

**Pittsburgh Environmental History: Nineteen Year Cycle**  
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**Overview**

The following unit description is designed as a supplemental unit for an eighth grade U.S. History course. As a whole the unit strives to develop higher level thinking and consensus building skills in the students as they develop an understanding for the complex issues surrounding Pittsburgh's environmental history and how they as an individual influence their world. The unit examines the production of iron and steel, the impact of the those industries on the environment, working peoples' reaction to those industries, the Pittsburgh Renaissance of the 1940's-1950's, and an applied learning project that has students examine school waste and its environmental impact and then create a plan to reduce it. Overall the unit utilizes simulation and applied learning actives, while stressing literacy and communication through oral and written forms that are essential in today's workplace.

**Rationale**

While Thomas Jefferson traveled throughout France as the United States Ambassador, he experimented, refined, and developed many ideas that he would later use as Secretary of State, Vice-President and President. One idea that never caught on was the idea that no generation had the right to make a perpetual law. Jefferson wrote to James Madison, "The earth belongs always to the living generation, not to the dead, and that one generation did not have the right to bind subsequent generations." To fulfill that goal he proposed that nineteen years after every law was passed it had to be renewed. Further more Jefferson believed that this applied to budgetary matters as well, saying that no nation should take on a debt that it could not be repaid in nineteen years.

This little known and never practiced philosophy of our third President seemed to take on a more real meaning as I seriously began to consider Pittsburgh's environmental condition and how we have arrived at this state. Every morning as I leave my home in Pittsburgh's south hills neighborhood of Brookline I am greeted by a gorgeous view into a valley that is outlined by trees and homes. I have tried to imagine what this valley would have looked like before European settlers came to the area. How would it have looked as the Western settlements began to pop up? How would it have looked while the land's minerals were taken though mining and its forests were taken though deforesting? Then the big question comes up, what effect have these decisions on this valley had upon the people, the animals, and the plant life that have lived here and, closer to my heart, that currently live

here? Has my health and the health of my family and friends been compromised by decisions made by bureaucrats and businessmen long since in their graves? The answers that I come up with are as varied as the weather during springtime in Pittsburgh.

However, as a student and teacher of history I believe that it is important to understand how we as a city and as its people have arrived at this point in our environmental history. We can then begin to truly understand the impact of decisions made by local government, business, and the residents don't often seem to have direct impact on our lives, but they most certainly will be profoundly felt by the children of this generation of Pittsburghers and beyond.

Overall this unit will work to have the students understand Pittsburgh's environmental history and how decisions made in the past affect us today and how decisions made in the present will affect tomorrow. This will push the students to answer the question that Jefferson's contemporaries could not, "Does a current generation have the right to make decisions for future generations?"

## **Background**

To understand Pittsburgh's environmental history the student must understand how we as a city got to this point. Ironically, we are not even going to mention much about the environment in the beginning of the unit's background. We will discuss more about the products that were used, their costs, and workers' pay. In this era the environment was not the concern. It was not until the early twentieth century that outsiders looked at the environment and not until the 1940's that Pittsburgh itself began to look at its own environmental conditions with concern. So we begin by looking at iron and steel production, Andrew Carnegie's production dilemma and the average person's concerns about the mills and move into Pittsburgh's Renaissance where we as a city attempted to deal with large-scale environmental issues.

### *Iron and Steel Production*

One only need take a look at the Pittsburgh Yellow Pages to determine the importance that iron was to this region and its lasting effects. The number of businesses that have iron or iron city in their names, yet have nothing to do with the production or support of iron are in abundance. Freshman sociology classes teach us that a society shows the importance of something by how often it is referred to in the society's general vernacular. Eskimos have over ten words, if not more to describe snow, Americans have over ten words, if not more to describe automobiles, and Pittsburghers still refer to iron as the city's patron saint. So if we are to begin to understand the product that has been both a blessing and blain we must start with how it is produced. We are not going to mull over the specifics of the process, but just give ourselves a rough overview to understand how this product is made.

Iron begins as a raw material known as Iron Ore. Iron Ore is mined out of the ground and taken to a place called a blast furnace. At the blast furnace the iron ore is converted into pig iron. From there the product would be transported to a foundry. Now the product needs forged, this is where the pig iron is hit repeatedly to remove impurities creating wrought iron. For a more specific job requirements, the pig iron could be handled by a puddler to shape or mold as needed by the customer.

