

# Coal, Chocolate Chip Cookies, and Mountaintop Removal

By BILL BIGELOW

IN 30 YEARS OF TEACHING, I'd never taught explicitly about coal. Coal appeared in my social studies curriculum solely as a labor issue. We read passages about the 1914 Ludlow Massacre of striking coal miners and their families in Colorado, and watched John Sayles' excellent film *Matewan* when we looked at early 20th-century labor struggles. But coal was mostly invisible in my history classes.

At the risk of sounding melodramatic, the world cannot afford this kind of curricular invisibility today. Forty percent of the main greenhouse gas produced in the United States, carbon dioxide, comes from burning coal for electricity; so does two-thirds of all the sulfur dioxide pollution. According to the American Lung Association, coal is responsible for thousands of premature deaths every year. Almost 40 percent of this country's electricity comes from burning coal: a *billion tons* of coal every year—more than 15 pounds of coal burned *each day* for every person in the United States. And most coal mining in the United States these days is strip mining—the Earth is essentially skinned alive to get at the coal seams within. Coal companies have sliced the tops off 500 mountains in Appalachia and dumped the

waste in the valleys, burying 1,200 miles of streams and poisoning residents' water. The term for this is *mountaintop removal*, and it's not a metaphor.

So I decided that it was time to break my curricular silence on coal. Now that I no longer have my own high school classes, my friends and colleagues Tim Swinehart and Julie Treick O'Neill invited me to help them co-teach a piece of a unit on climate change and energy to their 9th-grade global studies classes at Portland's Lincoln High School. (Tim and Julie teach separate classes but plan together.)

Coal is hidden—in the curriculum, but also literally: We encounter coal every time we turn on a light, but—at least in urban areas—our students almost never see it. I wanted to begin our brief introduction to coal by showing some of the stuff to students, but it was almost impossible to find. I sent an email to the 60 teachers on our Earth in Crisis curriculum list asking if anyone had any coal. No luck. So I called Portland General Electric, which runs Oregon's only coal-fired power plant, in eastern Oregon. PGE promised to send me some coal but never did. Finally, I called several coal companies around the country and left messages. A few days later a package postmarked St. Louis arrived from



Protesters at Melbourne Walk Against Warming, Dec. 12, 2009.

Takviri/Creative Commons

Peabody Energy, the world's largest coal company. Eureka. It contained a little baggie of chunks of coal.

In class, I began by telling students that we were going to play a game, but first I wanted to show them something. I brought out the coal on a piece of paper on a stool and placed it in front of the room: "I'd like you to describe this. Feel free to come up and take a closer look, but don't touch it and please don't talk with each other about it. Just write what you see. There's no right or wrong description."

Most students stayed seated and wrote, but four or five came up and carefully studied the little hunks of coal. After a few minutes, I asked students to turn to the person next to them and read their description aloud, and then asked for a few volunteers to read to the whole class. Students' accounts were observant and straightforward. Emma described it as "pitch black . . . bits

crumbling off, sharp edges, no one looks like the other. Some look shiny from different angles, others look dusty and charcoal gray. . . . All the pieces are huddled together, not a single one left alone." Students described "burnt chunks," "kinda crumbly," "chalky rocks," a "weak rock that you could probably crush into powder with your foot." A number of students mentioned that it looked like coal, but even more said they thought it was charcoal. (Charcoal, I later pointed out to students, is entirely different; it's made by burning wood. Coal is a rock—fossilized plant matter that is found in veins or "seams" underground.)

I told students that it was coal and recounted my difficulties in locating any to bring to class. I talked briefly about the importance of coal in the production of energy in the United States and the world and how it touches our lives every day, even if we give it no thought. I mentioned that when I'd moved to Oregon in 1977, I

assumed that most of our power came from the mighty Columbia River—Woody Guthrie had written "Roll On Columbia" after visiting the power-generating Bonneville Dam just a half-hour drive up the river. But in fact, even here in water-rich Oregon, more than 40 percent of our electricity comes from coal, and the massive Boardman Plant burns three full railroad cars of coal every hour of every day. I wanted this introduction to emphasize coal's significance, but to be factual and neutral. So I didn't mention that coal produces twice the amount of climate-altering carbon dioxide per unit of energy as

natural gas and a third more than oil—to say nothing of wind or solar—or that it is the world's single largest source of human-produced greenhouse gases, as well as airborne poisons like mercury, or that mining and burning coal produces three times as much waste as all the municipal garbage in the country. I wanted students simply to "meet" coal

before they thought about its social and environmental significance.

