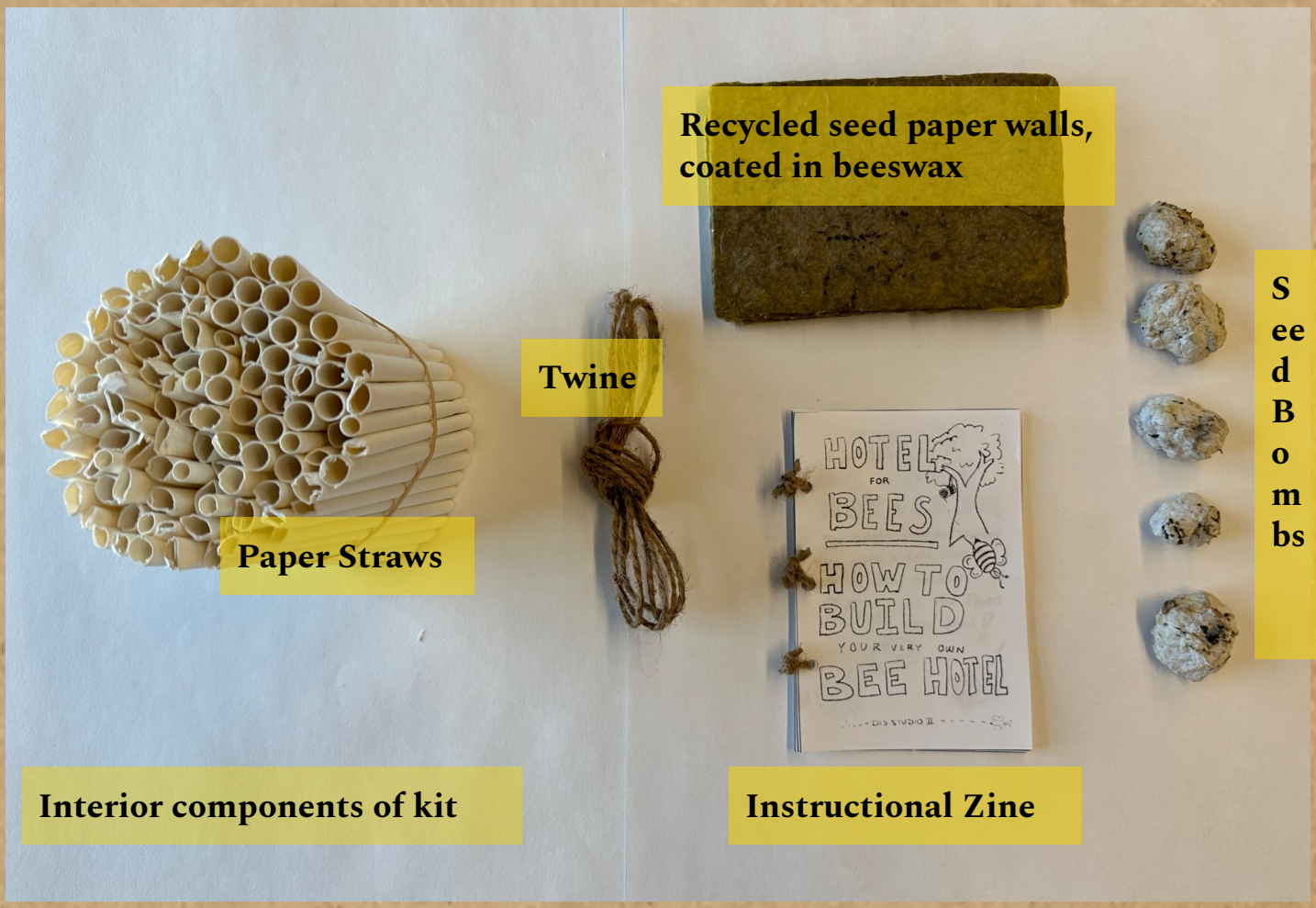
Top View of Bee & Bee

Side View of Bee & Bee

Packaging “honeycombs”

