The Coming of Life

ESSORI

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Great Lesson 2

Addlo Montessori

The Story of the Coming of Life on Earth

Great Lesson 2

The Coming of Life

The story of the Coming of Life is the second in the Great Lesson series and is Maria Montessori's way of explaining the How and the Why of Life on Earth to the children. How would you explain it?

How do we explain it in a way that gives the child the big picture so that they can be motivated and fascinated with life and its so many varied forms.

The story opens up the avenue for children to study life on Earth: Biology through Botany, the study of plants and Zoology, the study of animals.

In this version we will combine Great lesson 1 with Great Lesson 2. I find this a useful version for the younger minds. (Inspired from Denys Lyne's version)

Materials:

Black balloon

A pin

Black circular piece of material

Red, orange and yellow chiffon scarves

Pieces of brown material

The Story of the Coming of Life on Earth

Pieces of blue material

White, grey and brown chiffon

Water

White and Black Hama beads

Small animals and plant models

The Story:

In the very beginning before you were born, before Mummy and Daddy were born even our grand pas and great grand mas, were born there was nothing!

It was dark and very cold.

Then suddenly something happened. (Stick a pin in the blown up black balloon.)

Burst!

There was this big bang, small particles collided with lumps of particles forming. These got bigger and bigger, then hotter and hotter!

Many stars were made and our sun was one of them.

Then the planets were born and **our earth** was one of them.

The Story of the Coming of Life on Earth

Particles collided for many, many millions of years, until the young earth became its present size.

You could also use this version after telling The First Great Story... this is how you would start it though:

*Do you remember from our last story how gas and dust exploded into space with a **Big Bang**?*

Everything was spinning and the smallest particles colliding. Lumps of matter formed, which got bigger and bigger and hotter and hotter. Many stars were made and our sun was one of them. Then the planets were born amongst which is our Earth. The particles had to collide for many years until the young earth became its present size. (You can now continue the story from here on.)

The **Universe** was so dark

Spread your arm over the black circle. and the earth was a burning hot land.

Place orange and red scarves in the middle of the circle.

It got hotter and hotter,

Place yellow scarves in with the red and orange.

Then slowly it cooled a little, enough for a very **thin crust** to form on its surface.

But the core remained hot and **volcanoes** formed.

The Story of the Coming of Life on Earth

Make volcano shapes with the brown fabric.

Space objects were attracted to the Earth making huge craters and breaking the crust.

These **meteorites** brought a lot of metals and water.

The volcanoes spat out hot lava and water vapour.

Flick water on the black fabric.

This is how water first came to the surface of the Earth.

The Earth's surface started to cool.

It rained and it rained and poisonous gases enveloped the Earth.

Place the grey chiffon over the earth

Then some drops of water started to collect, forming first puddles and then pools, then lakes. Brooks became rivers and then became seas,

Flick more water onto the black fabric. and eventually great oceans.

Put the blue fabric on the circle.

Then the land came in the form of big continents.

Place some brown fabrics on the circle.

The Story of the Coming of Life on Earth

Use drums for clapping or clap your hands on your legs.

Then many years later the first life forms emerged on our earth in the oceans, very tiny creatures.

Throw black Hama beads on the blue fabric.

This we call bacteria, without it no life form can live. We all need bacteria and water to survive.

In the ocean billions of bacteria started to produce oxygen, but the iron used it all up, turning the water rusty red.

Place brown chiffon over the blue fabric

When the oxygen rose up it joined the other gases to envelope the Earth.

This is called the **atmosphere**, it envelopes the Earth and protects it.

Raise white chiffon over the black fabric.

Now after millions of years there was the Earth formed with land, water and an atmosphere.

Earth began to see new life forms, which were singled celled organ isms. These jelly like creatures were called amoebas.

Throw white Hama beads over the fabrics.

The Story of the Coming of Life on Earth

After billions of years some new life forms developed in the water.

Place examples in the water- blue fabric - fish

Life spread out onto the land as mosses, ferns and later bigger plants.

Place examples on land - the brown fabric- plants

More life in the seas spread to the land, they explored and were able to live on both land and in the sea, they needed both for their survival. The Amphibians emerged.

Place examples on the fabric- frogs- on brown and blue fabric

Life took to the skies and birds emerged.

Place examples on the fabric - birds

Millions of years passed, catastrophes happened and then the biggest beings ever emerged, the dinosaurs.

Place dinosaurs on the black fabric

Then for reasons we do not know, but maybe due to a huge meteorite hitting the Earth, the dinsaurs died out.

Small insects and flowers now emerged.

Place examples on the fabric - insects and flowers

The Story of the Coming of Life on Earth

The surface of the Earth changed new mountains grew along with rivers and seas.