Each step of the process requires large amounts of material, machinery, men, and fuel to complete. Not to mention the transportation of the materials from raw material to refinery to customer. This created a dilemma to get through the process and make a profit. Andrew Carnegie summed up the dilemma this way in his autobiography: "To make a ton of steel one and a half tons of iron stone has to be mined, transported by rail a hundred miles to the Lakes, carried by boat hundreds of miles, transferred to cars, transported by rail one hundred fifty miles to Pittsburgh; one and a half tons of coal must be mined and manufactured into coke and carried fifty-odd miles by rail; and one tone of limestone mined and carried one hundred and fifty miles to Pittsburgh. How then could steel be manufactured and sold without loss at three pounds for two cents?"

This was the general concern of the first era that we will examine, costs. People were not concerned with how their environment would be affected, but how their pocketbooks would be affected.

### *Direct impact on people from Iron and Steel Production*

During the 1992 presidential election, one of Bill Clinton's advisors coined the phrase; "It's the economy, stupid." This summed up what the election was all about and what the average person was concerned about. It means that people want economic security. The average person will not vote for a candidate that has a great environmental plan or educational plan or what ever plan if they are worried about their jobs. Basic human nature is to secure our most basic needs and we can not do that without a means to pay for a roof over our head or food on our table. Everything else becomes secondary. People can not afford to make statements on beliefs if it costs them their basic human needs. Clinton's unofficial campaign slogan of 1992 can just as easily be applied to the steel and ironworkers of the 19<sup>th</sup> and early 20<sup>th</sup> century.

That is not to say that steel and iron workers did notice the environment around them, but their first concern was a roof over their head and food on the table. Pittsburghers viewed smoke as prosperity. When there was smoke, the mills must be running, when there was not smoke, the mills must shut down. Although, I have found no tangible evidence or studies that verify this claim, logically it seems to be on target. If the mills were not in operation, then the mills were not producing smoke, there would be less trains coming into and out of the city, and the workers would have less money to buy coal, all producing the effect of less smoke and pollution. From the residents' perspective there was less smoke and pollution because the mills were not in operation. If the mills were not in operation then their economic security was threatened, quite simply pollution equaled work and economic security in the minds of the average Pittsburgher of the era.

The smoke produced was the major problem faced by Pittsburgh and every resident. No one could escape its grasp; everyone was affected by smoke alike, from the Andrew Carnegies to Joe Steelworker. According to Michael P. Weber in his biography of Pittsburgh Mayor, David Lawrence, Pittsburgh received a third less sunlight than other parts of Allegheny County, presumably because of the smoke. Also the biggest side boom was in laundries, which were a multi-million dollar industry in Pittsburgh through most of the early twentieth century ahead of other cities its size. This claim was anecdotally backed up during an interview on the smoke conditions of the 1940's I conducted with Lorraine Dugan a resident of Sheraden during the era, " The mornings were so dark all year round from the soot. I think the mills caused it. Everything got so dirty; you couldn't wear something white because it would get dirty. We probably should all have lung disease, but I don't

remember anyone getting sick from it. You couldn't even open up your windows, because that black soot would come into your house. A lot of people used to complain about it."

The smoke was caused by the use of bituminous coal. Although many people attribute the smoke to the steel mills, this seems to be an unfair indictment. The mills were responsible for a large share of the smoke and added some extra chemicals that were byproducts of steel production as well, but they were not the only culprits. The railroads that brought the mills their raw materials and then shipped out the steel also produced its fair share of smoke. But, the people in their homes also caused smoke, by using coal to heat their homes. It seems that everyone used coal, be it for business or their homes. The culminating effect caused the pervasive problem of smoke.

The same coal that played a large role in creating jobs, transporting people and cheaply heating homes was strangling the residents of the city. Anecdotal evidence abounds. From stories of the turn of the century doctor's amazement at the low number of infant deaths to retired steel workers being called back to work to locate materials buried in soot in the mills that the younger workers had not yet become accustomed. Pittsburgh residents simply learned to live with the conditions and carry with them a macho badge of honor or move away from the prosperity of the mills that offered economic security with little or no education or training. Many choose to stay, but the numbers of new residents began to decline foreshadowing the mill's and region's decline in the 1970's and 80's.

### *Renaissance*

By the 1940's, Pittsburgh was a major industrial city, but many companies had trouble attracting middle and upper level managers into the city, because of the city's well-deserved image as the smoky city. Circles of business and political leaders realized that change was needed and the city needed to clean itself up. This would prove no easy task, because the conversion from coal to other fuel sources came down to economics. Coal was a cheap form of fuel for both industry and homes, but it was also the major reason for the smoke and pollution of the region.

The issue of smoke control was not a new topic to Pittsburghers, although the issue of actual implementation and legislation with teeth was a new topic. For smoke control to take place, new alliances had to be made and arms twisted. The results of which were not only felt in smoke control, but in the altered political landscape of Pittsburgh.

