

The Project Approach to Learning at

RisingOaks
Early Learning

| St. Matthew

Project Name: Creepy Crawly Spiders

Age Group: School-age 1

Project Start Date: January 25, 2022

Project End Date: March 31, 2022



RisingOaks
Early Learning

Growing minds through play

Background

The Spider project started on January 17th 2022 in the School-Age group 1 class and ended on March 31, 2022. There were 25 children who participated in this project, however not all at the same time. The children involved in this project ranged from 3 1/2 years of age to 5 years of age. The educators involved were Keri Neeb, RECE and Josephine Allishaw, RECE.

Phase 1: Beginning the Project

This project was sparked by the children's ongoing interest and investigation every time they came across a spider inside the program room. The children would hypothesize together what type of spider they thought it was. After much debate and collaboration, the children would come to conclusions together as a group. Both Keri and Josephine took this as a great opportunity to commence a project on Spiders.

To start the project, we first wanted to highlight what the children already knew about Spiders; and then challenge them with coming up with a list of things they wanted to find out about spiders. Below is the lists that the children compiled together with a little help from the educators.

What do we know?

- They have eight legs - Samuel (4 years of age)
- They eat bugs - Max F. (4 years of age)
- They make webs - Sloan (4 years of age)

Formal definition:

- An eight-legged predatory arachnid with an unsegmented body consisting of a fused head and thorax and a rounded abdomen. Spiders have fangs that inject venom into their prey, and most kinds spin webs in which to capture insects.

Informal definition:

- Something that spins and makes webs (Helena)
- A spider is a creature. (Alexis)

Questionnaire:

Are you Afraid Of Spiders?

Name	Yes	No
Lucas	✓	
Alexis	✓	
Aubree		✓
Sloane	✓	
Lucy		✓
Max F	✓	
Stanley		✓
Grace	✓	
Raine	✓	
Ella		✓
Helena		✓
Thomas	✓	
Samuel	✓	
Lily		✓
Mya	✓	
Max		✓
Reid		✓
Austin		✓
Andrea	✓	
Rachel		✓
Liam		✓

Figure 1 Survey highlighting children's input into fears

What we want to know?

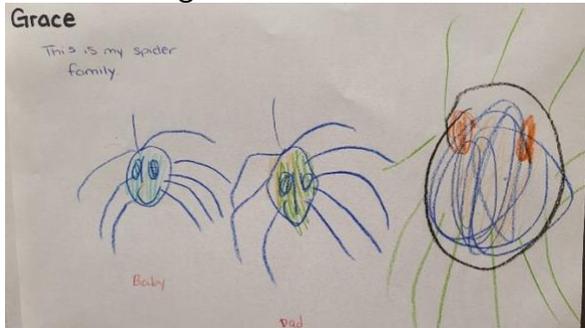
- How many babies can spiders have? - School teacher
- Why do spiders lay eggs? - Max
- What do the colors on spiders mean? - Keri
- Why do they have eight legs? - Lucy
- How many spiders are in the world? - Collective group
- Where do they live? - Collective group
- What do they eat? - Collective group

Who can we ask?

- Google and the internet
- Amazon Alexa
- Spider expert

First Drawings -

Grace



Max F.

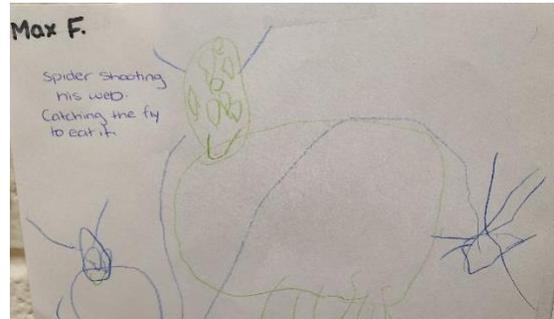
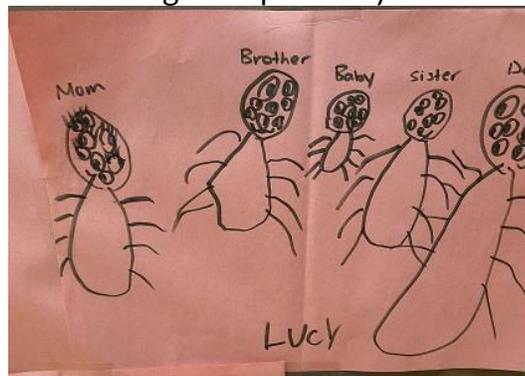
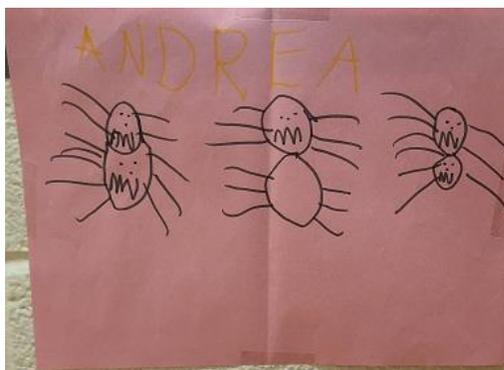


