Kentucky Coal: Preserving the Past, Fueling the Future

As the sun set softly on top of Webb Hollow, Ethyl Phelps expectantly looked to the hill to watch her husband return from the mine. He was late today; perhaps a trip to the company store and post office had delayed his arrival. It had been two months since their last correspondence with Edwin, their 24 year old son who was serving his country in the war. There was rarely that much time between letters and they were worried. As she folded the last quilt from the line, a shimmer of light from Poppy Lon's dinner bucket caught her eye. With bucket waving freely in the painted sky, she could barely comprehend his announcement. The shimmer of light grew into hope as she heard what seemed to be angles heralding, "The boy's coming home! The boy's coming home!"

Introduction

Over the summer, I developed the following two goals that have carried me through this coal unit:

1. transform my classroom into a differentiated classroom, and
2. become proficient in using new technology available through the 21st century classroom grant.

Differentiation is a philosophy that enables teachers to plan strategically in order to reach the needs of ALL diverse learners in the classroom. It follows the old saying that "one size doesn't fit all". Instruction is presented on many levels so that all students have access to all curriculum. In a differentiated classroom, teachers take a step back and allow for more "student-centered" learning. Students take a more active role in the classroom – designing activities, generating rubrics, etc. Student interests and multiple intelligences drive the curriculum, instruction, and assessment. At the beginning of the year, students completed interest surveys and a multiple intelligence test. During our units, these results were used to create lessons and project-based assessments that appealed to my students and allowed them to demonstrate their knowledge. As we began to design our coal unit, we continued this philosophy in our coal lessons, activities, and assessments.

The new technology in my classroom has allowed for even more differentiation. This year, I received a plasma TV connected to a document camera, smart notebook, and student response clickers. I, as well as my students, use this technology every day. This year I was given the opportunity to add even more technology to my classroom – blue QX5 digital microscopes. As I was deciding whether or not to attend the workshop in Pikeville, I received the agenda that included hands-on training with a "Science of Coal" lesson. I jumped at the opportunity because I knew this would be helpful during this year's coal unit.

In October, students completed surveys about possible coal study topics and activities. After collecting all surveys, I presented the top five choices to the students for a final vote. New technologies that reduce emissions from coal-burning power plants was the obvious winner with 62% of the votes. With 21% of the votes, the history of Van Lear coal camps came in second. Some of the students were so impressed with the possible activities of the second place choice, they proposed a look into the future AND the past. The majority of the students agreed and that is how "Kentucky Coal: Preserving the Past, Fueling the Future" began.

Activities

The next step was to create our KWHL chart (Know?, What to know?, How can you learn?, Learned?). We decided to do two separate charts – one for preserving the past and another for fueling the future. To begin, each student received a KWHL chart to complete individually. I did this so that each student would contribute and not rely on the group for answers. (As I walked among the students I was happy to see short "K" columns and full "W" and "H" columns – after all, learning about coal is what it is all about. I wouldn't want to cover a topic they had already mastered.) I was so impressed

with the resources they came up with, I decided to allow students to work in groups to create lesson plans and teach the other students. I have learned that you truly know a topic when you teach it.

Once students completed their individual KWHL charts, we filled in group charts using bulletin board paper and later hung them in the hallway. We discussed the topics in the "W" column and circled the ones we were most interested in. These became our individual lessons. Students chose the lesson they were most interested in and became a group. With four to five students in a group, I made sure to space out my gifted and special needs students - my homeroom is a specially designed room made up of 9 special needs students, 10 gifted students, and 8 regular education students. I also reminded students of their multiple intelligences survey from the beginning of the year and asked them to make sure as many as possible were represented in each group. (I didn't want one group where all students were verbal/linguistic and another group all musical/ rhythmic. I wanted them spread out so they could create differentiated activities with each lesson.)

Once all groups were completed, I gave the students a crash course in differentiated instruction and lesson planning. I gave them a modified lesson plan format using the KUD (Know, Understand, Do) framework. For each lesson, students had to list key facts and vocabulary (Know), ideas and principles (Understand), and skills (Do) using at least three different multiple intelligence strategies. The students were in charge of research, contacting guest speakers, creating power point presentations and handouts, searching videos and Internet sites, and creating activities and assessments. I, of course, offered assistance and guidance throughout the entire process but this was their unit and I

wanted them to take ownership as a way to get them more engaged in the unit. When each group was finished, they had to get a final approval by me. The students developed the following lessons:

Lesson 1: Why is it important to preserve our past?

Lesson 2: What were coal camps like in the early 1900s when Van Lear was a booming coal town?

Lesson 3: What is the chemical composition of coal?

Lesson 4: How do coal-burning power plants generate electricity?

Lesson 5: How do coal-burning power plants affect our environment?

Lesson 6: What is the government and coal industry doing to lessen coal's impact on the environment?

Their student-made lesson plans, complete with essential questions, objectives, core content, and activities are attached.

To get the entire school excited about the coal unit, the students and I brainstormed a list of activities for the school-wide Coal Week. First, we took all of our coal posters and hung them throughout the school. We also made our own posters announcing Coal Week and the school coal fair. We made an informational packet that included vocabulary, journal prompts, guest speaker dates, media materials, coal activities, and coal fair information. My students divided into groups in order to deliver and present this information to every homeroom in our building during advisor/advisee. This took one week to visit every homeroom. Because there are 33 homerooms at our school, we felt this packet would be the most convenient way to organize the coal unit. This way each teacher could decide how they wanted to implement the coal vocabulary

and prompts (journal, think-pair-share, roundtable, etc.). They could also decide the materials to use in their classroom and activities in which they wanted to participate and simply check them out from my room.

Summary

After each lesson, students and teachers were given evaluations to complete. The students who designed each lesson couldn't wait to get their feedback. All the information from these evaluations will be used to strengthen our unit for next year. Each evaluation consisted of 4 open-ended questions about the unit and lesson as a whole, including follow-up activity suggestions that can be completed after testing. Then each specific activity was listed where students could give them a ranking of 1 lump to 4 lumps.

1 lump: Peat – Blowin' smoke, not effective
2 lumps: Lignite – Feelin' some heat, needs more time and planning
3 lumps: Bituminous – Good, improvement possible but not required
4 lumps: Anthracite – Extremely efficient!

The students generated a list of important characteristics that any successful activity would contain. After some debate (students learned that what you think is important may not be important to others) and a final vote, our top four characteristics of a successful activity are…

- differentiated (Does it follow our new classroom philosophy?)
- real-world (Does this apply to our daily lives?)
- educational (Are we learning?)
- engaging (Does it keep our attention?)

If an activity possesses all four characteristics then it gets four lumps (an Anthracite ranking!); however, if it is only differentiated and educational, for example, it will receive two lumps (a lignite ranking). Students quickly made the connection between our coal rankings and the holistic rankings (novice, apprentice, proficient, distinguished) that

are used to score their performances and assessments. Several of the students' activities received 4 lumps – various experiments, guest speakers, and multimedia. The students agreed that looking at the coal peels under the microscope was the best part of the unit.

The culminating activity for this year's unit was the coal fair. Perfectly aligned with out new differentiated classroom, students were able to demonstrate their knowledge of the coal industry in their choice of seven categories. 82 projects were entered, including the work of over 120 students. 45 of the projects were then chosen to compete in the regional coal fair.

The entire unit was a success. All of the students' goals and objectives were reached and all essential questions were answered through projects, experiments, and/or reflections. My fellow teachers and I all agree that ***many*** aspects of this unit will be taught again – coal peels and digital microscopes, *An Inconvenient Truth* and propaganda, clean coal technologies – and our guest speakers will be welcomed again next year. All-in-all over 570 students, 33 teachers, 4 administrators, and countless community members and parents were directly involved in the completion and implementation of this unit.

Throughout this unit, I was continually reminded of the fact that I am not only an educator…I, myself, am a miner. Every day, I mine the undiscovered treasure of Kentucky's future – our children. It is essential that we fuel our future by educating our children of the latest technologies and ideals. But we must also acknowledge the importance of our heritage and past so that our children carry our stories and values into the future with them. As voices of the past echo through these mountains, "The boy's coming home", we understand the significance, the meaning, the past. When my son is old enough, he, too, will hear the story of his great-grandfather's homecoming from WWII. As he ventures into his future – working as a mine engineer or conditioning for his next space mission – he will think back to this story and always remember the importance of family and home. His home…still on Webb Hollow.

Student made lesson plans

Kayla [redacted]
Keyth [redacted]
Andrea [redacted]
Ashley [redacted]
Molly [redacted]
Jaken [redacted]
Kasi W.
Tiaria H.
Aynessa [redacted]
Austin F.

Coal Unit
Lesson:
Importance of preserving the past

Names: Ashley D.

"KNOW"
(Vocabulary, facts, essential questions, etc.)

Vocabulary:
perserve, coal camps, coal, coal mines, script, company stores,

Facts:
1. Van Lear Historical society is a local organization dedicated to preserving history.
2. Government funding is used to help organizations preserve the past.

Essential Questions:
1. Why is it important to perserve the past?
2. How have we perserved the Past?

"UNDERSTAND"
(Core content, statements/insight that is essential to grasping the topic…
"I want students to understand that…")

Statements (include core content code after each statement):
1. elements of culture (language, art, customs, etc) define specific groups (SS-08-2.1.1)
2. Social institutions (family, religion, education, economy, etc) are developed in response to human needs in a certain area (SC-08-2.2.1)
3. Coal resources, knowledge of coal, and technologies shaped our area (SC-08-4.22)
4. Views of history vary among different individuals and groups (SC-08-5.1.1)

"DO"
(Skills and activities…should relate to statements)

Activity 1:
View websites dedicated to preserving coal camp history

Multiple Intelligence:
Visual, intrapersonal

Activity 2:
Guest Speaker: Danny Blevins (Van Lear Historical Society)

Multiple Intelligence:
Verbal, Visual

Activity 3:
Preservation essay Contest

Multiple Intelligence:
Verbal/Linguistic Intrapersonal

Activity 4:
Reflection: Family Oral History

Multiple Intelligence:
Verbal/Linguistic

//

[redacted]

Coal Unit

Lesson: Coal camps in the Early 1900's

Names: Stephen [redacted] Daniel [redacted] Brodie [redacted] BRAD [redacted] Chad [redacted] Dylan [redacted] Bailey [redacted] BJ [redacted] Tracy [redacted] Madi [redacted] Brittany [redacted] Courtney [redacted]

"KNOW"

(Vocabulary, facts, essential questions, etc.)

Vocabulary: Coal camps, scrip, tipple

Facts:

1. Van Lear was incorporated in 1912 and was constructed by Consolidation Coal Company.
2. Because coal companies owned everything for miles around, a large percentage of their wages was returned to the coal company for housing, tools, food, and other necessary expenses.

Essential Questions:

1. Where and when did coal mining towns exist?
2. What were coal camps like in the early 1900's when Van Lear was a booming town?

"UNDERSTAND"

(Core content, statements/insight that is essential to grasping the topic…
"I want students to understand that…")

Statements (include core content code after each statement):

1. Describe the historic role of the coal mining companies and the mining towns (SS-08-3.1.2)
2. Describe the relationships between miners, families, and coal companies. (SS-08-2.3.1)
3. individuals and groups were in charge of determining how resources were used (SS-08-3.1.1)
4. geographical factors like mountains and rivers determined where large groups were located (SS-08-4.1.1)

"DO"

(Skills and activities…should relate to statements)

Activity 1:	*Activity 2:*	*Activity 3:*	*Activity 4:*
watch October Sky worksheet afterwards Coal Camp Memories website	Coal people: A century of Pride Memoir/poem	Guest Speaker: (Author ↓) Donny Blevins & Van Lear Historical Society	Read short story from: Coal Camp Chronicles Draw Coal Camp Scene
Multiple Intelligence: Visual, Verbal	*Multiple Intelligence:* Visual, Verbal/Linguistic, Musical	*Multiple Intelligence:* Verbal/Visual	*Multiple Intelligence:* Verbal, Bodily/Kinesthetic

Coal Unit
Lesson: Chemical Composition of Coal

Names: Brandie [redacted]
Josh [redacted]
Jerry [redacted]
Jon [redacted]
Evan [redacted]
Nick [redacted]
Kyle [redacted]
Katie [redacted]

"KNOW"
(Vocabulary, facts, essential questions, etc.)

Vocabulary: hydrocarbons, macerals

Facts:
1. Coal mainly contains the elements carbon, hydrogen, nitrogen, oxygen
2. Coal is made of organic building blocks called macerals that can only be seen under a microscope

Essential Questions:
1. How does the chemical composition of coal vary amoung rank of coal?
2. What does coal look like under a microscope?

"UNDERSTAND"
(Core content, statements/insight that is essential to grasping the topic…
"I want students to understand that…")

Statements (include core content code after each statement):
1. different combinations of elements have different properties (SC-07-1.1.2)
2. the layers of the Earth interact in the formation of coal (SC-07-2.3.2)
3. past ecosystems can be reconstructed by observing coal peels.. (SC-07-3.5.1, SC-08-2.3.1)
4. the Sun is the ultimate source of energy, even in coal (SC-07.4.6.2, SC-08, 4.6.2)

"DO"
(Skills and activities…should relate to statements)

Activity 1:
Carbon Cartoon
Weight
going to draw
Multiple Intelligence:

Activity 2:
Analyze
coal composition
Multiple Intelligence:

Activity 3:
View coal
Peels under
digital
microscope
Multiple Intelligence:

Activity 4:
Burning coal
experiments to
compare heat
and emissions
Multiple Intelligence:

Coal Unit

Lesson: Generating Electricity

Names: Zack, Chris, Kelly, Locey, Neaua, Katrina, Sarah, Jonathan, Tyler [redacted], Jamie

"KNOW"
(Vocabulary, facts, essential questions, etc.)

Vocabulary: Electricity, Kilowatt, power plant, turbine, generator

Facts:
1. Coal is used to generate electricity in many power plants
2. ___% of the coal mined is used to generate electricity

Essential Questions:
1. How can we use coal to generate electricity?
2. Why is coal used to generate electricity?

"UNDERSTAND"
(Core content, statements/insight that is essential to grasping the topic…
"I want students to understand that…")

Statements (include core content code after each statement):
1. Energy can not be created or destroyed but transfered (SC-08-4.6.2)
2. Coal is a fossil fuel that can be used to generate electricity
3.
4.

"DO"
(Skills and activities…should relate to statements)

Activity 1:
Did You Ever Wonder Where does Coal Come from
Video & open response
"What does coal mean to you?"
Multiple Intelligence:
Visual, Verbal, Intrapersonal

Activity 2:
Coal Into Kilowatt
D&D
"A World without electric power"
Multiple Intelligence:
Visual, Verbal, Mathematical

Activity 3:
United Streaming: Generation of Electricity
Open Response
Multiple Intelligence:
Visual, Verbal,

Activity 4:
Electric Circuits Activity
Guest Speaker Bruce Davis
Big Sandy RECC
Multiple Intelligence:
Kinesthetic

Coal Unit
Lesson: Burning Coal affect our environment

Names: Al, [redacted]
Kelley H.
Jame [redacted]
Tara [redacted]
Blair [redacted] Dylan [redacted]
Trenton [redacted]
Nick [redacted]

"KNOW"
(Vocabulary, facts, essential questions, etc.)

Vocabulary:
Global Warming, Greenhouse gases

Facts:
1. Greenhouse gases could lead to Global warming
2. Burning coal creates pollution, BUT the coal industry is working to reduce harmful emissions

Essential Questions:
1. What Greenhouse gases cause Global Warming?
2. How does burning coal create polution?

"UNDERSTAND"
(Core content, statements/insight that is essential to grasping the topic…
"I want students to understand that…")

Statements (include core content code after each statement):
1. different elements/compounds move among the solid Earth, oceans, atmosphere, and organisms (biogeochemical cycles) SC-08-1.1.4, POS
2. there are cause/effect relationships between global warming and energy transfer SC-08-4.6.1, POS (unifying concepts)
3. there is evidence that can be used to make predictions about global climate issues SC-08-4.6.1 (POS - unifying concepts)
4. there are solutions to global climate issues SC-08-4.7.2
POS - interdependence

"DO"
(Skills and activities…should relate to statements)

Activity 1:
Video: electricity ang global climate change

Science exp. Acid rain

Multiple Intelligence:
Auditory, Visual, Kinesthetic

Activity 2:
Video: electricity and the enviroment

Drawing of Greenhouse & Global warming

Multiple Intelligence:
Auditory, Visual, Kinesthetic

Activity 3:
CO_2 & other Greenhouse gases.

Students make pie chart

Multiple Intelligence:
Spatial, Kinesthetic, Mathematical

Activity 4:
An Inconvinient Truth"

pre- & post survey
Open response

Multiple Intelligence:
Verbal, Visual, Intrapersonal, Kinesthetic

Coal Unit
Lesson:

Reducing Harmful Pollutants

Names:
Grace, Rachel, James, Kristen, trevor, canisha

"KNOW"
(Vocabulary, facts, essential questions, etc.)

Vocabulary: Gasification, Liquidification, Fluidized Bed Combustion, FutureGen

Facts:
1. Increased use of clean coal technologies decrease emissions
2. FutureGen is a program working to produce a zero-emissions power plant

Essential Questions:
1. How can we reduce the effects of coal?
2. What is the future for coal?

"UNDERSTAND"
(Core content, statements/insight that is essential to grasping the topic…
"I want students to understand that…")

Statements (include core content code after each statement):
1. there are many clean coal technologies that will reduce harmful emissions (SC-08-4.6.2)
2. there are several solutions to detrimental interactions (Global Warming) (SC-08-4.7.2)
3. laws and regulations are made to improve working conditions and
4.

"DO"
(Skills and activities…should relate to statements)

Activity 1:
Clean Coal Technologies Multimedia Presentation (www.careenergy.com)
Student Products →
Multiple Intelligence:
Verbal / Visual

Activity 2:
Video
The Greening of Planet Earth
Coal Fair projects →
Multiple Intelligence:
Verbal / Visual

Activity 3:
Video -
Balancing the Need Coal and The Environment →
Multiple Intelligence:
Verbal / Visual

Activity 4:
Group discussion / Persuasive letter
How can we Prevent coals harmful Pollutants from going in the environment
Multiple Intelligence:
Verbal / Linguistic
Intrapersonal

Multiple Intelligences Test

*Some of the student products are copies because the original is in their writing portfolio and cumulative folder.

MULTIPLE INTELLIGENCES TEST

Where does your true intelligence lie? This quiz will tell you where you stand and what to do about it. Read each statement. If it expresses some characteristic of yours and sounds true for the most part, jot down a "T." If it doesn't, mark an "F." If the statement is sometimes true, sometimes false leave it blank.

1. F I'd rather draw a map than give someone verbal directions.
2. T I can play (or used to play) a musical instrument.
3. F I can associate music with my moods.
4. T I can add or multiply in my head.
5. F I like to work with calculators and computers.
6. T I pick up new dance steps fast.
7. T It's easy for me to say what I think in an argument or debate.
8. F I enjoy a good lecture, speech or sermon.
9. T I always know north from south no matter where I am.
10. T Life seems empty without music.
11. F I always understand the directions that come with new gadgets or appliances.
12. T I like to work puzzles and play games.
13. T Learning to ride a bike (or skates) was easy.
14. T I am irritated when I hear an argument or statement that sounds illogical
15. T My sense of balance and coordination is good.
16. T I often see patterns and relationships between numbers faster and easier than others.
17. F I enjoy building models (or sculpting).
18. T I'm good at finding the fine points of word meanings.
19. F I can look at an object one way and see it sideways or backwards just as easily.
20. T I often connect a piece of music with some event in my life.
21. F I like to work with numbers and figures.
22. T Just looking at shapes of buildings and structures is pleasurable to me.

23. T I like to hum, whistle and sing in the shower or when I'm alone.

24. T I'm good at athletics.

25. F I'd like to study the structure and logic of languages.

26. T I'm usually aware of the expression on my face.

27. ___ I'm sensitive to the expressions on other people's faces.

28. T I stay "in touch" with my moods. I have no trouble identifying them.

29. T I am sensitive to the moods of others.

30. F I have a good sense of what others think of me.

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MULTIPLE INTELLIGENCE SCORING SHEET

Place a check mark by each item you marked as "true." Add your totals. A total of four in any of the categories A through E indicates strong ability. In categories F and G a score of one or more means you have abilities as well.

A	B	C	D	E	F	G
Linguistic	Logical-Mathematical	Musical	Spatial	Bodily-Kinesthetic	Intra-personal	Inter-personal
7 ✓	4 ✓	2 ___	1 ___	6 ✓	26 ✓	27 ___
8 ___	5 ___	3 ___	9 ✓	13 ✓	28 ___	29 ___
14 ✓	12 ✓	10 ✓	11 ___	15 ✓		30 ___
18 ✓	16 ✓	20 ✓	19 ___	17 ___		
25 ___	21 ___	23 ___	22 ___	24 ✓		
Totals: 2	3	3	1	4	0	0

"If we are to achieve a richer culture... we must weave one in which each diverse human gift will find a fitting place."

— Margaret Mead

All students can learn and succeed, but not all on the same day in the same way.

William G. Spady

[redacted]

2007 - first Coal Unit Questionnaire

During February, we will be completing a coal unit. We will have guest speakers, activities, projects, videos, etc. relating to coal. I want you to be involved in the decision-making process! Please answer the following questions so that we can make this a unit we are all proud of.

1. What specific area of "coal" would you like to focus on?

   Coal History

2. What questions would you like to research about that specific area?

   When did people first realize that coal could produce energy?

   Has the process of producing energy from coal changed over time?

3. What type of classroom projects do you like to do?

   - Drawings
   - Models
   - Power Points

4. How do you like to demonstrate what you have learned? What products do you like to make to demonstrate your knowledge?

   Power Point
   Demonstration

5. Do you have any specific activities in mind for our coal unit?

   - Field Trip To the Coal Museum
   - [illegible] Speaker such as A Coal Miner
   - Group Research on Coal

[redacted]

During February, we will be completing a coal unit. We will have guest speakers, activities, projects, videos, etc. relating to coal. I want you to be involved in the decision-making process! Please answer the following questions so that we can make this a unit we are all proud of.

1. What specific area of "coal" would you like to focus on?

   Chemistry of coal

2. What questions would you like to research about that specific area?

   - What is the chemical makeup of coal?

   - What all can be made with coal

3. What type of classroom projects do you like to do?

   experiments

   [illegible]

   [illegible]

4. How do you like to demonstrate what you have learned? What products do you like to make to demonstrate your knowledge?

   posters, tests, models

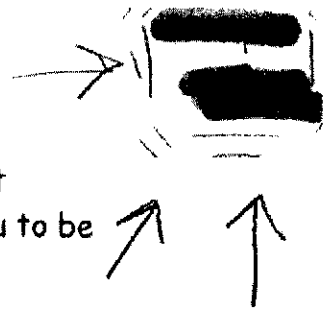
5. Do you have any specific activities in mind for our coal unit?

   [illegible] chemical [illegible]

   online activities

   [illegible]

5-4



2001-2002

During February, we will be completing a coal unit. We will have guest speakers, activities, projects, videos, etc. relating to coal. I want you to be involved in the decision-making process! Please answer the following questions so that we can make this a unit we are all proud of.

1. What specific area of "coal" would you like to focus on?
   I would like to focus on the new technology associated with the coal plant that helps it not to pollut so bad.
2. What questions would you like to research about that specific area?
   - Have you found any new technology that doesn't pollut as bad?
   - Are you coming out with any soon?
   - Does the machine have less pollut or is more harm to animals?
3. What type of classroom projects do you like to do?
   I like to:
   - hands-on
   - models
   - skits/plays
   - posters
   - timeline

   but NOT so much writing
4. How do you like to demonstrate what you have learned? What products do you like to make to demonstrate your knowledge?
   I would like to demonstrate what I've learned by making models [illegible] making a [illegible] timeline
5. Do you have any specific activities in mind for our coal unit?
   I have many specific activities in mind for our coal unit. Some are:
   - guest speaker from a [illegible]
   - [illegible]
   - make a mini model of one of the machines used [illegible]
   - make a [illegible]

2 1/2

Fellow Teachers,

I hope everyone had a fantastic Fall Break and is energized for another great 9-weeks! Time has really flown by this year.

As many of you know, I participated in the CEDAR (Coal Education Development and Resource) Coal Study Unit program last year and [redacted] in the middle school division (5-8). I could not have done it without the support of those teachers who struggled through it with me. I learned numerous lessons and am now ready to create an even better unit this year.

Let me start off by describing the CEDAR program. It is an all-volunteer, not-for-profit organization developed in 1993 for the purpose of improving the image of the coal industry. Their mission is to facilitate the increase of knowledge and understanding of the many benefits the Coal Industry provides in our daily lives by providing financial resources and coal education materials to implement its study in the school curriculum. They target students grades K-12 in all schools (public and private) in the Eastern Kentucky counties of Floyd, Johnson, Knott, Lawrence, Letcher, Magoffin, Martin, and Pike.

Like I stated earlier, I will be participating in the Coal Unit again this year. My unit will be short, focused, and content related. I have several guest speakers lined up, activities for the students to perform, videos to watch, portfolio piece ideas, etc. If anyone would be interested in participating in my unit or creating one of your own please see me. Please discuss this in team planning. Your participation can be as little or as much as you want. Your team can decide to work on the unit together or have one teacher (7th social studies, 8th grade science) in charge of completing the activities. It should take no longer than one week of your class time (less if you work on it together). Let me stress that I will have everything for you to do including free materials for you to use in your classroom (last year I received over $1200 worth of materials).

I must have the unit designed (on paper) and all teacher information turned in by November 1 so please let me know if you are interested. We will be completing the unit in classes some time during February. If you want to design your own unit, you must also have that turned in by November 1. Again, please see me for details.

There is a lot of money involved. First, you get free materials for your classroom. You could also win money if you write your own unit. [redacted] the [redacted] Even our students have a chance at winning money with their projects (I will give you information about this at a later date). We had 5 winners last year – more than any other middle school. Some of them won over $100!

Please consider this. I know we are all busy, but it is very worthwhile.

Thank you,

[redacted]

Name: LaVon [redacted] [redacted]

KWLH

Topic: Preserving The Past

Know?	Want to know?	Learned?
1.) Technology didn't provide better ways to coal mine.	1.) What has coal mining in the past effected our environment now? 2.) Has technology provided safer ways to min[illegible] 3.) Was mining an important job source? 4.) Has the death rate of miners increased or decreased? 5.) How can the health safety of miners be improved?	• early coal camps paid workers in scrips. • scrips could be used to buy groceries and any other needs or wants at company stores. • Van Leer Coal Camps named for Van Leer Black. An entrepeneur in the coal business.

How can you learn more? Where will you research – websites, interviews, books, videos, museums etc? internet, library—books, videos, television shows, magazines, guest speakers.

Name: _____ Date: _____

KWLH

Topic: Fueling The Future

Know?	Want to know?	Learned?
1.) Strip mining destroys land. 2.) pollutents can come from coal.	1.) What are the enviromental effects of coal and mining? 2.) How can we prevent negative enviroment effects? 3.) Are their good effects that come from mining coal? 4.) Will technology be upgraded so that coal mining isn't needed? 5.) Will the uses of coal in the future change?	• Today laws have been passed that have forced coal companies to reclaim mine land. • soil is renewed, land is reforested, lakes and ponds are made during reclemation. • coal companies are finding cleaner ways to burn coal for the use of electricity.

How can you learn more? Where will you research – websites, interviews, books, videos, museums etc?

internet, library - books, videos, television, magazine

Name: Kayla [redacted] Date: 1-10-08

KWLH

Topic: Preserving the past

Know?	Want to know?	Learned?
1) coal was mined 2) didn't have most technology we have today. 3) ran manully. 4) more accidients 5) less safty requirments 6) less pay than need → payed with script	1) wat was some of the technology used in early coal mining? 2) what was some of the jobs that were done manuly? 3) what were some of the safety precautions that were need? 4) Were there any laws for mining safety? 5) What was used to light the mines?	Van Lear was orginally a coal camp. Van Lear Black founded Van Lear and was named after here. Miners got scripts as pay to spend at company mines.

How can you learn more? Where will you research – websites, interviews, books, videos, museums etc?

