

Senior Thesis

Molly Lester

Introduction

My integrative project is about creating connections between children and intangible problems. I focused specifically on large environmental problems, as the understanding of which could enact empathy and open a path to change. An issue of this magnitude is usually seen as a mature problem. This is solely because it is the adults that have “control”, at least legislatively, on how the environment is treated. In truth, what become reactions in adulthood, are learned through interactions as children. Their view of the world is still malleable as they become more aware of their role in a grander scheme. I wanted to show their role in the loss of bees. Therefore, I am creating a game, which will take the on complex idea of bee loss and condense it for children ages 6 to 8. Beware is an active game played running around outdoors with a large group of children. It is derived from well-known games like capture the flag and freeze tag. The game will use a kit that describes the interaction between the bees and conglomerate farmers. Included in the kit will be: an instructor’s booklet, pollen pieces, team arm bands, a hive, a “stinger” ball, and cones to denote area. Creating a metaphor of survival will give them the desperation of the situation that is at the same time relatable and fun. Thus, exposing them at a stage in which their wealth of empathy can connect to the subject, and have that experience mature with them into adulthood. Creating more eco-friendly adults, and allowing them to feel part of the system and the solution.

Why Bees

The environment has always been a topic that I found hard to deal with. I have never been the biggest proponent of being “green”, and have always preferred to stay in my state of ignorance. When I started the journey of IP, I was trying to just simply suit my own aesthetic needs. I wanted to 3D model something. I wanted to work with the concepts and constrains of childhood, as I have through most of my time in art school. As the project grew, I felt that my original ideas were lifeless. They held no impact on the children. They simply became another material object that would be played with until it grew boring and it was all but forgotten. To make a game with impact, I would have to approach from a subject that was not always tackled in childhood, at least one that wasn’t discussed in mine. That is how I landed on the concept for doing an educational toy about the environment. My learned behaviors as a child, or lack thereof, had affected how I saw the responsibility of the environment and my role with it. Narrowing the subject, I saw that there were a few that interested me personally. I wanted to talk about one that was very outside of my normal sphere of understanding, and could be seen as in immediate danger. I have feared bees since I was little. Their impact on society is so massive, they are generally overlooked because of our innate fear and more pressing environmental issues. This was going to be the biggest challenge. I needed to get the children to understand the weight of what bees provide by hiding their prejudices against bees behind plain facts. In this way, I could also hopefully move myself past these same hurdles. Lisa Strausfield explained it best when she presented to the Art School; when artists take on these challenges of talking about large subjects that are not our forte, that they should be used as a way to better ourselves. This project became about bettering me, and showing an alternative lifestyle to these children.

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The real danger humanity faces when talking about bees, are their disappearance. Bees are one of the most valuable insects to the survival of the human race. While they go about their own business of creating a hive and making honey, they inadvertently pollenate crops. Not just some of the crops; all of the crops. It is estimated that to do what bees do for our farming industry would cost upwards of 14.6 billion dollars. Some plants, such as tomato plants, aren't even possible to pollenate without creating new technology to mimic the bees. They are disappearing and dying due mainly in part to human negligence. Bees have been in decline since the end of World War II, which started at 4.5 million and has lowered in 2007, was found to be below 2 million. This is due in part to four reasons; monocultures, pesticides, flowerless landscapes, and diseases/parasites. After 1945, society changed the way that they farmed. There were no more cover crops, but instead substituted with large amounts of chemicals. Without the cover, there became a flowerless landscape, that took away some of the main food sources to bees. In order to keep the plants growing and to keep up with the demand, the planting of large plots of one crop, or a monoculture, became practical. All these combined lead to an unhealthy diet for the bees. These situations together have made the bee's version of a "food desert". Even worse, the pesticides used to keep the insects from destroying the crops, have started to leak into the pollen and ruin the bee's food supply. These toxins account for enormous amount of bee deaths throughout the world.

Work

I needed to determine how I was going to approach the subject of the environment. To me, it was important to see the nature of trying to show environmental problems. If math games are suited to take the form of puzzles, and history to take on journalism, then the best way to show ecological issues would be through simulation. I needed to create a scenario that explained the situation, and then showed its effect through game play. I began to follow a very easy cycle of observe, make, reflect. I would start from the research, and interpret it into different game mechanics. After, I would assess the strengths and weaknesses of each option, and figure out a way that it could be better represented. This led me to two different paths, the Bears and the Bees.

I. Bears

"The Bears" was a board game focused on imitating a global view of habitat destruction. I wanted to use the objects to create a relationship, and role that each player would use. Moving across the board, each different bear would pick up items necessary for survival and bring it back to the den for their bear brethren. It was important to show how that even though the bears were fighting against themselves for the food, there were also limitations put there by humans and by the environment itself. To represent this, I made trap doors under each resource, once removed the animals would "disappear". This allowed to place the removal on an outside force, such as deforestation, as well as the base level of animals simply using the all the resources available in one area.

