

The Project Approach to Learning at

RisingOaks
Early Learning

Lincoln Road



Project Name: Earthworms

Age Group: Preschool (2.5-4 years)

Project Start Date: April 14 2021

Project End Date: August 31, 2021



RisingOaks
Early Learning

Growing minds through play

Background

Our project was centered around the study and exploration of earthworms. The group of children who participated in this project were between the ages of two and a half and five years old. The project was started on Wednesday April 14, 2021 and was completed on August 31, 2021. The educators involved in the project were Rachel RECE, Shae RECE, Fatima RECE, and Wesley RECE

Phase 1: Beginning the Project

The project started on April 14, 2021 during a nature scavenger hunt at the local park. We took the preschoolers on a walk there and handed out paper bags with colours on it. The challenge was to collect samples of items in nature that were different colours. For example, can you find something that is green or red or purple? The preschoolers found mud in the park that day! It had just rained all night so the ground was soft and moist. While the preschoolers were searching educator Rachel RECE noticed on a patch of dirt there was a huge earthworm wiggling out of a hole and down into another one. The children gathered around to observe and this sparked the interest in earthworms. Their curiosity about the weird little creatures continued to develop whenever we went on walks over the following week. It was a rainy spring so spotting earthworms on the sidewalk became a regular occurrence. Upon reflecting one child recalled, “do you remember when we were on our walk and you said we can’t pick up the dead ones?” Around this time, we were also noticing more signs of spring in the playground. The children would go on bug hunts and to their utter amazement and excitement were able to locate ants, centipedes, and pill bugs. Although these aren’t earthworms I believe they also contributed to the preschooler’s interest in earthworms. The hunt for earthworms in the playground continued and the preschoolers turned over every rock hoping to see a wiggly friend hiding underneath.

To officially launch the project, we started working on our ‘what we know’ and ‘what we want to know’ questions. After talking with the children this is what we learned.

What we know:

- “Worms like to eat dirt.” Nolan
- “Worms don’t like water.” Nolan
- “I don’t eat worms that’s yucky.” Nolan
- “They look for dirt so they can have things to eat.” Penny
- “They don’t have families” Penny
- “Do worms have bones? ... No... They have muscles.” (This is a child recalling a previous conversation with Rachel, RECE about a worm he observed before we began our project.) Hunter

- “They don’t have legs, they don’t walk, they dance like snakes.” Zachri
- “They are under the ground.” Zachri
- “I saw worms at my house.” Leila
- We know that worms live outside.
- Rory, “Worms eat dirt, so we are going to make them a mud cake.”
- Nolan, “Worms make good dirt for our plants.”
- Bryson, “We need more leaves for our worm cake.”
- Nolan, “When we cook the cake everyone can eat it! Worms, slugs, grubs, and us.”

What we want to know:

- Do worms have families?
- What colour are worms?
- How do worms eat?
- What do worms eat?
- What do worm babies look like?
- How big are worms?
- Do worms make me itchy?
- Do worms have teeth?

Who can we ask to help us answer our questions:

- Our Mommies and Daddies
- Each other
- The iPad
- Our educators

Below are some photos from our first drawings and second drawings side by side. The preschoolers were challenged to draw what they know about earthworms. It was interesting to see how the children saw worms. If you look closely at the pictures you may notice some children have drawn worms of different sizes, one drew a worm coiled up and another child drew worms as wiggly lines instead of straight lines like their peers did. They later explained that they drew it that way because worms wiggle. In their second drawings (spoiler alert) the preschoolers drew worms that were of various sizes again and drawn thin.