1) internet, books
2) internet, videos
3) internet, videos
4) internet, musemums
5) internet,

Name: Kayla [redacted] [redacted]

KWLH

Topic: fueling the future

Know?	Want to know?	Learned?
1) coal is a fossil fuel or natural gas 2) Coal is used to produce electricity. 3) there are laws on mining safety 4) [redacted]	1) what are some of the future technology dealing with coal mining 2) has there been any laws passed ~~for~~ mining. 3) How coal pollutes the enviroment 4) how does ~~coal~~ smoke pollute the air or enviroment. 5) How long does coal have left	The coal is burned, the steam from it powers the turbins which powers the genarator to help produce electricity. Coal won't last forever. there has been safety law passed to help keep miners safe.

How can you learn more? Where will you research – websites, interviews, books, videos, museums etc?

1) internet, video, books
2) videos, books
3) videos,
4) video, book, internet
5) book, internet

[redacted] **Jennifer S.**

To: Woofter, Mark
Subject: RE: coal fair

From: [redacted] Mark
Sent: Monday, February 11, 2008 7:36 AM
To: [redacted] Jennifer S.
Subject: RE: coal fair

Jennifer you can come any day you want at 2:55. Mark

From: [redacted], Jennifer S.
Sent: Friday, February 08, 2008 2:26 PM
To: Adams, Tim; Conley, Kim; Estep, Recina; Fairchild, Avery; Meek, Gretta; Robinson, Doris; Slone, Carolyn; Tackett, Kim; Wireman, Lisa; Woofter, Mark; Triplett, Rodney
Subject: coal fair

Teachers,
My students and I have been trying to find time to visit each homeroom to discuss the coal unit and the school coal fair. It would takes weeks if I only continue to visit during Advisor/Advisee. If it is possible for me to come at 2:55 pm please reply and let me know which day would be best for you. I will be visiting Young Gold next week during Advisor/Advisee since they have exploratories at the end of the day. I appreciate all your help!

Thanks for being such wonder colleagues!!
Jennifer [redacted]

During "Coal Week", we are asking all teachers to use their advisor/advisee time to complete the following daily vocabulary and writing prompts. You may use any strategy that you wish to complete this activity – journaling, think-pair-share, roundtable, etc. My students will be journaling for approximately 10 minutes and then the rest of the time will be spent in think-pair-share.

	Vocabulary	Prompt
Monday	Preservation	Why is it important to preserve the past?
Tuesday	Coal camps	Describe Van Lear as it was in the early 1900s.
Wednesday	Hydrocarbons	How does the chemical composition of coal relate to the properties of that rank (heating value, moisture content, emissions, etc)?
Thursday	Generator	How is coal used to generate electricity?
Friday	Clean coal technologies	What can government officials, coal companies, and/or you do to reduce harmful emissions from burning coal?

These vocabulary words and writing prompts cover material that students have already studied or will study as we continue our coal unit. Even though the unit will continue over a three week period, we will only be completing this activity for one week so that this time can be used to perform other activities. Thank you for your support and cooperation during the completion of this unit. It is a worthwhile, real world topic that our students should be aware of. Unfortunately, coal education is not a priority in our core content so I really appreciate each of you taking the time to help in our endeavor of educating our students about this valuable natural resource.

When you are finished with this activity, please send me student examples so that I may include them is our coal study unit report.

[redacted] Jennifer S.

From: [redacted], Jennifer S.
Sent: Friday, March 07, 2008 2:34 PM
To: All Johnson Co MS Teachers
Subject: Coal unit videos

As part of our coal study unit, I recently received a video library from AEP. I have the following videos in my room that will be available for you to check out. I will have these videos for approximately 4 weeks. If you are interested in showing any of these videos to your classes, please see me and I will be more than happy to help you.

1. What Energy Means
2. The Science of Energy
3. Time Travelers Guide to Energy
4. Electricity and Global Climate Change
5. Balancing Needs: Coal and the Environment
6. Electricity and the Environment
7. Science Fair Projects: The Ultimate Guide
8. Coal, the Inside Story

I also have a computer program entitled "Coal Country".

Have a great weekend! Hopefully, we will be back on Monday. Please let me know if I can help you.

Jennifer

[redacted], Jennifer S.

From: [redacted], Jennifer S.
Sent: Friday, March 07, 2008 2:45 PM
To: All Johnson Co MS Teachers
Subject: Coal unit materials

As part of our coal unit, I have the following materials available for you use. These materials now belong to our school...they do not have to be sent back like the AEP videos. Again, they will be in my room so please let me know if you would like to use any of them.

Print materials:
1. Energy Glossary
2. What Everyone Should Know About Electricity From Coal
3. What Everyone Should Know About Land reclamation
4. What Everyone Should Know About Coal
5. Let's Learn about Coal
6. Power From Coal
7. Mining Glossary and Games
8. Coal Careers and You
9. Mining Reclamation Primer

Newspapers:
1. The Energist - Getting to Know Electricity
2. The Energist - Coal

Videos:
1. All About Coal
2. Coal, the Inside Story
3. America's Fuel
4. Coal People: A Century of Pride
5. Mining - Discoveries For Progress
6. Coal Today
7. Common Ground - Modern Mining and You
8. Underground Mining Tour
9. From Mines to Lines
10. Coal to Kilowatts
11. The Greening of Planet Earth
12. Balancing the Needs - Coal and the Environment

I also have several Coal Sample Kits that can be used for various science experiments. Again, let me know if you are interested in these materials.

Jennifer

After Think-Pair-Share

Word of the day:

* Hydrocarbons: Substances made of hydrogen and carbon.

* All fossil fuels are hydrocarbons. All living things are made of carbon.

found:

Coal is a hydrocarbon so it is made of hydrogen and carbon. Each rank has diffuent levels of each element. I think the more carbon it has, the better it will burn but the more emissions it will produce.

I learned that moisture content decreases as the rank increases. I also learned that anthracite produces the least emissions. It also has the highest heating value. I think we should burn more anthracite coal. Is this what we have in Kentucky?

Many of the teachers "forgot" to check out the materials - now I know how the Librarian feels!

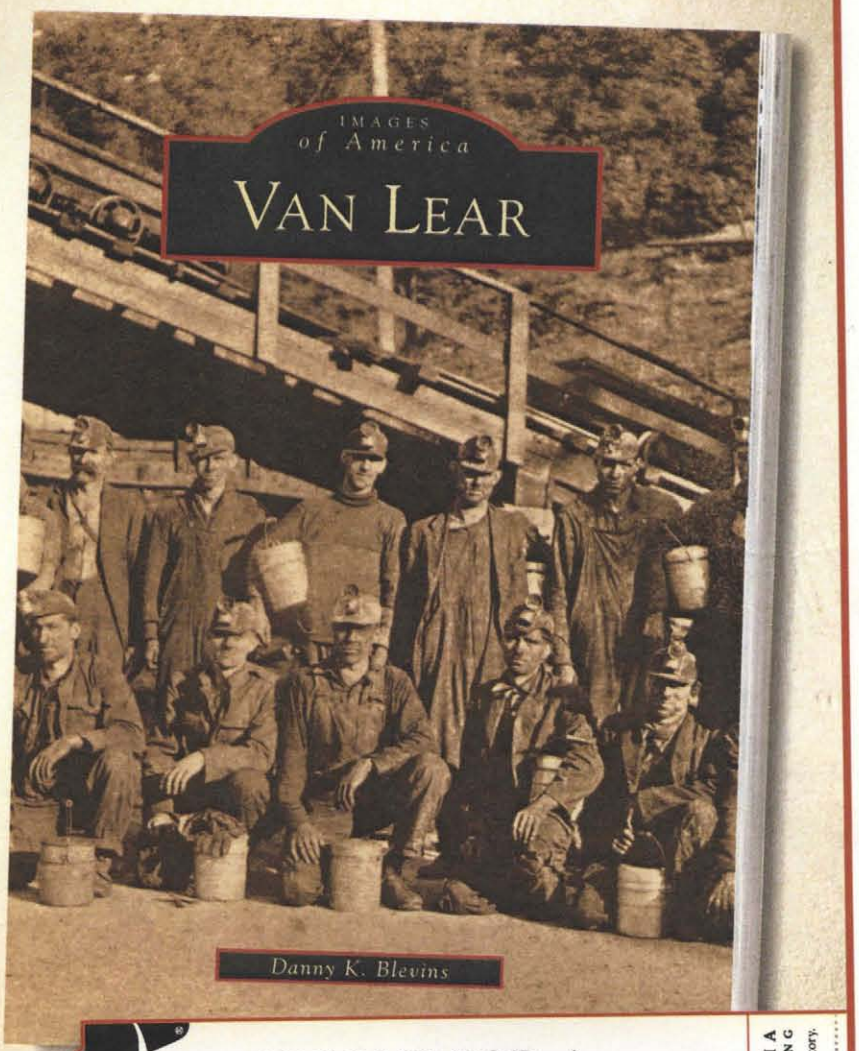
Video Sign-out sheet

Name	Title	Date	Returned
1. K. Meek	"An Inconvenient Truth"	3-26-08	4-8-08
2. M. Ailiff	"	"	
3. M. Davis	"	"	
4. R. Estepp	"	"	
5. P. Burton	"Greening of Planet Earth"	3-27-08	
6. P. Shepherd	↓	↓	
7. M. Chafins	↓	↓	
8. J. Fowler	↓	↓	
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Materials Sign-out sheet

Name	Title	Date	Returned
1. M. Pierce	"An Inconvenient Truth"		2-14-08
2. H. Lafferty	"		2/14/08
3. A. Sturgill	"		2/14/08
4. N. Collins	"		2/14/08
5. M. Pierce	"Coal pels	"	
6. H. Lafferty	"	"	3/26/08
7. A Sturgill	"	"	
8. N. Collins	"	"	
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Guest Speaker
Danny K. Blevins



JOIN US FOR A
BOOK SIGNING.

ARCADIA
PUBLISHING
Your place in history.

Saturday, March 8 ~ Words'n'Stuff

[redacted] Jennifer S.

From: Blevins, Danny
Sent: Thursday, March 27, 2008 10:30 AM
To: [redacted], Jennifer S.
Subject: Thanks!

Jenny,

Thanks for allowing me to visit with your class. I hope they learned something from my presentation.

Your old teacher,

Danny K. Blevins

[redacted], Jennifer S.

From: [redacted], Kelly A.
Sent: Thursday, March 27, 2008 8:02 AM
To: [redacted], Jennifer S.
Subject: RE: Danny Blevins

I didn't get to thank you for letting us know that Danny was in the building yesterday. I don't understand the science of it, but I love the historical aspect of all of that. I'd been wanting to get a copy of his book since it was published. I appreciate the 411.

Kelly

From: [redacted], Jennifer S.
Sent: Wednesday, March 26, 2008 11:45 AM
To: All Johnson Co MS Teachers
Subject: Danny Blevins

Danny will be here today around 1:30 to talk to my classes. He is bringing his book and will sell them to anyone interested. $20

We will be in the gym. Feel free to bring your class if you want to...I didn't say anything because I know the majority of you are stressing.

Jennifer

2008 Photo-Essay Competition
RESTORE-REUSE-RECYCLE

To celebrate Preservation Month in May 2008, the Kentucky Heritage Council and Preservation Kentucky, Inc. are pleased to announce **Restore-Reuse-Recycle:** Photo-Essay Competition for all Kentucky school students. Students should select an older building, site or structure in their community and reflect on how its preservation and adaptive use can benefit environmental causes and sustainable development. In attempting to discuss the "green" benefits of preservation, students may want to compare the benefits of 'recycling' historic places to the cost of 'throwing them away." Students may want to address the intrinsic historic value and significance of the historic site, but also consider the energy used for its production, land fill, replacement material and other environmental costs to Kentucky represented by the loss of historic buildings. In the essays, the students will want to address the best way to 'recycle" the selected historic place for the economic, environmental, and social value to the community.

Entries should be thoughtful and creative essays about the importance of preserving and recycling Kentucky's historic resources for future generations. For the competition, students should photograph a historic building or structure in their community and then write an essay describing the historic resource and explaining its relationship to the theme.

The Kentucky Heritage Council and Preservation Kentucky hope that the Photo-Essay Competition will stimulate young people's interest in historic preservation and will provide an opportunity for students to interact with their local decision-makers (mayors, city council / commission members, county judge/executives, magistrates, etc.) regarding the importance of historic preservation. As part of the competition, students are required to submit a copy of their essay to at least one local decision-maker in addition to judges.

The Kentucky Heritage Council and Preservation Kentucky, Inc. will select first, second, and third place essays from three categories:

Primary (Grades 1-5)
Intermediate (Grades 6-8)
Secondary (Grades 9-12)

•# ***The school submitting the most entries to the 2008 Competition will also be recognized and presented with an award for participation.***

Photo-essay winners will receive cash awards and other prizes and all competition participants will receive a certificate of recognition. Photo-essay winners will present their winning essays and photographs and will be recognized at a celebration in May 2008.

The Kentucky Heritage Council serves as the State Historic Preservation Office. Preservation Kentucky, Inc. is a statewide, nonprofit preservation organization and Statewide Partner of the National Trust for Historic Preservation.

Feel free to view winning essays from previous years online at Preservation Kentucky's website - www.preservationkentucky.org

Historic Preservation

No. 5 Company Store

Historic preservation is the planned and guided protection, management, documentation, rehabilitation, restoration, and maintenance of our historic and cultural resources. When I think of historic preservation, I think of the No. 5 Company Store in Van Lear, Kentucky. The store is still in operation today but it could be so much more. I would like to see it restored to it's heyday – when Van Lear was a booming coal mining town.

The restoration of this landmark would not only breathe new life into the Van Lear community, it would also breathe life into our environmental concerns. If the No. 5 company store were restored it could provide a great need to our community – a full-service grocery store. Right now, we must travel to surrounding communities for basic needs. This puts a strain not only on our pockets with the price of gas but also on our environment with the air-polluting car emissions. If residents of Van Lear had a comparable grocery store they would not have to travel long distances in their cars; in fact, many could walk to grocery store, increasing the overall health of the community and decreasing harmful emissions.

Restoring the No. 5 company store would also help the economy of Van Lear. It was once a booming coal mining town but has dwindled since the 1960s. Residents would be spending their money at a "home town" business where money would feed directly back into the community.

Historic preservation is no longer concerned with saving a few pristine monuments – it is recognized as a vital tool for the protection and enhancement of city and countryside. It does not mean saving everything, nor does it mean stopping growth. Historic preservation can instead be thought of as an attitude we bring to the overall planning of our communities and environment. Whether the purpose of preservation is environmental, economical, or sense of community, the Van Lear No. 5 company store has all the bases covered. Help me preserve a lasting monument to my community that once was...and discover what it could be.

Assignment: Family History

I learned many thing about my grandfather while doing my coalfair project. I Found out that he worked in the mines since he was 17 years of age. He also never missed a day of work due to a mining injury. Throughout his mining days he mostly worked in Virginia pretty close to where he lived.

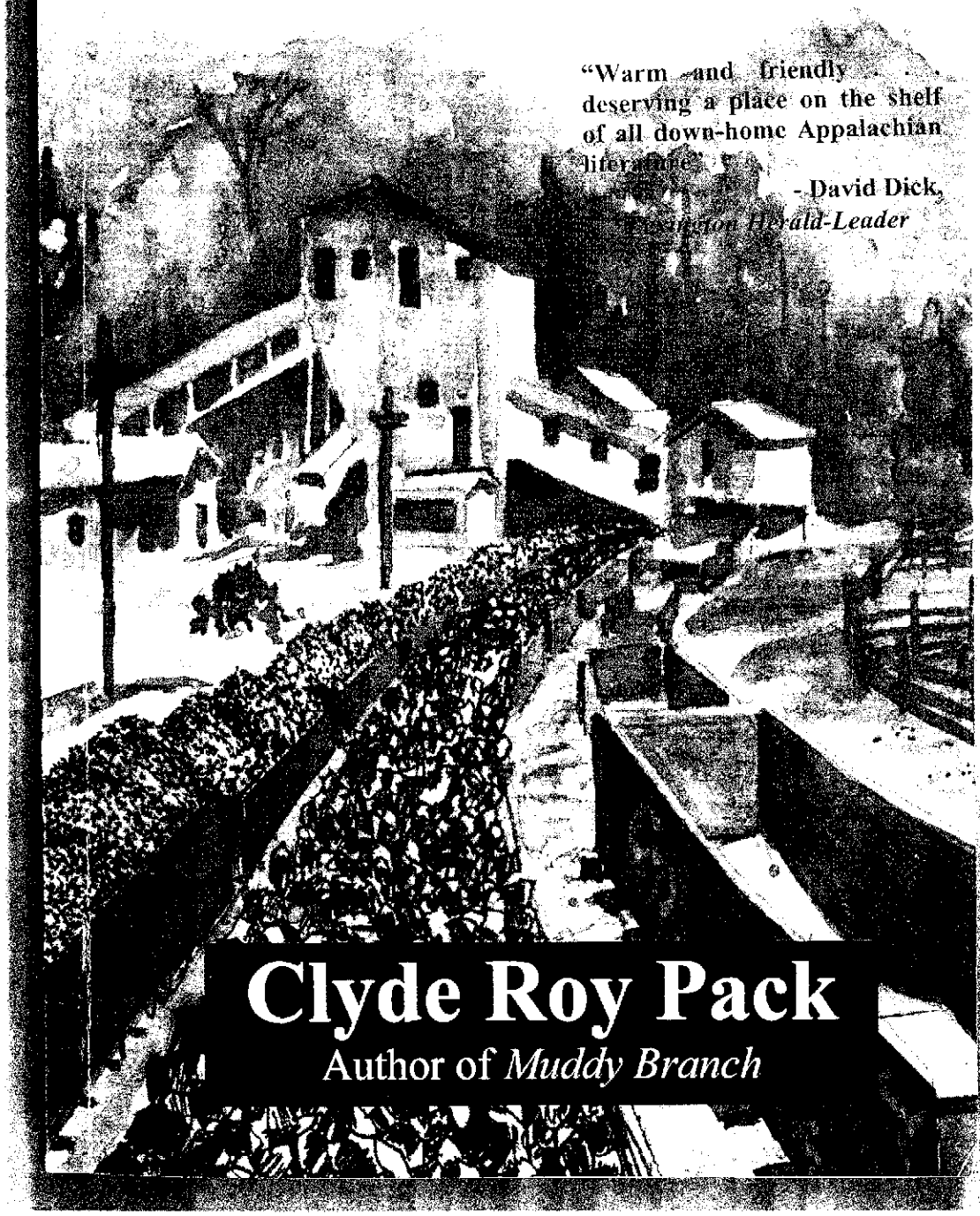
Assignment: Family History and "Coal People"

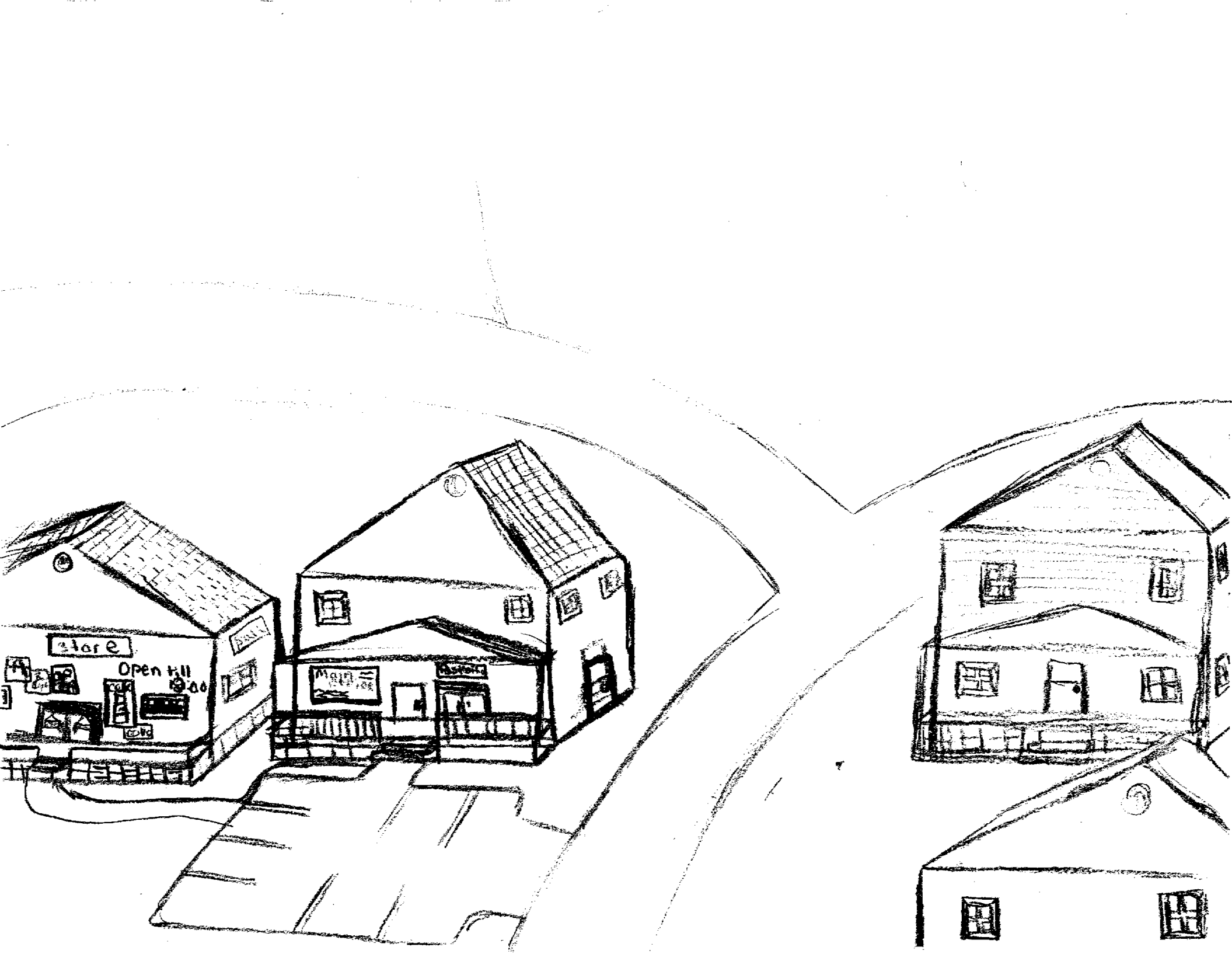
The life of a Coal Miner
By: Tara [redacted]
8th Grade

**My uncle, the coal miner, starts his day at 4:30 a.m.
His wife will fix his breakfast & lunch
to get him on his way.
He will drive 30 miles to work. There he will take what is called a Mantrip into the mines, which is like a small bus on rail road tracks. He will travel 2 miles underground.
There he operates a Continous Miner
that digs the coal and loads it into a buggy.
Which hauls the coal to a conveyer belt
that transports the coal outside
to a tipple. There the coal is loaded onto a train.
To be moved to the power plant which will use
the coal to make electricity.
After 9 hours of work, he will then travel 30 miles home to his everyday chores.
After all chores are finished he will eat dinner then shower and then straight to bed. To only start his day over again at 4:30 a.m.
He works six days a week so that we can have
Electricity everyday.**

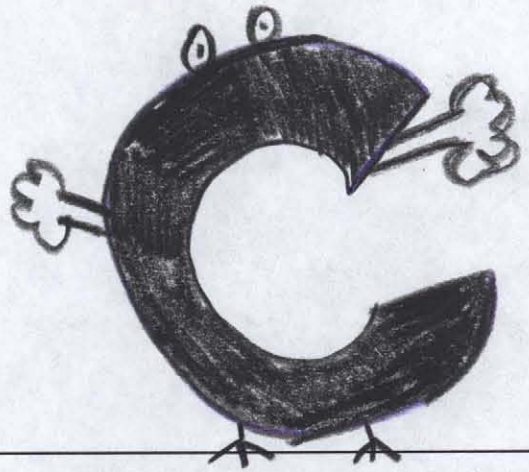
→ Reading Passages
→ Coal Camp Scenes

Coal-Camp Chronicles




store
Open Hill

It's ALL about Carbon...



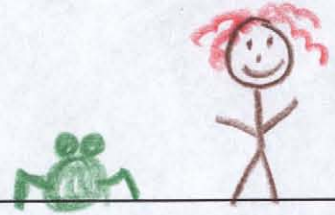
Because Carbon is in

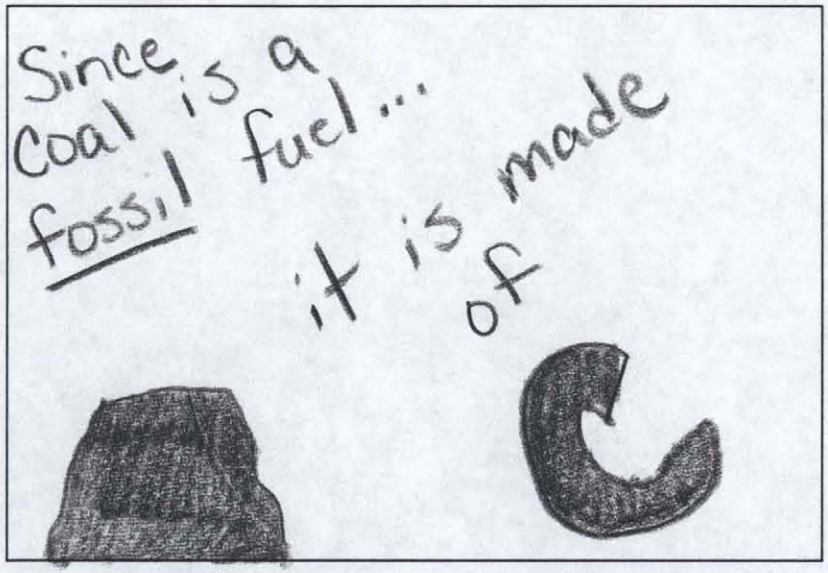
EVERYTHING

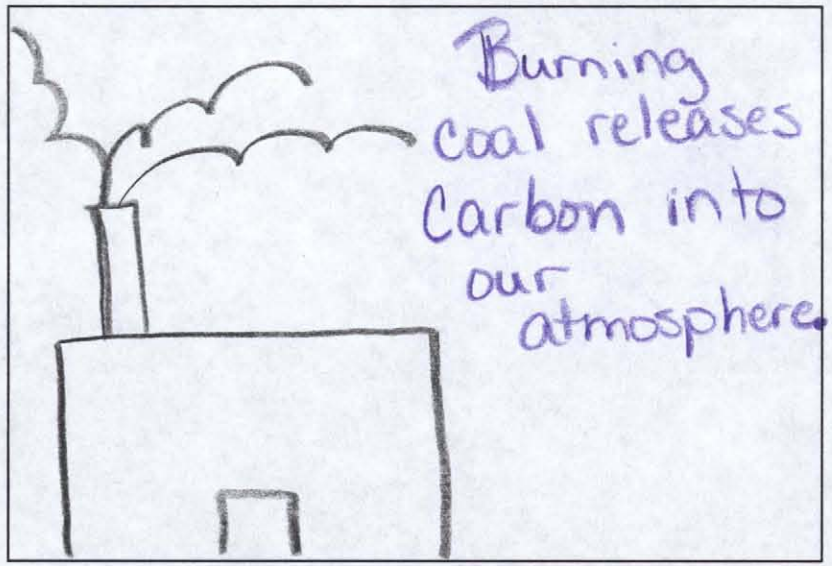
... Living/or once living

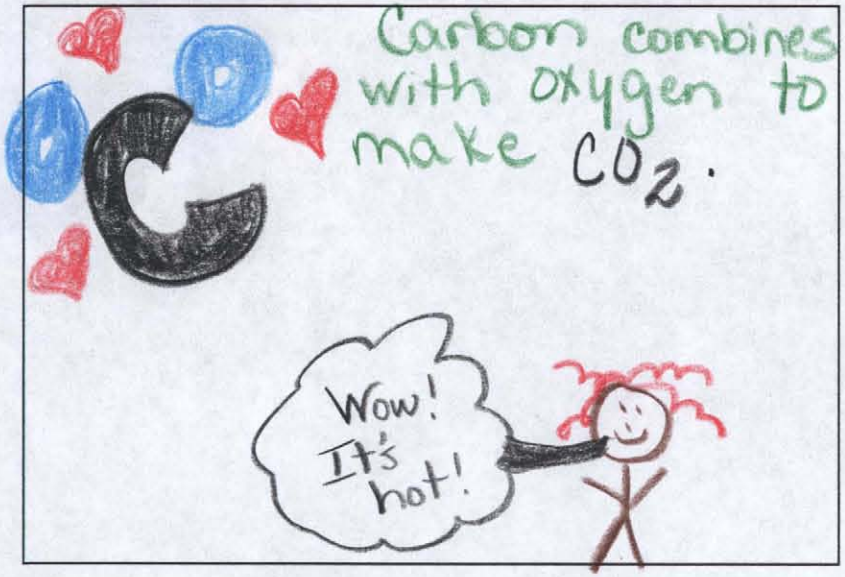
Trees & Plants...