It seems hard to imagine today why smoke control would be such a hard issue to tackle. But, the issue had many powerful enemies. The Pennsylvania Railroad was one such powerful enemy. The Pennsylvania Railroad relied on the use of bituminous coal to run their trains; any directed change from that fuel source would seriously eat into the company's profit margin. It was the Pennsylvania Railroad that provided one of the major roadblocks to the passing of meaningful legislation.

No matter how much power and influence Pittsburgh Mayor David Lawrence had, it would never amount to enough to overcome the Pennsylvania Railroad's block; they were simply too powerful of an economic and lobbying force. It was in this case that the true cooperative spirit that made the Renaissance a success, transparent. Richard King Mellon, according to Michael Weber, simply called the president of the Pennsylvania Railroad and told him, that if the Railroad did not drop its opposition to smoke control legislation, Mellon controlled business, which were substantial would find another railroad to use. Considering Mellon controlled a number of powerful and influential

companies in Western Pennsylvania, the Pennsylvania Railroad had reason to take the threat seriously, they could not afford to call Mellon's bluff and risk that it was not a bluff. The Railroad's opposition to smoke control was shortly thereafter dropped. After which some of the most progressive smoke control legislation in the country if not the world was enacted. Fortunately, for Mellon his fight in the war over smoke control ended, but his partner Lawrence still had to battle with angry voters.

The other major obstacle to smoke control was the working poor of Pittsburgh or the core supporters of the Democratic Party. Lawrence knew that smoke control, if enacted would cost him votes, enough perhaps to cause him to lose re-election. Many of his supporters were the working poor of Pittsburgh, who did not have the economic resources to easily change the type of fuel they used to heat their homes. And as any good group of Americans as Clinton slogan taught us, Pittsburghers vote with their pocketbooks. If smoke control was enacted and heating costs rose, Lawrence would be blamed and punished at the ballot box. Just to make sure the voters remembered the forced change from coal, any challenger from inside the Democratic Party or from the Republican Party would spend substantial time and money focusing the voters' attention on that issue. Lawrence, as all great politicians have known, if he was going to antagonize a core group of supporters, he would simply need to develop another core if he hoped to win re-election.

Lawrence sought the support of the middle to upper class neighborhoods of Pittsburgh's South Hills and East End, which foreshadowed the American middle and upper class shifting priorities towards environmental issues. These neighborhoods had traditionally been beds of Republican support. But, as Lawrence perceived the threat to his re-election these neighborhoods' support were increasingly courted and the strategy paid off its expected dividends, Lawrence's closest re-election.

This is not the end of Pittsburgh's environmental history or the unit. But, as the environmental movement asked people to think global and act local, so will the unit. Students will then move to create the forth part of the unit as they research the impact of the school cafeteria on the environment and they can work to lessen that impact on a small part of their world.

## **Objectives**

### **Overall Goals**

My unit seeks to have the students gain knowledge of their city's environmental past and how those issues have been dealt with and continue to be dealt with within the city. The knowledge gained will build upon the current district curriculum for eighth grade American History where as part of the curriculum the students examine the Industrial Revolution. In addition the students will understand their place in the current environmental history of Pittsburgh and how they affect it positively and negatively.

### **Specific Goals**

Students will be able to identify and describe Andrew Carnegie's role in the Industrial Revolution, the impact of the Industrial Revolution on people and the environment, and Pittsburgh's Renaissance.

## **Standards Achieved**

Through the completion of this unit the students shall achieve the following district Social Studies Standards:

#1 All students will demonstrate an understanding of major events, cultures, groups, and individuals in historic development of the United States and describe the patterns of historical development.

#2 All students demonstrate understanding of the themes and patterns of geography, know the location of major bodies of water and landmasses and describe the relationship between geography and historical, economic and cultural development of the United States.

#3 All students describe the development and operations of economic, political, legal and governmental systems in the United States and assess their own relationship of those systems.

#4 All students examine and evaluate problems facing citizens in the United States by incorporating concepts and methods of inquiry of the various social sciences.

#5 All students develop and defend a position on current issues confronting the United States conducting research, analyzing alternatives, organizing evidence and arguments, and making oral presentations.

## **Strategies**

The underlying philosophy of the unit will be based around the idea that much of the world around us has been determined by generations past and that we will make decisions that will affect generations to come. The finished unit will be integrated into an 8<sup>th</sup> grade American History course. The unit will consist of four mini-units that will look at four different aspects of Pittsburgh's Environmental History, Present, and Future.

## **Andrew Carnegie's Dilemma**

In first mini-unit the students will take part in a simulation activity. The activity will place the students in the "shoes" of Andrew Carnegie. The students will have to make production decisions based upon several factors; cost, competitiveness, and workers' pay. Each decision will be based upon decisions that Carnegie faced or may have faced. The students will then examine the impact of their decisions in terms of costs versus benefit. How did their decisions affect their costs, their employees, and the environment? Their goal will be to make a profit, as was Carnegie's. Students in this exercise will work without regard to the environmental impact of the decisions, much like the era. We will then examine the choices they made and compare them to the decisions that Carnegie made.