Mammals emerged

Place examples on the fabric - mammals

Apes emerged and shortly after the dandelions that you see growing in the grass, came our ancestors and finally man.

Place early man on the fabric - man

But that is another story for another day.

This is another version... one considered to be nearest to the original version. There is no record of the original version though. This is from the Moteaco website and it gives you a detailed more extensive story.

For this story you require an impressionistic chart: The Great Lesson 2 Timeline. This is your main

Material for this lesson, which you can buy or make. A truncated version from the Moteaco site is provided in pdf form which you can download from this lesson page.

The Story

Remember the story of how the earth came to be? Today let' s hear the story of earth coming to life with plants and all kinds of animals.

The Story of the Coming of Life on Earth

Think back to when the earth was born; just a drop of light and heat, full of commotion and confusion. And in all that, each particle was given a set of laws. The earth cooled and settled down according to these laws: water, rocks, and the air surrounding it.

The earth was a beautiful little pearl lit up by her mother, the sun. The sun could not stop looking at it. It looked day and night.

One day the sun saw something was not quite in order. Something was beginning to happen. There was trouble! It rained a lot on this earth. As the water passed through the

air it got mixed with different gasses (carbon dioxide, sulfer dioxide, and nitrous oxide).

This made an acid rain that washed over the rocks and washed parts of them into the sea. There were lots of storms and water pounding on the rocks breaking them down more and more. The sea was becoming full of the mineral salts. The land was being washed away. It looked like the order that had been created was beginning to be lost!

Who was causing this? Who was the culprit?

Sun looked at Water and said: "Water, you must be the culprit. You are washing the salts into the sea!"

But Water said: "Who, me? What have I done? Remember how I am made and the laws that I must follow! When I become hot I rise up as vapor, but if I get cold I must fall down as a liquid. Since I am a liquid I must press downward and sideways, and whenever I see a hollow I have to enter. What can I do? I don' t have any choice! And my sister Air stirs me up and carries me around, dropping me on the rocks. It' s her fault that I have to move, talk to her!"

Air said: "Me? I like that! I was given the job of covering the earth with layers of blankets so she won' t be cold. I have to always cover her, but she has a big tummy and her head and feet are frozen. I have to keep on the move to cover them. Whenever I go near Water, she jumps on my back to take a ride! That' s fin when it' s flat, but when I run into mountains it' s different. It is hard climbing mountains and I get so tired carrying

Water up the mountain that I have to drop her. I can' t play all of the time. I have important work to do! It' s the fault of those rocks! Why does the earth have to have such a wrinkly skin? Rocks have no consideration at all! They do not move to let me pass. Sometimes they get so hot that when I go near them I have to climb up to avoid burning. When they are freezing, I cringe!"

The Rocks said with one voice: "Why do you blame us? We are not doing anything but sitting around! Do you think we want to get hot? The sun shines on us and we cannot help it. We are made this way. If you ask us, Sun, it is your fault. You are the culprit!"

And so it went on. Non one wanted to be blamed, but the trouble just got worse and worse. You see, everything was at fault. Everything was acting just the way it should, following its own laws, and yet the beautiful order was being threatened. Soon the earth would no longer be a beautiful pearl in space. Something had to be done. But what could be done?

A wonderful thing happened! Something new was created, things so small that you could not see them. These tiny particles were given a gift that would save the earth. This gift was sensitivity. These new particles also had some rules. In order to exist, these particles had to eat and grow - but not all of them ate the same things. They were also given the ability to create others like themselves. And so life came like this, as tiny particles in the water.

The tiny particles of life began to eat and eat and eat, and they began to clean up the sea by eating the mineral salts in the water. From the mineral salts some built shells around their bodies for protection. When they died, their shells dropped to the floor of the sea with the salts trapped in them. Time passed and layer upon layer of these tiny shells built up. They were like the pages of a book. Some of these pages that were laid down long before we were born were left for us to read to tell us what happened long, long ago.

Now these tiny creatures were made of just one tiny cell. This tiny cell did all the work that needed to be done - all the eating, breathing, growing, and getting rid of what the cell didn' t want. These tiny creatures drifted around the seas, cleaning the waters for a long time.

Time went on and some of these creatures seem to have said, "Let' s join together and be a bigger creature. We could do things better that way." Thus they formed into bigger creatures made of many cells. They grew, multiplied and fed in the sea as they drifted about.