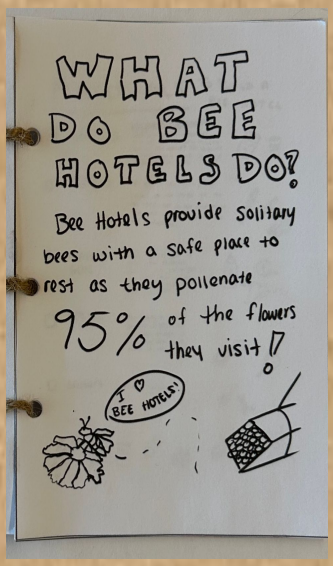
Side View

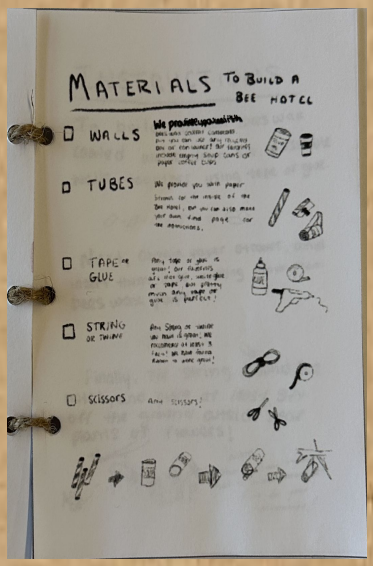
Detailed Prototype

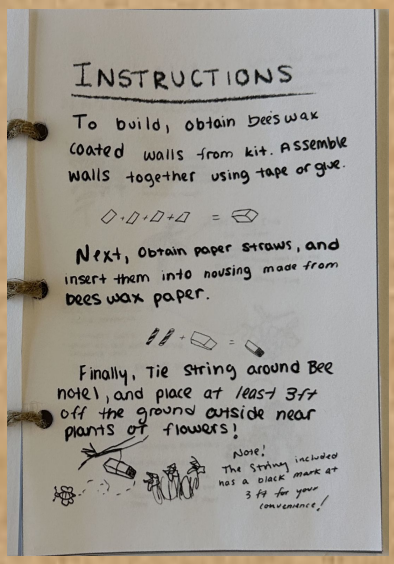


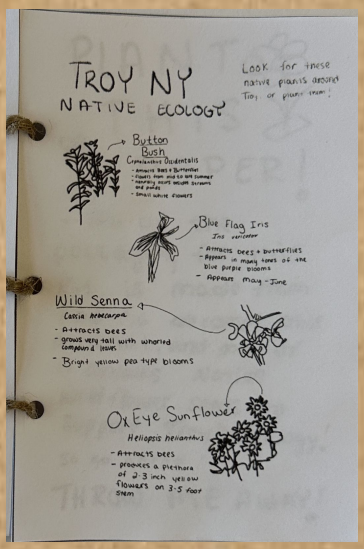
View of fully packaged kit ↓

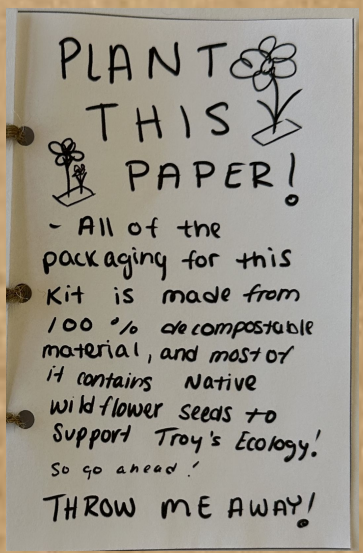
Detailed Prototype











Instructional Zine Pages

User Test 4a

These first user tests for the second prototype were done in the same environment. During the earth day cleanup at Frear Park, we were able to show off our beehive kits to the volunteers. The first group was the students of the Troy High School sustainability club. Interest in the product seemed to vary between students. When we asked a few uninterested students why this was the case they said because they were tired from doing yard work for the earth day project. One students just said they didn't care much for bees. However, some students did show interest. They really liked the idea, especially the part where they could make their own hives. When the students were given the kits they immediately gravitates to the seed balls. There was already a seedball station at the cleaning event so everyone was familiar with the concept. Students did seem a little confused with the construction of the hive itself. The construction of the housing around the hive wasn't very easily understandable. Even after reading the instructions (users didn't want to read the instructions at first), they still had trouble with construction and figuring out how the rubber bands were supposed to work/if they should be discarded.