I found the game that I wanted to play with students in a remarkable book called *Coal Mountain Elementary*, compiled by Mark Nowak. This might be best described as a book-length prose collage, featuring pieces of testimony about the 2006 mining disaster in Sago, West Virginia; excerpts from newspaper accounts of coal mine accidents in China; and photos of Chinese mine scenes from photojournalist Ian Teh. The book's otherworldly feel derives from its inclusion, amidst the vivid and heartrending imagery, of pro-coal mining lesson plans for children, developed by the American Coal Foundation (ACF), the nonprofit arm of the coal industry. The game I discovered in the book and then found described in detail at [www.teachcoal.org](http://www.teachcoal.org) is a pedagogically clever activity on mining "coal" from chocolate chip cookies. Materials described in this article can be found at the end of this page.

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## Playing a Game—with Two Minds

It's this unsettling juxtaposition between the grim reality of coal mining and ain't-it-great coal industry propaganda that I sought to reproduce in class. My hope was that students would play the industry-designed game and then be able to critique its premises as they learned a fuller story about coal mining. And Julie and Tim had just finished teaching about mining for natural gas via hydraulic fracturing—"fracking"—as described in the disturbing film [Gasland](#), so the three of us felt that it would not be much of a stretch for students to see that there was much more to coal than presented in the cookie game.

I told students that before I explained the game I wanted to show them the prizes that I'd brought for them—a wide assortment of quality chocolate bars that I described one by one in delicious detail. "Of course, we don't have enough of these for everyone. Only for the winners." I told them that to win the game would require some dexterity, some strategy, and, yes, some luck.

I distributed the Cookie Mining Worksheet, and read to them the ACF's description of the game: "The mining industry, like any other business, faces challenges to make itself profitable. To understand some of these challenges, you will attempt to conduct a profitable mining business in an experiment that requires you to mine the 'coal' chips from chocolate chip cookies."

I told students: "I'd like you to play the game with two minds. First, just get into the game and have fun. But second, as you're playing, think about what the game is meant to teach students. What values does it teach? What is missing from the game about what coal mining might actually mean in people's lives?"

At first glance, the game seems more complicated than it is. The basic idea is that students begin with a certain amount of money—for some reason, the ACF chose \$19—and then must decide which "property" (i.e., which type of chocolate chip cookie: Kentucky, \$7; Pennsylvania, \$5; or Montana, \$3) and which kind of mining equipment (a paper clip, \$6; a round toothpick, \$4; or

Photo: Courtesy David Novack | Burning The Future: Coal in America



Maria Gunnoe and Larry Gibson on the EPA steps, Appalachia Rising, September 2010.

a flat toothpick, \$2) they will purchase. Making these choices constitutes the strategy piece of the game. The dexterity component involves the speed and accuracy with which students can dig out the chips from the cookies—“labor” costs \$1 a minute (students get five minutes to mine chips)—and how messy they are in the mining process, because they will be charged for leaving cookie residue outside the original area of the cookie. (Each student begins by outlining his or her cookie on a sheet of graph paper.)

Here is how the ACF describes this “reclamation” process, which I read aloud before we began: “Coal companies are required by federal law to return the land they mine to its original, or an improved, condition. This process, known as reclamation, is a significant expense for the industry.”

As mentioned, the game itself takes just five minutes to play, plus three minutes of post-mining reclamation. But it took a bit of time for students to choose which property and mining equipment they would purchase, and to review the Cookie Mining Worksheet, so everyone felt on top of the game before starting to dig out the chocolate chips—er, coal.