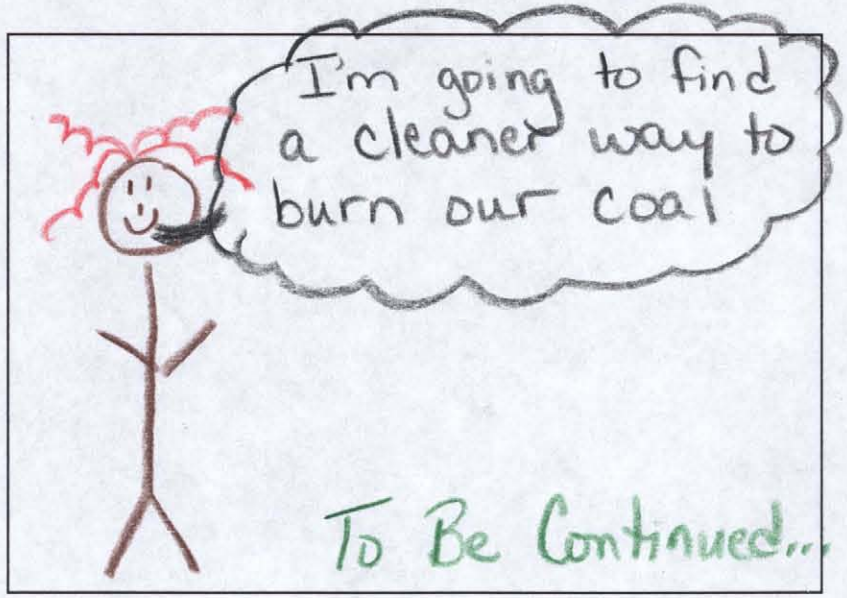
... Animals, Big & Small




Since Coal is a fossil fuel...
it is made of
C


Burning coal releases Carbon into our atmosphere.


Carbon combines with oxygen to make CO_2.
C
Wow! It's hot!

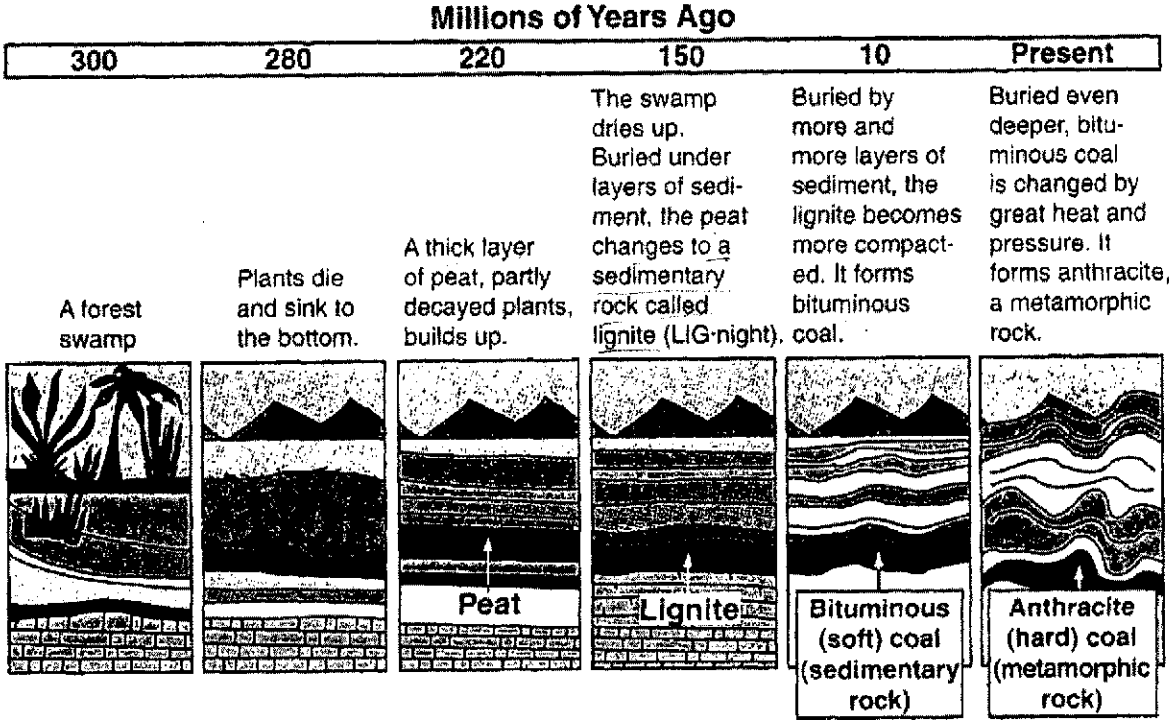

I'm going to find a cleaner way to burn our coal
To Be Continued...

Name Dustin J Date 4/10/05

Interpret Illustrations
Lesson 4

How Are Metamorphic Rocks Used?

This diagram shows how coal is formed. Notice that above the drawings there is a bar that tells how long ago each step took place. The oldest stage is at the left, and the present stage is shown at the right.



Answer these question about the diagram above.

1. Where does coal come from? a great swamp
2. What is peat? a [illegible] partly decayed plants
3. What does peat change into? a sedimentary rock called lignite
4. What happens to the lignite? becomes more compacted
5. What does lignite become? bituminous coal
6. How is bituminous coal changed to anthracite coal? great heat and pressure
7. What kind of rock is anthracite coal? metamorphic rock

Chemical Composition of Coal

**Use your prior knowledge and the graph of coal composition percentages to complete the following assignment.

Convert the percentages of each element to degrees. Show your work!

increasing decreasing decreasing decreasing!!

Rank	Carbon	Hydrogen	Nitrogen	Oxygen	Total
Peat	.556 x 360 200.16	.063 x 360 22.68	.018 x 360 6.48	.363 x 360 130.68	360°
Lignite	.681 x 360 245.16	.052 x 360 18.72	.013 x 360 4.68	.254 x 360 91.44	360°
Bituminous	.879 x 360 316.44	.050 x 360 18.00	.010 x 360 3.60	.061 x 360 21.96	360°
Anthracite	.932 x 360 335.52	.026 x 360 9.36	.009 x 360 3.24	.033 x 360 11.88	360°

Create a pie chart using the data above for each rank of coal showing their chemical composition.

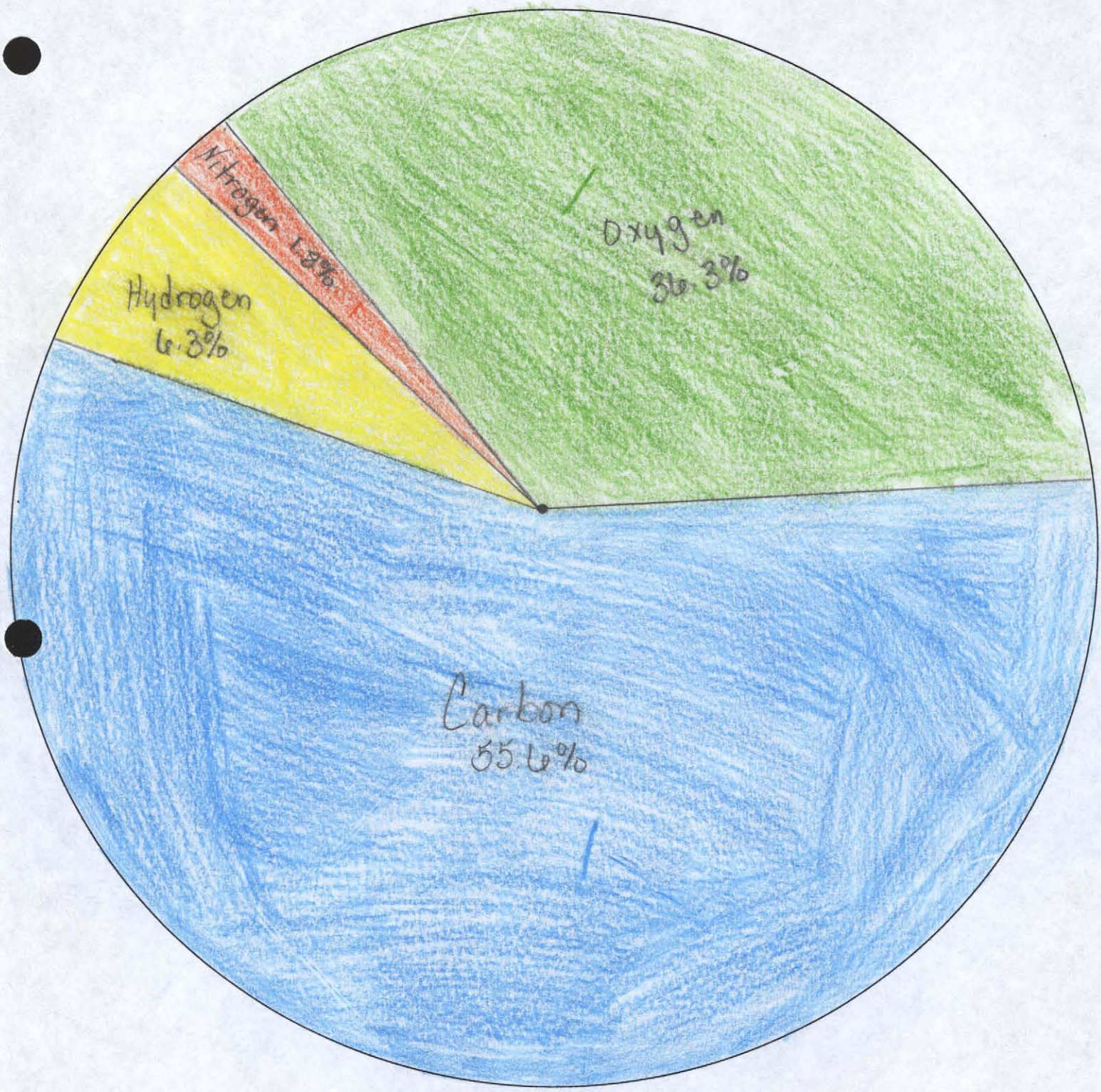
Analysis:
Based on your charts, make predictions about which rank of coal would burn most efficiently…

1. Which rank would increase the temperature of water the quickest?
   Peat - more oxygen, oxygen necessary for burning
2. Which rank would burn the "cleanest"?
   Peat - less carbon, "dirty"
3. Which rank would produce the most acidic emissions?
   Peat - more hydrogen, necessary in acids (HCl, for example)

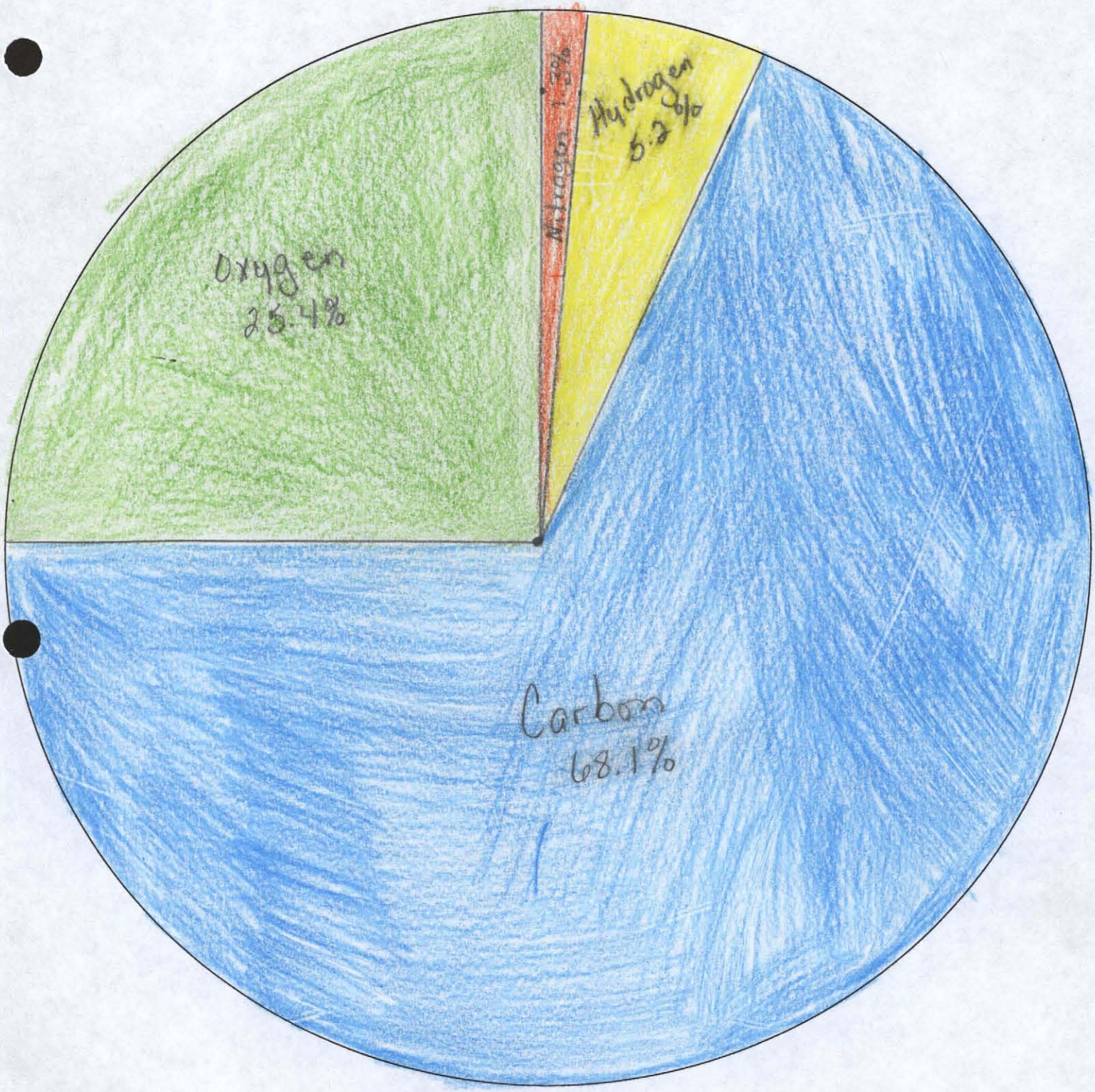
We will be performing these experiments and your answers to these questions will become you hypotheses.

These are my hypotheses for our coal experiments

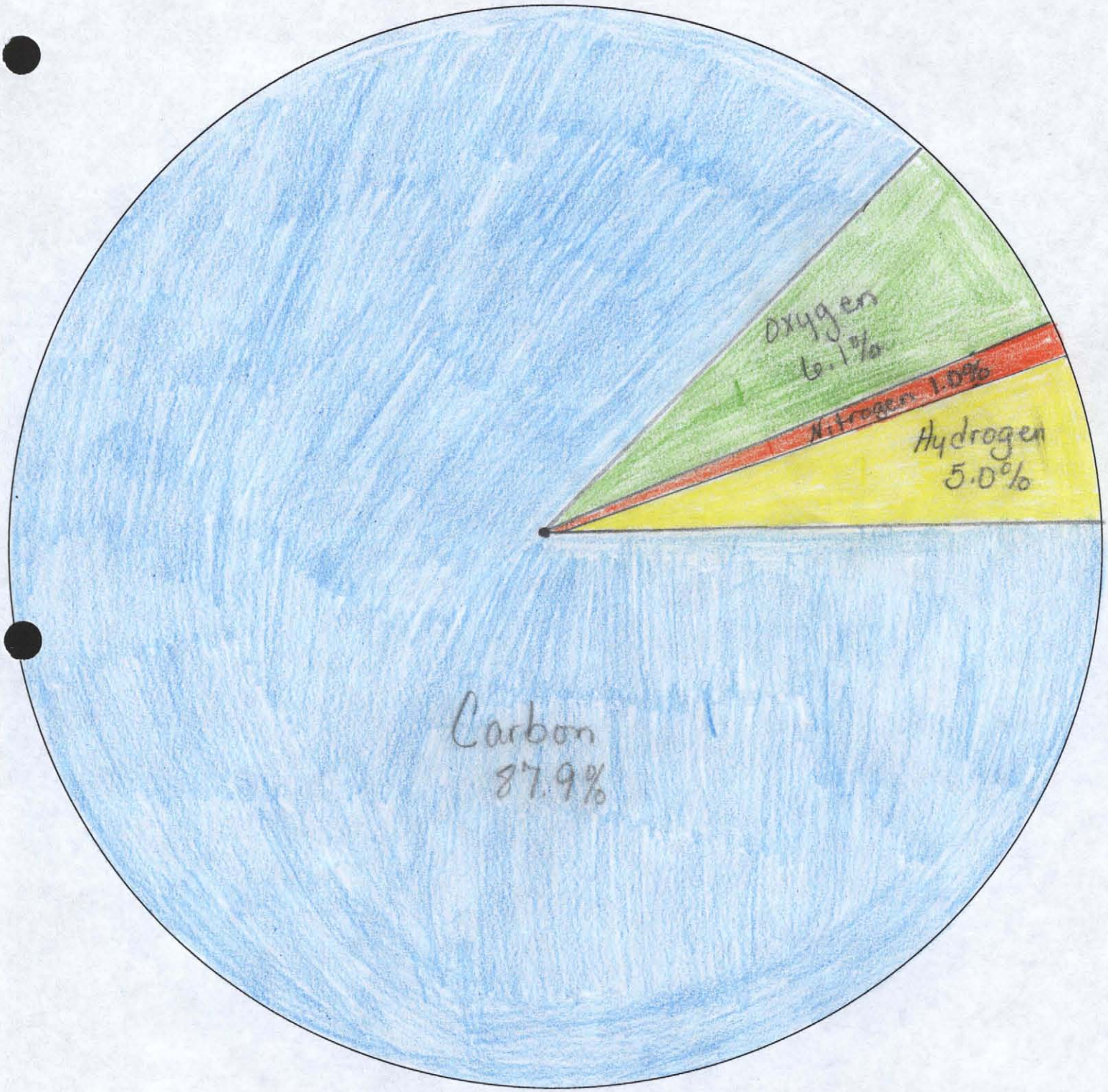
Chemical Composition
Peat



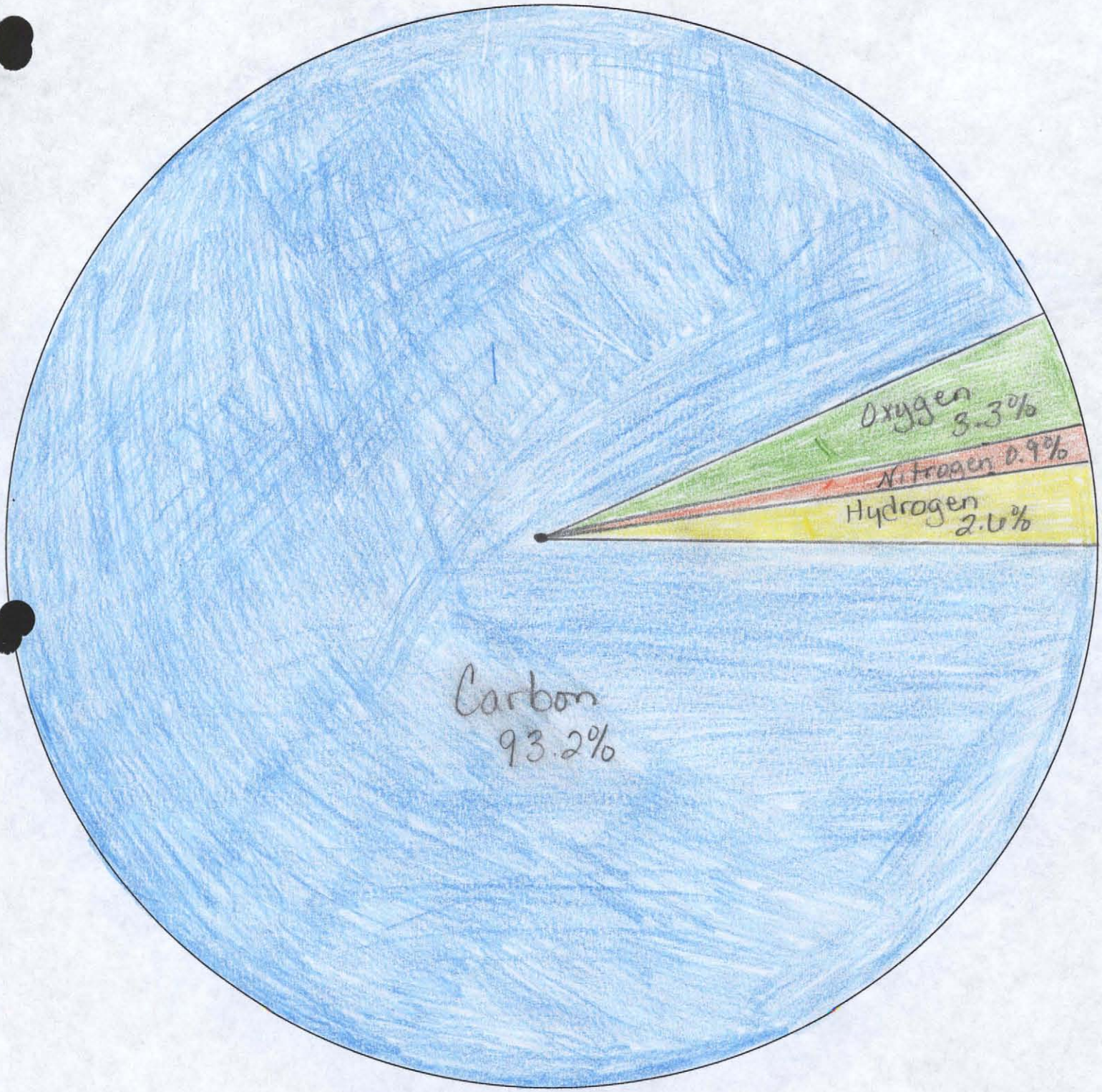
Chemical Composition Lignite



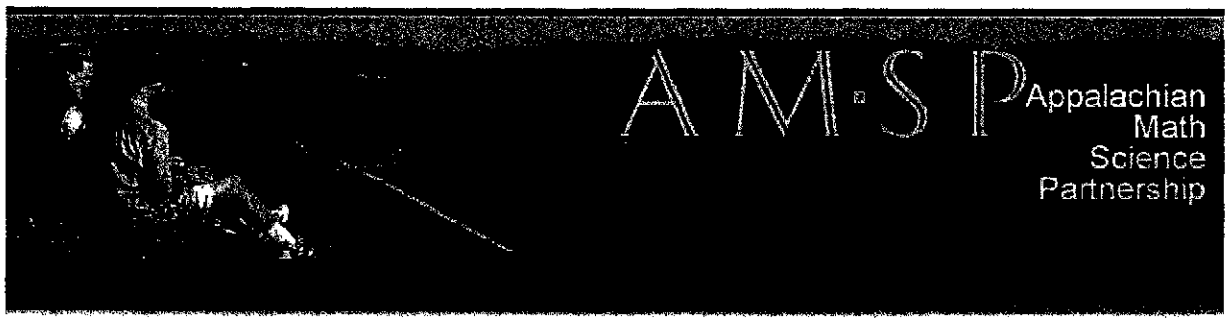
Chemical Composition Bituminous



Chemical Composition
Anthracite



www.uky.edu/KGS



Workshop on the Digital Blue™ QX5 Microscope
Featuring
The Science of Coal
Pike County Central High School
Monday, August 27, 2007
Agenda

3:30 pm -4:15 — Interactive Presentation on the Geological Aspects of Coal Formation and the Implications

The presenters will interact with the teachers to provide instructionally related information on the interrelationships between the geology and paleobotany of coal formation and the role of coal in the big picture of energy and the environment. The instructional material will be linked to the state's standards for content in these programmatic areas. The presentation will link the materials involved in certain stages of coal formation to the slides to be used in demonstrating the Digital Blue microscopes.

Dr. Jim Cobb, Director, Kentucky Geological Survey
Moderators:
John Yopp and Wimberly Royster

Refreshments Available

4:15 – 5:15 — Digital Blue Microscopes - Set-up and Hands-on Demonstration of Uses: John Yopp and AMSP Personnel

5:15 – 6:00 — Exploring the features and functions of the computer-linked digital microscopes using slides of acetate peels of coal formation material

and

Hands-on demonstration of the process of making acetate peels of coal formation material ("coal balls").
Coordinators and facilitators: AMSP Personnel

Each Teacher will receive:
Coal and the Environment published by American Geological Institute
A video depicting the formation of coal
Coal Formation and Coal Uses by Dr. Jim Cobb, Director of Kentucky Geological Survey
Set of Acetone Peel Slides of Coal Formation
Process for Making Slides
Slices of Coal Balls Stages of Formation to make Slides

Schools will be receiving Digital Blue Microscopes courtesy of Sponsors of the Program

Congratulations on Your Computer Microscope Purchase!

With your Computer Microscope, you can explore your environment and share discoveries with your family and friends.

Here's what you can do:

- See tiny things on your computer.
- Take the microscope off its base for magnified viewing.
- Build a collection of your discoveries and creations.
- Produce your own movies and slide shows.
- Print out posters and stickers (printer and sticker sheets not included).

Setup Guide

Important: *DO NOT attach the microscope to your computer until you have installed the software!*

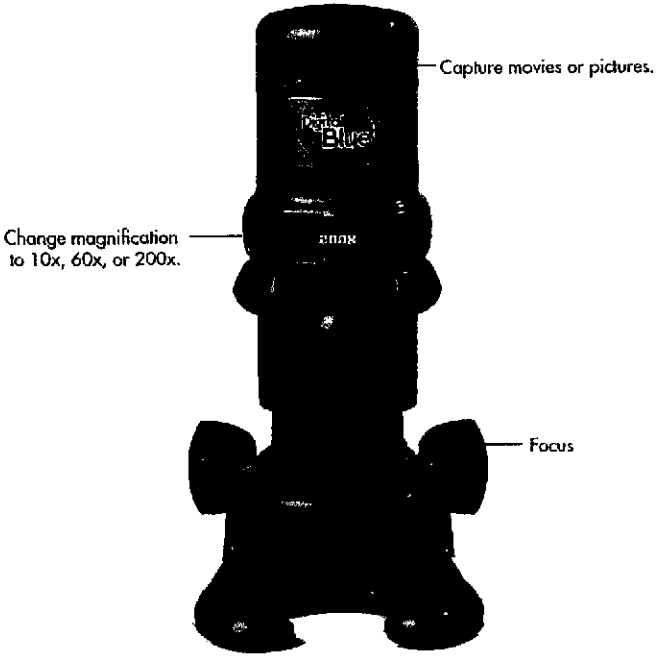
Here's how to get started using your microscope and software:

1. *Insert the CD.*
2. *Wait for the installer to start automatically.*
   - If the installer does not launch automatically, go to the desktop and double-click the icon named My Computer.
   - Double-click the icon for the CD drive that contains the software CD. If the software doesn't start automatically, open the setup folder, double-click on setup.exe, and follow the setup steps.
3. *Follow the steps by clicking the appropriate buttons.*

Now you can start the software and attach your microscope to your computer with the USB cable.