Figure 2 The children's first drawings of their spiders

Second Drawings - towards the end of the project, the children took all of the learning concepts that they could and turned these concepts into their second drawing representations. See below for some of these drawings completed by the children.



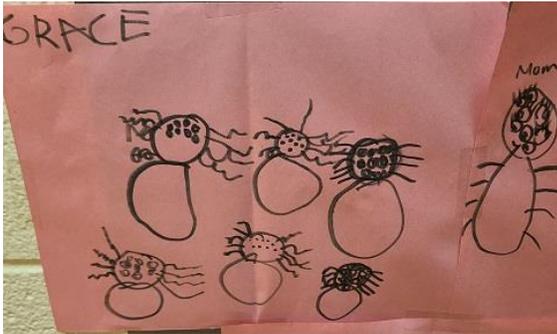


Figure 3 Children's second drawings of their spiders

Visual Representations

To enhance their first drawing, the children also created a visual representation of their spiders using clay to help bring their representation one-step further. This process allowed them to develop their creative expression as they used their imagination to create their vision. They were excited to share off their work with their peers and even traded ideas with each other in the process of making their spider.



Figure 3 Visual representation of a spider



Figure 5 Representation of a spider with 8 legs



Figure 6 Sense of pride in spider creations



Figure 7 Lucy showing off her spider representation

Phase 2: Developing the Project

Live Web

Together as educators, Keri and Josephine wanted to ensure they were able to capture the children's learning in an engaging way. We came up with the idea of instead creating a separate learning web; our project display board would be our live web. The visual representation of a habitat of arachnids. As the children's learning and investigations into the project grow, so will our web. Together, we will be able to reflect on the process we go through as we dive into the world of Spiders.



Figure 8 The starting live web in which will build with the project.

Below highlights the finished web that was completed by the children as the project ended. This web signifies all of the learning that took place throughout the duration of the project.



Figure 9 Final web representation by the children and educators

Vocabulary List

Throughout the entirety of the project, any new vocabulary that was gained by the children while investigating Spiders was added to our growing vocabulary list. This list was frequently re-visited by the children, as we were moving through the project stages. This allowed them to use these vocabulary words in their conversations regarding certain investigative activities.

- | | | |
|-----------------|----------------|-------------|
| - Spinnerets | - predator | - crawling |
| - Pedipalps | - Invertebrate | - predatory |
| - Cephalothorax | - venom | - thorax |
| - Ballooning | - paralyzes | - tropical |
| - Molting | - habitat | - habitats |
| - Spider lings | - vibrations | - fatal |
| - Arachnids | - cannibals | |

Spider Discovery

During the second day of our project starting, the group was able to catch a close-up look at two spiders who were making their home in the warmth of the school. The children examined the spiders, and began a conversation of what they were. "That one is a daddy long leg spider!" Reid exclaimed. "I am not sure about that one though?" Ella told the group. Nearing the end of our project, the children were tasked with going on a spider hunt at their own house. The children headed both indoors and out to see what

different spiders that they could find. When the children returned the next day, they were ecstatic to share with the group in their discoveries.



Figure 10 Children exploring for spiders in their house

How many spiders are in the world? What are the types? Where do the live?

Before diving deeper into spiders, the group concluded that they first wanted to explore and investigate how many different spider species are known to be in existence in the world today. To do this, we researched on the iPads, along with read various articles and watched various videos that highlighted some of this information. Educator Josephine also took a trip to the local library to pick up a variety of informational books on Spiders. The children had the opportunity to look through these books and use their observation skills to identify differences and similarities in the spiders they see. The children showed excitement while exploring these books and ensured to use their communication skills as they highlighted the things they saw to both their peers and educators.

