

**FIRE DOWN BELOW**

**Introduction**

As a staff, we were asked to participate in the Cedar Coal study. We were invited to develop lesson plans for a coal study unit within our grade level. So, the kindergarten teachers (3 of us) came together along with our coordinator to brainstorm ideas. We used the Internet to get some innovative ideas. After brainstorming our ideas, we focused ourselves on three main units. We sat down and developed lesson plans using the appropriate forms and sent them to Cedar Coal for approval.

After being awarded the grant, we were off to purchase our items and develop specifics to accomplish our goals. We knew that working with the kindergarteners left us with some limitations. These students are so young and inexperienced that we knew we would be very creative. We started our unit off with by hooking our students. We held up a piece of coal and asked what it was. This invited several of our students to participate and begin their thinking process. Then we developed a K-W-L chart. We generated what they knew about coal and what they would like to learn about coal. We used higher order questions to probe in order to find answers to complete the K-W-L chart. These results came our focus on how we were to cover the unit.

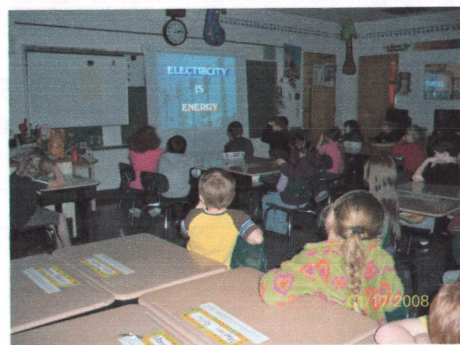
Once we had our results, we sat down together and mapped out how to answer the inquiring minds of our students. We set up daily instructional strategies and began diving into our coal unit.

**Description of Activities and Goals**

Day 1: What is this? We held up a piece of coal and allowed for time to generate ideas to complete a K-W-L chart. Most of the students knew it was coal and that it came

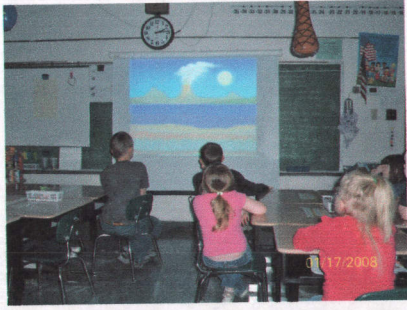
from coalmines. We started probing to see what they would like to know about coal. Some of the suggestions were “Where do coal trucks take the coal”, “What happens to the coal”, “How is it made into things”. We then watched the DVD, *All About Coal*. Then we revisited our K-W-L chart and added more items to it. Our last item for the day was to complete an exit slip that told one thing they learned about coal.

Day 2: Where does this come? We held up a bottle of perfume and asked where they thought it came? After several well thought out responses, we informed them that perfume is a byproduct of coal. Then we started a class discussion on the various uses of coal (electricity, insulation, sidewalks, paving, roofing, etc.). This discussion lead to some interesting ideas and questions on the different uses of coal. We then started using our higher order thinking and probed for why do we need electricity, what uses electricity, what activities do we do when we get home and expanded to see if we could do those without electricity, what would we do without electricity, and so forth. We focused on electricity as a source of energy and how we get electricity. This sparked the interest of the students and also made the teachers start to think and reconsider some new ideas. We also saw that our students were starting to show more independent thought and being able to support that independent thought with validation. At the conclusion, we asked for an exit slip of a drawing of an activity that requires electricity.



Day 3: Layers of the Earth. We started this activity with an image of the Earth's layers. We started by discussing the layers of the Earth and how things are placed there





over time. Then we gathered the students around the table and watched how layers of the Earth are formed. We had a white cake mix that represented the Earth's



surface and started to add elements to the surface. We had soil (chocolate morsels), decaying plants and animals (butterscotch morsels), rocks (two different sizes of M & M's) that represented the elements of the Earth. The students saw how the layers worked and how they could

see them "sink" into the Earth. We talked about how temperature and time made a difference in where the elements stayed in the Earth's surface. We had a cake that was baked with all the elements. We compared the two cakes (Earth's surface) and discussed how the difference was made by baking (adding heat and time). Once we discussed, compared, and analyzed some effects, we ate the Earth (cake). It was delicious! This was such a great way to bring this concept to real-world. The students actually



understood the layers and how layers occurred over time. We were amazed at how they grasped such an abstract concept. While eating the cake, we decided to extend our learning even more. We read, The Tale of

Fern Fossil. The students loved the book too. It tied in with what we discussed and gave them some food and entertainment. Our exit slip for the day was to draw and color the layers of the Earth. We were amazed with how well the students did on this because it was evident that they learned the concept.