Then, some of the creatures thought, "Instead of each cell doing the same thing, it would be much better if some of us did one job and others did other jobs. Some could do the eating, some could do the breathing, some could do the moving, and so on." So the cells divided the work up amongst themselves. Some cells were to do the eating, others were to do the moving, and others would do the breathing. Thus came creatures with legs, mouths, hearts, lungs, and so on - creatures with organs. When the Book of Earth is opened to the first page, we can see that all of these creatures were there. The tiny one-celled creatures, the multi-celled creatures, and those with different organs. (Open up the Time Line of Life to the Cambrian Period)

When the Book of Earth opened up its first page, all these tiny creatures were already there, living in the water. Here is the amoeba, a one-celled creature with no shell. (point to the amoeba)

Here' s another, called a flagellate, with two little whips to help it move about. (point to the flagellate)

This creature is made of a group of cells. (point to the sponge)

Sea anemones like this (point to the sea anemone) stayed in one place. In order to get food, they moved the water with these long thin body parts so tiny creatures in the water would come into their mouths.

There was one kind of creature that could be found in these ancient seas in great numbers. (point to the trilobites) They are known as trilobites. Trilobites were the most advanced creatures of their time, and they grew in many shapes and sizes. Today we no longer have these creatures, but they were around for a long time at the beginning of life on earth.

(Open up the Timeline of Life to the Ordovician Period)
Time went on and all kinds of creatures appeared, and all sorts of experiments went on.

Look here! This creature is called a cephalopod. (point to the cephalopod) It had its legs attached to its head. (Open up the Time Line of Life to the Silurian Period)

As time went on, all kinds of animals appeared. Here we have some that look like flowers on a stalk. (point to the crinoids)

They stayed in one place like the anemones. Some built rings of stone out of the salts in the in the sea water. These rings held their soft jelly-like bodies. With the feathery parts they moved in the water they could catch tiny creatures floating about in the sea.

Because they were so colorful and looked like flowers, they were called sea lilies. (point to the seal lilies) But they were animals, not plants. When they died, the stalk of rings collapsed and fell to the bottom of the sea. The waters were full of life at this time! (Open up the Time Line of Life to the Silurian & Devonian Period)

There were creatures of long ago who, instead of eating other creatures, made their own food out of sunlight and salts in the water. As they drifted about, they thought, "I wonder what it would be like over there on the land?" And so they drifted over to the edge of the sea, The waves and tides caught some and washed them onto the land. They stayed there until the water caught them again and washed them back into the sea.

They day came, however, when some said, "Oh, it is lovely here!" They stayed on the land because they had plenty of sunshine and air, which contained a gas called carbon

dioxide that they needed to make food. They attached themselves to the land, from which they could get water and mineral salts. (point to the Silurian/Devonian marsh plants)

And so came the plants. For the first time, plants appeared on the land! When the plants died, they left their bodies there, preparing the ground for other life forms to come. (Open up the Time Line of Life to the Devonian Period)

Life was now moving onto the land. While plants were trying out the land, two new kinds of creatures appeared. One of these was the coral polyp, which helped to build up the land by eating salts in the sea. The other was an animal that had a hard rod in its body.

Up until now, the hard part was always outside the body. This was the beginning of animals with backbones. This animal eventually developed into the fish, but these fish were different from those we have today. They were enormous fish with hard plates on the outside to protect themselves. (point to the Devonian, armored, jawless fish)

They buried themselves in the bottom of the sea with only hard plates sticking out, and waited until a bit of dinner floated by, and then they would open up their mouths and gobble it up. Some could swim very swiftly, and they developed movable fins which helped them to swim better. (Open up the Time Line of Life to the Carboniferous Period)

Then the land began to rise. Places that were in the sea became land and places that had no rain began to dry out. Some fish were cut off from the water. Imagine being a creature in one of these places! You need water so that you can live, but the water dries up! Fish, who needed water, began to think about what to do now that they were on land. They had to change or die. So they decided to build a sack inside their body with water in it so that when there was no water they could still breathe. And so the secret of breathing outside of water was invented.

And so came the amphibians, animals who live partly in the water. (point to the

Carboniferous amphibians)

Fins were of no use any more, so they changed and became legs to walk on.

Something very wonderful happened when the amphibians came. The sound of the first voice on the face of the earth! A voice on the land! Until the amphibians came with their voices, the silence was broken only by the sound of rain on the rocks, or the rumble of thunder. Imagine how exciting it would have been to have heard the first sound ever to be made on the land!

Meanwhile the plants had left the sea. They grew in great variety and size, eating and making their own food with the air and sunlight. (point to the arboreal mosses and ferns in the Carboniferous Period)

The insects also came (point to the Insects in the Carboniferous Period), so there was food around for the amphibians.