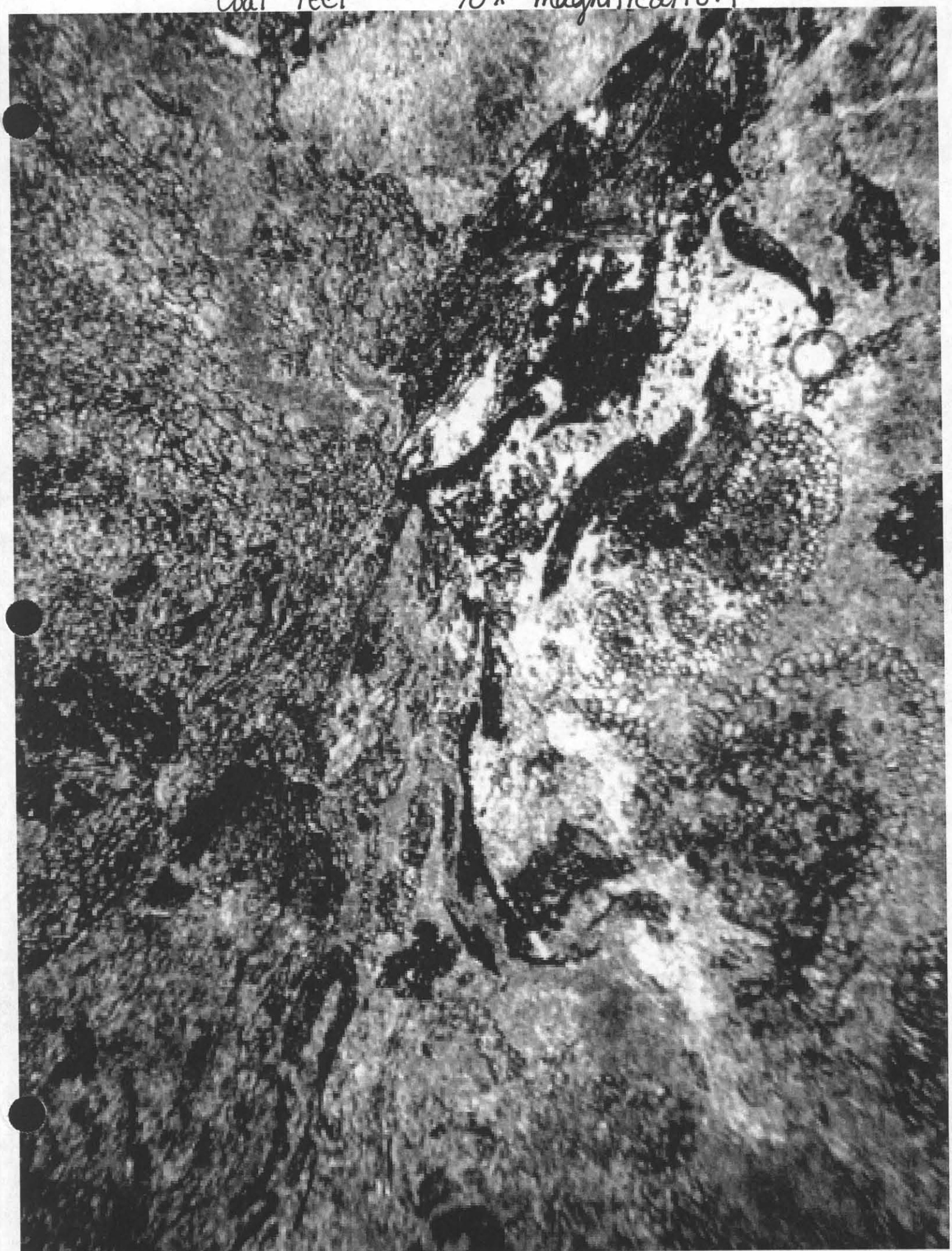
Using the Microscope

The microscope has three simple controls:



When you are using your microscope on its base, you can use the buttons in the software to capture movies and pictures. The direction of the light (top or bottom) and its brightness is also controlled by the software. You can learn more about this in the Using the Software section.

Coal Peel 10x magnification



Coal Peel 60 x magnification

Student designed experiment

Date:

EXPERIMENT NUMBER 1

Problem/Question State the purpose of your experiment. What do you hope to find out?

Which rank of coal produces the most heat?

Facts/Research Write down what you already know about the problem/question. Gather additional information to help you with your experiment.

While doing my coal fair project I learned that Lignite is the lowest ranked it is crumbly and has a high moisture content.

Anthracite holds little moisture.

Hypothesis Based on your facts/research, what are your predictions for the outcome of the experiment?

I belive that Anthracite will produce the most heat. I belive this will happen because it has little moisture so it could catch fire and burn till it burns out.

Procedure List the steps you will take to test your hypothesis.

Materials

- Matches.
- Samples of the 4 ranks of coal. (0.5 g each)
- water
- 1 beaker
- 1 flask
- 1 thermomiter

Steps

1. Fill the Flask with 150 milliliters.

2. Crush the rank of coal you would burn first and place it in the beaker.

3. Use the Matches to set fire to the coal in the beaker and set the Flask with the 150 mL of water over top.

4. Put the thermomiter in the water and watch the temp. rise. Record the temperature every 30 sec. for 5 minutes

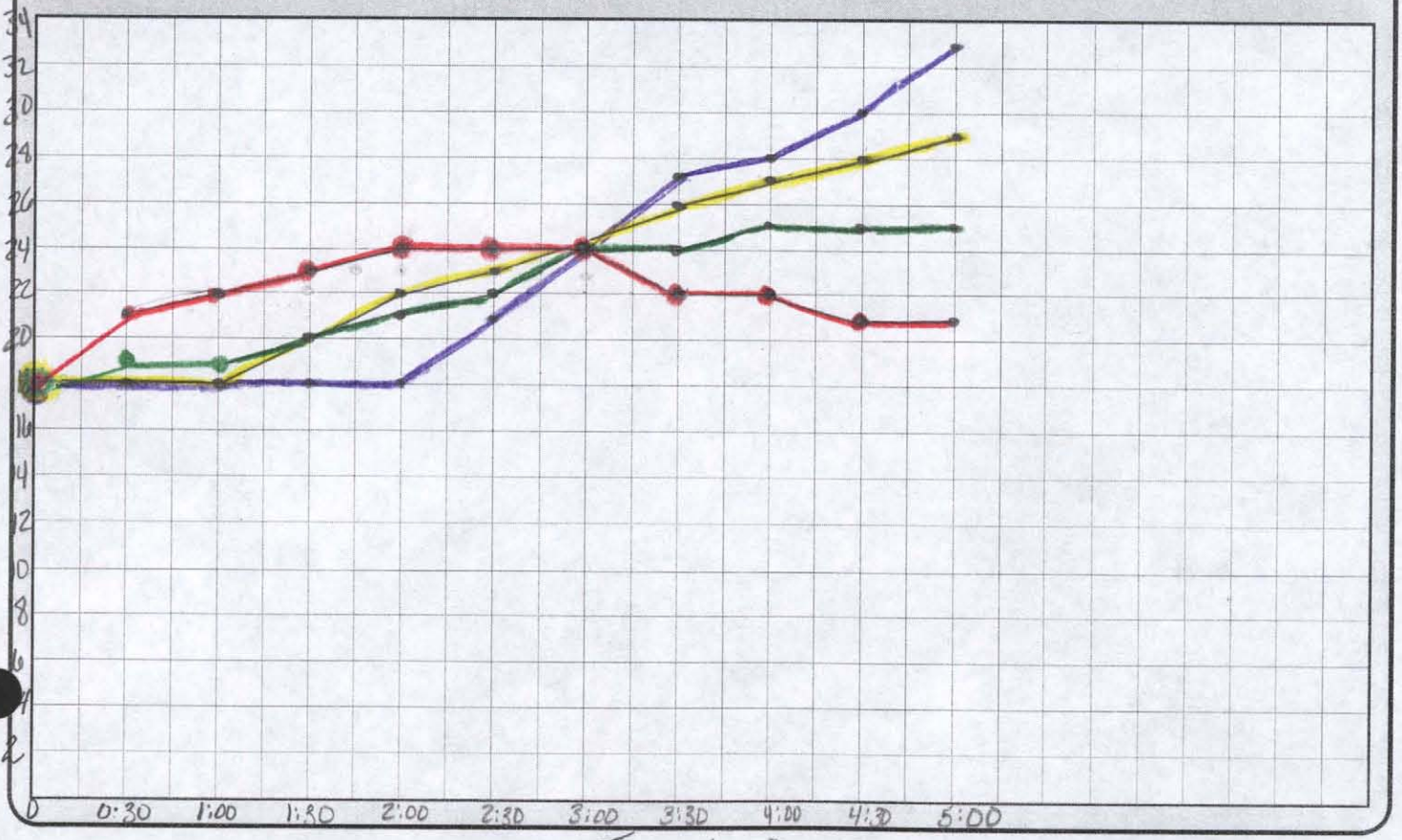
5. Repeat this proceedure with each rank of coal.

Materials What do you need to complete your experiment?

- Matches
- Samples of the 4 ranks of coal. (0.5 g each)
- water
- 1-beaker
- 1-Flask
- 1-thermomiter.

Data Collection Record your observations from your experiment in the space below. Use the graph paper for charts, scientific drawings, etc.

Time	Temperature			
	Peat	Lignite	Bituminous	Anthracite
0:00	18°C	18°C	18°C	18°C
0:30	21°C	19°C	18°C	18°C
1:00	22°C	19°C	18°C	18°C
1:30	23°C	20°C	20°C	18°C
2:00	24°C	21°C	22°C	18°C
2:30	24°C	22°C	23°C	21°C
3:00	24°C	24°C	24°C	24°C
3:30	22°C	24°C	26°C	27°C
4:00	22°C	25°C	27°C	28°C
4:30	21°C	25°C	28°C	30°C
5:00	21°C	25°C	29°C	33°C



Conclusion Explain the results of your experiment. Was your hypothesis correct?

In the end Anthracite would produce the most heat. Anthracite seemed to be the most steady in heating the water. It was close, because while burning the peat it seemed to catch fire the quickest and heat the water faster, but it would quickly burn out, thus causing the water temp to decrease. While burning the Lignite, the temp. of the water would gradualy rise but than decrease but not by much. While burning the Bitminous coal, I noticed that it would heat the water gradualy but not that fast. Then when doing the procedure on Anthracite coal I found that it would take a while to heat the water but when it did it seemed to heat the water the fastest and it kept rising in temp.

Application How can you apply the knowledge you have gained from this experiment to real-life encounters?

I belive that Antracite would be the most efeshent way to burn in coal companies becaus it would bring the water to a higher temp. This would creat stem better for electricity.

Student designed experiment

Date:

EXPERIMENT NUMBER 1

Problem/Question State the purpose of your experiment. What do you hope to find out?

Which rank of coal produces the "dirtiest" emissions?

Facts/Research Write down what you already know about the problem/question. Gather additional information to help you with your experiment.

Ranks of Coal	Percent of Carbon Emissions
Peat	55.6%
Lignite	68.1%
Bituminous	87.9%
Anthracite	93.2%

Hypothesis Based on your facts/research, what are your predictions for the outcome of the experiment?

For my hypothesis I think that Anthracite will cause the "dirtiest" emissions. I'm basing my hypothesis on the chart that I shown above. It says that 93.2% of carbon emissions is from Anthracite.

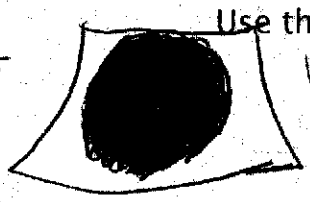
Procedure List the steps you will take to test your hypothesis.

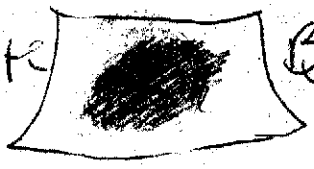
1. Get your 4 ranks of coal (Peat, Lignite, Bituminous, and Anthracite) and place around 0.5g in the 4 fireproof beakers. All ranks must be pulverized into powder.
2. Get your longhandle lighter and set them all on fire.
3. Place the coffee filter over the top of the beakers, and wrap a rubber band around each one so it will stay put.
4. After about five minutes, take the rubber bands and coffee filters off the tops of the beakers.
5. Examine the coffee filters and the one that is the "dirtiest" is the answer to the experiment.

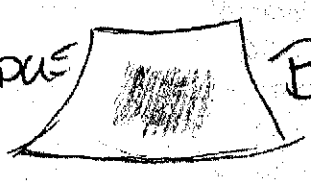
Materials What do you need to complete your experiment?

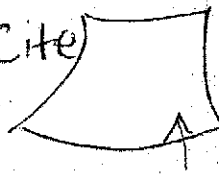
- 4 ranks of coal: Peat, lignite, Bituminous and Anthracite (all pulverized)
- 4 fireproof beakers
- long handle lighter
- 4 coffee filters
- 4 rubber bands

Data Collection Record your observations from your experiment in the space below. Use the graph paper for charts, scientific drawings, etc.

Peat  WOW! this is the "dirtiest"!

Lignate  By the experiment it is the 2nd dirtiest"

Bituminous  Bituminous is the 2nd cleanest"

Anthracite  Anthracite is the "cleanest" of the other 3 coal types

Clean

Conclusion Explain the results of your experiment. Was your hypothesis correct?

Our hypothesis was wrong. Anthracite is the "cleanest" while the "dirtest" of the coal types is Peat.

Application How can you apply the knowledge you have gained from this experiment to real-life encounters?

When we burn Peat coal we have a big problem. it puts more carbon in the air. So we should burn Anthracite because it's the cleanest coal to burn. We should come up with different coal tech. So when we burn coal it won't change our atmosphere.

Student Self Evaluation Form for Group Work

	Seldom	Sometimes	Often
Contributed ideas		✓	
Listened to and respected the ideas of others			✓
Positively encouraged others in my group		✓	
Compromised and co-operated			✓
Was flexible and willing to follow others			✓
Took initiative when needed		✓	
Helped to solve problems			✓
Took risks by exploring something new to me		✓	
Did my share of the workload/tasks			✓

My two greatest strengths from the list above are:

1. listening to + respected the ideas of others
2. did my share of the work/tasks

The two skills I need to work on from the list above are:

1. Took initiative when needed
2. Positively encouraged others in my group

What does coal mean to you?

When this question was first posed in class, I initially thought electricity for playing my Wii and taking hot showers. I was sure that everyone would talk about this so I wanted to be original. I sat down and really thought about the role that coal plays in my life. As I was deep in thought, it came to me that coal plays an even bigger role in my future.

My future goals include attending the University of Kentucky and majoring in mining engineering. My main goals are to make mining safer and decrease the harmful emissions produced by burning coal. As part of my coal fair project, I have been studying technologies that will ultimately result in near-zero emission power plants. That sounds so exciting to me and I am now more focused than ever on my future goals.

So, what does coal mean to me…it means a bright future and a healthier planet.

Assignment: "What does coal mean to you?"

John [redacted]

4-17-08

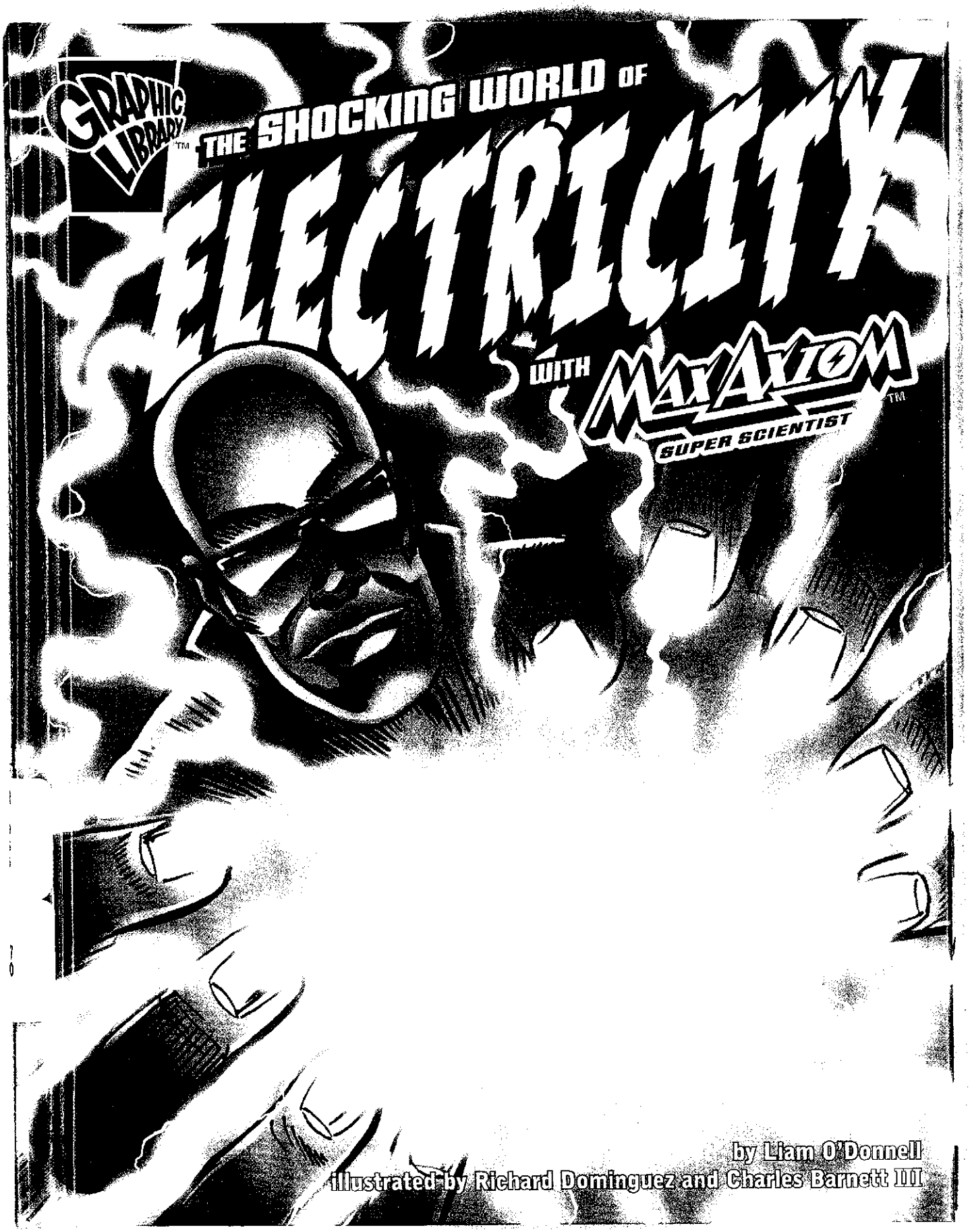
Shepherd

Coal is very important to me. I am one of the possible candidates to win the 2008 Robinson Scholar for Johnson County. I am also aware that the money for this scholarship is donated from a coal corporation. This scholarship means a lot to me and I want to win it for many reasons. The first reason is while I am in college, I don't need to worry about a large debt. While I'm in school I just need to worry about my class work and studying, not money. I also don't want my parents to worry about paying for college. They already have to worry about paying bills and keeping their things up and running.

I also know this scholarships means the difference between a career I enjoy and that pays well; and a job that pays minimum wage that I dread going to. I'm aware that if just graduate high school, it will be hard to find jobs that pays more than three-hundred dollars a week. But if I go to college, I can earn a much higher paycheck.

As you can see, coal is an important aspect of my life. It means the difference between being barely able to support and well-to do, and being able to just have an enjoyable life.

Comic Book


GRAPHIC LIBRARY
THE SHOCKING WORLD OF
ELECTRICITY
WITH MAX AXIOM
SUPER SCIENTIST
by Liam O'Donnell
illustrated by Richard Dominguez and Charles Barnett III

Name Kendra [redacted]

9

GENERATING ELECTRICITY
from the series *Electricity and Magnetism*

WRITE A STORY

Directions: Try to imagine how different life would be if there was no electricity.

A World Without Electric Power

It's Monday, June 8th, 2008. I wake up to find nothing but sunlight filtering through my window to shine upon the regular furnishings of my unusually cold bedroom. I glance to my right where my alarm clock is sitting on my nightstand but instead of recieving information as to what time it is, I am stared back at from a blank black screen. I got up from my bed walked into the bathroom turned on the hot water, added a little cold, got in and instead of warm comforting water hitting my back, I felt ice cold water hitting down my spine. I went on and took the icy shower and when I tried to turn the light in my closet on, I just looked into darkness. I felt something suspicious was going on. I traveled down the hallway to the door that led to the breaker box. everything was on, my mom called the electric company from her cell phone and got no answer. What would life be without cool, without electricity you ask. Try going through this, and much more, everyday.

Name _____

1

GENERATING ELECTRICITY
from the series *Electricity and Magnetism*

PRE-TEST

I. Directions: Pick the definition in column B that best matches the word in column A. Write the letter of the definition on the blank line.

A		B	
1. transformer	C	a. Works like a pinwheel, steam is used to spin the blades.	
2. generator	f	b. Electrical power produced by falling water.	
3. turbine	a	c. Used to step-up or step-down the voltage of the electricity as it travels from the power plant.	
4. cells or batteries	e	d. Used to conduct electricity from the power plant to users.	
5. high tension wires	d	e. Used to turn chemical energy into electrical energy.	
6. hydroelectric	b	f. Used to make electricity.	

II. Directions: The following questions need a short answer.

1. Name some fossil fuels.
oil, natural gas, coal

2. Why does a power plant need to produce steam? What is the steam used for?
To produce the power that runs all of the things in our life. To turn turbines that create the electricity

3. How does a generator work?
steam is put into the generator which the steam is to turn a thing which creates electricity

4. Name some different ways electricity is generated.
Geothermal power from hot springs
wind
water wheels

Name [redacted]

2

GENERATING ELECTRICITY
from the series *Electricity and Magnetism*

PROGRAM QUIZ

Directions: At the end of the program, there is a short quiz. You can record your answers on this sheet.

1. Some power plants use fossil fuels to heat the water needed to generate electricity. What are some fossil fuels? oil
natural gas
Coal

2. What does a hydroelectric power plant use to turn the turbines, which are connected to the generators that make electricity? The power of running water

3. What does a solar cell, or photoelectric cell, need to produce electricity?
Sunlight

4. What does a step-up transformer do at a power plant?
something that increases the amount of voltage in a line of electricity.

5. What is voltage?
The amount of electric power coming through a circuit.

Name _____

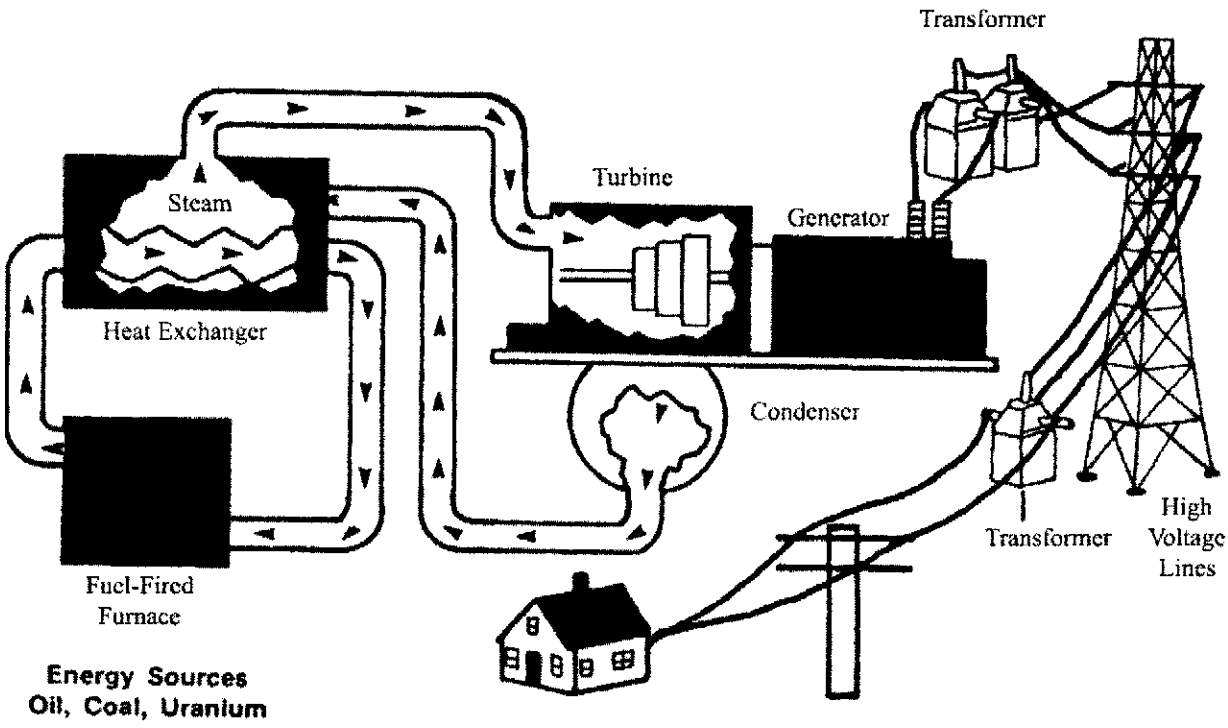
4

GENERATING ELECTRICITY
from the series *Electricity and Magnetism*

POWER PLANT

Here is a illustration showing the steps involved in developing electricity.

Explain the process, starting with the fuel-fired furnace and ending with electricity in the home.



This system uses oil, coal, or uranium as fuel to create steam to turn the turbine. What are some other energy sources used to generate electricity?

Diagram on plasma TV via document camera. Student responses on their own paper

4 A-

A. The process of getting electricity in a home starts at a power plant. It begins when the plant burns coal. As the coal is burned, it heats water into steam. This steam is used to spin a turbine (a pinwheel like propeller) that makes a giant magnet spin. This magnet is spun in an area surrounded by metal coils (loop). This creates an electrical current. The current (flow of electrons) goes through the metal to something called a step-up transformer that increases the voltage (or push) of the current. This current travels to a step-down transformer that lowers the voltage to a safe level for use in the home. The water and heat used in this process is reused to make it easier to repeat for more electricity. More efficient?

How does it go from step-up to step-down?

5.7
6.1
6.2
7.1
9.4
9.7
9.10

400

Open Response Rubric

	Unacceptable		Acceptable	
	1 (2 points)	**2** (4 points)	**3** (6 points)	**4** (8 points)
Correctness	Demonstrates a minimal understanding in discussion of concepts	Demonstrates a limited awareness of concepts	Demonstrates a general awareness of concepts	Demonstrates a thorough understanding of the subject matter
Higher-order thinking	Little to no evidence of elaboration, extension, higher-order thinking, or relevant prior knowledge	Limited evidence of elaboration, extension, higher-order thinking or relevant prior knowledge	Some evidence of elaboration, extension, higher-order thinking, and relevant prior knowledge	Contains elaboration, extension, and/or evidence of higher-order thinking and relevant prior knowledge
Idea Development	Unfocused details	Poor development of topic; few supporting details	Adequate development of topic using appropriate details	Well-developed topic including pertinent details
Scientific vocabulary	Inappropriate vocabulary	Simplistic vocabulary; few scientific words defined	Acceptable vocabulary; majority of scientific terms defined	Strong use of scientific terminology; defined terms
Organization	Weak to no organization; lapses interfere with comprehension	Weak organization; lapses do **not** interfere with comprehension	Appropriate organization; no lapses	Strong, subtle organization; no lapses
Grammar	Errors in English Conventions interfere with communication	Errors in English Conventions are disproportionate to length and interferes with communication	Minor errors with English Conventions have little to no effect on communication	Strong control of English Conventions

← left out power lines →

4.20

[redacted], Jennifer S.

From: [redacted], Jennifer S.
Sent: Friday, February 22, 2008 12:44 PM
To: All Johnson Co MS Teachers
Subject: science presentation

I have contacted Bruce Aaron Davis about presenting to my class. I was going to have him discuss energy transfer and energy conversions - this is a major component of 7th and 8th core content. Also, for my coal unit, I would like him to discuss electricity and the process of going from mined coal to the electricity in our home. Now that you know the background info, here is my question:

How many of you would be interested in bringing your students to this program?

We could have a separate one for 7th and 8th so he can focus on different content. I know your time is valuable right now so please discuss this in team planning and try to get back to me by Monday if you are interested. Also, make suggestions if you have any additions. I didn't want to leave anyone out. For those who are interested, we can discuss a date and time that would be most convenient.