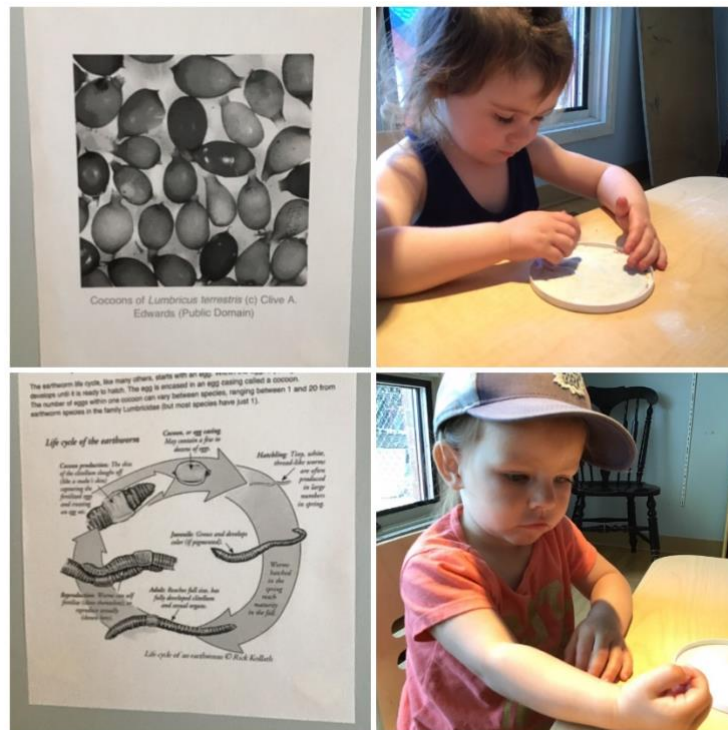
Phase 2: Developing the Project

As we continued on in our exploration of worms and did some research on the iPad. We watched a short video about earthworms and learned that their bodies are made up of thick rings of muscle. A week later Rachel RECE was using the shop vacuum to clean out the vents when it leads to an impromptu teachable moment. The hose for the shop vacuum looked just like the body of a worm! It was made up of thick plastic rings attached together just like how an earthworm is made of thick rings of muscle. The preschoolers then manipulated the hose and discovered that the motion worms make when they are moving is related to how their bodies are built. Because they don't have bones and joints the design of the rings attached together make it possible for the worms to wiggle and have fluid motion.

What do worm babies look like?

After educator Rachel RECE researched this topic and gathered enough information to share it with the class this is what we learned. We learned that when a worm has babies they create a mucus ring around their bodies. Their eggs are in that mucus ring. The earthworm then wiggles out of the ring and leaves it in the dirt. The eggs are kept safe in the mucus until they are ready to hatch. Earthworm eggs are the size of a sprinkle and they are yellow when they are first laid and then turn to a dark brown soon after.

When the eggs hatch and a worm emerges it looks small, thin, and is white. We used a small piece of dental floss to visualize what a new worm looks like. While we discussed this the preschoolers were engaged in a hands on experience. We used rainbow sprinkles as earthworm eggs and sand in our activity. Rachel RECE mixed the sprinkles and the sand together on a small tray and the preschoolers searched through it for the little 'eggs'. Bonus points if they could find a yellow sprinkle! Through this experience the preschoolers continued to explore earthworms and used their fine motor skills to pick up the little 'eggs'. We used pictures of worm eggs, a life cycle of a worm, dental floss, sprinkles, and some sprinkles in gel to expand the preschooler's knowledge of earthworm babies and to answer this question.



Do earthworms make me itchy?

When answering this question, we looked specifically at worm mucus. Pretty gross right? The preschoolers weren't squeamish and took this new information about mucus with ease. First Rachel RECE explained that mucus is like snot and spit. Earthworms love when this stuff covers their whole body. We then asked would you like if snot and spit covered your whole body? We were met with a definite no from the preschoolers.

We built on this reaction by talking about why worms love their mucus so much. It keeps their skin wet and cool for they can easily breathe through it, because worms don't breathe through a nose and mouth like we do the oxygen goes through their skin. We also know from answering our first question that worms leave their eggs in mucus. Plants are thankful for the mucus worms leave in the dirt and use the nutrients in it to grow stronger.

Mucus is important to worms when they are building tunnels. When a worm is wiggling in the dirt they leave some mucus behind and that mucus hardens like cement and keeps the walls and roof of the tunnel strong so it doesn't cave in again. Worms also leave this mucus behind on your hands when you hold them and so to answer our question no it doesn't make you itchy, but it is still best to wash your hands after touching one. To create a hands on exploration aspect to this new information the preschoolers used craft glue and string to simulate mucus and an earthworm. The preschoolers covered their 'worms' in 'mucus' and wiggled or dragged the worms over the paper. Some of the glue

transferred to the paper and when it dried clear you could see the trail the worm left on the paper as it travelled.



Do earthworms have families?