Tim, Julie, and I did this activity with three 9th-grade classes, each with about 30 students, in 90-minute block periods (including the initial coal-writing activity and follow-up writing on the game and discussion). Every single student was engaged in ferociously digging the chips out of these cookies as if there were no tomorrow, laughing and groaning. The air was punctuated with cries of “Man, these cookies are so hard,” “Can I buy another toothpick?” “How am I ever going to put this cookie back together?”

Because the chocolate chips in each separate brand of cookie were of such varied sizes, afterward we distributed a “standard chip” to each student to measure chip production—students earned \$2 for each chip mined. At the end of the game, we led students through their final tabulation: They began with \$19; from this they subtracted the purchase of their property, their equipment, their labor, and their “reclamation” costs; and then added the gross profits from their chocolate chip mining to determine their final net profit. We awarded the delectable Toblerone, Equal Exchange, and Lindt chocolate bars to the students who ended up with the most profit—just like in the real world.



*Mountaintop removal—a coal sludge pond near Middlesboro—in Bell County, Kentucky.*



## Students Analyze the Game

We wanted to give students a chance to step away from the frenetic competition and playfulness of the coal mining game, so we asked them to write briefly on two questions:

- What “works” about the ACF simulation? What is good about it as a teaching activity?
- What is missing from the simulation? What doesn’t “work” about it? What is bad about it as a teaching activity?

I confess that I have a grudging admiration for the cleverness of this simulation. Who wouldn’t want to design an activity that engages 100 percent of one’s students? And in their answers, students also expressed respect. As Henry said: “This is a good activity in that it teaches students the main costs that go to coal mining and especially reclamation. Also, it teaches students that it’s difficult to profit from coal mining because the yield of a mine is not very predictable. It also teaches children that higher price has visible merits, as the paper clip never breaks, while toothpicks do.”

Carmen added, “It’s also more relatable because not many kids are interested in coal mines, but cookies are a shoo-in.”

But students also saw the activity’s limitations—or, one might say, manipulations. As Ally said, the activity “puts an image in students’ heads that profit is the only thing to worry about. Also, having the cookie fit within the circle doesn’t address how destroyed the cookie is and what effect it has on the entire paper (grease stains, crumbs).” Emily echoed this ecological critique:

“It leaves out what effects the mining business has on the Earth. Kids need to know what burning coal can do to harm our environment. . . . Little kids could get the wrong impression about coal mining, since they’d think it’s a good thing, since they had fun during the activity.” As Alejandra summarized so eloquently: “This activity trivializes the effects of coal mining on the land,

presenting destruction as the harmless hunting of chocolate. It sends the wrong message.”

Students also noted the ACF’s not-so-subtle linking of coal and chocolate: As Lili said: “It makes mining for coal look like a fun, happy cookie game. . . . Kids might also be attracted to the food aspect and think that coal is good.” Finally, Carmen picked up on the way the game erases social class and “puts the jobs of two separate levels of the industry into one job.” This was a brilliant point: In the game, each student plays both capitalist and worker, conflating the category of “labor.” The activity entirely hides the fact that in the real world, one group profits off the work of another group.

## Coal Mining: The Game vs. Coal Mining: The Reality

Perhaps because this game came in the midst of a broader unit that Tim and Julie were teaching on climate change and environmental justice, almost all students were alert to the activity’s failure to deal forthrightly with the consequences of coal mining on the Earth. However, I’ve used this game “cold” with groups of students who didn’t have the environmental study context; participants still recognized the way in which the activity maneuvers players to focus exclusively on profit and to disregard what happens to the cookie—i.e., the Earth.

With the end of the semester closing in on Tim and Julie, we were pressed for time, but we wanted to contrast the ACF game with at least some of the actual effects of U.S. coal mining. We decided to show pieces of the film *Burning the Future*, about mountaintop removal in southern West Virginia, and to pair these with a choral reading of a collection of quotes about coal extraction and burning—some drawn from *Coal Mountain Elementary*, in homage to the book’s idea of contrasting the coal industry’s self-portrait with real-world consequences.