They had a great time - except for one little problem: because of their skins, the amphibians needed to be near the water to keep from drying out. Some wanted to be free of the water. They wanted to be independent, and to be able to travel! They wanted to be able to eat plants that grew farther from the water, but how? They thought and thought. They would have to leave the water! (Open up the Time Line of Life to the Permian Period)

So, gradually they developed a special type of skin that did not dry out, and for their eggs they invented a shell. Now there was no problem! These were the reptiles. They had a skin that could be in the sun and shells for their eggs so they would not dry out. (point to the Permian Period reptile) Now they could move wherever they wished across the land!

And then what happened? There were plenty of plants and amphibians. The reptiles had a good time and they grew and grew. many experiments were tried. There was no one

to stop these creatures, and they became the lords and masters of the world! They took over the land, and the seas, and they even took control of the air! (Open the Time Line of Life to the Mesozoic Era)

Here is a picture of one of these creatures: (Introduce the Apatosaurus Chart)

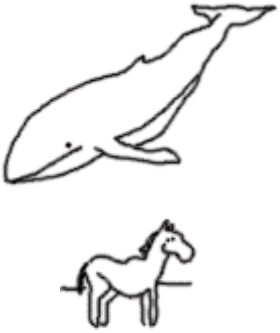
Do you know how big this creature was? Seventy feet long! This creature had a head that was a big as a man' s body! Our classroom is ___ feet long. This animal would fill more than ___ rooms like this! There was something peculiar about this creature. It had a brain in its head, and another down near the base of its tail, so that messages from the tail didn' t have to travel all the way to the head and acted upon.

Can you imagine how the earth must have shaken as these huge creatures stomped around, feeding? These animals had everything they wanted. The little animals had no chance against these big animals. And so the smaller fled to where it was cold, where the large reptiles could not live and could not get to them.

As time went on, these animals who lived on the fringes where it was cold developed something to protect them from the cold. They developed hair or fur and a way to keep their blood warm without sunlight. These were the first birds and the mammals. (point to the Archaeopteryx of the Jurassic Period and to the Kangaroo of the Cretaceous Period)

What about their eggs? They knew very well what happened to eggs that were left alone, so some began to carry them inside their bodies. The birds, however, could not carry their eggs and still fly, so they built nests for their eggs. One of the birds always stayed with the eggs until the babies were hatched, and fed them until they were big enough to leave the nest. (Open the Time Line of Life to the Cenozoic Era)

The mammals (point to the mammals of the Cenozoic Era) kept their eggs inside them and when the babies were born they fed them with their own milk!



This was very new. No other animal ever did this before! Other animals just left their eggs and some of the eggs were eaten by other animals. The young ones had to look after themselves. But the children of the birds and mammals remained with their parents until they could take care of themselves.

The weather began to change again. It began to get colder and colder. The dinosaurs disappeared, though no one is really sure why this happened. Then the mammals took over. They grew and grew. They were able to go everywhere! There were giant animals: giant pigs. giant hippopotami, and giant elephants. (point to the large herbivore in the

Oligocene Epoch)

The mammals had a good time, even as it got colder, and huge sheets of ice covered much of the earth. The mammals moved all over the earth in search of food and warmer weather. In the end, none of the giant mammals were able to survive.

Something very exciting happened toward the end of a very cold period. A completely new kind of creature emerged! It did not have sharp teeth to eat with, nor huge claws to fight with, nor fur. But it had something that none of the others had. It had a larger brain and it had the power to think and imagine. This creature also had an enormous amount of love. It was different from the other animals, because this animal could go beyond the love of its own children. It could love others, even others it would never see.

This creature was the human being. (point to the human figure at the end of the time line)

You see, it was as if all of this (move your hand across the entire span of the Time Line of Life) had to happen in order for man to come. Human beings would not have found it possible to live if they' d come here (point to the Cambrian Period), or when the plants were first trying out the land (point to the Silurian Period). At the end, though, everything was ready.

The Story of the Coming of Life on Earth

If the earth had a voice, it would have said, "I have spread myself thick with carpets of grass for your feet so you can walk on soft ground. I have put flowers in my hair and covered myself with jewels for your pleasure. My cupboards are full of milk, meats, fruits, and vegetables for you to eat. Down in the cellars are coal and iron. All of me is ready. It is time for you, human beings, to come."

And so we are here. This (move your hand across the entire span of the Time Line of

Life) was all prepared for us, and now we are part of the story.

Follow up work may include:

Study of what plants need to survive.

Experiment on how plants adapt in different environments

Focus on the study of palm trees and flowering plants or herbs

Vegetables and how to prepare and cook them

The Plant Kingdom

Parts of a plant

Types of animals, Vertebrates and invertebrates

Study of Fish, Amphibians, Reptiles, Birds and Mammals

The Animal Kingdom

The Story of the Coming of Life on Earth

Animal welfare

The endangered species

The study of Dinosaurs and Fossils

The study of the continents

The study of conservation of life on earth (climate change)

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Thank you,