Below is some information that the children took from these videos and books:

- More than 43, 000 different breeds of spiders in the world currently
- Of these, there are only a few that have been proven dangerous to humans
- The common spiders are the ones that we find in Ontario

This link highlights some of the points that we found in relation to the spiders we have seen around here.

<https://www.pestworld.org/news-hub/pest-articles/spiders-101/>

With much research and investigation into the topic of Spiders, the children showed much engagement when it came to finding out where the various different types of spiders live. They used their communication skills through both active communication and passive communication as they told stories and used books to share their findings with their peers. To do this, we again used books, the internet, recapitulative skills, and research to find out the information we were searching for.

Below is some information the children found in relation to where spiders live on our earth and their variety in the environments they live in.

- Spiders live everywhere on our earth, except for areas in which their habitats cannot be sustained. Such as cold regions, oceans, and places with high altitudes like mountains.
- Spiders like to live in habitats such as rain forests, tropical destinations, and colder regions such as our home country of Canada.
- Spiders can live on water, such as those of the water spider. They glide across the water and that is how they travel from place to place

What are Spiders?

To answer the question about what species spiders are classified in, we took to the internet and book resources to research what we could about spiders. Collectively as a group, we discovered that spiders are classified as arachnids, and are in the same family as scorpions and ticks. They have the ability to spin silk and catch their prey using the webs that they create. Spiders have eight eyes, and have the ability to see their prey from a far distance.

We also discovered that Spiders have the ability to lie and place hundreds and even into the thousands of eggs into an egg sac, to ensure that the species has a chance of survival. Most spiders, when they are born, are eaten by other wildlife or do not have a large survival rate. The group found this interesting and Alexis asked, "How do they go from eggs to big spiders?"

To expand and answer this question, educator Keri and Josephine decided to look at the lifecycle of spiders. This experience provided the children with the ability to find out exactly where spiders started and how they continue to grow and reproduce.

For this experience, we first watched a few videos, which highlighted the steps that take place during the spider's transition from egg to adult. Educator Josephine created a 3-D replica of what this lifecycle would look like, and challenged the group to use their

creative expression and innovative thinking to choose one aspect of the lifecycle and recreate it using materials provided to them.

The following information was discovered through a google search.

Some key points the children learned about a spider's lifestyle include:

- Start as tiny eggs (hundreds) that are wrapped in silk to create a sac
- Spider lings hatch but will wait until the web is warm to come out. They do this by biting open the sac.
- After a few days, the spider lings will leave their web to find their own space to make their own web.
- Eventually, the baby spiders molt into their new skin, which they will continue to do for 5-9 times before, they become an adult spider.

As the children worked on their lifecycles, comments were made that highlighted their gained knowledge on spiders as the project moves throughout its stages. "I made all of the stages. This would be the egg sac, the babies and even the adult spider," Reid explained to a nearby peer. "I even added a web in mine!" Ella told her educators.



Figure 11 Staff representation of a spiders lifecycle.



Figure 12 Child's representation of an egg sac.



Figure 13 Child's spider representation



Figure 14 Child's large egg sac representation

After this experience, we also took some time to take notice of the differences between spiders and insects. The group turned to books and the internet as resources for this information.

What are the differences between Spiders and Insects?

Spiders	Insects
- has eight eyes or less	- has two eyes
- has eight legs	- has six legs
- spins web to move around	- uses wings
- has two body parts	- has three body parts
- molt	- grow through metamorphosis
- blue colour blood	- colourless blood
- breath through trachea and book lungs	- breath through trachea only
- mainly predators	- feed on both animal material and plants
- can't chew, sucks up food	- can chew

Figure 15 Differences between insects and spiders highlighted.

What do the colors on spiders mean?

Colour has many functions in spiders. For example, the bright colors of male jumping spiders helps to attract their female counterparts. Spiders have the ability to blend in well with their environment as a form of camouflage to protect themselves with a variety of predators. The multiple colours found on some spiders makes it harder for predators to recognize what species it belongs to. The predator would not take the chance to eat the spider as it could be potentially fatal to them. Predators would be more likely to venture off than to take the risk and eat the spider. Spiders are cold-blooded animals that take on the temperature of any environment that they are living in. If the temperature is cold outside, they will adjust their temperature to match. The same if the temperature was hot and humid. Dark colour spiders absorb more sunlight, which in turn releases heat, and lighter colour spiders reflect more light and stay cooler.

