

### The Dinosaur Project

When the semester began Dave and I observed the children closely to see what topic they might be interested in exploring in some depth. It quickly became apparent that dinosaurs were a subject of general interest. After Dave and I did a brainstorm of possibilities and asked the children to contribute questions they had about dinosaurs we realized that this was a topic that could be taken in many interesting directions.

We began with some typical dinosaur activities: sorting plastic dinosaurs, putting dinosaur props in the block area, and reading books about dinosaurs. A book that really prompted considerable interest was *Bones, Bones, Dinosaur Bones* by Byron Barton. We added a "Paleontology Lab" to the class and did some activities that simulated excavating bones. These activities promoted a lot of exploration and questioning by the children. The children decided that we needed to bring in an expert. Dr. Hillenius's visit prompted intense interest in fossils and the children began to ask new questions. Eventually the children went on a fossil hunt where they found real fossils. The fossil hunt resulted in a side study of rocks that allowed us to have another expert come talk to the children.

As the end of the semester approached the children decided that they wanted to make a movie about dinosaurs and paleontologists. The year ended with the premiere of our movie, "The Dinosaurs Help."

As I review the semester I am astounded by how much the children learned in their semester long study of dinosaurs. The topic lead them from dinosaurs to bones, fossils, and rocks. In the process they developed skills in questioning, hypothesizing, experimenting, questioning, researching, listening, measuring, counting, categorizing, and communicating with drawings and the spoken and written word. More importantly they developed dispositions for engagement in extended learning.

However, upon reflection, I can see several areas that I would like to pursue as a teacher. In our next project I would like to focus on developing more ways for the children to express their thinking through art materials and story. Also, I would like to make extensive use of the children's words and work to spur them on to higher levels of questioning and thinking. I think these two things have the potential to make our projects even more exciting.

During the first semester the children had included a dinosaur museum in their neighborhood project. In January the children expressed their ongoing interest in dinosaurs through dramatic play and art.



A dinosaur dad looks over his babies in the nest.  
"These are the good dinosaurs and the bad dinosaur t-rex is coming to get them."  
Zachary



Davis and his friends drew dozens of pictures of dinosaurs.

I wanted to see what the children knew about dinosaurs and what they

wondered about dinosaurs so we started a KWL chart.

**What we know:**

- They bend legs when they walk. [Erica]
- They are not all meat eaters. [Betty]
- The duck bill has a beak like a duck. [Davis]
- The dinosaur in "Dinosaur World" was a duck bill. [Zachary]
- Long neck has a long neck to eat leaves off of trees. [Anna]
- Some dinosaurs have sharp teeth. [Davis]
- Meat eaters have sharp teeth not plant eaters. [Betty]
- Dinosaurs lay eggs. [Steven]
- Some dinosaurs with eggs have nests. [Betty]
- Some dinosaurs don't lay eggs in nests. [Steven]
- Maiasaura was a good mother to her babies. [Davis]
- Some dinosaurs sneak eggs from other dinosaurs' nests. [Anna]

I reorganized the room and put some new materials out to encourage the children to explore their ideas about dinosaurs.



These children sort dinosaurs by color. Later several children will sort them by species. Finally, some children begin to sort by carnivore and omnivore.

“The baby dinosaurs are resting; some are hiding so the bad dinosaurs don’t eat them.” Heesue and Zachary used the sorting materials to explore an interest in the predatory behavior of some dinosaurs. The children had questions about “good” dinosaurs [herbivores] and “bad” dinosaurs [carnivores] that were expressed throughout the unit. The ideas reappear in the story line of the culminating activity – the movie “The Dinosaurs Help.”



The children built lots of dinosaur homes in the block center. In order to understand new ideas the children began their exploration with the very familiar – homes.

“Miss Mary, we built this dinosaur aquarium for dinosaurs that live in the water.” [Betty]



Benjamin, Zachary and Steven built a cave for their dinosaurs.



“I’m an omnivore that doesn’t eat meat.” [Steven]

“But omnivores eat meat.” [Zachary]

“I’m an omnivore that **chooses** not to eat meat.” [Steven]

“That’s a vegetarian.” [Betty]

Conversation that took place in dramatic play area.

