April is always an exciting month in the kindergarten! Each year, eggs arrive for the children to attempt to hatch. In preparation for the big event, the children helped set up an incubator in the classroom. The incubator temperature has to be kept at a steady 99.5. The humidity has to stay around 50%. We use an egg turner to simulate the mother hen turning her eggs. Just to be safe, we set up two incubators, putting half of the eggs in each.

On April 7th, 12 eggs arrived! The children were surprised that the eggs were not white but a variety of colors. The children counted and then placed the eggs onto the egg turner in the warmed incubator. We made a hatching calendar to track the 21 day incubation process. During this time, preschool friends enjoyed visiting our eggs. The kindergarten loved explaining the process to the younger children!
CANDLING

Our 21 days of waiting for our eggs to hatch were filled with a variety of egg activities. The children were very interested in what was happening inside the eggs. Each day we watched this YouTube video showing the development of the chicken embryo (http://www.youtube.com/watch?v=PedajVADLGw).

On Day 7, we candled the eggs to check if we could see any development. Again we used the computer to view photos of what to look for while we were candling. We were checking for the appearance of veins and a dark spot for the eye. The children were fascinated with how much we could see inside our eggs. We marked the “good” eggs with a star, the “not sure” eggs with an X and threw away several eggs that were not fertilized. Each morning we candled the eggs and watched our chicks developing. The children were so excited when we saw a chick moving inside the shell!

“EGG”-SPLORATION

Our interest with eggs led us to deeper exploration. The children were given an unfertilized egg to explore. We observed the shell, which we discovered is porous. Immediately beneath the shell are two membranes, the outer and inner shell membranes. These membranes protect the contents of the egg from bacteria and prevent moisture from leaving the egg too quickly. The yolk is the source of food for the embryo and contains all the fat in the egg.

The small white spot on the yolk is called the germinal disc. The germinal disc is where the female's genetic material is found.

We continued exploring eggs by comparing a raw egg to a hard boiled egg. The children conducted simple tests on both eggs to see which egg floated, weighed more and spun the longest. Then they recorded their observations.

HUMPTY-DUMPTY EGG DROP

Aside from hatching the chicks, a favorite activity this past month was the Humpty Dumpty Egg Drop. Each child was given a hard boiled egg inside a Ziploc Baggy. Mrs. Blizman set out a variety of materials (such as cotton, pom-poms, beans, styro foam, wood chips, etc.) and challenged the children to protect Humpty Dumpty from the fall off the wall (ladder) by filling the bag. The children filled the bag with the materials of their choice and positioned the egg inside in the place they felt was the most protected. Humpty was then carried up a six foot ladder and dropped off onto the floor. The egg was taken out of the bag and checked for cracks to find out which Humpty survived.
**Shape=Strength**

**I wonder...** how strong is an egg. Can it hold the weight of a person?

**I think...** the eggs will crack when we stand on them.

**I learned...** an egg can support our weight!

One end of the egg is more “pointy” while the other end is more round. Just make sure that all of the eggs are oriented in the same direction. By doing this, your foot will have a more level surface on which to stand.

The shape of the egg is the secret! The egg’s unique shape gives it tremendous strength, despite its seeming fragility. Eggs are similar in shape to a three-dimensional arch, one of the strongest architectural forms. The egg is the strongest at the top and the bottom (or at the highest point of the arch).

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**Force Distribution**

**I wonder...** although we know that the egg can hold our standing weight, we were sure that we could squeeze the egg with our hands and break it.

**I think...** the eggs will crack when we squeeze them in our hands.

**I learned...** By completely surrounding the egg with your hand or two hands, the pressure you apply by squeezing is distributed evenly all over the egg. However, eggs do not stand up well to uneven forces, which is why they crack easily on the side of a bowl.

This fact also explains how a hen can sit on an egg and not break it, but a tiny little chick can break through the eggshell—the weight of the hen is evenly distributed over the egg, while the pecking of the chick is an uneven force directed at just one spot on the egg.

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**Inertia**

**I wonder...** what will happen if we hit the paper plate out from under the egg.

**I think...** the egg will go flying across the room!

**I learned...** since the egg is not moving while it sits on top of the tube, that’s what it wants to do - not move. We applied enough force to the paper plate to cause it to zip out from under the cardboard tube (there’s not much friction against the drinking glass). The edge of the tray hooked the bottom of the tube, which then sailed off with the tray. Basically, we knocked the support out from under the egg. For a brief nanosecond or two, the egg didn’t move because it was already stationary (not moving). But then, as usual, the force of gravity took over and pulled the egg straight down toward the center of the Earth and into the glass of water.

The setup includes a large glass of water, a paper plate, a cardboard tube and an egg.
FINALLY... CHICKENS!
After much anticipation and 21 days of patiently waiting, our chicks started to hatch...right on schedule, Tuesday, April 28th. Out of the 10 viable eggs, three chicks successfully hatched. The children watched as the chicks pipped through the egg shell. Although the children did not witness an actual hatch, Mrs. Blizman recorded the first hatch for them to watch during circle time. The children have been so proud caring for and showing off our new additions.