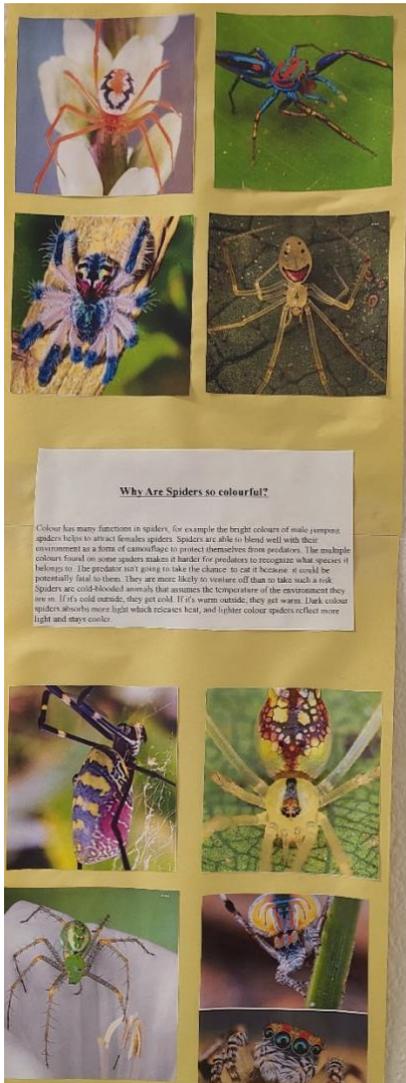


Figure 16 Colors of the spiders

Why do they have eight legs?

To discover why exactly spiders have eight legs, the group took to some template drawings highlighting all of the essential body parts on a spider that can be seen by the human eye. The children first used their creative expression to color their own individual spider in colors that replicated a spider that they have already learned about previously. Some chose the black and brown of a Tarantula, while others chose the black and red of a Black Widow Spider.

From here, the children each cut out the body part name plates and identified the correct areas in which they were to be placed onto their spider. Some of these parts included the abdomen, feelers, spinnerets, and the head.

This experience led into the great conversation as to why spiders have eight legs. Educator Josephine explained to the children that all spiders need eight legs so that they are able to climb and weave their webs. They have special hairs and traction on their legs, which assist in scaling walls, trees, and furniture. **Below highlights, some of the information we discovered surrounding this question:**

- We discovered that horseshoe crabs and spiders are an evolved species. They came from the same ancestors. - GOOGLE WEBSEARCH
- Scientists call spiders feet tarsi, and they are covered in tiny hairs that allow the spider to limit the amount of surface time their legs come into contact with their own silk when spinning their webs - www.vpr.org
- They have the ability to hold onto an object with 4 of their legs, while using the other 4 legs to catch their prey or spin their webs - www.quora.com