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After testing the game with a 3rd grade class from Bennett Woods Elementary, and Lily age 6, I saw many areas in which it failed. First, it was too vague about who was creating the removal of resources and killing the animals. This led to the problem that I learned in the exit interviews, none of them learned anything from it. They understood the basic premise, that the bears were dying and they needed to collect the food, but not that there were any out of normal reasons why this was happening. There was a lack of connection between the cause and effect. Second, the game wasn't engaging enough. Although they reveled in the competition, there simply weren't enough things actively happening to keep their attention. Third, there wasn't enough of a connection begin made between player and game piece. Emotional connection is key in the influence of my game.

II. Bees

The premise of Beeware was to show the interaction between bees, and the farming industry, something that so highly affects the livelihood of our society. The game starts off with one of the children reading a "lead-in story". It explains that our society depends upon these bees to create our food. The farmers, that worked so hard to create food, used to work together with the bees in harmony. The bees would go about their daily routines, and the farmers would be thankful for their help on their farms. But, as demand grew, the farmers could only see one way to continue the cash flow and producing enough crops. They began to take the bees, and make them work ridiculous hours until they died. Using this story, Beeware discusses that there are more viable options than the system that is used now.

The gameplay starts after the reading of the story. The children are split up into two teams, bees and farmers. The bees job is to rebuild the hive that the farmers destroyed in trying to lure them into capture. They run around and collect pollen pieces that are turned into the hive, while avoiding the pieces that are actually pesticide. If they accidentally grab a pesticide piece, they immediately die, and are removed from game play. This was a conscious choice to make it a harsh point. Pesticide is one of the leading reasons for bee illness and death. It also creates a very good opportunity for a discussion about ethical uses of pesticides, and the ramifications of human consumption. The farmer is trying to catch the bees, and force them to work "overtime" on his farm. He does this by catching them and bringing them back to his Drone Hives (fig 1). Each level after that adds a level of difficulty on either side so that it can model the bee's life slowly enough for the children to take in every detail. The next levels try to give the bees more advantage, by giving them an actual area to build the hive, and a "stinger" ball in which they can use once against the evil farmers (fig 2).



Fig 1 - Bees in the Drone Hive

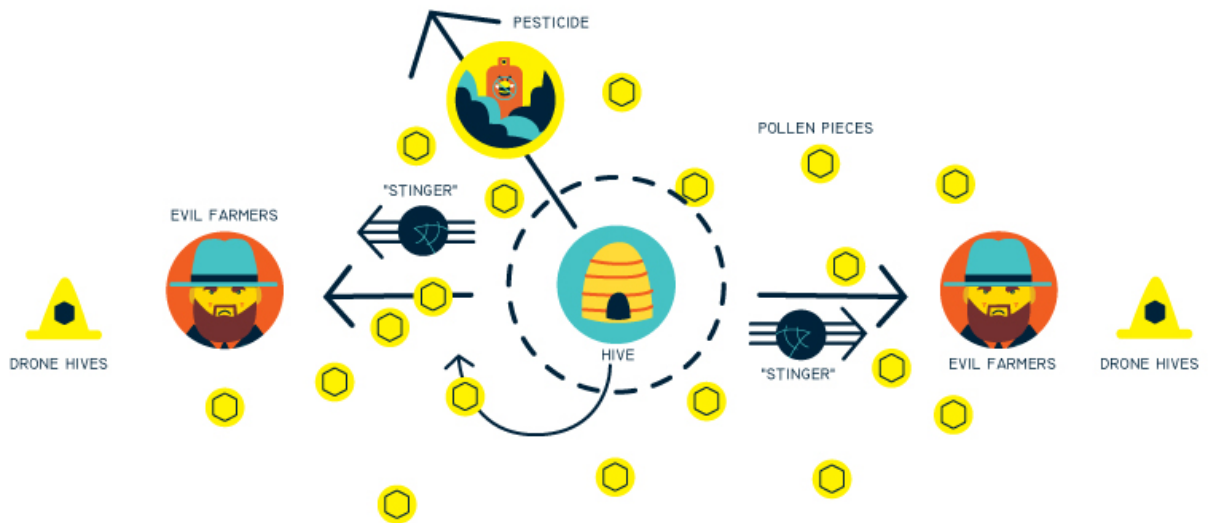


Fig 2 - Schematic of Beeware Gameplay

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Throughout the games they can be saved by their bee brethren, but it brings up strong issues of what is correct treatment of animals. It places them on the same level as humans; they begin to see the bees as workers with basic human rights. It's always important to bring up this idea of fairness. In the teacher booklet that comes with the kit, it brings up discussion topics that get the children to converse about what is ethical through the word fair. Fair is a common enough understanding that they can use it to determine issues throughout the game, and in the reality of the system. As you keep playing, generally the evil farmers keep winning. It is at the point between the "levels" that you ask them if the gameplay is fair. Bringing that element in, allows them to see that they have a say in ultimately how the game is played. Based on what they decide the game continues. There are some ready-made solutions, but it would be admissible if the children weren't allowed to come up with solutions on their own. A couple of suggested roles to add would be the organic/local farmer, queen bee, or parasite. The organic farmer could help in defense against the large farming corporation and the queen putting a limitation on the number of bees. The parasites showing how a bee infected can become an integral part of colony collapse by leaving its hive behind, and forgetting how to even produce honey for the hive.