We filled the time waiting for the chicks to hatch by learning about insects. First we learned how to identify an insect and went on an Insect Hunt. Insects are the most diverse and important group of animals on land. There are more species of insects than all other land animals put together. Insects are members of a larger group called arthropods. All arthropods have a rigid exoskeleton and legs that are jointed. In order to grow, arthropods have to shed their whole exoskeleton all at once; this is called molting.

All insects have bodies that are divided into three sections: the head, thorax, and abdomen. Nearly all insects have a pair of antennae on their heads. They use their antennae to touch and smell the world around them. Adult insects have six legs that are attached to the middle section of the body, the thorax. Insects are the only arthropods that have wings, and the wings are always attached to the thorax, like the legs. Insects have two compound eyes.

All insects lay eggs. There are two ways that insects grow: complete or incomplete metamorphosis. Insects that have complete metamorphosis have babies that look very different from the adults and often eat very different foods than adults. Butterflies, beetles, and true flies are some of the groups that have complete metamorphosis. The babies are called larvae. Caterpillars and maggots are examples of insect larvae. Larvae often have soft exoskeletons that stretch so they can grow fast, and they go through a resting stage called a pupa before emerging as an adult. Insects that have incomplete metamorphosis have babies that look like small adults with no wings. They usually eat the same kind of food as the adults do. Grasshoppers and cockroaches are two kinds of insects that have incomplete metamorphosis.
BUTTERFLIES VS MOTHS

Our first insects to study were the butterfly and moth. Mrs. Armbruster led the children in a lesson on symmetry as they made colorful, tissue paper butterflies to hang in the windows.

The children recreated the 4 life cycle stages for all butterflies and moths: egg, larva (or caterpillar), pupa, and adult - emphasizing the difference between a chrysalis and a cocoon.

We compared and contrasted the two species using a Venn Diagram to chart the differences.

### BUTTERFLY
- Bright color
- Slender, smooth body
- Long, thin antennae
- Rests with wings closed
- Makes a chrysalis
- Cannot detect sound
- Uses sight to select mates
- Active during the day
- Uses sun to warm up
- Have a proboscis

### Moth
- Less bright
- Plump, fuzzy body
- Short, feathery antennae
- Wings usually open
- Makes cocoon on ground
- Have ears
- Uses scent to select mates
- Active mostly at night
- Moves wings to warm up
- No proboscis.

We concluded our lesson on butterflies and moths by using oil pastels to draw a butterfly or moth and the corresponding caterpillar. The children wrote informational facts about these insects. The colorful results were displayed on the three hallway bulletin boards for the whole school to enjoy.

POLLINATION

Pollination is a very important part of the life cycle of plants. Plants cannot produce fruit or seeds unless they are pollinated. Pollen is transferred by pollinators, which can be insects. Once pollination takes place, seeds begin to grow. The children loved this short Youtube video explaining the pollination process: [https://www.youtube.com/watch?v=zy3r1zlC_IU](https://www.youtube.com/watch?v=zy3r1zlC_IU)

The children shook out dandelions onto a piece of paper to see the pollen. To demonstrate the pollination process in the classroom, the children ate a cheese covered cheetos “flower” then, without licking their fingers, sipped juice from a “flower” juice box. The “pollen” cheese from the one flower transferred to the juice flower.
BEES

After exploring pollination, we moved on to the most famous pollinator, the honey bee.

Honeybees and bumblebees live in colonies or hives. Each colony has an unique odor for member identification. All the bees in the colony work together for the good of the hive. Each has a job to do: the one queen lays the eggs and the workers (females) build the honeycomb, care for the larvae and collect the food, the drones (males) wait to mate with the queen. Only workers have stingers.

Bees fly from flower to flower, sipping nectar and collecting grains of pollen. Bees have a special tongue that sucks up the nectar and a crop in their throat for storing it until they get back to the hive, where it is turned into honey to use as food. Bees collect pollen in the pollen pocket located on their back legs. Our favorite activity was honey tasting. We compared flavors of honey to choose our favorite.

Honeybees communicate with one another by dancing. We learned to dance the Bee Waggle and danced to the Flight of a Bumble Bee.

The children created a classroom hive, first by recreating a model of a hive and colony using paint, recycled materials and paper and then by turning our dramatic play area into a hive. The children pretended to be a queen, workers, drones or a bee keeper.

BEETLES

The last insect that we studied was the beetle. Beetles are the largest group if living organisms known to science. One out of every four animals on Earth is a beetle! One of the traits that make beetles easy to recognize is their hardened forewings, that serve as armor. These wings can be metallic and colorful, which makes them very beautiful.

Using all the knowledge of insects that we acquired over the past month, each child made an insect diorama. Collecting natural materials from the park for the background, we added insects of our own design.