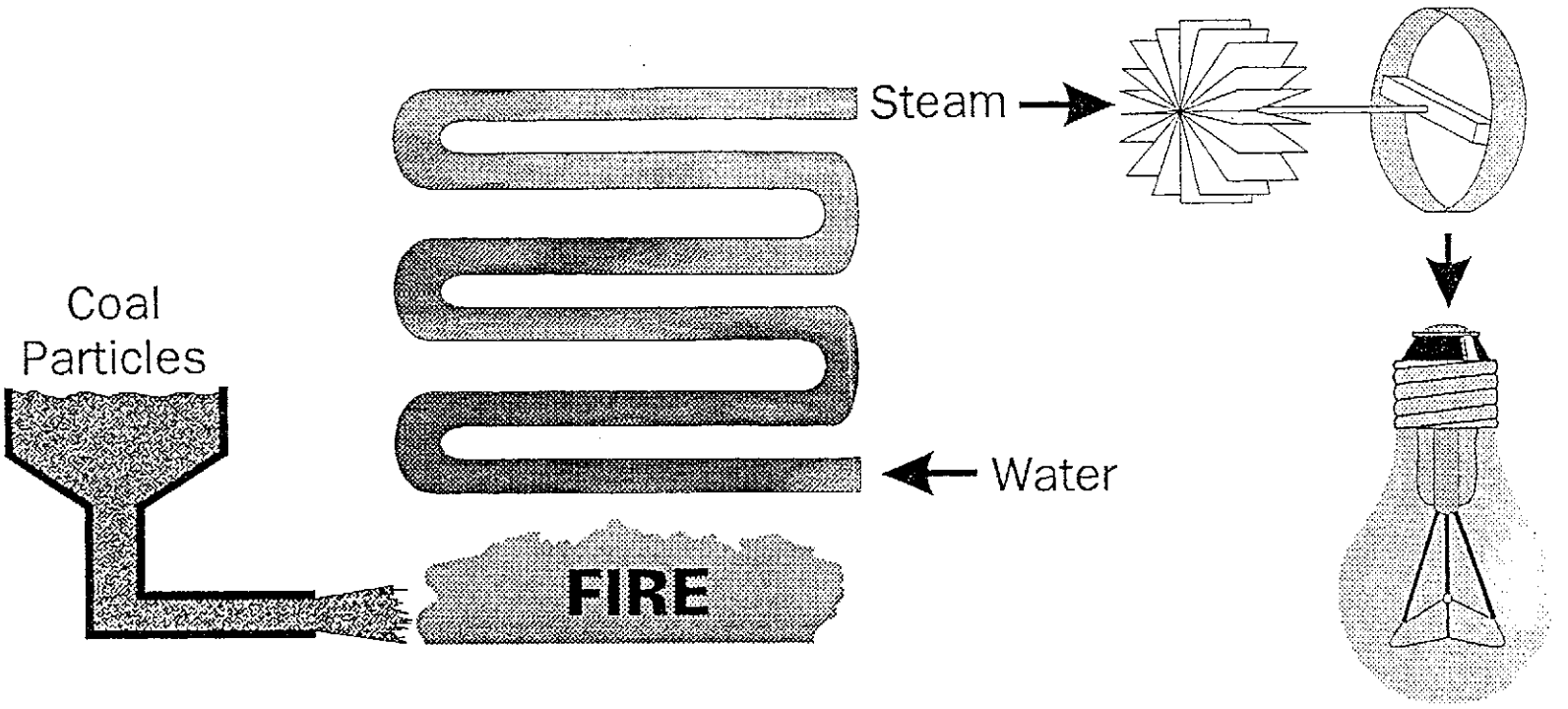
[redacted], Jennifer S.

From: [redacted], Jennifer S.
Sent: Wednesday, March 12, 2008 1:11 PM
To: All Johnson Co MS Teachers
Subject: Science Presentation

I would like to thank everyone who participated Tuesday in the presentation by Bruce Aaron Davis of Big Sandy RECC. I realize your time in valuable (I am in midst of our coal fair projects and I am struggling to get them completed). I am sure that your students came away with knowledge that will not only be useful for the end-of-the-year assessment but also practical information about coal and electrical safety.

Jennifer

How Electricity Is Made



1) Coal is pulverized into tiny particles.

2) The coal is burned at temperatures greater than 2,500 degrees.

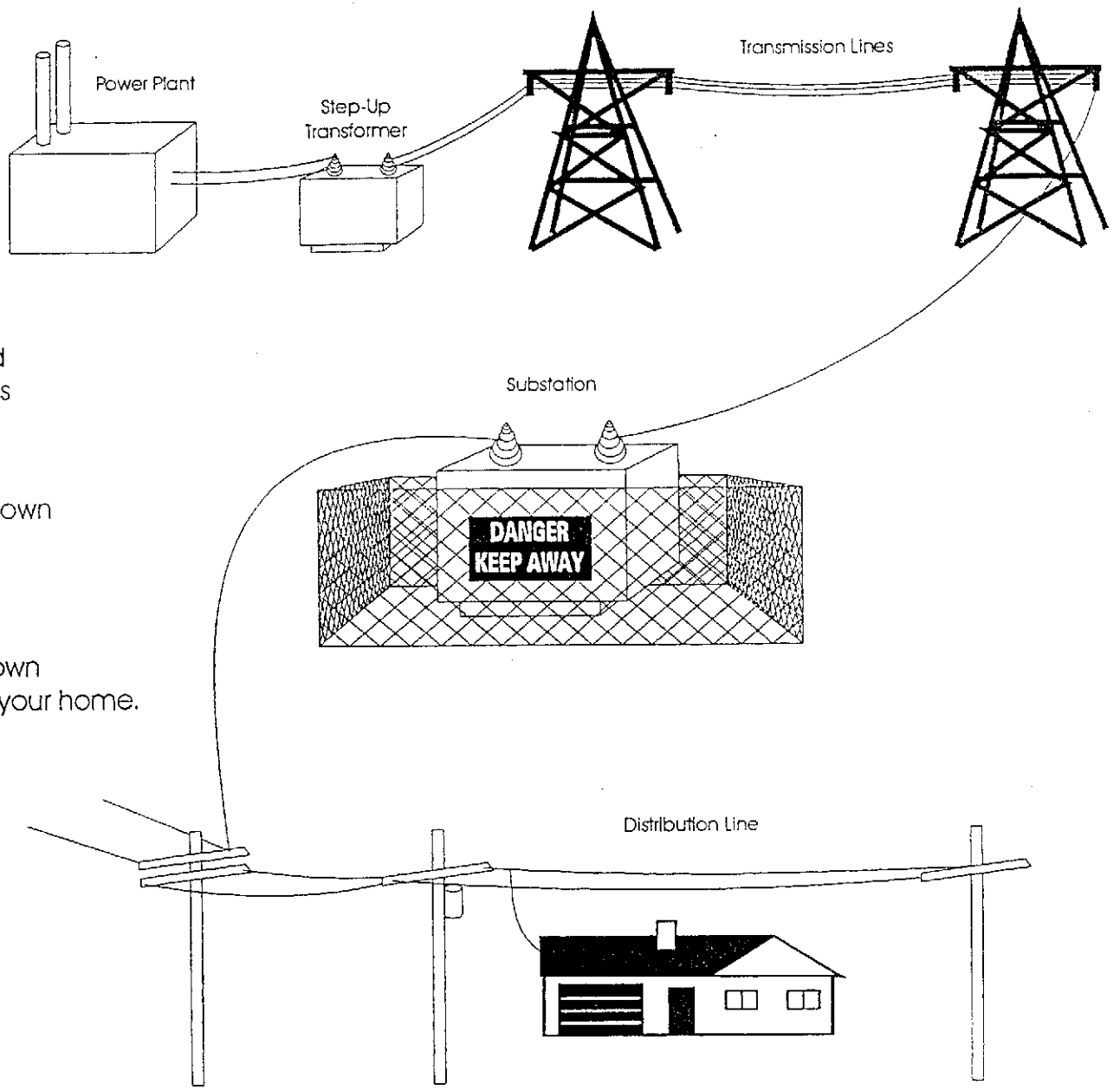
3) Water is super-heated to make it turn into steam.

4) The steam blows against a series of blades, making the blades and the shaft they are attached to, turn.

5) A magnet, which is attached to the other end of the shaft, moves at right angles to a coil of wire, producing electricity.

Guest Speaker: Bruce Aaron Davis
Big Sandy RECC
*Every student received this handout

How Electricity Gets From The Power Plant To Your Home



1) Electricity is produced at the power plant and is sent to a step-up transformer that increases the voltage so it can travel long distances.

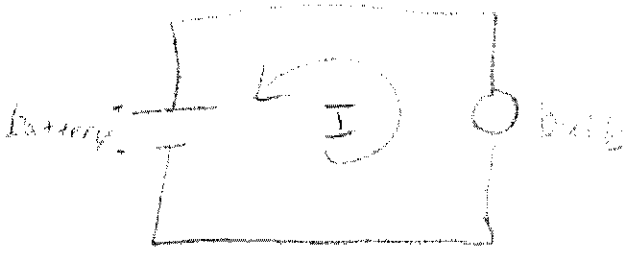
2) The electricity then travels along transmission lines until it reaches a substation that steps-down the voltage for distribution.

3) The electricity travels along distribution lines, going through another, smaller transformer attached to a distribution pole, that steps-down the voltage even more so it can be used in your home.

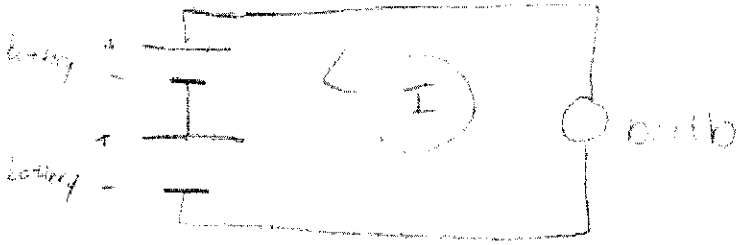
Constructing Electrical Circuits

Draw the following circuits. Then create them using the materials at your table. Be sure to include batteries, bulbs, switches, and current in your drawings.

1. A circuit composed of one battery and one blub

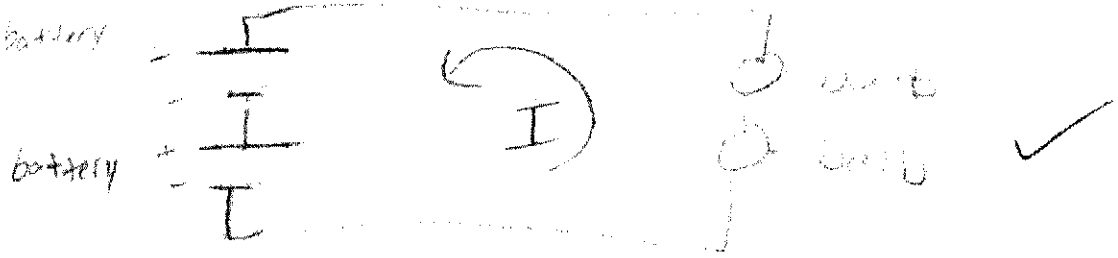


2. How can you make the bulb brighter?

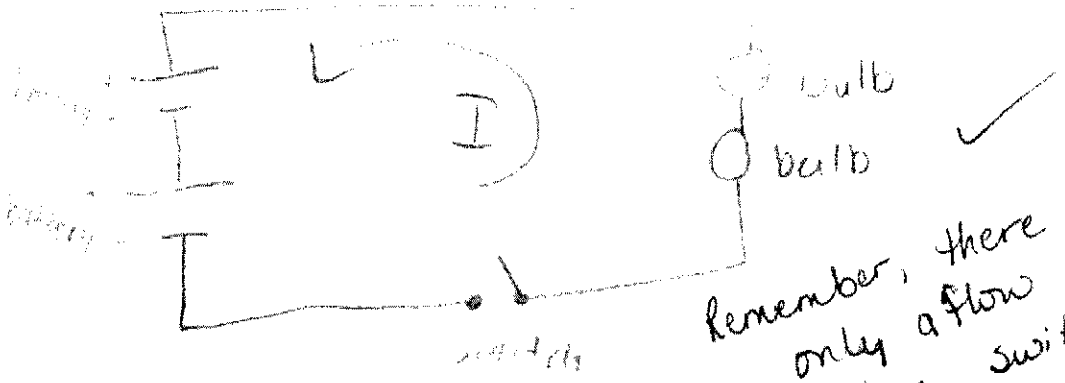


add another battery

3. A series circuit

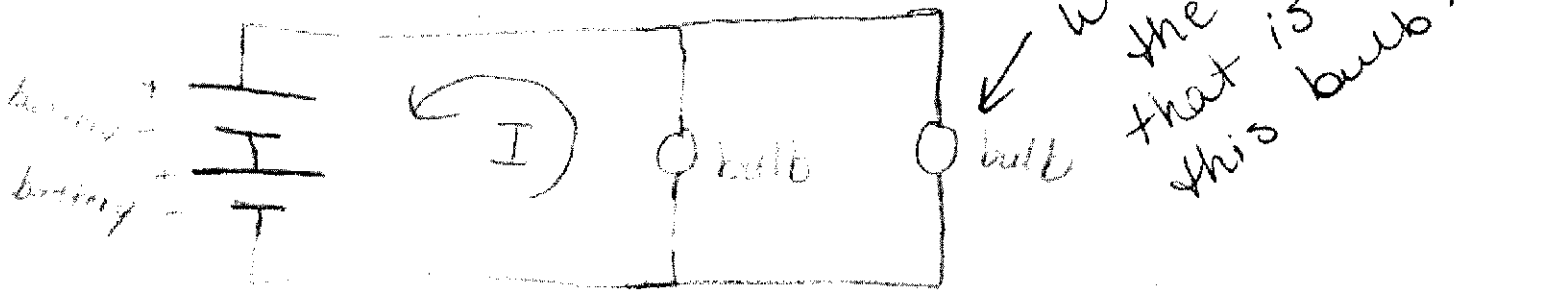


4. A series circuit with a switch

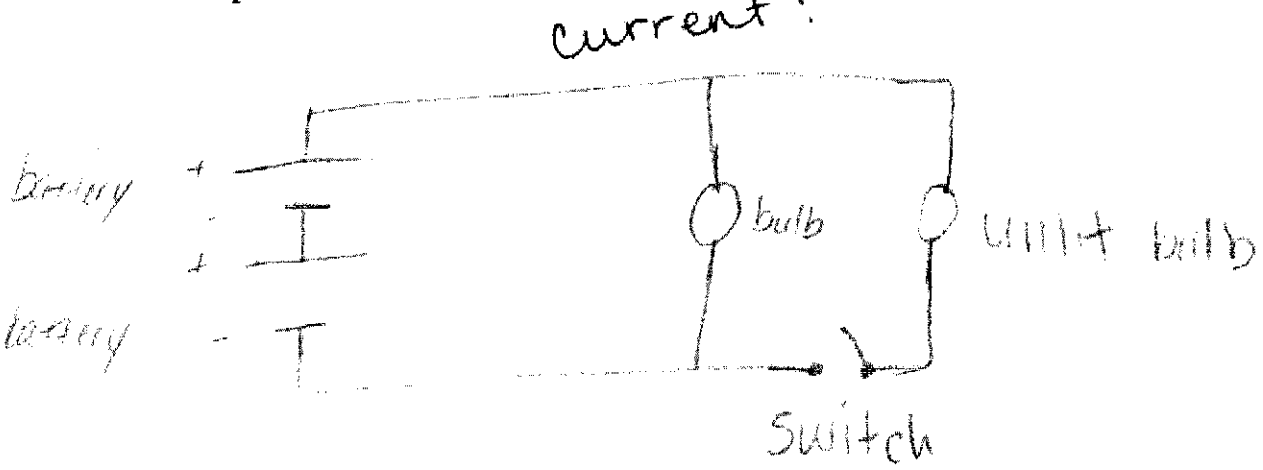


Remember, there is only a flow of current when switch is closed

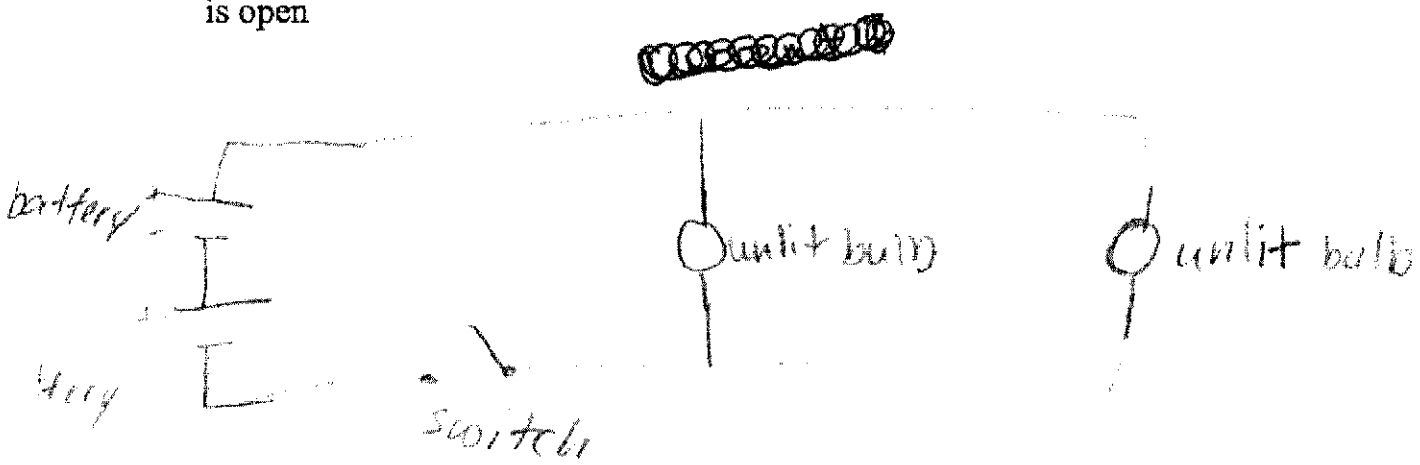
5. A parallel circuit



6. A parallel circuit with a switch in which one light will remain on when the switch is open



7. A parallel circuit with a switch in which none of the lights work when the switch is open



Student designed experiment

Date:

EXPERIMENT NUMBER 1

Problem/Question State the purpose of your experiment. What do you hope to find out?

How does the pH of ~~simulated~~ acid rain produced from burning bituminous coal compare to that of anthracite coal?

Facts/Research Write down what you already know about the problem/question. Gather additional information to help you with your experiment.

Chemical composition of bituminous coal:

88% carbon
6% oxygen
5% hydrogen
1% nitrogen

*universal indicator can be used to find pH

Chemical composition of anthracite coal:

92.2% carbon
3.8% oxygen
2.6% hydrogen
0.9% nitrogen

*acid rain is also known as "sulfuric acid"

Hypothesis Based on your facts/research, what are your predictions for the outcome of the experiment?

I predict that bituminous coal will have the lowest pH (most acidic). I don't know how much sulfur is in each sample but I do know it is found in trace amounts. Since the amount of carbon increases as you change rankings, I would assume that sulfur will decrease.

Procedure List the steps you will take to test your hypothesis.

1. Using a spoon and scale, measure 0.5g of bituminous coal into a pyrex beaker.
2. Hold the flame of the lighter on the coal sample until it begins to smoke.
3. Remove the lighter and quickly cover the opening of the beaker with a coffee filter. Secure with a rubber band.
4. Wait until the coal sample stops burning and until the beaker is filled with smoke.
5. Repeat steps 1-4 using anthracite coal
6. Carefully lift a small section of the coffee filter of each jar, pour 10mL of water, and replace the filter
7. Dissolve the smoke by swirling the water.
8. Put one drop of universal indicator in each solution (gas dissolved in water) and determine its pH according to the color chart.

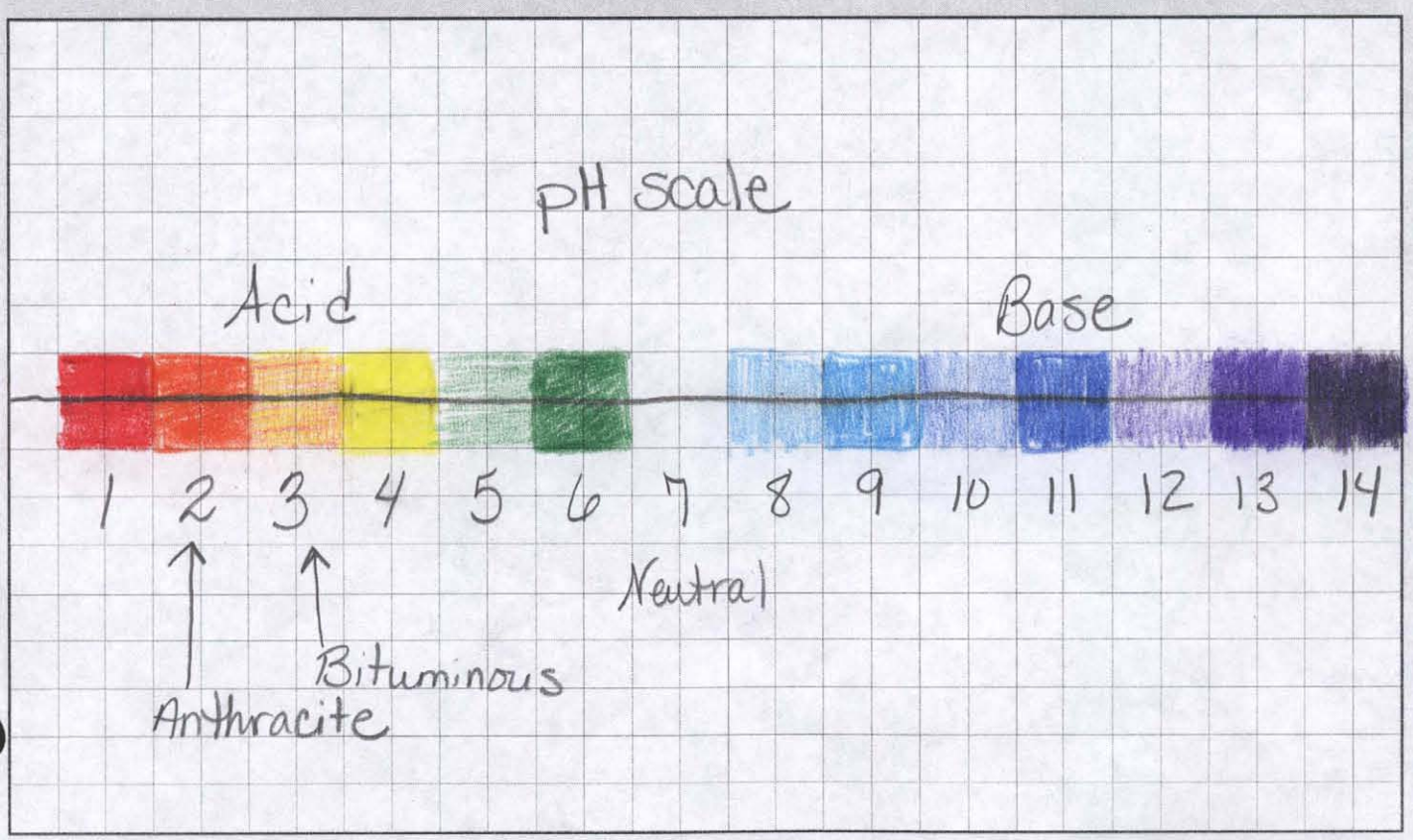
Materials What do you need to complete your experiment?

- .5g bituminous coal (pulverized)
- .5g anthracite coal (pulverized
- 2 pyrex beakers
- 2 coffee filters
- 2 rubber bands
- lighter (long handle)
- eyedropper
- universal indicator
- universal indicator chart
- spoon
- scale
- water, graduated cylinder

Data Collection Record your observations from your experiment in the space below. Use the graph paper for charts, scientific drawings, etc.

Bituminous - peach color

Anthracite - orange/red color



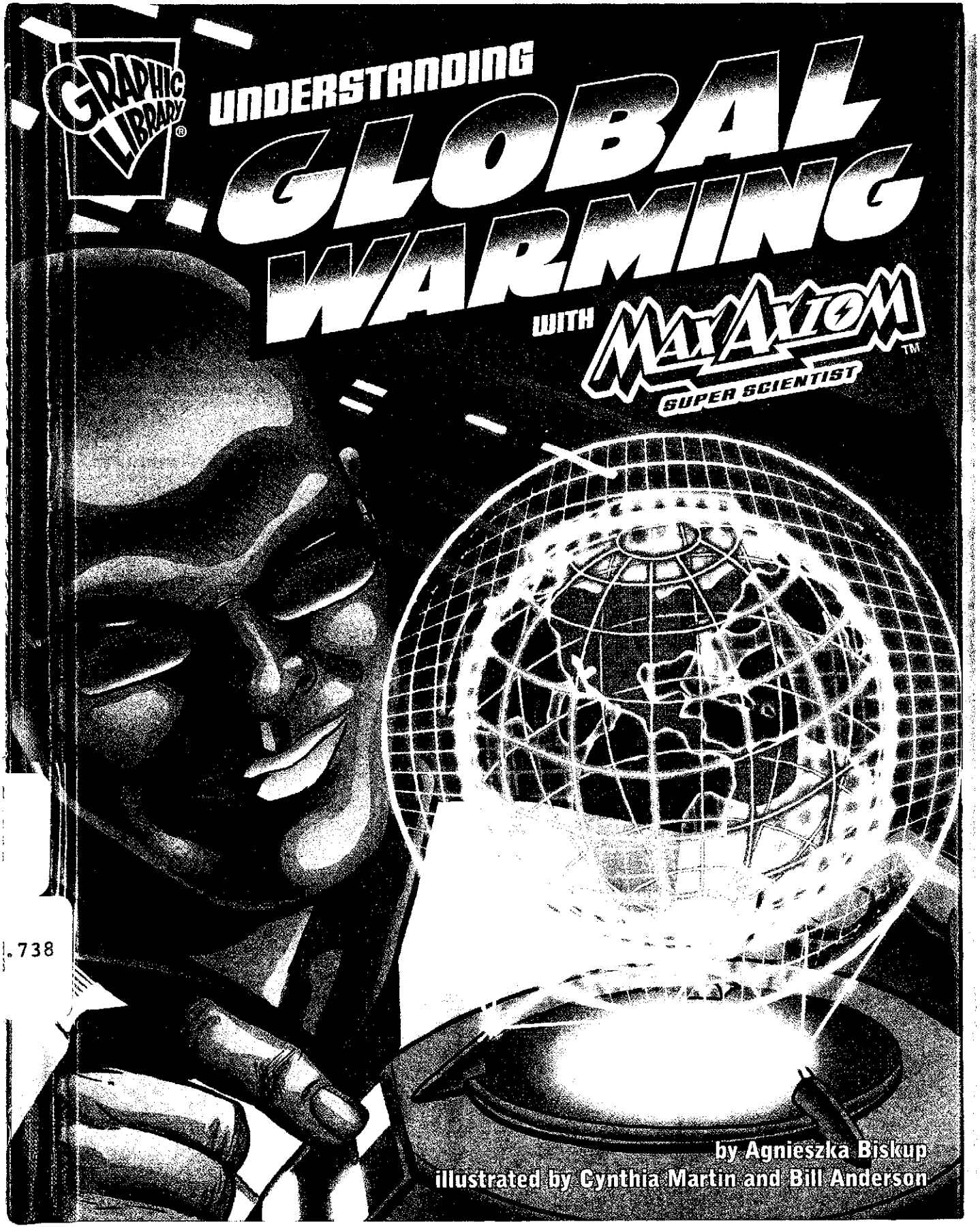
Conclusion Explain the results of your experiment. Was your hypothesis correct?