**What we want to know –**

Is the t-rex bigger than a blue whale? [Betty]

Is a brachiosaurus the biggest animal in the world? [Steven]

Do pterodactyls only lay their nests on volcanoes? [Anna]

Why does iguanodon have a spike on his fifth finger? [Davis]

Why does pteradactyl fly when he catches his food? [Zachary]

Do pteradactyls fly into water?

**How can we find the answers to our questions? –**

“Ask a grown-up who is studying dinosaurs so they can tell us.” [Davis]

We read *Bones, Bones, Dinosaur Bones* by Byron Barton. The children wanted to be paleontologists so we gathered tools and made a paleontology lab. We put shells, bones, and plastic dinosaurs in the sand table. Later we used the plastic dinosaurs to make "fossils" with plaster of Paris. This prepared the children to think about fossils and provoked a new set of questions



The children imbedded small plastic dinosaurs in plaster of paris. When they "excavated the fossils" they found that they had made imprints of the dinosaurs. Later when Dr. Hillenius showed them the two kinds of fossils the children immediately recognized that imprint fossils were created through very similar processes



Throughout the project children were encouraged to represent their understanding of dinosaurs and fossils in multiple ways. Children made use of blocks, crayon, print making, modeling and collage in their work.



The children also read books and drew pictures of many different kinds of dinosaurs. They became experts on the names of dinosaurs and had accumulated a large supply of facts about the dinosaurs that interested them most. They applied this knowledge in conversations, questioning, book writing, and story telling.



Betty and Steven made this scene so that they could use it to tell stories about dinosaurs.

The props were used over several days to tell more and more detailed stories.

We invited a dinosaur expert to come and answer our questions. Dr. Jaap Hillenius came to show us some bones and fossils. He also used plastic pipe to show us why parasaurolophus has a crest. "He knows everything about dinosaurs." Without us realizing it the children were beginning to learn some of the processes involved in research. In this case they consulted an expert. Several times during the project the children would fall back on this strategy.



Dr. Jaap brought fossils.



"He brought cow bones that were not too old and he brought some that were already fossils."

"This one feels different. It is heavy." [Hailey]



Dr. Jaap told us that parasaurolophus had a crest so it could make a loud noise. The children used these pipes left over from a construction project to explore this concept. Each piece of new information was explored in concrete, hands-on child created activities. The children's need to physically express their emerging understanding was realized through their play in blocks, dramatic play, blocks, and outside.

The children started to make use of books as references. This greatly expanded their repertoire of research skills. For the rest of the project children looked to books for answers to their questions, frequently finding the place where an answer might be found [using pictures or initial consonants or sight words as a guide] before bringing the book to an adult for help in reading.



"This is triceratops; the book says he is a plant-eater."



"We are finding the picture that matches the rock and then we make a label."

Zachary had a lot of fossils his grandparents found. The children used sorting circles to divide the fossils into groups. There were shark teeth, vertebrae, bones, and petrified wood. As the study of fossils and rocks progressed the children's classification criteria became more precise. The negotiation of increasingly specific criteria required considerable negotiation between children.



Hailey makes a decision about her fossils while Anna and Steven wait their turn.



Yuna places her fossil. Brazil and La'Royalty have a disagreement about where one fossil belongs.



On the playground the children start digging for fossils and discovered a very large rock. They dug during several days and finally, with a little help from Miss Mary, they got it out. They used tools from the paleontology lab to break the rock into pieces. They hoped they would find fossils or interesting rocks. During the rock phase of the project the children applied what they had learned about research earlier in the project. They consulted experts [a geologist] and referred to reference books.



The children started to examine rocks and label them. Here Zachary got a small "crystal" out of a larger rock. He put it in the sorting tray and labeled it. He consulted a rock book to find out how to spell the word diamond. This was a significant step for a child who had resisted all efforts to encourage him to write. In the context of his intense interest in what he was doing he was able to a step that he had previously considered too risky.