Figure 17 Rachel showing off her finished diagram

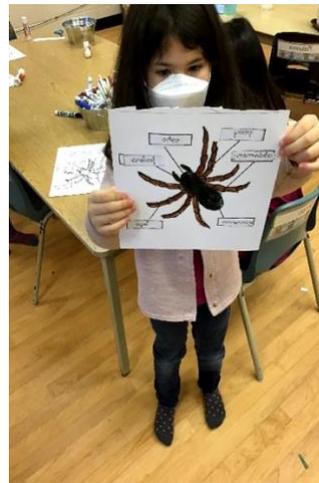


Figure 18 Ella created her spider to look like a Tarantula

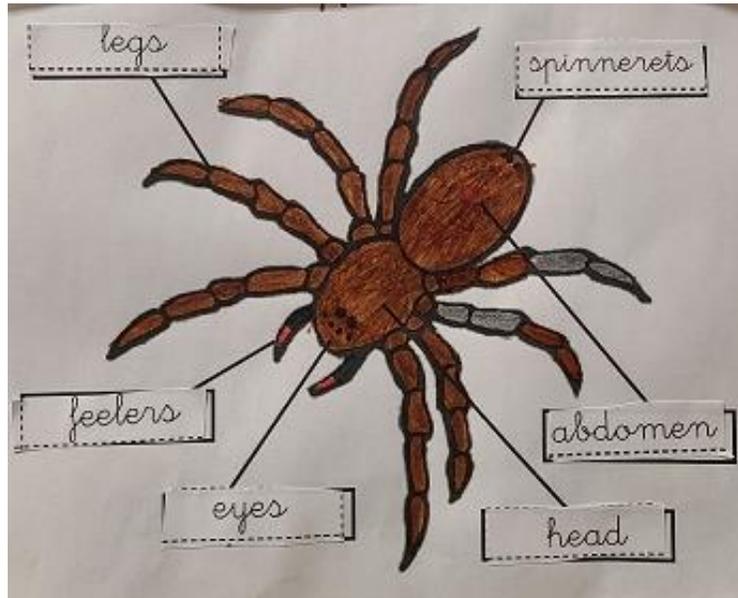


Figure 19 Andrea hard at work labelling the parts of her spider. Her finished product with body parts labelled correctly.

The following information was gathered from Google searches and books loaned from the library for children to research and investigate through.

Body parts and their functions:

- Legs: walking, jumping, scaling various surfaces at steep angles, pulling silk from spinnerets, attack and pin their prey, and the hairs on their legs sense vibrations and smells.
- Pedipalp: used for capturing or holding prey, taste and smell organs
- Spinnerets: (silk spinning organs) silk is used for climbing, to create webs, to build smooth wall in burrows, build egg sacs, and wrap prey.
- Eyes: spiders cannot turn their heads to look at things, extra eyes around their head helps them to see the world around them and to quickly spot prey or predators.
- Fangs/Chelicerae: biting and injecting venom in their prey
- Cephalothorax: head and thorax combined, contains the brain and stomach. The legs, eyes, pedipalps, and fangs are attached to this part of the body.
- Abdomen: this part of the body contains the lungs, heart and spinnerets

What do they eat?

One of the main questions that kept arising during previous experiences into our spider investigations was what spiders ate.

The children answered this question by observing a few informational videos using the iPad. The group first used our recapitulative skills to engage in a collective conversation about experiences and if we have, overheard or overseen mention to what spiders ate during previous activities. After much conversation, the children were able to come up with a complete list of animals that spiders eat in their diet. Some of these animals included worms, small birds, worm, small frogs, etc. Educator Keri then introduced an activity to the group that would test their recap and memory skills. The children were tasked with colouring various objects, and then guessing on if the object went in the yes column or the No column as it pertained to a spider's diet. This experience sparked much conversation between the group as they communicated back and forth, as to what they thought. They showed teamwork and resilience as they problem solved together to finish their activity.



Figure 20 Matching items spiders eat



Figure 21 Using hand-eye coordination to cut out items.

Another aspect that we looked at in its connection to a spider's diet was their webs. The children were able to identify that the spider's web is spun and constructed using silk also created from the spider. This silk is then distributed from the spider's abdomen. The silky web is difficult to be spotted from the spider's prey, making it the perfect trap for the spider to collect its food. The children also discovered that a spider does not stick to their web as they have special hairs on their legs that limit the amount of surface time their feet stay on the webs. To expand on this, the children used spaghetti noodles and paper plates to create their own design of a web. Some children chose strands to be close together, while others decided to make their web larger. As a final activity, the group took to a game, which highlighted and replicated the stickiness of a spider's web using a hula hoop, pom poms and tape.



Figure 22 Child recreating their web



Figure 23 Using hand-eye coordination to stick objects onto our webs

Special Guest - Little Ray's Reptiles

As the afterschool group 1 children continue their investigations into their spider project, the children's sense of curiosity continues to grow as they discover different species of spiders, their diets, feeding habits, along with the amazing colors and designs each spider has. As we are unable to do a lot of stuff in person right now, the educators decided to bring in a special guest over zoom. Our guest speaker was Paul "the reptile man" from Little Rays Reptiles. Throughout this presentation, the children had the opportunity to gain new insight into spiders. Paul showed the children different types of webs like orb weaving webs, funnel webs, sheet webs and even tangle webs. The children gained even more curiosity during this part of the presentation. He also demonstrated with cartoon drawings on how the spider uses various webs to capture its prey. The children discovered that not all spiders spin webs, and the Brown Recluse spider, Wolf spider and Jumping spider are hunters and do not require webs to catch their prey. The children also learned that scorpions, mites, ticks and horseshoe crabs are all part of the arachnid family. Horseshoe crabs have blue blood and are very helpful to us. They are able to detect the presence of toxins in humans and are used to sterilize medical equipment and other materials. One interesting fact that the children took from this presentation was that Rose Hair Tarantulas are used in TV shows and movies, as they are extremely calm and easy to care for. These type of spiders make great pets. Spiders have the ability to be fascinating creatures that help to get rid of household and garden pests. So if you don't see any insects around your home, be sure to thank the spiders when you see them instead of trying to squash it. The children thoroughly enjoyed this entire presentation and can't wait to see where our spider project finishes off.