We used the iPad to research the answer to this question. Then we hooked up the iPad to the projector and googled the question. We remembered that earthworms leave their eggs in the dirt and then crawl away. So they don't have families, but they will travel in a group or a herd. When they need to communicate with other earthworms they touch each other to do so because they don't have voices like people.

What do earthworms eat?

How do earthworms eat?

Do earthworms have teeth?

We answered these three questions together because they are similar. Rachel RECE showed the preschoolers how a worm's digestive system works by using a compostable disposable straw as a visual aid. She started by telling them a story about a worm that was crawling through the dirt and got hungry. It found a little piece of leaf in the dirt and used its sensors to taste if it was food or not. It was food! So the worm sucked it up. It doesn't have teeth to take a bite like you and me so it eats little pieces at a time. Then the food stays in a little pocket inside the worm until it is ready to eat it. When the worm is ready to eat it the food it gets pushed into its gizzard. The gizzard is the thicker ring on the earthworm. When the food is in the gizzard the worm squishes the food and mashes it up like chewing, but remember it doesn't have teeth. They mash the food in the gizzard by stretching and tightening their body. Once the food is mashed up it goes into the worm's intestines and just like people intestines it pulls all the vitamins and nutrients out of it that the worm needs to make energy.



We also studied a picture of things worms like to eat and what they don't like to eat. To reinforce this concept in a hands on way the preschoolers were given their own straw to use. They used their fine motor skills to pull the paper wrapper off the straw and then pull either end of the straw to extend the crinkled elbow part. The crinkled elbow part of the straw represented the gizzard and the preschoolers 'feed' their pretend worm little pieces' of paper and some lettuce from our garden. Both of these items were on the list of things earthworms like to eat. The preschoolers used their fine motor skills to put the small bits into the straw and then pull and push the gizzard part to mash it up. We also used the projector to do some more research on the iPad about how worms eat. We watched a time lapse video of earthworms eating in a worm farm and looked at pictures of earthworms and worked to identify the gizzard.

Below is a spontaneous application of knowledge about earthworms the preschoolers used during their play.

For this activity the preschoolers tried their hand at something new. They tried weaving. We used a piece of construction paper with slits cut into it and stripes of paper for this activity. Rachel RECE showed the preschoolers how to move the paper through the slots. While we were working on this we discovered it was like earthworms! The stripes of paper were like the earthworms and they went out of the dirt and into the dirt and out of the dirt and into the dirt. I overheard some children saying this over and over again as they weaved. The motion of earthworms sliding in and out of the ground helped some preschoolers understand the concept of weaving. Through this activity the preschoolers practiced their hand eye coordination, used their creative skills, learned a new skill, and tapped into their knowledge about earthworms.