The kit would be made out of completely environmentally friendly products. There are two boxes, one for the bee team, and one for the farmer that contains instructions and all the pieces they will need to set up the game. Both groups set up their own area is important because it reinforces their premise that this object/area is theirs (fig 2). Each item can be recycled, and can be added to by the teacher. It is set as a very open-ended game, so that creation and multiple simulations can be run through it. The reason I chose this instead of the Bears, was because it creates a better connection between the child and the animal. By creating the role of the bee, they are forced to interact with each other in a different way. It also discusses more locally found animals. By keeping it "local", it changes the scope of the issue. The scope is larger than what they regularly deal with, but still small, and visually prevalent enough, that they feel as though they are part of the solution. The main reason why I started the bees, was because their issues are so important, but very much overlooked. Without them, many of the foods that we desperately depend on would never be pollinated, and never exist. By creating the role of the bees, fighting the tyranny of the conglomerate farmer, they will begin to understand what level honey bees play in our environment. Show that an insect so small, effects humanity on such a great scale.



Fig 3 – Girls Setting Up Bee Area with the Bee Kit

Context

Piaget once said, “Play is the work of children”, that safety that can only be found in imagination. This is the place where they constrict the framework that dictates their perspective on life. Play is an important part of children growing up, because its ability to test ideas in a safe environment. I started to look into some schools that used play as an important part of their curriculum, such as the Steiner schools and Reggio Emilia. Play was a self-teaching tool, which helped them to assess situations without adult influence.

“In the Reggio Emilia preschools, however, each child is viewed as infinitely capable, creative, and intelligent. The job of the teacher is to support these qualities and to challenge children in appropriate ways so that they develop fully.”

Reggio Emilia was working off one of the basic strategies, using play to show children how to interact with the outside world. This play theory, started by Fredrich Froebel, explained that education is an important part of an active childhood. Meaningful play, a term he coined, is one in which the child is fully engaged and is participating on a high cognitive level. Below you see one of his “gifts”; a device that taught spacial relations, rudimentary geometry, and beauty to young children, ages 5 and older. The things learned from these objects are not surface area knowledge. Where the true learning comes in, is

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when the toy can give enough information to the child that they can interpret the meaning without consciously thinking about it.

In the more recent years, there has been a new field that has been created through merging games with reality, Gamification. Gamification is about applying game techniques to non-game experiences. Its idea is to apply the sense of accomplishment and fun, to things that are not as fulfilling. In the example of Bottle Bank Arcade Volkswagen wanted to see if making the act of recycling a game would increase usage. By making everyone's menial task a little more fun, they had a huge impact on how often it was used and the environment. Another interesting case was The World Peace Game. Having been replicated on a slightly smaller scale by John Hunter, the original idea for this game came from the late great Buckminster Fuller. The premise of this idea was to simulate realistic world scenarios in a game. It would be set up so that each person was a different country. Then real information about the country's wealth and pressing issues would be applied to the game landscape. The way to win was to get to a state of World Peace with all of the countries. It was made to specifically side step the prejudices that people have constructed, and show that there should always be a common goal among the countries, World Peace. This has been a great influence on how I view my game. It is about the ability for the children to see that there is a way to solve these problems. But, at the moment, the system is not treating everyone fairly. It needs to be a framework in which multiple simulations can run, and facilitate un-prejudiced conversation.

I have had a strong sense of apathy towards the environment since I was young. It didn't affect my daily life, it didn't mean much to me. The scope of it made it difficult to see how I could do anything to change humanity's attitude towards nature. I needed to see how I was part of the system and the solution. If I could create a scenario in which they could understand the system that lies between humans, animals, and the earth, could I produce a more eco-friendly child? As I began to narrow my age range, I saw that there were a peak number of years, 6 to 8, where children feel very akin to animals. Mrs. Bernstein, my psychology teacher, informed me that when testing these ages in the lab, they would use animal rather than humans. Children could understand situations from an animal's role rather than from a human's. It is also the point in which they begin to learn from: social play, objects, and decentralizes their cognition. It turned out to be the perfect age for me to start my exploration into learning through gamification.

Conclusion

My game started off as an attempt to control a design from start to finish. By wrangling complexity and my own faults, I began to see the potential in what I was creating. It is a way to bring the reliability back into learning that doesn't leave out the room for imaginative play. It was not my job to create the simulation entirely, but instead to make the atmosphere in which they viewed it. Creating an emotional tie to these bees, at such a young age, can expand their awareness and compassion. Then, as they mature, allow the precedents they learned to shape how they treat not only bees, but take an active role in how their environment is treated. But, if in reality they only learn enough to take consideration of bees, and become an advocate for the species, I have done my job. There is a limitation on how much you can make someone care. You can lead them to it, but without their constant

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compassion, it will have a hard time sticking. While doing this project, I have become a firm believer in new forms of education. I would like to start incorporating teaching skill sets in I went further into gamification, or working with large educational systems reforming to allow more meaningful play.

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