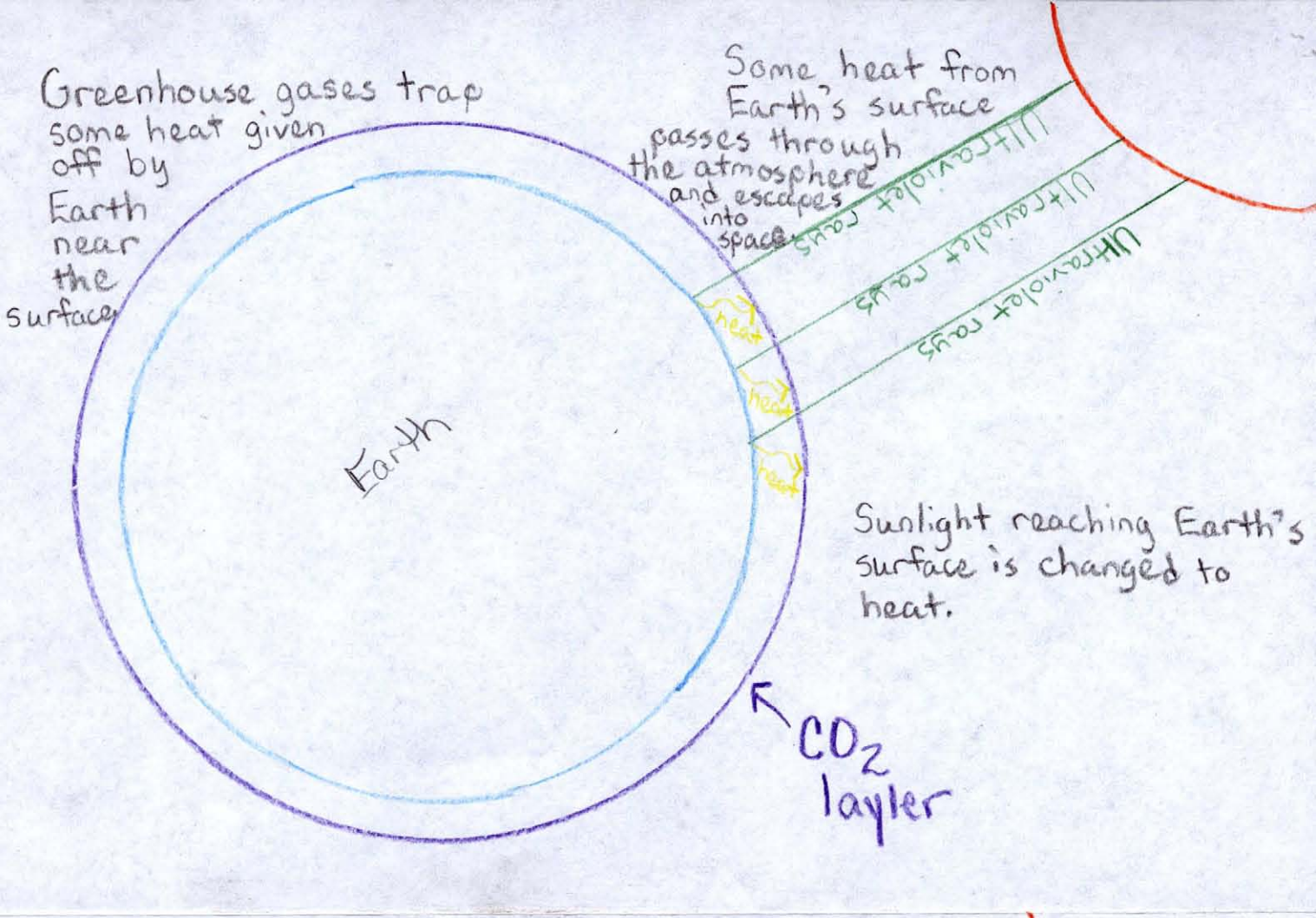
Yes, my hypothesis was correct. Bituminous coal produces emissions with a lower pH (more acidic) than anthracite coal.

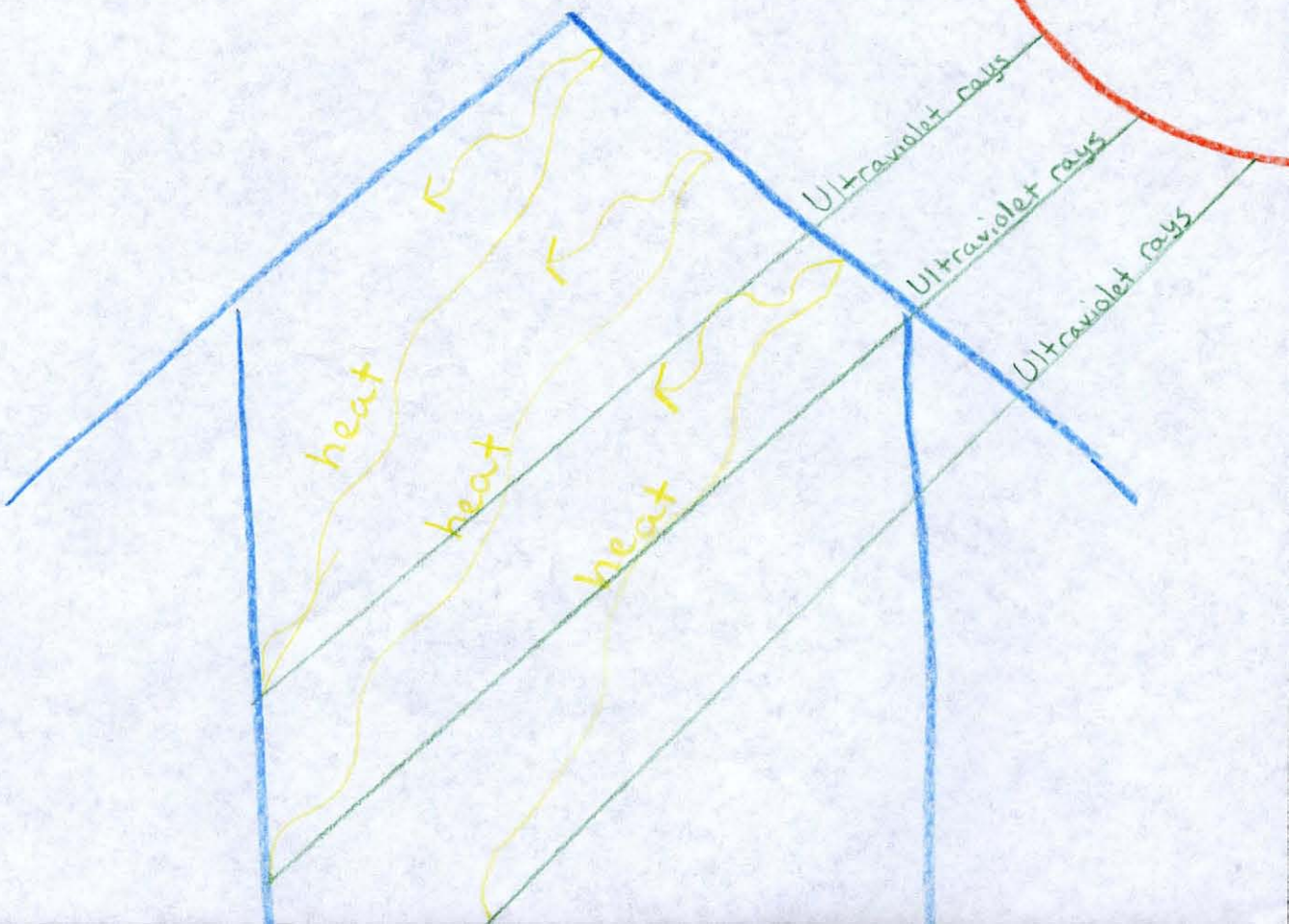
Application How can you apply the knowledge you have gained from this experiment to real-life encounters?

Our government and the coal industry should use coal that will produce the least acidic emissions. This will produce less air, water, and ground pollution. During this experiment, Mrs. Fowler told us about low-sulfur coal and sulfur-washed coal. I think this would be a great topic for our Coal Fair project!

Comic Book




Greenhouse gases trap some heat given off by Earth near the surface
Some heat from Earth's surface passes through the atmosphere and escapes into space
Ultraviolet rays
Ultraviolet rays
Ultraviolet rays
heat
heat
heat
Earth
Sunlight reaching Earth's surface is changed to heat.
CO_2 layer


Ultraviolet rays
Ultraviolet rays
Ultraviolet rays
heat
heat
heat

The following chart shows the percentages of greenhouse gases in our atmosphere. Use the information to convert to degrees and construct a pie chart.

	Percentage	Degrees
Carbon dioxide	76%	273.6°
Methane	13%	46.8°
Nitrous oxide	6%	21.6°
Fluorocarbons	5%	18°

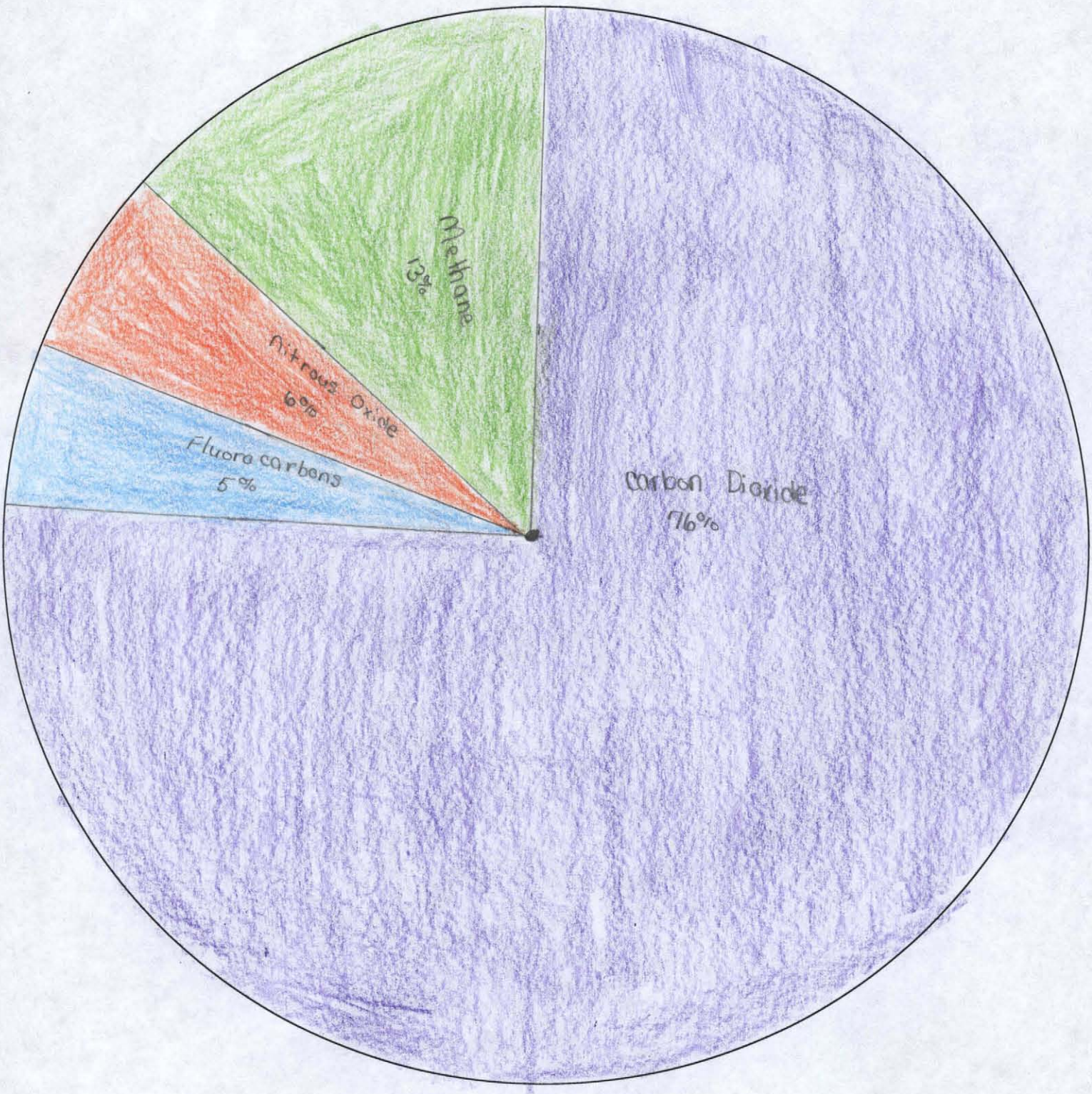
The following chart shows how carbon dioxide gets into our atmosphere. Use the information to convert to degrees and construct a pie chart.

	Percentage	Degrees
Power plants	33%	118.8°
Factories and heating systems	33%	118.8°
Cars and trucks	22%	79.2°
Major transportation	12%	43.2°

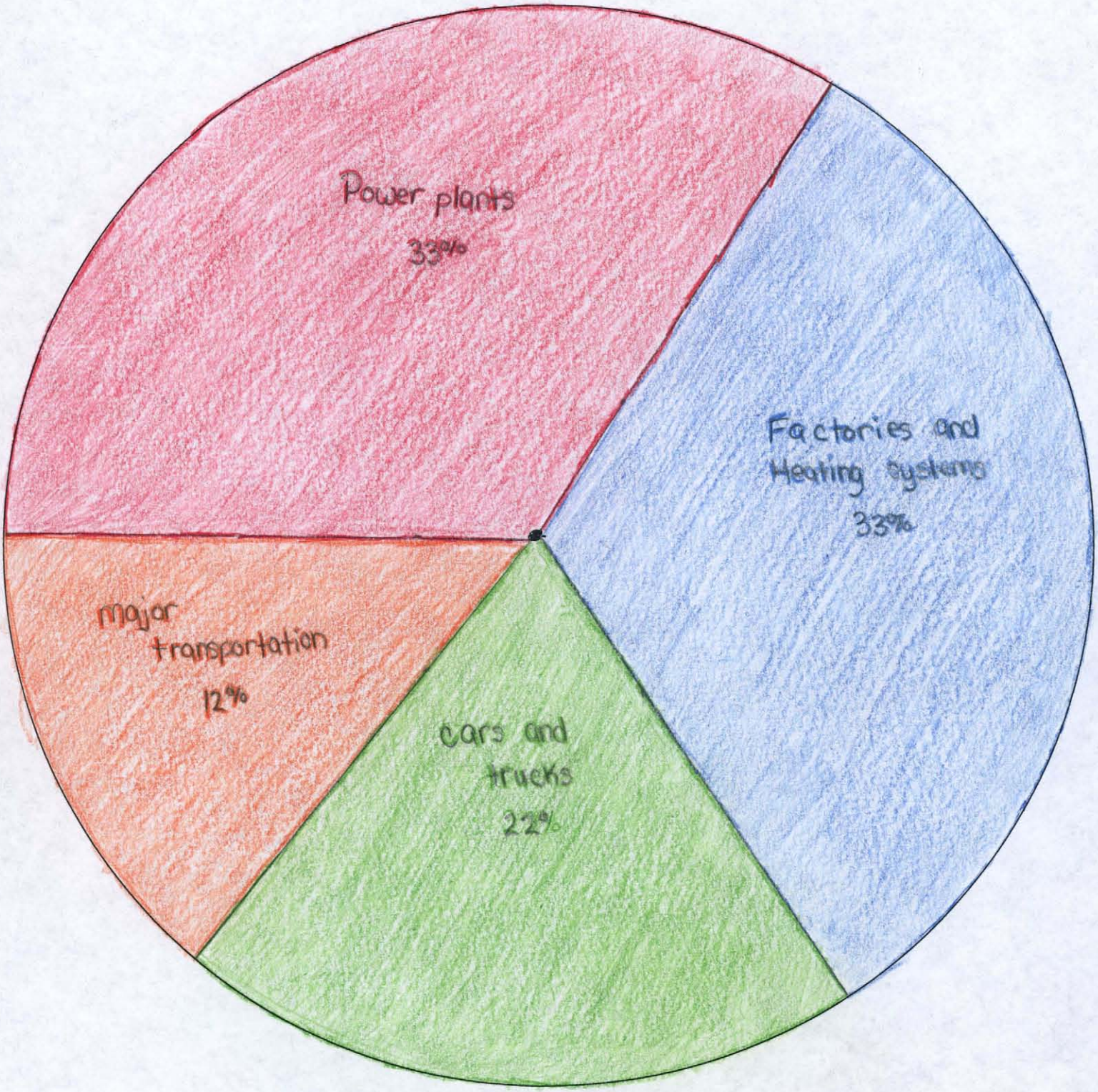
What can you conclude from the information contained in these charts?

CO_2 is the most prevalent greenhouse gas. It is produced by power plants, factories, and transportation. We need to use clean coal technology to reduce harmful greenhouse gases.

Green House Gases



Pollution Causes



Teacher created lesson plan
"Propaganda, Global Warming, An Inconvenient Truth"

Jennifer S. [redacted] | March 24-27, 2008 | 8th grade
Science | 94 students | 9 IEP students
Lesson: Propaganda Techniques/Global Warming
Coal Unit: Preserving the Past, Fueling the Future

Objectives: Students will be able to…

1. define and give examples of propaganda techniques
2. apply propaganda techniques to real-world situations
3. analyze the use of propaganda in *An Inconvenient Truth*
4. evaluate the effectiveness of propaganda

Students will be assessed on these objectives by various methods – dramatic and/or artistic representation, matching, and open response.

Essential Questions:

1. What is propaganda?
2. Where and Why do we use propaganda?
3. How is propaganda used in *An Inconvenient Truth*?
4. What is your impression of the video? Did propaganda sway your views of Global Warming?

Connections:

Core Content 4.1
SC-08-4.6.1
Students will explain the cause and effect relationships between global climate and energy transfer; and use evidence to make inferences or predictions about global climate issues.
SC-08-4.6.5
Students will explain the effects of change to any component of the ecosystem.
SC-08-4.7.2
Students will explain the interactions of the components of the Earth system (e.g., solid Earth, oceans, atmosphere, living organisms)
RD-O8-3.0.9
Students will identify persuasive techniques or propaganda techniques or explain how each is used.
WR-08-1.2.3
Students will incorporate persuasive techniques or propaganda techniques when appropriate
Kentucky Learner Goals and Academic Expectations for Science

2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.
2.3 Students identify and analyze systems and the ways their components work together or affect each other
2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.
2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Program of Studies
Structure and Transformation of Matter

- Analyze factors that may influence the movement of elements among the solid Earth, oceans, atmosphere, and organisms

This lesson crosses many disciplines – science, reading, writing, social studies. Global climate change and its effects on our Earth is a focus for 8th grade core content. It is also a very real, current issue that students need to be educated about. Propaganda is another

real-world topic that has been prevalent in history (WWII) and today. If is important that students be able to recognize and use propaganda techniques, when appropriate.

Context:

This lesson is part of our coal unit (attached). Kentucky Coal: Preserving the Past, Fueling the Future is a look at the importance of preserving our past while keeping our focus on the future. A huge concern of the coal industry today is harmful emissions and negative effects on the environment. Students looked at the processes of coal-burning power plants. We also looked at the repercussions of burning coal, including the possibility of Global Warming. One group of students expressed interest in watching *An Inconvenient Truth*. During a previous team meeting, my language arts teacher expressed her concern about covering specific topics and propaganda was something she mentioned. I spoke with her and she gave me a handout to use. After this lesson, students will focus on solutions for slowing down global climate change and reducing coal's harmful effects on the environment.
Accommodations for IEP and 504 students are as follows: collaboration with special needs teacher (she attends class with students and help when necessary), oral reading in class, repeating directions on all tasks/assignments, extended time on all tasks/assignments, paraphrasing text and class notes, prompting oral/written responses, student notebook (special needs teacher helps keep it organized), and peer assistance by seating chart and special grouping on tasks/assignments. I also gave the students a "cheat sheet" to use for the open response question because I noticed they were struggling with identifying some of the propaganda techniques in the video. They knew the definitions but could carry that over to recognizing them in the movie.

Resources:

Global Warming survey
Propaganda Techniques handout (adapted from language arts teacher)
Propaganda Techniques definition quiz (matching)
An Inconvenient Truth
Websites (www.skepticscience.com, www.eteam.ncpa.org, www.realclimate.org)
Open response

Procedures:

Day 1 – Monday
Focus/Motivation:

1. Students will complete a global warming survey and turn it in.
2. Students will be given 2 minutes to brainstorm a list of propaganda techniques (they should have prior knowledge from 7th grade)
3. Students will then be paired for think-pair-share and will be given 5 minutes to discuss what they wrote and time to work together to generate more techniques.

Students will then generate a classroom list of propaganda techniques on the board.

4. Students will then receive a list of propaganda techniques with definitions of each. We will read these aloud together. We will then discuss where you see propaganda used and when has it been used in history.
5. Staying in their previous groups, students will be assigned a propaganda technique and will have to create a TV commercial or magazine ad that demonstrates that particular technique. Students will be scored on understanding of the techniques and creativity.

Day 2 – Tuesday

1. Students will take a matching definition quiz over propaganda techniques. After they turn in their quiz, we will quickly review our classroom list on the board and correct any misconceptions.
2. We will begin the video and students will take notes of propaganda techniques used in the video and specific examples of each.

Day 3 – Wednesday

1. After quickly reviewing the techniques on the board and refreshing them on their task of taking notes during the video, we will finish the movie.
2. After the video, we will discuss our impressions of the video and propaganda techniques that were used. Students will view their surveys again to see if any of their views have changed. We will also view various websites that lists pros and cons of the video – what was correct and what was incorrect.

Day 4 – Thursday

1. Students will then be given their open response prompt. They will have sufficient time to complete their assignment. Those who finish early will be allowed to work on their final Coal Project due in two weeks.

Assessment:

Students will be assessed in various ways during this lesson. First, students will be assessed on understanding and creativity of their TV commercials/Magazine ads. Students will be strategically paired to assist struggling learners. Second, students will take a short matching quiz over propaganda techniques to identify any misconceptions. Since this is matching, I do not feel the need to modify the quiz but I will read it allowed to my class with IEP students. Finally, students will write an open response/reflection of the propaganda used in *An Inconvenient Truth*. Responses will be scored using my open response rubric. IEP students will receive "cheat" notes from the video to help them with their response. The special needs teacher will also pull those you need extra assistance into her classroom to help them in a smaller setting.

Reflection/Analysis of Teaching and Learning:

Considering that this is the first time I have ever taught about propaganda techniques AND Global Warming, I am very happy with this lesson. The students suggested most of this lesson by showing an interest in the film and creating their own commercials. I really enjoy working and planning with other teachers and weaving other content areas

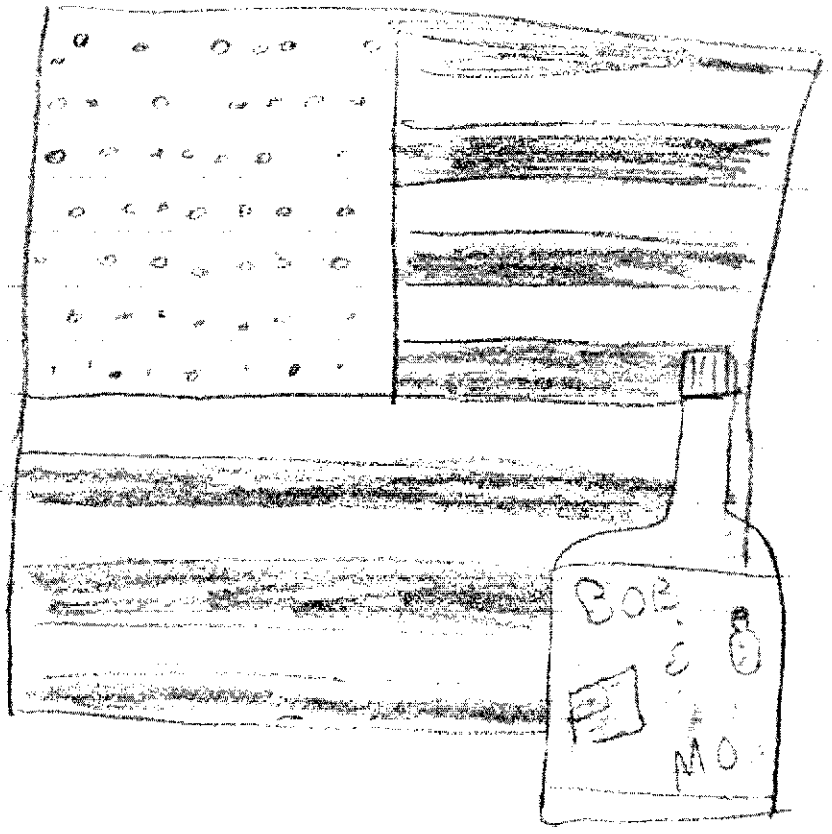
into my lessons. Throughout this lesson, students were able to use their multiple intelligences (visual, verbal, musical, kinetics) to demonstrate their learning. Since this lesson is part of the coal unit, I have the students complete an evaluation on each lesson. The commercials/ads were their favorite part by far.
When we began this lesson, several students had only two or three examples of propaganda on their list (some did not have any!). As I walked around the room, I tried to pair those students with the students who had prior knowledge of the topic. When I allowed them to share, I heard many students say, "Oh, yeah...I remember that now." By the time we wrote all the propaganda on the board, we had 21 different techniques listed! 92.5% of the students scored a 100% on their quiz – I was really blown away by the scores. In their open response/reflection, many students expressed that they liked the video and thought it was educational...but not in terms of Global Warming. They were more impressed with the propaganda techniques. The majority of the students did not feel that this movie made them more concerned about Global Warming.

Refinement:

When I teach this lesson next year, there is honestly very little I will change. I would like to have more resources on Global Warming – videos, articles, editorials, speeches, pamphlets, etc. Next year, I could have two articles – one supporting the theory of Global Warming and one disputing the theory. Students could compare the propaganda in each. If time allows, I think this would be a good lesson to include debating techniques and have a classroom debate. Community leaders and high school students could assist in this as there is a Mock Trial team in our high school. I will also try to get a representative from a coal-burning power plant and an environmentalist to visit the classroom. I attempted this earlier in the semester and was unsuccessful.

Propaganda Advertisements

Bob & MO's



KETCHUP EMPORIUM

Olivia
&
Ali

show Ad ↘ Bob & Mo's Ketchup Companion

Announcer: Bob & Mo's ketchup is the only ketchup for our troops. take a look...

(walk across [illegible] very proud [illegible])

G.M.: I am General Mustard of the U.S. Military and Bob & Mo's Ketchup is the only for me & you. so jump on the bandwagon today

(go back to announcer)

Announcer: so if you support your troops, buy a bottle today and you will recieve a free stapler.

show Ad →

Both: Bob & Mo's ketchup theme song

<u>Propaganda</u>
Flag Waving
Bandwagon
[illegible]
[illegible]

Propaganda Techniques

1. Bandwagon – using the argument that because everyone is doing it, you should, too.

2. Card stacking (also called slanting) – telling only one side of the story as though there is no opposing view.

3. Exigency – creating the impression that your action is required immediately or you opportunity will be lost forever.

4. Flag waving – connecting the person, product, or cause with patriotism.

5. Glittering Generality – using positive or idealistic words based on details or minor attributes to create an association in the reader's mind between the person or object and something that is good, valued, and desired.

6. Innuendo – causing the audience to become wary or suspicious of the product, person, or cause by hinting that negative information may be being kept secret.

7. Name calling – using negative or derogatory words to create an association in the reader's mind between that person or object and something that is bad, feared, or distasteful.

8. Plain folks – using a person who represents the "typical" target of the ad to communicate to the target audience the message that because we are all alike and I would use/buy/believe this, you should, too.

9. Prestige identification – showing a well-known person with the object, person, or cause in order to increase the audience's impression of the importance or prestige of the object, person, or cause.

10. Red herring – highlighting a minor detail as a way to draw attention away from more important details or issues.

11. Snob appeal – associating the product, person, or cause with successful, wealthy, admired people to give the audience the idea that if they buy or support the same things, they will also be one of the "in-crowd".

12. Testimonial/Expert opinion – using the testimonial or statement of someone to persuade you to think or act as he or she does.

13. Transfer – linking a known personal goal or ideal with a product or cause in order to transfer the audience's positive feeling to the product or cause.

Propaganda in *An Inconvenient Truth*

A. What is propaganda?

B. Why do we use propaganda?

C. ***How*** was propaganda used in *An Inconvenient Truth*?

D. What is your impression on the movie? Did the propaganda work? Did your views of Global Warming change?

Wow very impressive!

Propaganda in *An Inconvenient Truth*

Propaganda is techniques such as loaded language, slanting, and fancy graphics that are used to convince the viewer to believe a certain way, use a certain product, etc. Propaganda was used in the documentary *An Inconvenient Truth* to persuade viewers to believe as Al Gore does about global warming and to take action to slow down the process. For example, in this film fancy graphics were used. Al Gore used this propaganda technique because the complicated charts and diagrams gave the appearance that Gore is very informed about this topic and thoroughly understands it. Gore also used emotional appeals in *An Inconvenient Truth*. Most of the emotional appeals used are not related to global warming such as the anecdotes about Al Gore's son's accident and his sister's death. This propaganda technique is trying to get the viewer to have sympathy for Gore. The prestige identification technique can be found

in the film, also. Viewers will likely think that Al Gore is an intelligent person that knows a great deal of information because he is the former Vice President of the U.S. and also a well-known person. The expert opinion technique is used, too. Al Gore includes his former science professor's opinions and theories on global warming. People tend to trust information more from someone who is an expert in an area more than they would from someone who is not. The final technique is card stacking/ omission of important facts. It is made obvious that Gore is using this technique when he makes the statement "...That gets into the science of global warming, but I'm not going to go into that." This prevents Gore from having to talk about a topic he does not fully understand. This movie did not change my opinion on global warming because I recognized that most of the movie was propaganda, not fully the truth.