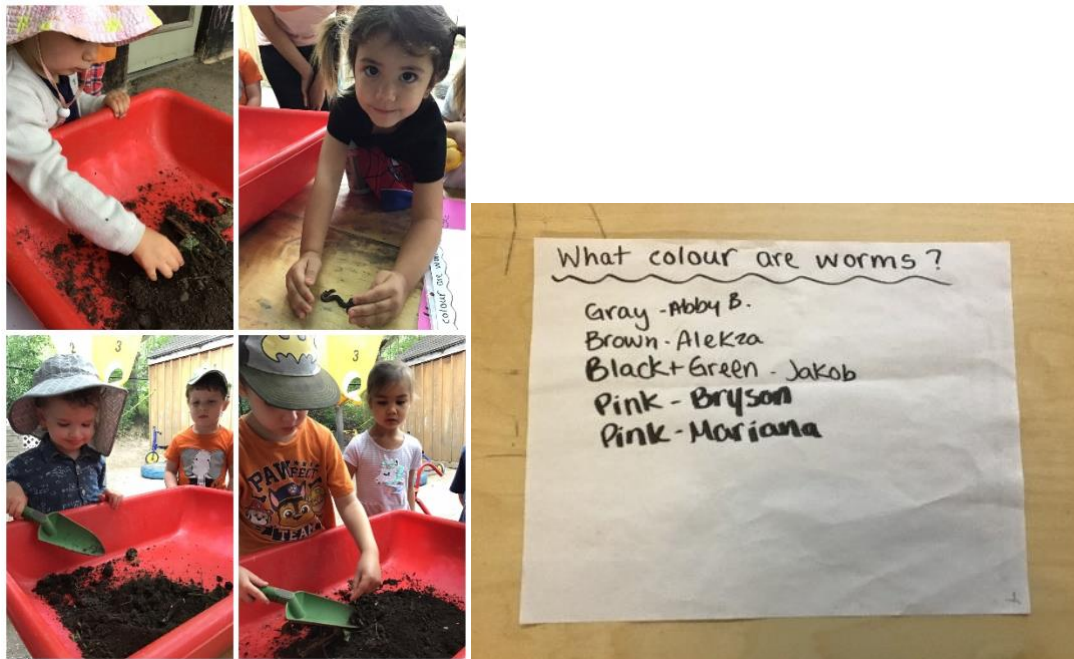
Phase 3: Concluding the Project

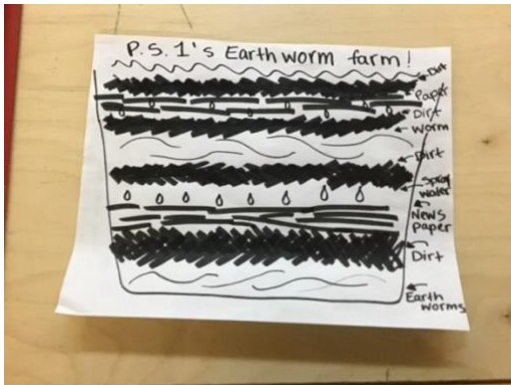
We answered the rest of our questions and completed the final step of our project all in one. We answered the questions **how long is an earthworm and what colour is an earthworm?** Rachel RECE brought in a bucket with dirt and earthworms in it. to start the preschoolers gently sorted through the dirt until they found an earthworm. When they did we laid it out and measured how long it was. We soon discovered that this was tricky business. We discovered that worms change their length when they wiggle. We tried our best to carefully uncurl them and measure them with a ruler however when they started to wiggle and moved their body like an accordion they changed size! We had to measure a few times and what we did measure was an approximation. Check out the picture of the paper with the measurements on it and the names the preschoolers gave the worms. When the preschoolers found an earthworm in the dirt we used a spray bottle with water in it to mist the worms and clean the dirt off of them. This was in an attempt to

see what color earthworms are. The preschoolers gave different answers to the questions as some said they looked pink, brown, grey, or green. They weren't wrong the earthworms took on all these different hues depending on how they moved.

The final project we made was an earth worm farm. When Rachel RECE told Jakob this he laughed at the thought of worms on a farm. Rachel then built on the preschoolers' vocabulary and told them about habitats. We then called our creation a worm habitat or worm farm. We followed a picture instruction that directed us how to put a worm farm together. As we were finding earthworms to add to our worm farm we were also arranging layers of dirt and stripes of newspaper that we sprayed with water to help keep the habitat moist.

The preschoolers were so excited about our new classroom pets and the preschoolers were happy that their educator finally let them bring earthworms into the classroom!



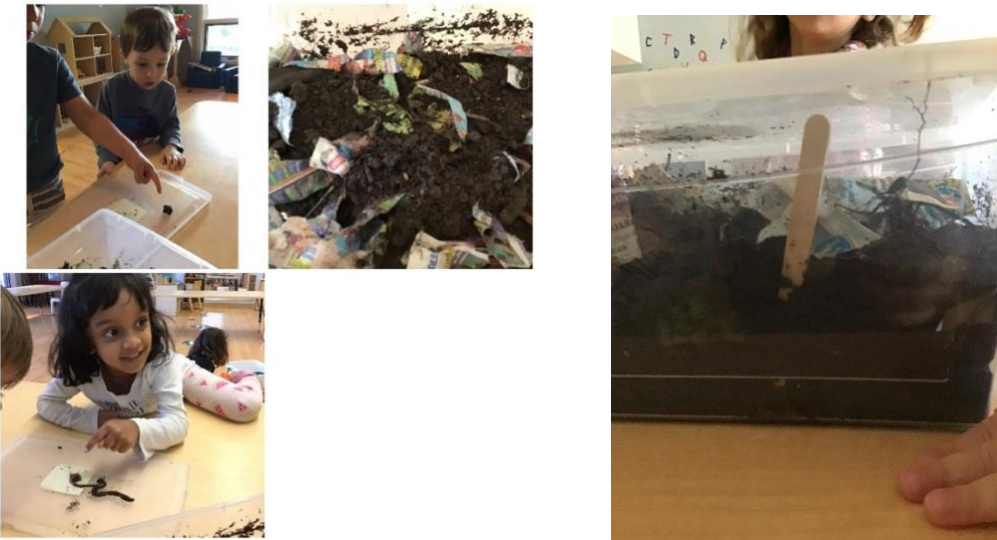


Through this final project the preschoolers were extending their knowledge about earthworms and combined it to build the ultimate worm farm. They also used their observation skills and sense of touch to explore the nature around them.