Day 4: Being a Coal Miner. We started this activity by showing the cover of Mama is a Miner by George Ella Lyon. We read and discussed the book during class and then expanded their learning and developed a class discussion over if they would like to be a coal miner. This led us to our next activity, which was to actually go through a “mine”. We took sheets/blankets and hung over chairs and tables to construct a classroom mine. We then turned off the lights, gave the students flashlights, and had them crawl through the mines. This was a blast because they had to be careful not to get to close to the top or the sides or the mine could cave in on them. They had to be careful to not run into the others that were in the mine too. The kids really loved this activity because they love to be active. During this activity, they used rulers to measure the height of the mine and had to

We also started to discuss the such small spaces regularly. start mining. We had given

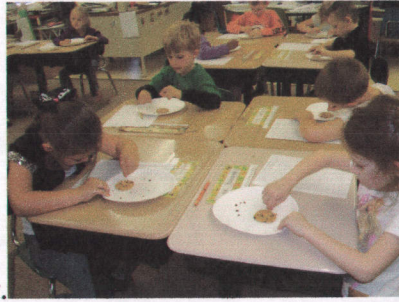


record their findings. outcome of working in We then had them to them graph paper to

record their findings, a mine (chocolate chip cookie), and mining equipment (toothpicks and paper clips). They started by tracing the mine (cookie) and deciding how much coal (chocolate chips) were on the surface. They graphed that amount on their paper. Then we turned them into miners. We had them to imagine that they were in the small mines where it was cold, dark, and wet. Then they were told that they had to mine out all the coal and separate into sections. The cookie part was the land and the chocolate chips were the coal. Once they had separated all the parts, they graphed the results. They counted



the number of squares on the graph paper of each drawing and wrote the number. They



circled the larger number.

Day 5: Field Trip. We took our students to tour the Coal Museum in Jenkins.

We are very blessed to have had a coal museum within a mile of our school. The museum provided us with a free tour and was outstanding with our students. They learned so much and were exposed to one of the county's tourist attraction. The curator was very informative and explained the terminology on a level for the kindergarten class to grasp. The students started asking questions that amazed the curator. When we returned to school, the students were still discussing what they saw. We even had students that went home and had family members write narratives of what they did daily at the mines. We had some that drew pictures of the how to bolt roofs, put coal on the conveyer belts, load into trucks, etc. Their exit slip for the day was to draw a picture of what they observed today at the

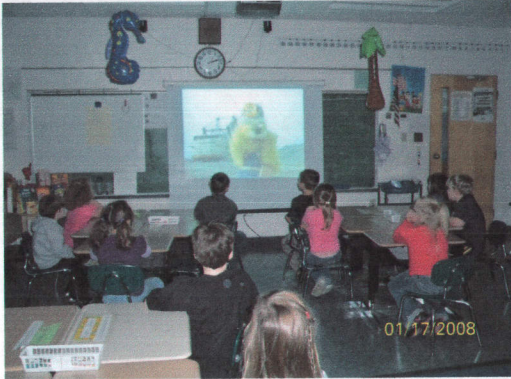


museum.

Day 6: Surface vs. Underground. We started class by grasping their interest with toy bulldozer and toy trucks. We then started discussing surface mining and underground



mining. Our students modeled the process of surface mining by using clays of various colors. They had to discriminate the different layers of surface mining by removing the layers the best they could. We discussed how parts of the layers were left on the next layer. This allowed for us to see how the layers sit upon each other.



We then followed up with *All About Coal* DVD.

This led us to using the posters for imagery to develop a better understanding of types of mining. Then we read a booklet: *Land Reclamation*. Our exit slip for this activity was to draw a picture that compares both types of mining.

Day 7: Land Reclamation. We started by reviewing land reclamation and discussed what we had learned previously. Then each child was given a sugar cookie. They were charged with finding ways to reclaim their land (sugar cookies). They were given the reclamation tools, frosting (top soil), food coloring (fertilizer), and green



sprinkles (grass/plant seeds).

The students used

their creativity skills to reclaim their land and used their oral skills to describe to the class what they were doing during each step. The explanation was used as their exit slip.

Day 8: Birth of a Coal Town. We started by posing, "Do you know how your town was made?". We brainstormed ideas on how towns originated and then we started to focus on how Jenkins originated. We then watched the movie, *The Birth of a Coal Mining Town-Jenkins, Kentucky*. We were exposed to the different images of the past of their hometown and surrounding areas. We even discussed what some of the areas are now. This led to a compare and contrast class discussion of historic landmarks. The exit slip for today was to draw a picture of how Jenkins was formed.

Day 9: Our Home. This was our last day. We wrapped up all loose ends of the K-W-L chart. We listed all the items that we learned along the way. We extended our knowledge base because they needed to know how to take care of the Earth and the importance of doing so. The students need to be able to apply care to the Earth not just as miners. The last part of the section was completing the unit assessment.

### Summary

This unit was great! We loved it, students and teachers. All goals were accomplished plus some. We learned more than what we expected. We gained support of our families and community. The evaluation process we used was the exit slips daily, the unit assessment at the end, and we had the students write and draw what they learned/liked and would like to do differently. The only comments we received were of positive feedback. We even had the parents comment on the students' activities and excitement. They loved this and can't wait until they can do more items like this.