Before we began the film, we brought out the stool with the pieces of coal: “We want to give

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*“It makes mining for coal look like a fun, happy cookie game.”*

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you your writing assignment now, so that you can take notes as you watch the film. Earlier, you wrote about this coal. After we finish the film and hear some passages about the effects of coal mining, we'd like you to write again about this coal. You can ask questions of the coal, write an interior monologue from the perspective of the coal, write from the point of view of the mountain where the coal was found, or write from one of the characters in the film about the coal. The idea is simply to see this coal more deeply and fully than we did the first time around." We mentioned that students might want to collect memorable passages from the film and complete the assignment as a "found poem." [See Julie Treick O'Neill's article on using found poems in "[Our Dignity Can Defeat Anyone](#)," *Rethinking Schools*, summer 2008.]

We showed students chapters 2 and 8 of *Burning the Future*, approximately 25 minutes' worth. Chapters 4 and 6, about the impact of mountaintop removal on water quality, are also excellent, but Julie and Tim thought that these might feel a bit repetitive because, as mentioned, they'd recently shown *Gasland*, to study fracking, natural gas extraction, and drinking water pollution. (There are a number of films that would work well to alert students to the impact of coal mining, especially mountaintop removal, and also to the inspiring grassroots movement to protect communities and the environment; see "[Coal at the Movies](#)," in *Rethinking Schools*, spring 2011.)

These segments of *Burning the Future* tell the story of Maria Gunnoe, the impact of mountaintop removal coal mining on her land and family, and efforts by members of her community to organize and draw attention to what's happening there. Gunnoe lives in Bob White, West Virginia. She explains that her family has lived in the area since the 1700s. "The land was kind of like the root of the family," she says, in a line that struck a number of students and that they incorporated into their writing. In the film, Gunnoe walks the land near her home, pointing out how

her family harvested ginseng, saffron, and more mushrooms, and tells of different ways her family used poke leaves and stems in cooking.

And then she tells of the arrival of mountaintop removal coal mining, the clear-cutting of trees near her home, including a huge birch tree that her parents had carved their initials in when they were dating. The stripping of the land and filling in of the valleys left the land vulnerable to flooding. She describes her family's terror when the 2003 floods roared through her valley, carried off five acres of her land, and left her daughter traumatized. Gunnoe remembers:

*The mine company engineer come to my front yard the next day and told me that this was an act of God. He stood and looked me in the face and told me that this was an act of God. It just infuriated me. I mean, how dare he blame something like this on God? God didn't do this. God put what was here before. And it was beautiful, it was useful. And it was abundant with life; there were birds, and deers, and bears, and foxes, and coons, and grouses. It was—it was really abundant with life.*

The coal industry uses the term "overburden" to refer to everything covering the coal—in other words, the land, teeming with life, which Gun-

noe describes. In the film, a coal official explains that miners "take great pride as they mine the coal to make sure that we have a very small and gentle footprint on the scenic beauty of West Virginia. And specifically, what I'm referring to as the 'great reclamation' of the mining sites that our coal companies and our coal miners are taking great pains with. As they run the dozers to put the

land back, it's almost an artistic activity to watch the way they sculpt the mountains in really a great manner." Meanwhile we view images of this "art": bulldozers shoving rocks into gullies.

I wouldn't say that the video ends on a hopeful note, but it does end on a defiant one, with

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*"Do people realize that mountains in West Virginia are being leveled to keep this street lit up?"*

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Mountaintop removal at Oven Fork, near Whitesburg, in Letcher County, Kentucky.

Gunnoe and fellow activists visiting New York to testify before the U.N. Commission on Sustainable Development. We stopped the video as Gunnoe stands on Broadway in New York and cries out: “Do people realize that mountains in West Virginia are being leveled to keep this street lit up? Do you realize your connection? For the sake of the families in southern West Virginia, turn out the lights!”