Open Response Rubric

	Unacceptable		Acceptable	
	1 (2 points)	**2** (4 points)	**3** (6 points)	**4** (8 points)
Correctness	Demonstrates a minimal understanding in discussion of concepts	Demonstrates a limited awareness of concepts	Demonstrates a general awareness of concepts	Demonstrates a thorough understanding of the subject matter
Higher-order thinking	No evidence of elaboration, extension, higher-order thinking, or relevant prior knowledge	Limited evidence of elaboration, extension, higher-order thinking or relevant prior knowledge	Some evidence of elaboration, extension, higher-order thinking, and relevant prior knowledge	Contains elaboration, extension, and/or evidence of higher-order thinking and relevant prior knowledge
Idea Development	Unfocused details	Poor development of topic; few supporting details	Adequate development of topic using appropriate details	Well-developed topic including pertinent details
Scientific vocabulary	Inappropriate vocabulary	Simplistic vocabulary; few scientific words defined	Acceptable vocabulary; majority of scientific terms defined	Strong use of scientific terminology; defined terms
Organization	Weak to no organization; lapses interfere with comprehension	Weak organization; lapses do **not** interfere with comprehension	Appropriate organization; no lapses	Strong, subtle organization; no lapses
Grammar	Errors in English Conventions interfere with communication	Errors in English Conventions are disproportionate to length and interferes with communication	Minor errors with English Conventions have little to no effect on communication	Strong control of English Conventions

Great!

Grade:	F	D	C	B	A
	0-23	24-31	32-37	38-43	44-48

[redacted], Jennifer S.

From: [redacted]n, Kelly A.
Sent: Monday, October 29, 2007 11:08 AM
To: [redacted] Jennifer S.

There's something that I've been wanting to do for a portfolio piece since the House of Representatives walk out this summer I would like for my kids to write a persuasive letter on why turning coal into fuel is a good idea. I want to focus on the personal aspect as well as the economic aspect. These kids can put as much heart into a letter like this, and put some science in it too. I also want to mail these letters to Frankfort when they're finished. Is this idea possible?

Kelly [redacted]
Johnson County Middle School
251 N. Mayo Trail
Paintsville, KY 41240
[redacted]3
[redacted]
[redacted]

On-demand Writing Prompt

"New technologies and mitigation strategies continue to be developed to meet higher environmental standards. For example, research continues into finding economic and environmentally safe techniques for gasifying coal in the ground, called in situ gasification. Research also continues into finding alternative uses for coal combustion byproducts, which would decrease the amount of solid wastes. Research into technologies and strategies that will decrease anthropogenic carbon emissions are being investigated and tested. As old coal-fired plants are retired, plants with new gasification technologies will be built that gasify, rather than burn coal, producing fewer emissions and operating more efficiently. Continued research into carbon sequestration and FutureGen will result in power plants that can use coal with near-zero emissions...

...Because coal's use as a fuel will likely continue and even grow, it is imperative that society develop the appropriate balance of policies for maximizing the use of our resources, meeting energy needs, and providing a healthy environment."

"Coal and the Environment"
American Geological Institute

Write a persuasive letter to our House of Representatives urging them support the research of clean coal technologies. Be sure to include both environmental and economical arguments.

**Use your prior knowledge of on-demand writing to complete this prompt. It will be scored using the writing rubric. Refer to your rubric, on-demand organizer, and persuasive letter outline as you write your persuasive letter.

To the Kentucky House of Representatives:

For about 150 years we have relied on the burning of coal to fuel our state. And as most of you may know, the coal-burning process has improved over the years but it still releases gases that could harm our environment such as carbon dioxide (CO_2) and nitrogen (N). Through time, these gases have built upon one another to a point where people are finally noticing them. Education about these gases has increased, leading more and more people to begin researching clean coal technologies. This is why I am asking you, the Kentucky House of Representatives, to support the research of clean coal technology in our fine state.

Many people may think that Kentucky is only good for coal, horses, and sports but it is also full of clean resources that could take the place of coal. For example, methane that lies in deep coalbeds has already been used in places such as Wyoming and New Mexico. These areas have already reported that their environment and air has improved by over 34% in the last two years. So if we begin to look for and use these new clean resource, our environment could improve equally or more.

But we want to improve not only our environment but the lives of the citizens of Kentucky as well. By researching new coal burning processes, we can do just that. A recent study shows that the helthier the environment is, the healthier the people are. My grandfather used to work around a powerplant that had so many bad emissions that after 20 years of inhaling those emissions he died. So to improving the environment and the people's lives, you may want to support clean coal technology.

On an economical point, these clean coal technologies will provide more jobs for people in our state. Coal miners could even be reassigned to these positions. That way miners don't lose their source of income. Speaking of money, the cost of these resources may seem a little pricy, but in the long run the resources will pay for themselves through power plants, gas lines, and possibly future vehicle fuel.

So I am asking you, the Kentucky House of Representatives, to make a choice. A choice between improving our environment, lives, and

economy or to let these harmful gases continue to cause trouble for our environment. If you're having trouble deciding, just think about the fact that most people who vote would like a clean environment.

Sincerely,
A student and future voter

Student/Teacher Evaluations

Name: Stephen Warner
Lesson: preserving the past

1. What did you like best about this lesson?

   Guest speacker

2. What would you change to make this lesson better?

   Visit coal camp museum

3. What could we do as a follow-up activity to this lesson?

   visit den leer Historical Society

4. What did you learn from this lesson? How can you use this information in your daily life? I Learn That its important to preserve the past

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.

	1 lump (peat)	2 lumps (lignite)	3 lumps (bituminous)	4 lumps (anthracite)	Class Average
Activity 1: coal camp website					1.2 lumps
Activity 2: Guest speaker					4 lumps!
Activity 3: Essay contest					3 lumps
Activity 4: family History					2.6 lumps

Student/Teacher Evaluations

Name: Haley Blanton
Lesson: Early Coal Camps

1. What did you like best about this lesson?
   Watching October Sky

2. What would you change to make this lesson better?
   Meet author of Coal Camp Chronicles

3. What could we do as a follow-up activity to this lesson?
   Field trip to Van-Lear

4. What did you learn from this lesson? How can you use this information in your daily life?
   Van-Lear was onee booming coal mining town. It was like its own little city.

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.

	1 lump (peat)	2 lumps (lignite)	3 lumps (bituminous)	4 lumps (anthracite)	Class Average
Activity 1: October Sky					4 lumps!
Activity 2: "Coal People"					2.3 lumps
Activity 3: Guest Speaker					4 lumps
Activity 4: Coal Camp Chronicles					2.8 lumps

Student/Teacher Evaluations

Name: Taylor Higgins
Lesson: Chemical Composition of Coal

1. What did you like best about this lesson?
   looking at coal peels under the microscope.

2. What would you change to make this lesson better?
   make our own coal peels

3. What could we do as a follow-up activity to this lesson?

4. What did you learn from this lesson? How can you use this information in your daily life?
   Carbon is the main element in coal and pieces of coal contain fossils

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.

	1 lump (peat)	2 lumps (lignite)	3 lumps (bituminous)	4 lumps (anthracite)	Class Average
Activity 1: carbon cartoon					3.8 lumps
Activity 2: Pie-charts					2.0 lumps
Activity 3: coal peels					4 lumps!
Activity 4: experiments					3.6 lumps

Student/Teacher Evaluations

Name: Sarah Lane
Lesson: generating electricity

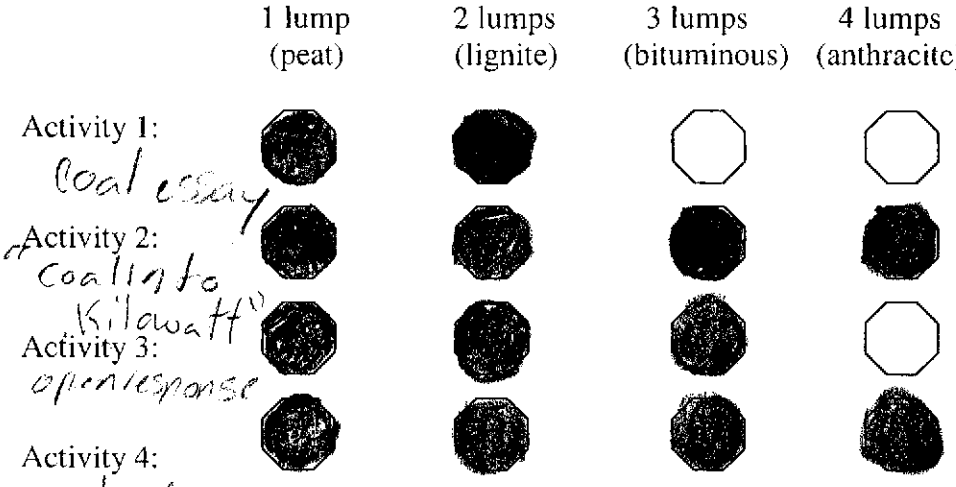
1. What did you like best about this lesson?
   Making electrical circuits

2. What would you change to make this lesson better?
   visit power plant

3. What could we do as a follow-up activity to this lesson?
   build a gerater

4. What did you learn from this lesson? How can you use this information in your daily life?
   Coal is burned in power plant to generat electricity

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.



Class Average

1.4 lumps

3.4 lumps

2.4 lumps

4 lumps !!

Student/Teacher Evaluations

Name: Tiffany Cline
Lesson: Burning Coal affects our environment

1. What did you like best about this lesson?

   Acid rain expirement

2. What would you change to make this lesson better?

   test all ranks coal

3. What could we do as a follow-up activity to this lesson?

   create student commercial

4. What did you learn from this lesson? How can you use this information in your daily life?

   Burning coal releases carbon dioxide into our environment atmosphere. This could lead to global warming

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.

	1 lump (peat)	2 lumps (lignite)	3 lumps (bituminous)	4 lumps (anthracite)	Class Average
Activity 1: experiment	●	●	●	●	4 lumps!
Activity 2: drawings	●	●	●	○	2.6 lumps
Activity 3: green house gases	●	●	●	○	2.4 lumps
Activity 4: An Inconvenient Truth	●	●	●	●	3.8 lumps

Student/Teacher Evaluations

Name: Nina Combs
Lesson: Reducing Harmful pollutants

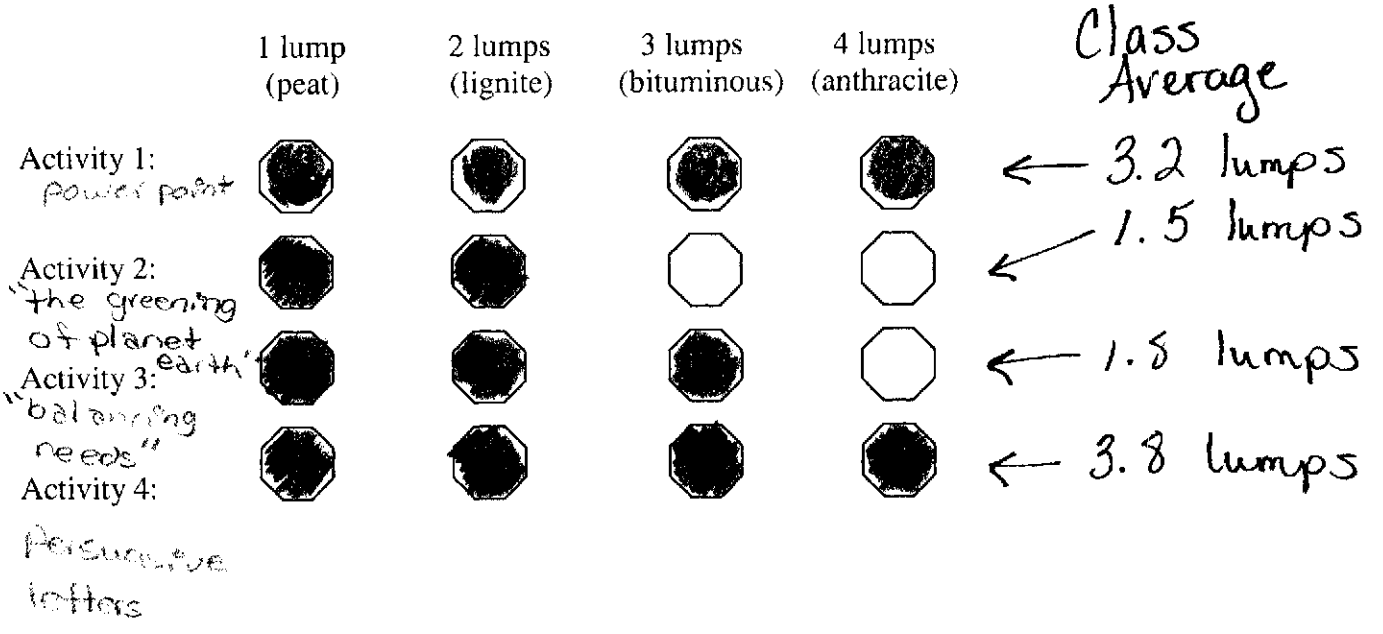
1. What did you like best about this lesson?
   working on coal fair projects

2. What would you change to make this lesson better?
   go into more detail about each clean coal technology

3. What could we do as a follow-up activity to this lesson?
   visit power plant

4. What did you learn from this lesson? How can you use this information in your daily life?
   The coal industry is working hard to reduce harmful emissions

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.



Student/Teacher Evaluations

Name: Kami [redacted]
Lesson: "An Inconvenient Truth" Analysis

1. What did you like best about this lesson?
   The student analyzed content presented to them instead of just accepting the information.
2. What would you change to make this lesson better?
   Show the movie in pieces and allow student debate.
3. What could we do as a follow-up activity to this lesson?
   Editorial on the truth of global warming or the influence of propaganda in the movie.
4. What did you learn from this lesson? How can you use this information in your daily life? Students were better able to better analyze the information after eliminating the propaganda.

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.

	1 lump (peat)	2 lumps (lignite)	3 lumps (bituminous)	4 lumps (anthracite)
Activity 1: Movie	●	●	●	●
Activity 2: Student Commercials	●	●	●	●
Activity 3: open response	●	●	●	●
Activity 4:	○	○	○	○

Awesome!

Melissa [redacted] Student Teacher Evaluations

Name: Coal pels
Lesson:

1. What did you like best about this lesson? Using the microscopes to get a microscope look at the chemical composition of coal.
2. What would you change to make this lesson better?
Use more coal pels.
3. What could we do as a follow-up activity to this lesson?
Have a geologist come to school.
4. What did you learn from this lesson? How can you use this information in your daily life?
Chemical composition of coal.

Melissa, please complete the bottom as well and return ~ Thanks

Please rank the following activities based on differentiation, educational value, real-world connection, and level of engagement.

	1 lump (peat)	2 lumps (lignite)	3 lumps (bituminous)	4 lumps (anthracite)
Activity 1: Coal pels	⬢	⬢	⬢	⬢
Activity 2:	⬡	⬡	⬡	⬡
Activity 3:	⬡	⬡	⬡	⬡
Activity 4:	⬡	⬡	⬡	⬡

[redacted] Jennifer S.

To: [redacted], Kami J.
Subject: RE:

You're welcome...let me know if there is anything else I can do for you. How many of your students are going to compete in our school coal fair?

From: [redacted], Kami J.
Sent: Monday, April 07, 2008 4:09 PM
To: [redacted] Jennifer S.
Subject:

Thank you so much for the open response rubric. It is very useful. Our exchange of information and resources has been very helpful to me and my students. They really enjoyed watching "An Inconvenient Truth" and then learning about clean coal technologies that will not only improve our environment but the image of the coal industry.

Thanks again,
Kami [redacted]

[redacted], Jennifer S.

From: [redacted]e, Melissa L.
Sent: Monday, April 07, 2008 1:49 PM
To: [redacted], Jennifer S.
Subject: Coal resources

Jennifer,
I would like to thank you for sharing your coal unit and resources with me. My students really loved the movie and were able to develop a better understanding of life in a coal town. I look forward to using more of your materials in the future.

Thanks,
Melissa R[redacted]

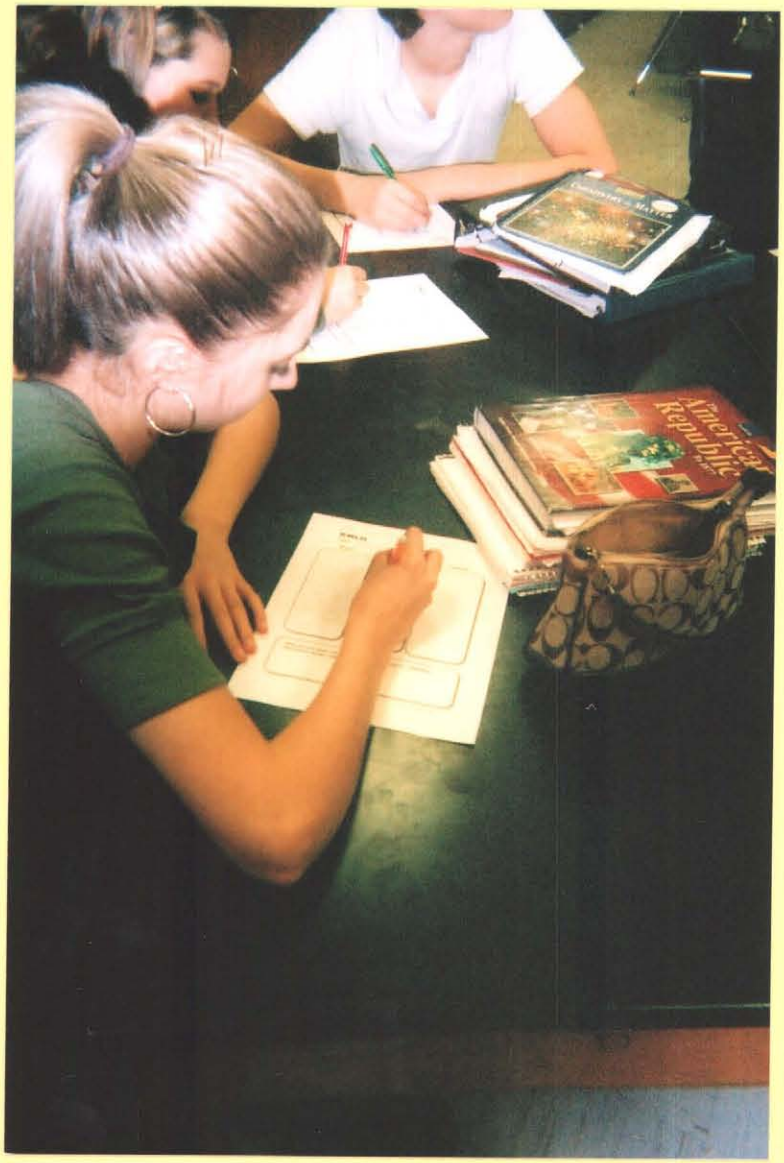
Look What

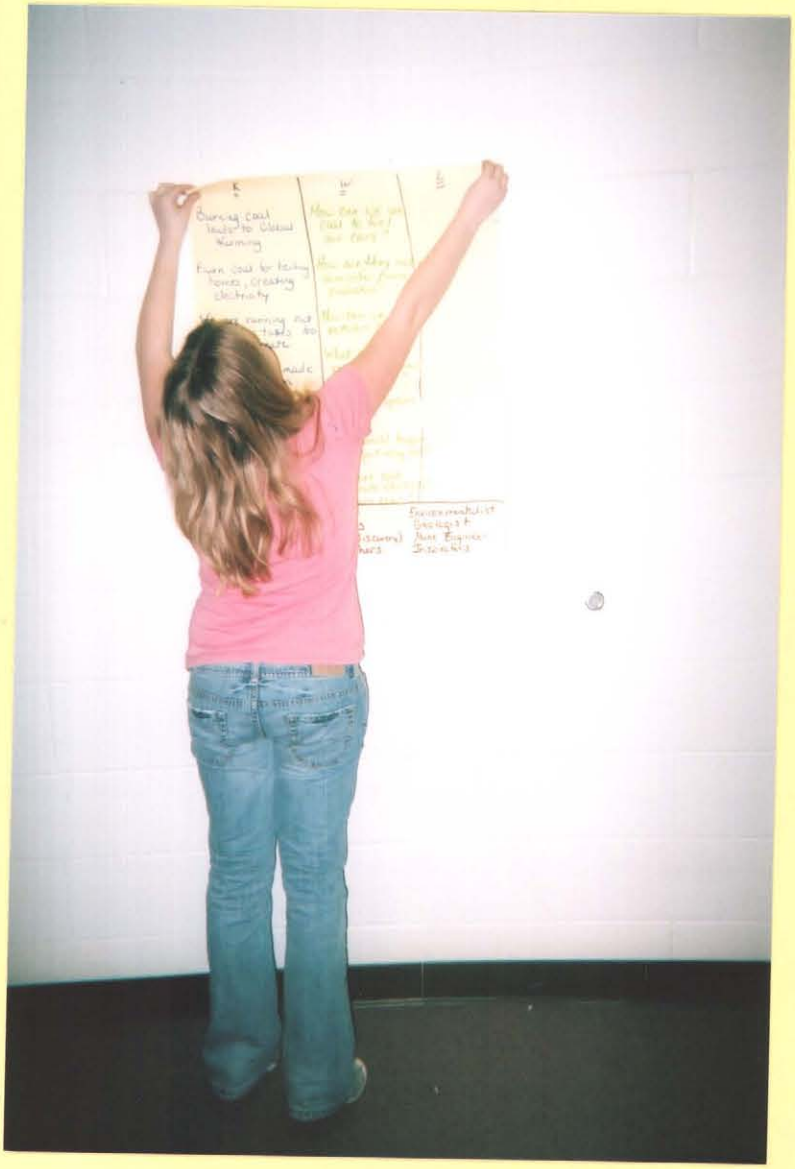
We Did!

Students collected all of our coal unit posters and hung them around the building.

To promote our schools coal fair, we hung informative posters throughout the school

Students completed individual KWRL charts before generating a larger classroom chart.





Classroom KWRL charts are hung in the hallway to keep us focused throughout the unit.

All materials were laid out so that students knew what was available during the unit. Later, other teachers were able to check out these materials.

Students worked in groups to create their lesson plans. We have some great future teachers! AEP sent us videos and resource books to use during our unit.

Students distributed coal materials to all the homeroom teachers in our building.

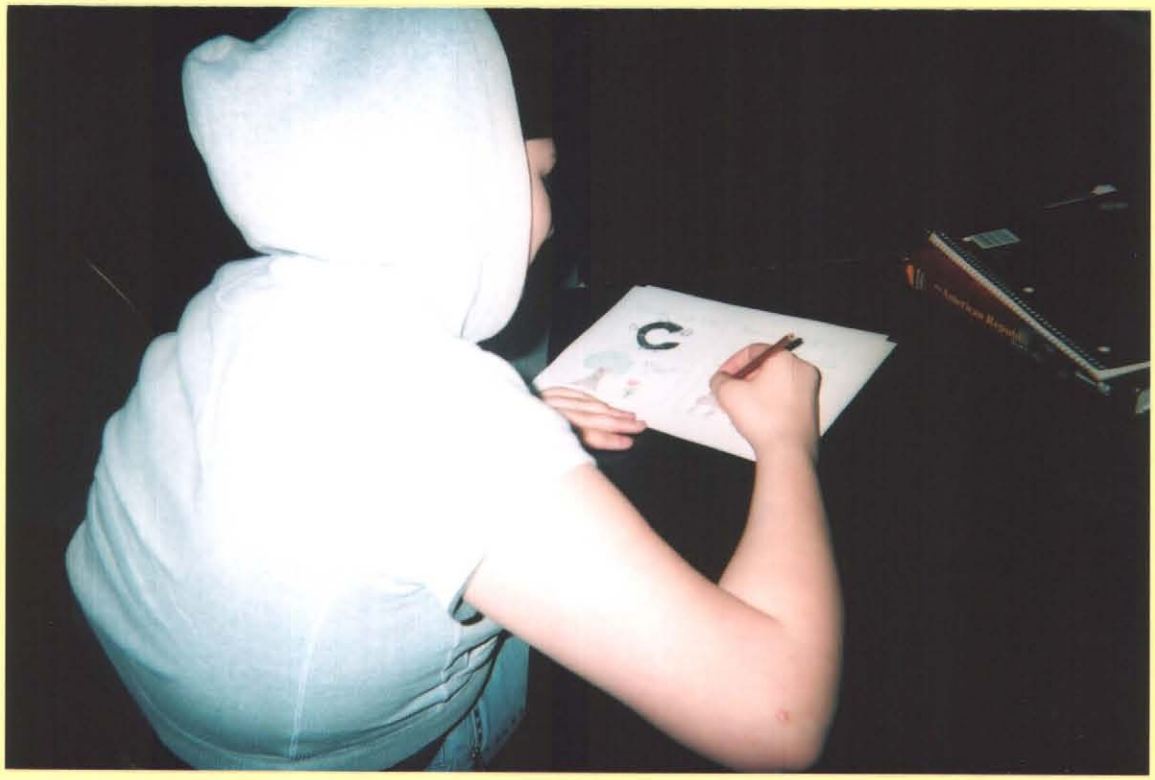
Teachers discuss coal lessons and activities they are going to complete in class.

This year, we had two very special guest speakers. First, Danny Blevins, author and president of the Van Lear Historical Society.

Second, Bruce Aaron Davis, Big Sandy RECC, talked with the students about how coal is used to generate electricity and electrical safety.

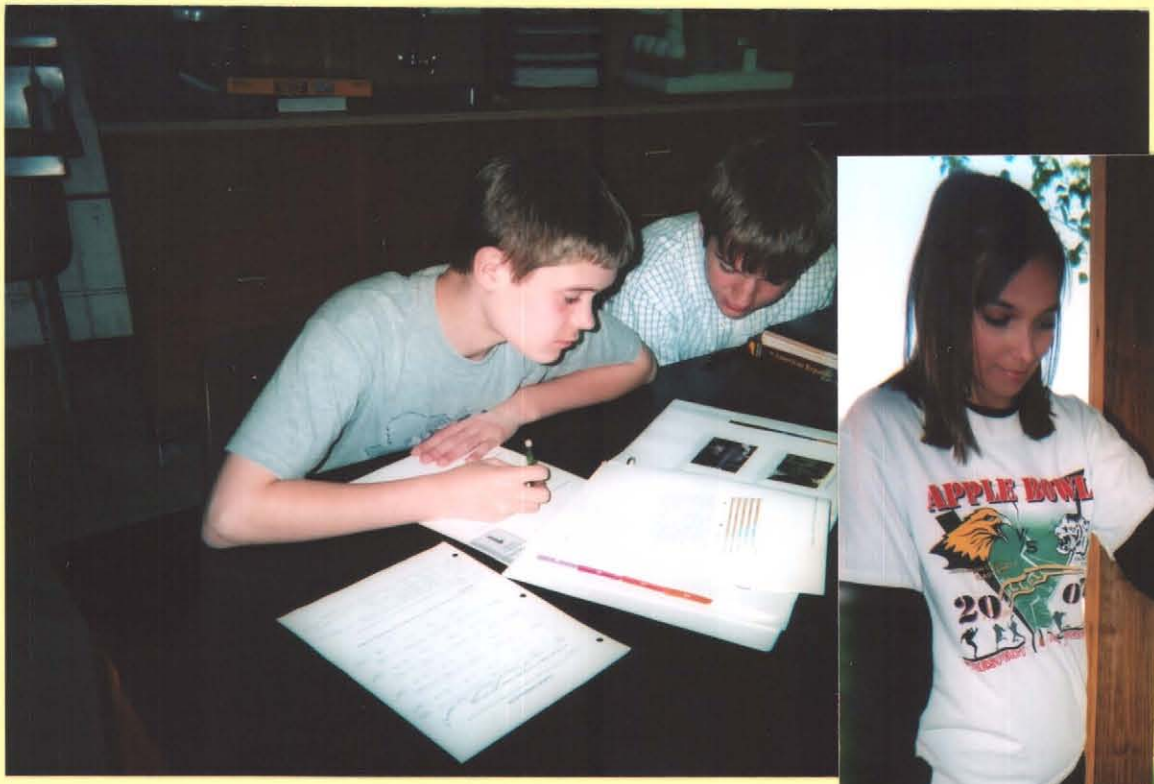
In their social studies and language arts classes, students wrote their historical preservation essay and their persuasive letters.