Zachary's grandparents invited us to come to their house for a fossil hunt. We discovered that the area around Snee Farm is loaded with fossils. When we arrived the children began to search for fossils in a cleared area near their home. "We looked very carefully until we saw something that might be a fossil. We found rocks, wood, metal, dirt, and real fossils. We showed people what we found. The fossils were shark teeth, bones, vertebrae and shells." [From discussion by children in class]

Jack and Ben dig for fossils. Betty shows off the fossilized clam that she found.



The children searched through the fossils they brought back from the hunt. Their interest in classification resulted in a follow-up activity that involved the whole group in creating categories for the fossils they had.



Steven and Erica examine their fossils. Heesue draws a picture of her fossils.



I have rocks, fossils, and dirt.

## Authentic Writing Experiences

Some of the children began to wonder how old their fossils were. Steven suggested that they ask a fossil expert. Anna decided to send an e-mail to Dr. Hillenius.

Dear Dr. Hillenius,  
We found some real fossils on a fossil hunt . How old are our fossils?  
We have shark teeth and some fossilized shells and vertebras. Can  
you come tell us?  
From:  
Anna  
ECDC Fives

\*dictated to teacher and typed by the teacher and child together

Dear Anna,  
How old are your fossils? Well, that depends on where you found them.  
There are lots of places near Charleston where you can find shark teeth  
and shells and vertebrae. How about we ask Ms Mary when a good time  
is for me to come look at your fossils? I could stop by on Monday of next  
week, or maybe Wednesday? Have Ms Mary email me a reply.

Cheers,  
Jaap H.



Dr. Jaap says that our fossils are about 29,000,000 years old. The children showed him their fossils. "That is almost infinite." [Benjamin]



We had Dr. Elizabeth Rhodes, geologist, come and answer our questions about rocks. She told us about some of the properties of rocks. The new information about rocks prompted the children to go back to the rocks they had identified and to reconsider their work. Many rocks had to be relabeled.



Some rocks are magnetic. Some rocks smell funny. Some rocks are really heavy.

How tall are stegosaurus, brachiosaurus, t-rex, and triceratops? The children had already measured the length and width of several dinosaurs. Mr. Dave decided to use helium filled balloons to help the children understand height.



1 Davis helped figure out the height of the dinosaurs by referring to a reference sheet. Betty helped find the correct numbers on the string.

2 The children took turns helping each other figure out how to use the reference sheet and measure the necessary height. Many of the activities done during the dinosaur unit required the children to communicate and cooperate with each other in order to complete the work they had chosen. This required considerable work on their part.





Mr. Dave helped tie the string to the balloon. This is the height of t-rex. Even the children in the other classes got excited when they saw how tall some of the dinosaurs were.



## “I have a great idea”

Zachary said as he rushed into the classroom. “I think we should make a movie.”

“What would the movie be about,” asked Miss Mary.

“Dinosaurs,” answered Zachary.

Dave sat down with Zachary and helped him create the cover of his movie. It featured a Triceratops head facing out and read, “Jurassic Park Kids.” That was the end of the idea . . . for that day. It was not until later in the week, when Zachary asked to share his idea with the group during sharing time that the other children became interested. Anna, Davis, Zachary, Erica, and Betty chose to spend their Language Arts Center time working on ideas for the movie. They each chose a character and drew a picture of what they wanted to look like.

“We could be on stage” – Erika

“Yeah, I’ve been on stage” – Betty

Then they decided to make signs telling everyone that we would be having a show.

“Let’s make a movie!” [Zachary]

“Yea! We’ll be movie stars.” [Anna]

“What would the movie be about?” [Miss Mary]

“Dinosaurs!” [Zachary]

These words launched the movie project.

The children immediately made a list of characters and began to draw pictures of the things they thought should be in our movie.