We followed these excerpts of *Burning the Future* by distributing a collection of powerful brief readings about the impact of coal, and students read these aloud one by one. Some focused on coal mining and some on coal burning. For example:

*My name is Martín Macias Jr. I'm 19 years old from Chicago, Illinois. I live about two miles away from two of the biggest coal power plants in the Midwest region and the only two coal power plants in Chicago. [Coal is] responsible for about 50 deaths a year in my neighborhood, and it's responsible for toxic air, toxic soil. If you look at the demographics of these communities, it's mostly Latino working-class immigrants. It doesn't employ anyone from our neighborhood, and we don't get any energy.*

## “Black Cocaine”

We reiterated the writing assignment and asked students to suggest a few ways that they might approach “re-seeing” the coal sitting in front of them. Their writing was imaginative and, for the most part, heartfelt. Steve now described these little chunks of coal as “black cocaine, giving America its energy.” David said: “Looking at this coal again is like looking at . . . a blood diamond. . . . I can picture a giant wrecking ball crushing through the walls of my very own house.” And Alexandra lamented the “wilderness once without scars” that had turned into a “battlefield of destruction.”

Several students saw themselves as the entire mountain. Henry lashed out at “those proud humans” who “make ridiculous claims that they can reclaim the land and return me to my original state. How dare they tell such an outright lie.” Jessica-as-mountain wrote: “I used to be beautiful, covered in memories.” Alejandra imagined herself as the Earth:

*I am the layer cake. I am the most ancient one of all and I have seen them all. I knew that man would destroy if it could. . . . They hacked, hacked, hacked away, and black gems revealed themselves within my body. They*



*carried pieces of myself to faraway big cities,  
burned me for light, for heat, for comfort.  
“Slow down,” I cried. “Soon there won’t be  
any of me left. I have forests and people to  
support. I am older than the oldest tree, older  
than your great-grandfather, older than time  
itself. I am the Earth. I am your mother.*

William, on the other hand, was unmoved:

*The people from southern West Virginia are  
asking for all this sympathy. Stop using coal,  
blah, blah. . . . I know that not very many  
people live in southern West Virginia. A lot of  
people reap the benefits brought by clean coal.  
There are about 10,000,000 people in NYC  
and like 20,000 in southern West Virginia.  
Why should they all cater to the tree that three  
people care about? . . . Some streams were  
blocked, but it seems more is won than lost.*

But William was an “outlier,” as the expression goes. Some students may not have picked up on Maria Gunnoe’s activism, but they certainly embraced her anger and her sense of loss. In a later discussion, Lili noted that she was particularly saddened by the fact that the destruction of land in West Virginia was happening to people who have passed down that land from generation to generation and who know it so intimately.

For Julie, Tim, and me, this was a quick curricular visit to the Land of Coal. But we’ll be back. In *Big Coal*, Jeff Goodell wrote that the coal industry’s “goal is to keep us comfortable, not curious.” Our aim is just the opposite. As the great labor organizer in the coalfields, “the miners’ angel” **Mother Jones** said, “My business is to comfort the afflicted and to afflict the comfortable.” Pretty good words for teachers, too.

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# Cookie Mining Activity

Note: Here are the teacher instructions for the Cookie Mining activity from the American Coal Foundation. In italics, I've commented on some of the instructions that I found unnecessary. I have not changed or deleted any of the text from the original American Coal Foundation instructions.

—Bill Bigelow

## Grade Level 3-8

*[I have played this game with high school students. I've also played it in teacher education classes and professional development workshops, examining the politics of curriculum.]*

## Overview

Students participate in a simulation of the mining process using chocolate chip cookies and toothpicks. The simulation helps to illustrate the costs associated with the mining of coal.

## Objectives

Students will:

1. participate in a simulated “mining” of chocolate chips from cookies, using play money to purchase the necessary property, tools, and labor; *[I didn't use play money, which needlessly complicates the game. Students can simply keep track of their profits on their worksheets.]*
2. understand the various costs associated with mining coal, including environmental remediation, as demonstrated in the simulation; and
3. calculate costs and profits from cookie mining and relate them to the mining industry.