User Test 4b

This user group was made up of the clean up volunteers who weren't students, and included a many parents, adults, and a handful of kids. All of the adults seemed very interested in the project, with several of them asking us if we were thinking of using our product in a wider distribution ("Have you thought about selling these at the farmer's market?" etc). There was also a lot of interest in the aesthetics of the project. We got a few comments on the papery "eco-friendly" look, and how that really appealed to our users. It also seemed to easy the users into the project, with a couple of people saying "The fact that this [the packaging] looks like a craft project makes me think I could do something like this." The rest of the design was, however, not as easy as it seemed. All of the users had trouble constructing their hives and figuring out where they would place the hives. One user said "You seem to have this theme of sixes in your project, I don't understand why that doesn't continue to the hotel." Even given these difficulties however, a handful of participants wanted to take the kits home to their families. One user said "My daughters are afraid of bees, so I hope something like this will teach them that there's nothing to be afraid of."

Final Concept

Our final concept for Bee & Bee includes a lot of upgrades to our packaging. Bee & Bee is meant to be a starter kit for people who wish to create bee hotels. Our mission is not only to provide materials but also educate those who use our kit. First and foremost, our different packaging iterations allowed us to explore eco-friendly ways to create lasting packaging. Our method of using paper making techniques for our packaging insures that we only use recycled materials that don't further harm the environment. However, we do wish we were able to streamline our production process so that the packaging was much more robust.

The rendering to the right showcases what we hope our packaging to look like in later iterations. It showcases cleaner lines, to where the lid and container are able to perfectly hexagonal. Additionally, instead of having two tall hexagons fit together, the lid is now much shorter as there was no need for the extra space. The package is then sealed with our Bee & Bee labels as shown in earlier iterations.

Final Concept

Majority of the changes are made on the inside of the kit itself. We received feedback from users that it was hard to keep track of which materials were for each step. The inside is now redesigned in order to reveal the materials throughout different steps.

Upon opening the kit, users are greeted with the zine. The zine contains the step by step process on how to make your own bee hotel. Behind the zine are wax coated hand-made papers meant to be used as the walls of the bee hotel.

An inner layer of packaging sits under the zine and wax coated paper. This layer of packaging features the twine, seed bombs and straws. Now users will be left with the packaging, as it is meant to be more durable, users are able to reuse the packaging any way they wish.

Bee & Bee is meant as a starter kits to produce interest in learning about local ecology as well as helping our fellow bee friends.

Final Concept

After our third and final round of usertesting we understood that the majority of the issues users were experiencing was with the design of the construction ofthe Bee Hotel itself. While users appreciated and were drawn to the comforting recycled aesthetic of the packaging, the steps to assemble the hotel itself were not as appreciated. To improve this interaction we redesigned the interior of the packaging to support the users and encourage a more intuitive transition through the process. To remedy these as times confusing steps, we broke the interior design into a layered approach, only introducing the user to materials one layer at a time. This encourages the user to complete the layer before continuing down the packaging. We also designed this approach to hopefully remind users of mechanisms that they are already familiar with, as this layered approach can be seen in many different packaging designs across the tool kit product realm. Another user experience issue that this final concept answers is the aesthetics of the bee hotel itself. With our users wanting a hexagonal hotel, we changed the final concept to feature a hexagonal housing for the hotel, continuing the series of sixes throughout the product. All of these changes will hopefully lead us to a better product for our users and remedy some of our user experience issues.