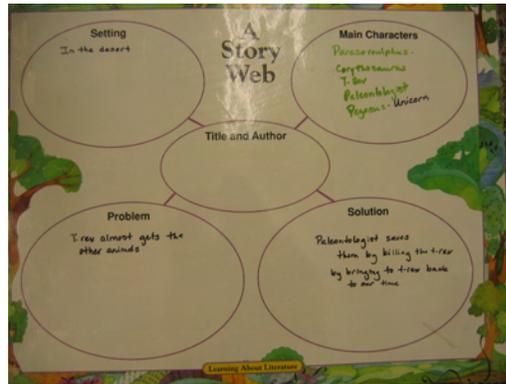


Meanwhile, I [Miss Mary] tried to find a way **not** to make a movie. Dr. J. suggested that I ask Mendi Benigni to help. I was positive she would be too busy, so I e-mailed her. This was her response:

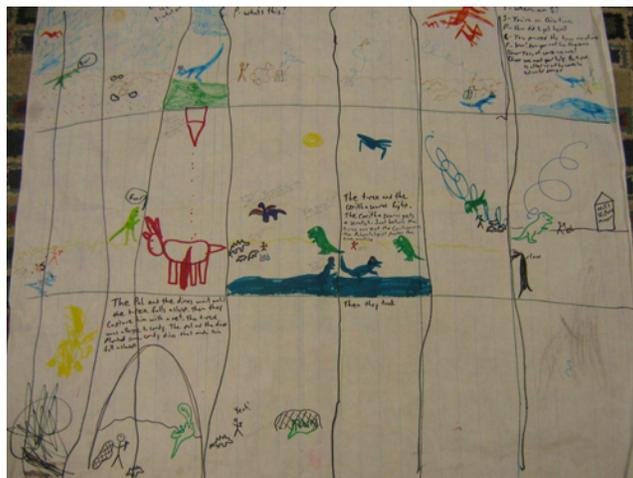
“That would be so exciting! When would you like to meet to talk about it? Mendi”

So the next day the children and I started a story map laying out the basic outline of the story.

Mendi and I met and planned to write a very simple play.



At this point, I turned the writing of the story/script over to Dave, my graduate assistant. While I would have been trying to keep the story simple, Dave allowed the children to develop a much more complex story. Dave showed the children how to make a story board so they could visualize their story.



As the story emerged the children began to design the set with Miss Mary. They went through magazines and selected picture that looked like deserts. The children made drawings for the set using the pictures as a guide. When it was time to transfer their drawings to a larger sheet Betty said, "We need you to help us." So, Mr. Dave sketched a very simple outline of some of their images onto the large paper. The children went to work. They choose paint colors and painted the picture adding details as they worked.



The children had decided to set the movie in the desert but as they painted they added rivers and ponds to the desert. This demonstrates their understanding of "desert" and opens up another possibility for exploration.

The children also experimented with ways to represent the dinosaurs. The children who chose to work on costumes began by drawing costume ideas. In the end most of the children chose to make head bands although a few made masks or tails to go with their costumes. Unfortunately, we ran out of time before the children had completed their costumes. We went ahead with the bare minimum.



It was time to finalize the script. For three days the children walked through the story. As they did I typed their words on the computer. During this process their ideas were clarified and the final script emerged. The film crew, Mendi Benigni and Tomas Mendez, were scheduled to arrive. Finally, the story would be taped for the movie.



The children discover that you spend a lot of time waiting when you are filming a movie.

At the last minute Anna had the idea that we should have music. She remembered that in the ballet "Peter and the Wolf" there was different music for each character. She thought we should do the same thing. There was not time to choose music but Mendi agreed to add music and she made the selections for us.

Thanks to Mendi and some hard working children we had a real movie.

View the movie online:

<http://stream.cofc.edu/whitemj/TheECDPlay.mov>

### Teacher Reflections

The movie phase of the dinosaur project taught me that I needed to revise my image of "the child". I have long believed that we overestimate children academically and underestimate them intellectually, but I saw that I had been guilty of doing just that with these children. As the people at Reggio Emilia say "the children were rich, strong, and powerful."

During the movie project they showed this in their understanding of story and their ability to make their story visible and concrete. During this project I learned the power of stories made real.

The children's strength was also demonstrated in their ability to compromise, negotiate, and assimilate other peoples ideas into the project. They were much more capable of handling conflict than I had given them credit for. In the process the story they developed became richer and more representative of all of the children.

Edwards, C.P., Gandini, L., & Forman, G. (1993). *The hundred languages of children, The Reggio*

*Emilia approach to early childhood education*. Norwood, New Jersey: Ablex Publishing Company, p. 102.