## National Standards

[National Council for the Social Studies \(NCSS\) Standards](#)

1. Production, Distribution, and Consumption
2. Science, Technology, and Society

[National Council of Teachers of Mathematics \(NCTM\) Standards](#)

3. Numbers and Operations, 3-5

## Time Needed

One to two class periods *[Obviously, the duration of the game depends on the length of class periods. One could likely “play” it in a 50-minute period, but this would not offer sufficient time to debrief—nor would it offer time to do the pregame writing about coal, described in “Coal, Chocolate Chip Cookies, and Mountaintop Removal,” if you’ve been able to locate some coal.]*

## Materials

1. Play Money *[Again, no need for this.]*
2. Three different types of commercially packaged chocolate chip cookies *[This sounds easier than it is. I tried to find cookies that were clearly different sizes and with different amount of chips. As I mention in my article,*

*I had to distribute standard sized chips at the end because the chips in chocolate chip cookies vary greatly in size.]*

1. Grid paper
2. Pencils
3. Flat toothpicks
4. Round toothpicks
5. Paper clips
6. Cookie Mining Worksheet

## Discussion Questions

What do you think are some of the costs associated with mining coal?

Do you know what the term land reclamation means?

If not, what do you think it might mean with regard to coal mining?

## Procedure

1. Review the costs associated with coal mining: land acquisition, labor, equipment, and reclamation. Coal companies are required by federal law to return the land they mine to its original, or an improved, condition. This process, known as reclamation, is a significant expense for the industry.
2. Explain that the mining industry, like any other business, faces challenges to make itself profitable. To understand some of these challenges, students will attempt to conduct a profitable mining business in an experiment that requires them to mine the “coal” chips from chocolate chip cookies.
3. Give each student \$19 in play money [Again, this is unnecessary; students can simply record this on their Cookie Mining Worksheet.], a sheet of grid paper, and a Cookie Mining Worksheet. Allow each student to purchase one “mining property” (a cookie) from three separate brands available. Montana costs \$3, Pennsylvania costs \$5, and Kentucky costs \$7. Students may want to examine the cookies before deciding which one to purchase. [I showed the cookies to students, but didn’t allow them to “examine them,” as this can be time-consuming and is not essential for the game.]
4. Once all the students have purchased their property, have them measure it by placing it on the grid paper and tracing it. Then have them count the number of squares that fall inside the circle (partial squares count as full squares). Tell students to record this number on the Cookie Mining Worksheet under *D. Reclamation*.
5. Have each student purchase “mining equipment” (flat and round toothpicks and paper clips). More than one piece of equipment may be purchased, but no tools may be shared among students. Sell a flat toothpick for \$2, a round toothpick for \$4, and a paper clip for \$6. Sell replacement tools when necessary.
6. Explain that each minute of mining (labor) costs \$1 and that each chocolate chip mined from their property will result in a \$2 profit. Broken chips may be combined to form a whole chip. Consumed chips will eat into profits!
7. Do not allow students to spend more than five minutes mining. If they spend less time, their labor cost will be lower. Have them record their mining time and labor cost under *C. Mining/excavation costs* on the Cookie Mining Worksheet.
8. After everyone is finished mining, have students restore their property to its original condition, within the drawn circle on the grid paper. This “reclamation” should also be timed, (no more than three minutes) and students may only use their

tools, not fingers. After time is up, collect additional reclamation costs (\$1) for each square covered outside the original outline. Disburse profits for chips mined. Have students use the Cookie Mining Worksheet to calculate their profit or loss.

### **Assessment**

Allow students to share their experiences with the class. Was making a profit easier or harder than they expected? How accurate is this simulation in illustrating the challenges of making money in the mining industry? What costs or possibilities for profits were not included in this exercise?

### **Extension**

Encourage students to design another profit/loss simulation for a different industry. Remind them to think of all the costs related to the industry and to try to create an exercise that can be done in a short period of time by the rest of the class. Have them prepare a worksheet for other students to complete after participating in the simulation, on which to calculate their profit or loss.

### **Differentiation**

Working in tandem to complete the profit/loss worksheet might be helpful for those with math-related learning disabilities.