Following Up

We checked back on our worm farm several times in the two weeks since we built it and saw it was thriving. We opened it up to check on the worms and made several observations. Since we used regular soil there were other bugs crawling in the worm farm too. The preschoolers spotted centipedes, ants and a tiny spider along with some new delicate sprouts from seeds already mixed into the soil. It was its own ecosystem! The first time we checked Rachel gently moved some of the dirt off the top hoping to spot one of our earthworms. We couldn't find any and just when we thought all was lost in a last minute idea we lifted up to bin and looked at the underside. Through the clear plastic we saw, resting on the bottom, a worm. We stuck a popsicle stick into the dirt pointing to the worm to mark where it was. Next time we opened up the worm farm we checked the spot we marked but couldn't see the worm. That means it had moved and made a tunnel! We also felt the soil and gave it a little mist with a spray bottle because it felt dry.

After having the worm farm in our classroom for two weeks we decided to put the earth worms back into nature. The preschoolers picked which garden out of the three in our playground they wanted to relocate the worms to. Once they picked we gently dumped the worms out and misted the area with water to soften it up. We hope our worms live along and happy life in our garden and help our plants grow. After this we knew our project was done.



Teacher Reflections

Rachel RECE

This project was so much fun to explore with the preschoolers. We had rich inquiry questions to answer that had me learning more about earthworms that I ever thought I would. I also liked the challenge of creating engaging activities that supported the information we were learning. I feel like I grew as an educator by building my own play experience that offered the preschoolers a way to engage hands on and build their own memory pathways. It is awesome to see them a month later still finding and interested in earthworms. They still collect them in bug catchers after a rainy day, observe them and show their off to their peers. Then they put them in the garden because they learned that's the healthiest place for worms to live and they remembered that's where we put our worms from our worm farm. I it great to see the preschoolers using and applying the information they learned through our worm project in the real world around them.

Shae RECE

As our earthworm project progressed, I observed the preschoolers interest in all living life outdoors grow as well. Although this project started based on earthworms it became so much more than that. The educators in our room learned alongside with the children as we had unanswered questions ourselves. Going into this project my knowledge on earthworms was limited, however as it came to an end I feel it was a great learning experience for both children and educators. I feel that the children developed so many skills in both their physical and cognitive development through the educator guided

activities. Overall this project benefitted our classroom as a whole as it gave the children a sense of wonder and excitement before each activity that they engaged in.

Fatima RECE

The earthworm project was a great learning experience for the children. The children benefitted as they learned about different things earthworms do and eat. I observed the children's interest as soon as they saw the wet ground. One child in a small group of children in particular would always ask for a shovel to dig up areas of the garden and other parts of the playground to find worms. It also became our classroom pet for a little bit as the children loved to watch the earthworm and created a little house for it which was brought inside our classroom as a pet. The developmental domains demonstrated in the earthworm project included social, emotional and cognitive skills as they children were about to have great social connections talking about the earthworms and being able to touch and watch very carefully. Some children were emotionally attached as they would ask about the earthworms and at times be concerned for their wellbeing. Great project overall. I was also able to watch and learn with the children as it was originally not a big interest for me but as I learned more about them through the research I got comfortable enough to touch and hold an earthworm!

Wesley RECE

The earthworm project provided us with many valuable learning experiences and opportunities to ask questions about the world around us. One of these moments of inquisition was when we brought in large drainage tubes, when taking the tubes and stretching them out one child said that the sections in the tubes when stretched were like the sections on a worm. This lead to us trying to see if a worm could be as long as the tubes and also lead us to creative play using the tubes as worms and "feeding" them things such as wood chips and dirt. We then followed that up by discussing how worms are an important part of our eco system and are needed to help plants grow healthy which we and other animals eat. Through this we were able to learn about more than just worms and were able to learn the importance of taking care of animals because we are all inter connected.