Figure 24 Screenshots taken of the Little Rays presentation of both the spider webs and an up close of a tarantula

Phase 3: Concluding the Project

To make our paper Maché Black Widow spider we used two blown up balloons, a large one for the abdomen and a smaller one for the head. Each balloon was taped to a vase to keep its position in place.

The children used their fine motor skills, quick innovative thinking, and their hand-eye coordination skills as they took turns applying a paste of glue and water to the balloons, while others smooth on strips of black tissue paper onto it. Several layers were added to the balloons, and it was left to harden

The balloons were then popped with a paper clip and pulled out of the paper Mache structures, then the small and large paper Mache pieces were tapes together to create the spiders body. More layers of paste and black tissue paper was added to the spider's body.

Three pieces of pipe cleaner were then twisted together to make a spider leg. Eight legs were hot glued onto the underside of the spider's head; four smaller pieces of pipe cleaners were hot glued onto the front of the spiders head for the fangs and pedipalps. Eight googly eyes were also added to the spiders head, four pipe cleaner spinnerets were glued to the back and the abdomen and hourglass shaped red tissue paper was pasted onto the top and bottom of the abdomen.

Lucy attached a see through bag with several small black plastic spiders in it to the front leg of the spider and said, "Now the spider is complete. She has her babies inside the sac"

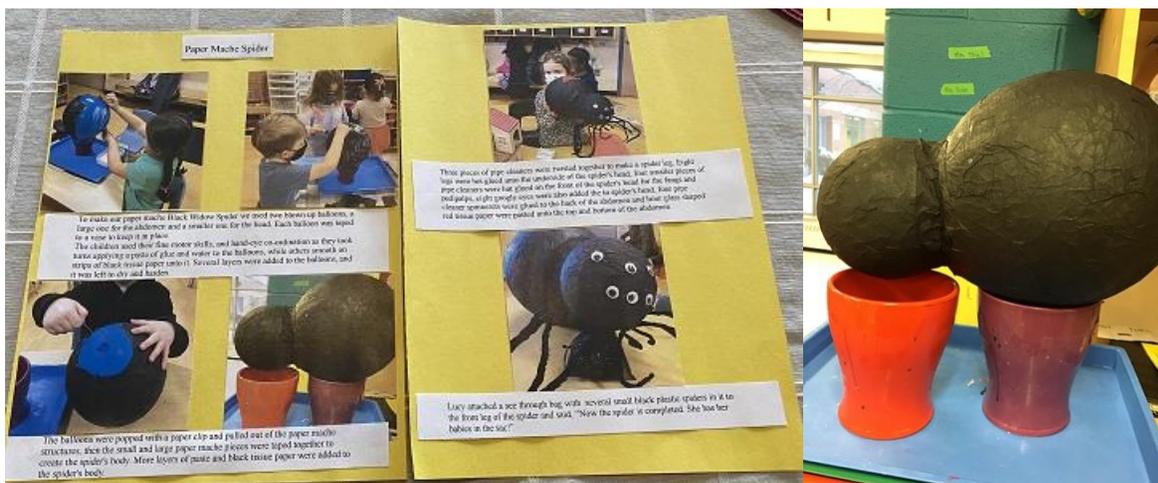


Figure 25 Finished process

Teacher Reflections

Completing this project alongside the JKK/SK group has been a very rewarding experience for both Josephine and myself. Once again, we as educators found ourselves learning alongside them as we answered every question that was initially asked. There were a few bumps along the road, some disagreements in some answers, but in the end, we always came to a conclusion and finished the task at hand. The cohesiveness of the group throughout each activity has been nothing like I have seen before. Completing a project on spiders gave us the opportunity to collectively work together on a common interest. The past few years has taught us one thing, nothing beats the power of teamwork and coming together as one. Overall, this experience taught us many things, and we look forward to sharing this project with you.