# Cookie Mining Worksheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_



AMERICAN COAL FOUNDATION

## Costs

### A. Land acquisition costs (price of cookie)

(Montana – \$3; Pennsylvania – \$5; Kentucky – \$7)

Name of property \_\_\_\_\_ \$ \_\_\_\_\_

### B. Equipment costs

Flat toothpick \_\_\_\_\_ x \$2 = \_\_\_\_\_

Round toothpick \_\_\_\_\_ x \$4 = \_\_\_\_\_

Paper clip \_\_\_\_\_ x \$6 = \_\_\_\_\_

Total equipment costs \$ \_\_\_\_\_

### C. Mining/excavation costs (chip removal)

Number of minutes \_\_\_\_\_ x \$1 labor = \_\_\_\_\_

Total excavation costs \$ \_\_\_\_\_

### D. Reclamation

(Original number of squares covered before cookie was mined = \_\_\_\_\_ )

Squares covered outside original outline after reclamation \_\_\_\_\_ x \$1 = \_\_\_\_\_

Total reclamation costs \$ \_\_\_\_\_

## Profit

### E. Mining valuation

Number of whole chips mined \_\_\_\_\_ x \$2 = \_\_\_\_\_

Gross profit \$ \_\_\_\_\_

## Calculating Net Profit/Loss

Start-up funds \$ 19

less total mining costs (A. + B. + C.) - \_\_\_\_\_

less total reclamation costs (D.) - \_\_\_\_\_

plus gross profit (E.) + \_\_\_\_\_

Total Net Profit/Loss \$ \_\_\_\_\_



“Mountaintop removal mining may more appropriately be called mountain and stream annihilation. The tops of mountains hundreds of feet deep are blown apart to get at coal seams. Coal companies then dump the waste rock and debris in adjacent stream valleys, smothering the stream and any associated life. Mountaintop removal converts a biologically rich mountain ecosystem to a biological moonscape.”

— **Janet Keating, co-director, Ohio Valley  
Environmental Coalition  
West Virginia**

“You stand at the edge of one of these mountaintop removal sites and you’ll never feel the same way again,” says Mat Louis-Rosenberg, a staffer at Coal River Mountain Watch in southern West Virginia. The practice turns rolling mountains and valleys into flat, desolate moonscapes. Locals regularly hear the blasts of surface mines from their homes and then drink the resulting contaminants in their well water. When newly created lakes of toxic coal waste give way—as happened last December, as a billion gallons of sludge flooded 300 acres of land near Harriman, Tennessee—they are the ones whose homes stand immediately downstream.

— **Mark Engler, journalist,  
Commondreams.org**

Dai Longcao said she had not been able to eat since the Sanhuiyi Coal Mine was ripped apart by a massive blast on Tuesday. “I held my children’s hands and walked three hours along the mountain path to the coal mine,” said the 42-year-old woman. “I took off immediately after I heard the news, and didn’t even get a minute to let my parents know what happened.” As her husband’s meager salary provides for the whole family, the housewife said she feared for the future of her son and daughter. Her fears were shared by a pair of sisters, whose spouses were also their families’ only breadwinners. Xia Xingrong and Xia Xingbi have their fingers crossed for their missing husbands. “If anything happened we’d be helpless,” they said.

— ***South China Morning Post*, March 21, 2005**

I called my daughter and wife. I don’t remember which one answered the phone. I believe it was my wife answered, yeah. And told her that the mine had blew up and her brother was still in there and told her to come on up to the mine.

— **from testimony,  
West Virginia Office of Miners’ Health and Safety**

More than 150 Chinese coal miners were dead or missing yesterday following three separate accidents in seven days, prompting renewed calls for better safety in the nation's notoriously dangerous industry. . . . The spate of accidents prompted some state-run papers to repeat calls for better safety and reforms. "It seems unlikely that hearts of gold could be installed in mine owners and managers," said *China Daily* in an editorial yesterday. More than 6,000 miners died in workplace accidents last year, according to government statistics. Labor rights groups say the figure could be as high as 20,000.