After watching carbon cartoons on the Internet, students created their own cartoons. Very creative!



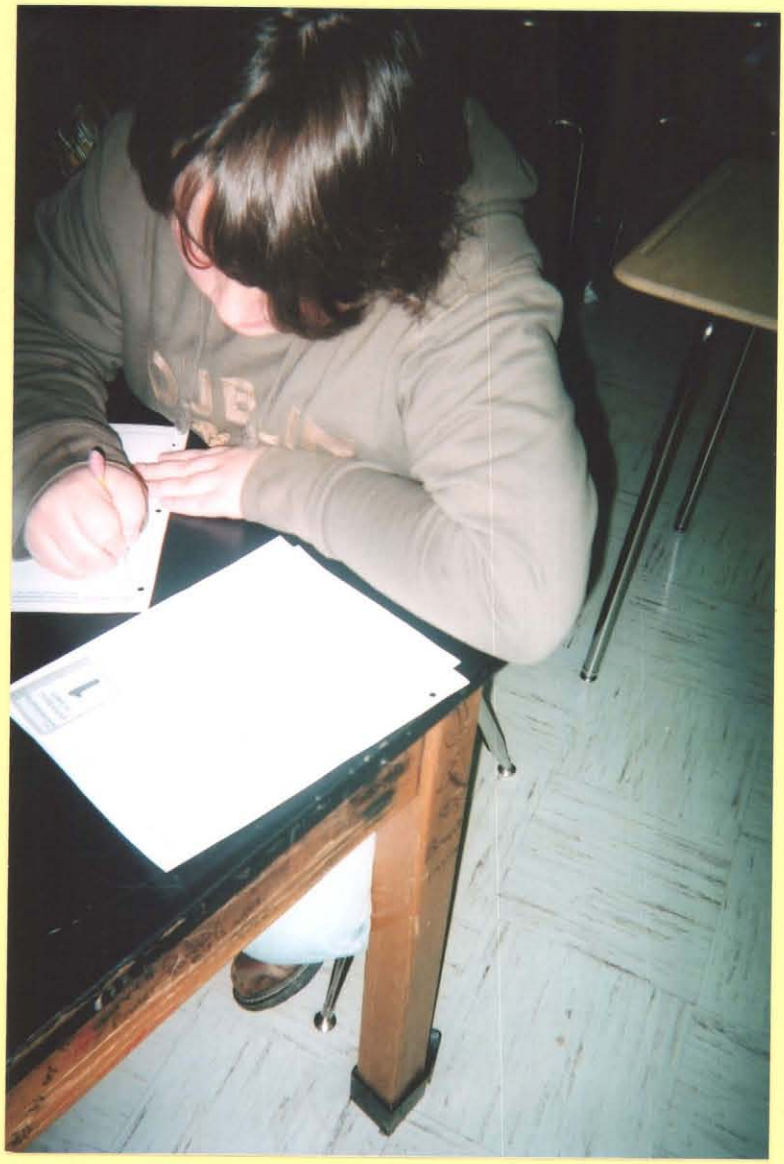
As part of our differentiated instruction, some students needed a "refresher course" on the formation of coal. Our special needs teachers helped all students be successful.

Students <u>love</u> our new digital microscopes. I had a coal peel from my workshop. We looked at it under 10x and 60x magnification. It displayed on our new Plasma TV!



Students were in charge of designing the entire experiments - from writing procedures to collecting materials. This really pushed students to their limits. I was very impressed.

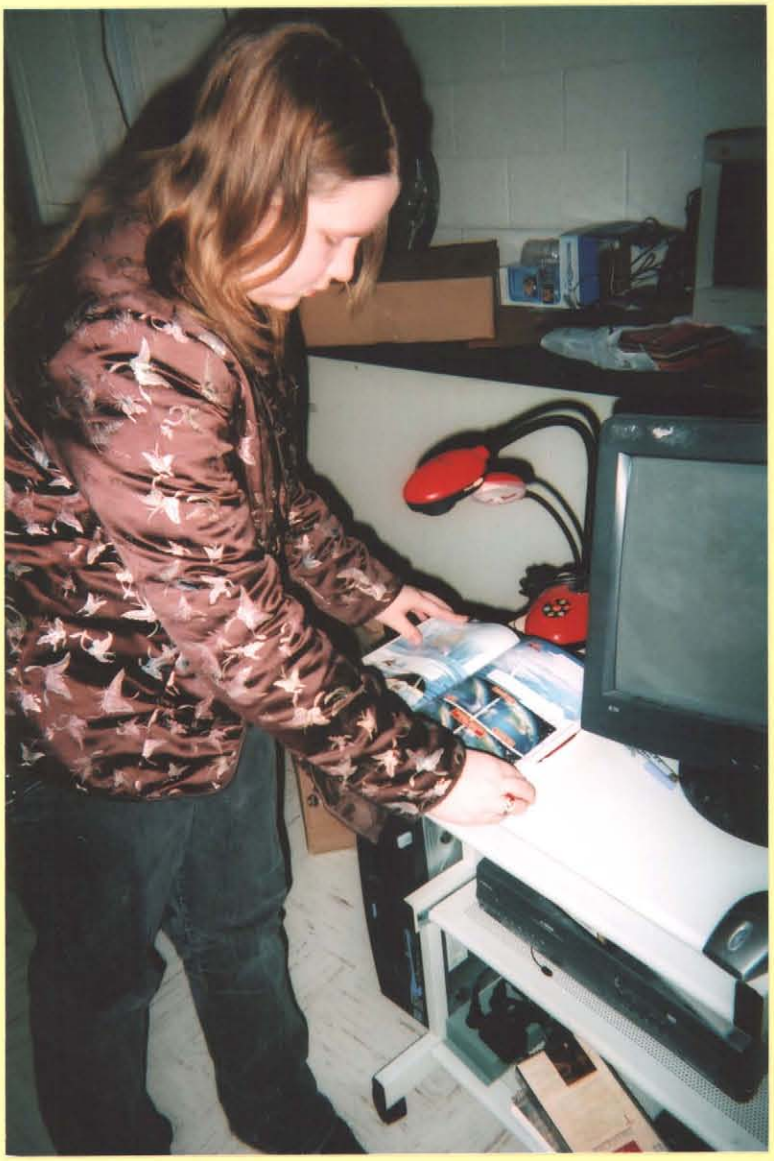
After writing their procedures and collecting materials, students headed to the outdoor classroom to conduct the experiment. Then there were graphs and analysis to complete.



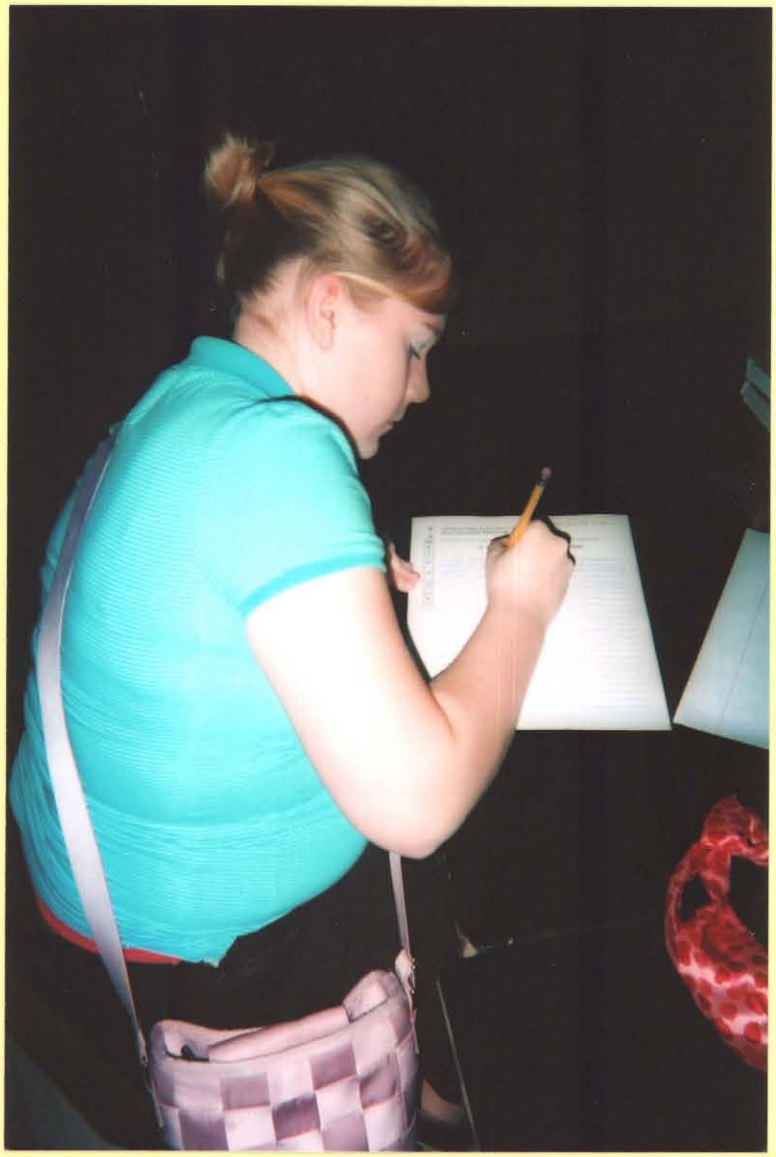
Students wrote an experiment to check for "dirty" emissions. Then headed outside to carry it out. No smoke alarms, please!

Scientific Inquiry is an essential skill for middle schoolers. Our students went above and beyond by writing their own experiments.

Students were able to use the document camera to display the comic books on our plasma TV. We read comic books about electricity and global warming.



During free time, students enjoyed reading our coal newspapers and "Coal Age" magazine, which we subscribed to this year.



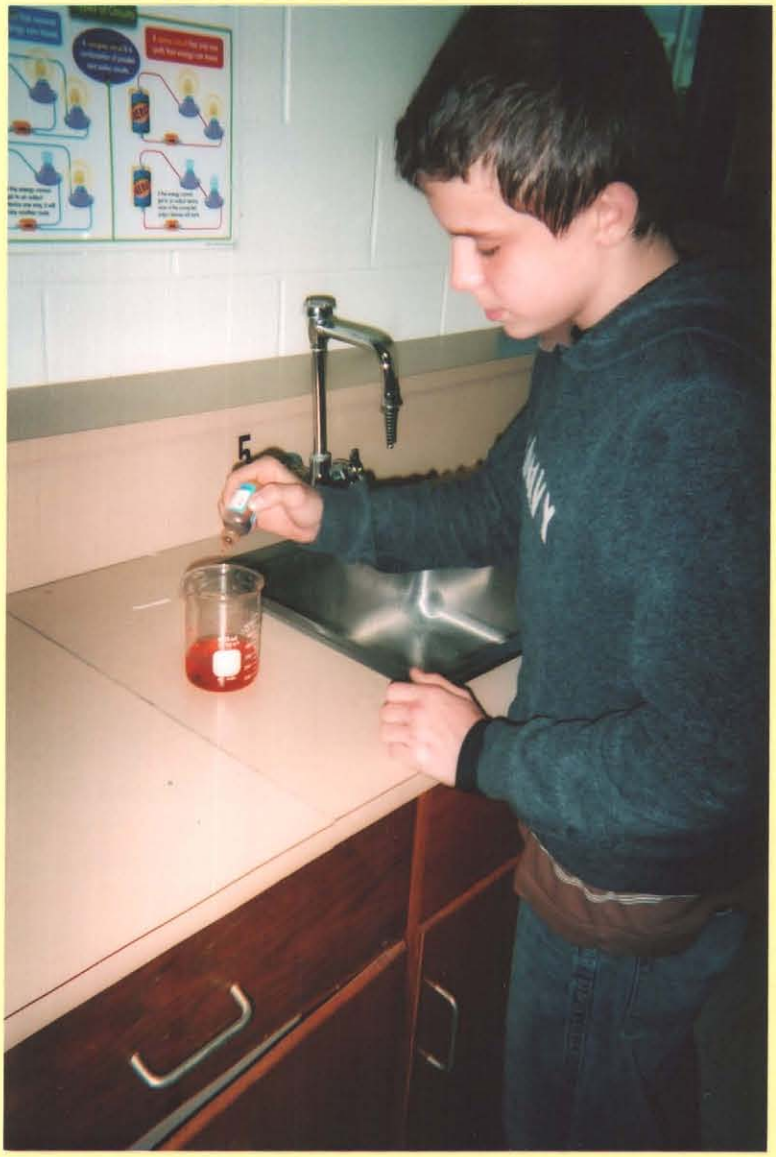
Students were able to assess their knowledge of electricity by creating various electrical circuits.

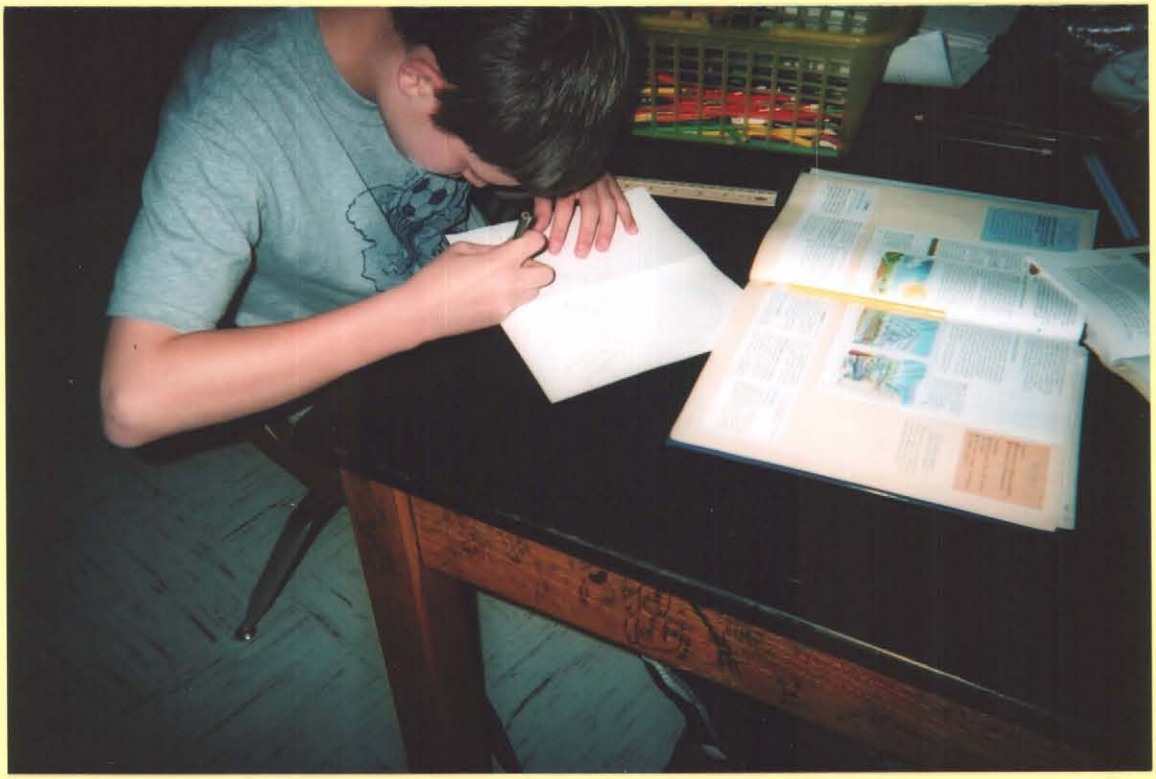
Students were given the writing prompt to imagine a world without electricity - they were scared! No Wii!!

Students wanted to test of acidity of coal emissions. They wrote the experiment, conducted the experiment, and then took them inside to test with our universal indicator. This was our best experiment!!

Bituminous Sample

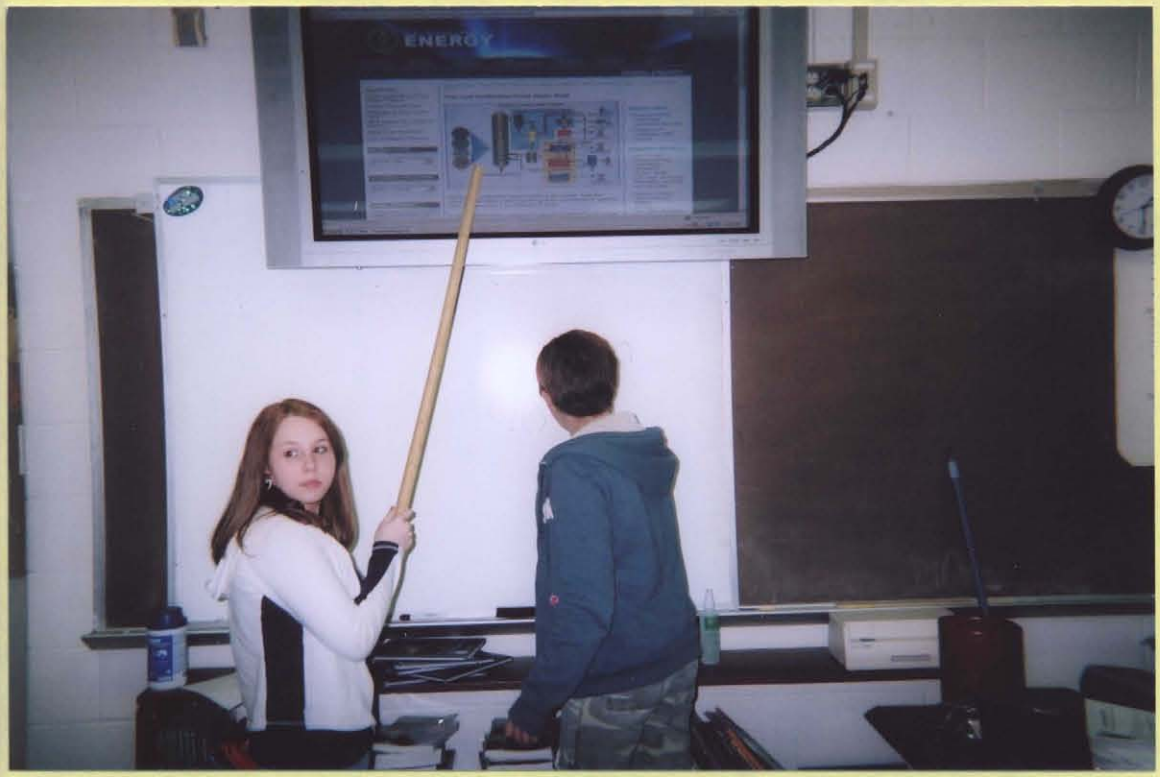
Anthracite Sample





Students created a diagram comparing the "green house effect" on Earth to an actual greenhouse. These were hung in several classrooms for test preparation.

Students had to use their math skills to convert percentages to degrees and then construct pie charts.

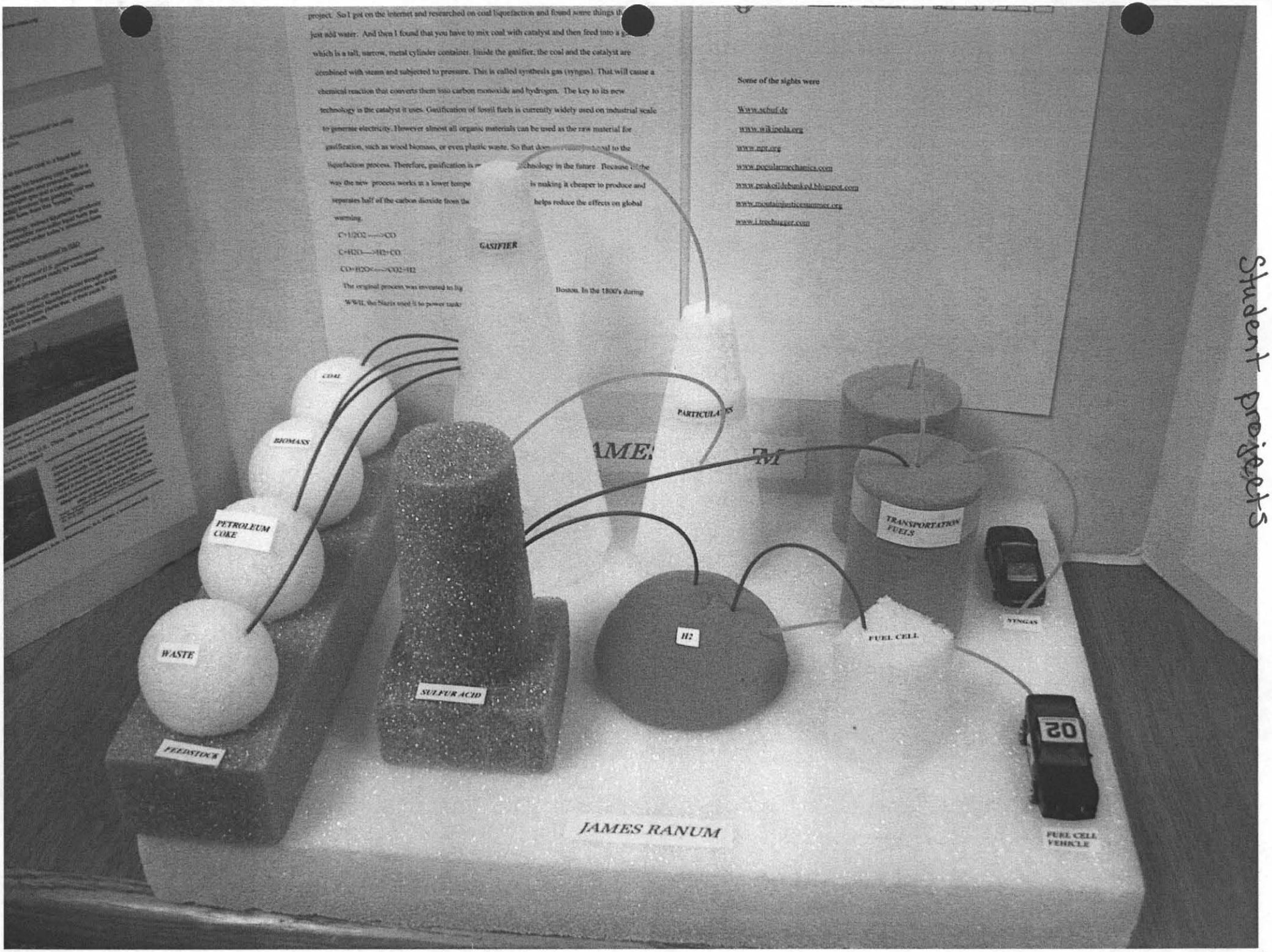


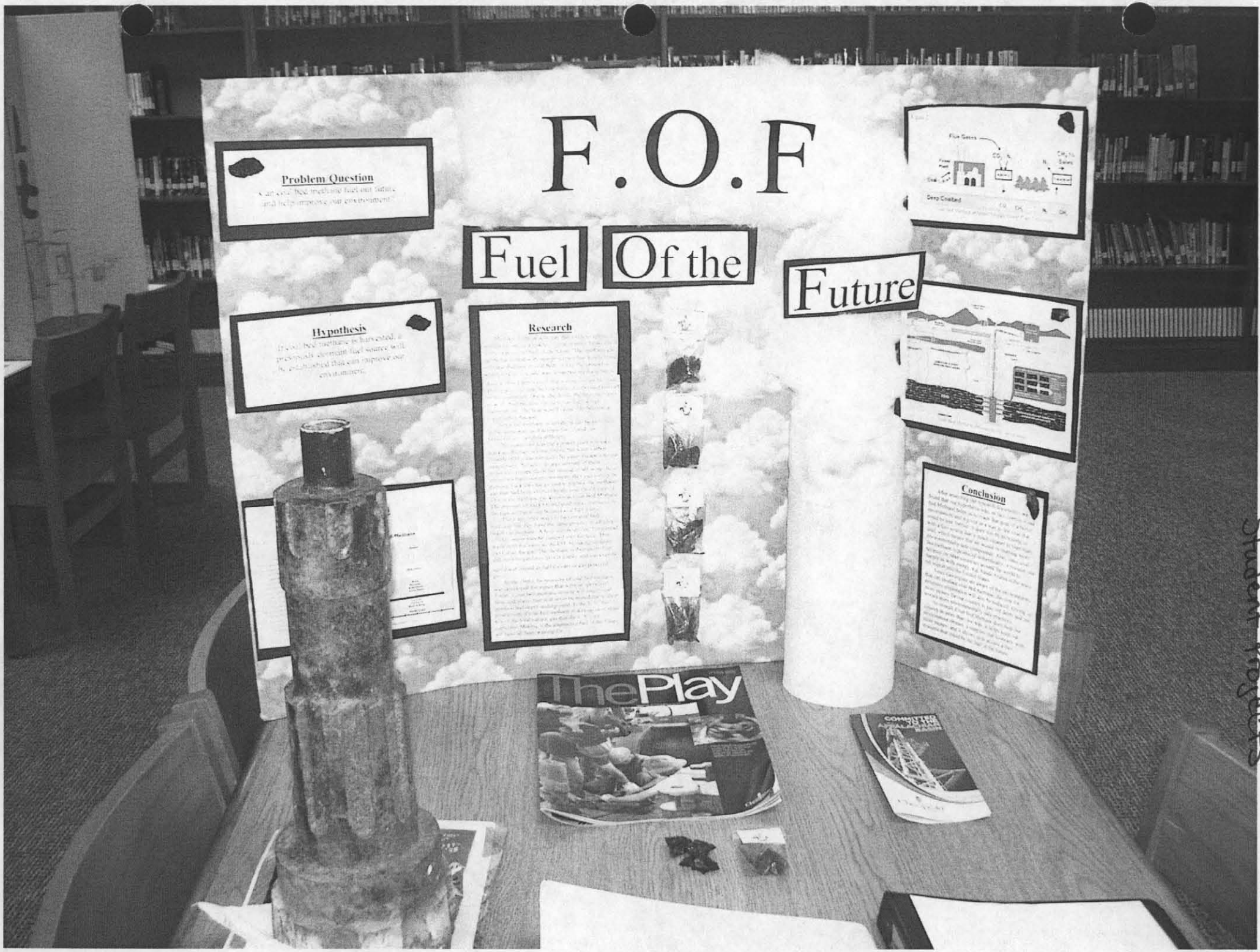
Students were able to use our new technologies to present their lessons on clean coal technology.

After every lesson, students and teachers completed evaluations so that improvements could be made next year.

Our librarian gathered and ordered many books for our unit. Students were able to check them out. She set out different books every few days.

How Coal is Formed
Student Projects


project. So I got on the internet and researched on coal liquefaction and found some things th
just add water. And then I found that you have to mix coal with catalyst and then feed into a g
which is a tall, narrow, metal cylinder container. Inside the gasifier, the coal and the catalyst are
combined with steam and subjected to pressure. This is called synthesis gas (syngas). That will cause a
chemical reaction that converts them into carbon monoxide and hydrogen. The key to its new
technology is the catalyst it uses. Gasification of fossil fuels is currently widely used on industrial scale
to generate electricity. However almost all organic materials can be used as the raw material for
gasification, such as wood biomass, or even plastic waste. So that doesn't
liquefaction process. Therefore, gasification is
way the new process works at a lower tempe
separates half of the carbon dioxide from the
warming.
C+1/2O2 ---->CO
C+H2O---->H2+CO
CO+H2O<---->CO2+H2
The original process was invented to lig
WWII, the Nazis used it to power tanks
GASIFIER
Boston. In the 1800's during
Some of the sights were
Www.schuf.de
www.wikipeda.org
www.npr.org
www.popularmechanics.com
www.peakoildebunked.blogspot.com
www.mountainjusticesummer.org
www.i.treehugger.com
COAL
BIOMASS
PETROLEUM COKE
WASTE
FEEDSTOCK
SULFUR ACID
H2
PARTICULATES
TRANSPORTATION FUELS
FUEL CELL
SYNGAS
02
FUEL CELL VEHICLE
JAMES RANUM
Student projects



Student Projects