— *China Daily*, April 11, 2006

This is why the coal boom is so alarming. Right now about one quarter of the world's CO<sub>2</sub> emissions come from coal. If we go ahead with these new coal plants, they will add roughly 570 billion tons of CO<sub>2</sub> to the atmosphere over the life of the plants. (To put that number in perspective, 570 billion tons is about as much CO<sub>2</sub> as released by all the coal burned in the past 250 years.) If that happens, our chances of stabilizing the climate are virtually zero.

—Jeff Goodell, *Big Coal*

Big Coal's goal is to keep us comfortable, not curious. It's not hard to understand why. Coal is by far the most carbon-intensive of all fossil fuels, emitting more than twice as much CO<sub>2</sub> per unit of energy as natural gas, and so any limits on CO<sub>2</sub> emissions will hit coal the hardest.

— Jeff Goodell, *Big Coal*

An analysis released by the American Lung Association in 2004 attributed 24,000 premature deaths *each year* to pollution from coal-fired power plants. In addition, the research estimates that more than 550,000 asthma attacks, 38,000 heart attacks, and 12,000 hospital admissions are caused annually by power plant pollution.

— 2007 *State of the Air*,  
American Lung Association

Our denuded hills now stretched across the valley with a haunting vacancy. It felt strange to be standing alone in an area where a dynamic community—the first settlement in [Eagle Creek, Illinois]—once thrived for two centuries. There was an air of an emptied field: of death, not life, despite the verdant spread of grass across strange ruts and broken slopes. The area looked abandoned. There was no wildlife. No people. No homes. No barns. No horses. No trees. As part of the so-called reclamation laws the coal company had replanted a type of grass, which grew in clumps like weeds. Not a single tree had been planted on our ancestral property.

— Jeff Biggers  
*Reckoning at Eagle Creek*

I am a Mud River West Virginia Girl! More specifically, I am a Conley Branch Girl.

I loved the mountains that surrounded our little three-room house. It was as if the mountains were there to protect us.

The mountain to the east of our house was my absolute favorite. Amongst all of the trees that are indigenous to the area stood a huge pine tree. It jutted out far beyond the top of the forest as if to say, “I am here. I will protect and shelter you from harm.”

There were sad times when I sought out the comfort of the mountain. I ran to my tree when my grandmother died.

I wish I could run there today, but the mining companies came after I left. Neither Conley nor Mud River will ever be the same.

Conley is now blocked off with a “No Trespassing” sign. The mountain at the turn into Conley is even gone. No trees. No wildflowers. No squirrels. Like a lot of places in the Appalachians, nothing is left except what the mining company did not want.

I pray that those of us who love this land are strong enough to stand up for the mountains that remain. They have provided strength, solace, protection, and even life, to us. It is now our turn to return the favor.

— **Marlene Adkins Thames, [iLoveMountains.org](http://iLoveMountains.org)**

Operating at full throttle, the [Boardman, Oregon] power plant inhales 330 tons of pulverized coal dust *an hour*. That’s nearly three rail cars worth—stripped from open pit seams in Wyoming’s Powder River Basin—every hour, almost every day, every year.

Inside the plant’s 260-foot-tall furnace, 32 flame-throwing burners ignite the cloud of talcum-size coal particles into a roiling, 3,000-degree ball of noxious gases and ash.

Like a miniature sun, the ongoing eruption creates enough energy to power 280,000 homes served by the plant’s part owner and operator, Portland General Electric. It’s 19th-century technology. But it’s reliable and cheap.

Unfortunately, it’s also dirty. Very dirty.

— **Ted Sickinger, *The Oregonian***  
**Dec. 26, 2008**

My name is Martín Macias, Jr. I’m 19 years old from Chicago, Illinois. I live about two miles away from two of the biggest coal power plants in the Midwest region and the only two coal power plants in Chicago. It’s responsible for about 50 deaths a year in my neighborhood, and it’s responsible for toxic air, toxic soil. If you look at the demographics of these communities, it’s mostly Latino working-class immigrants. It doesn’t employ anyone from our neighborhood, and we don’t get any energy.

— **Interviewed on Democracy Now!**  
**March 2, 2009**

# rethinking schools

This lesson was previously published in [Rethinking Schools magazine](https://rethinkingschools.org).

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