## **Impact of the Industrial Revolution on Pittsburgh**

In this second part of the unit the students will examine pictures from the late nineteenth century through the mid-twentieth century that show the impacts of the smoke created by the large use of coal in the mills, railroads, and homes. The students will describe the pictures and put themselves in

the shoes of the average worker to understand the love-hate relationship that Pittsburgh had with its pollution. Creating historic fiction based upon the pictures.

### **Pittsburgh's Renaissance**

In this section of the unit the students will role-play the groups that were involved in bringing about smoke control legislation. They will each represent a different group with different interests. They will have to explain their interests to the group and why they oppose or support smoke control. They will then have to come to an agreement within their groups as to how they will deal with the smoke.

### **Today and Tomorrow**

In the forth mini-unit the students will work on an applied learning project that will measure the impact of waste in the school's cafeteria and how to lower it and the school's environmental impact. Students will create a report that summarizes the impact of the school's cafeteria on the environment, create a plan to improve upon the results and then work to implement the plan.

To do this, students will examine the trash content in the school cafeteria. The students will inventory the content of the trash and write a report of the their findings. Groups of students will then investigate to find out what the discarded products were where they were from, what they were made out of and how much they cost. The students will prepare a report and present on the results of their findings to show the resources that were required to produce the goods and what their impacts are on the environment.

The students will then create a plan to lower the environmental impact of the cafeteria. This will be on three levels, what can the teachers/administrators do, what can students do, and what can the board of education do?

### **Final Evaluation**

At the conclusion of the unit the students will be assigned a take home essay to answer the following question. Pittsburgh has undergone significant changes since the inception of the industrial revolution, that have both benefited and hurt the city. Do you agree or disagree with Thomas Jefferson's assertion that decisions made by one generation should not affect another? In your answer be sure to include evidence that shows the progression of Pittsburgh's environmental history and the results of our own school study.

### **Classroom Activities**

#### **Example Lesson Plan: 1 Andrew Carnegie's Dilemma**

##### *Objective*

The student will be able to identify and describe the impact of Andrew Carnegie on Pittsburgh during the Industrial Revolution and why he made those decisions.

### *Standards Achieved*

#1 All students will demonstrate an understanding of major events, cultures, groups, and individuals in historic development of the United States and describe the patterns of historical development.

#2 All students demonstrate understanding of the themes and patterns of geography, know the location of major bodies of water and landmasses and describe the relationship between geography and historical, economic and cultural development of the United States.

#3 All students describe the development and operations of economic, political, legal and governmental systems in the United States and assess their own relationship of those systems.

#4 All students examine and evaluate problems facing citizens in the United States by incorporating concepts and methods of inquiry of the various social sciences.

#5 All students develop and defend a position on current issues confronting the United States conducting research, analyzing alternatives, organizing evidence and arguments, and making oral presentations.

### *Materials*

The teacher will need Andrew Carnegie's Dilemma Worksheet and the Environmental Impact Evaluation Worksheet. In addition see bibliography for background information on the topic.

### *Lesson Description*

This lesson will last approximately three to six class periods. The students will make decisions about producing steel that would have been similar to decisions Carnegie would have made. Their goal will be to make as much of a profit as they can. The second half of the lesson they will evaluate their decisions and gage their impact on the environment. This will then lead into part two of the unit that examines the impact of the Industrial Revolution.

Students will be given Andrew Carnegie's Dilemma Worksheet. This worksheet will set the scene for the student. They will be placed in the shoes of Andrew Carnegie and asked to make a profit in the steel industry. They will make decisions about where to produce the steel, who to buy the raw materials from, what to pay the workers, and what types of machinery to use in the plants. Students will be given formula's to figure out how much money they made as they ran the steel mill.

The students will then be given an evaluation worksheet so that they may evaluate the decisions that they have made to gage there impact on the environment.

### *Evaluations*

Students will complete the worksheets for themselves as they work through the simulation project. They will later use the information gained from the experience in the unit-culminating essay.

### **Example Lesson Plan 2: A picture is worth a thousand words**

## *Objective*

Students will be able to identify and describe the impact of pollution on the average Pittsburghers life in the late 19<sup>th</sup> and early 20<sup>th</sup> century.

## *Standards Achieved*

#1 All students will demonstrate an understanding of major events, cultures, groups, and individuals in historic development of the United States and describe the patterns of historical development.

#2 All students demonstrate understanding of the themes and patterns of geography, know the location of major bodies of water and landmasses and describe the relationship between geography and historical, economic and cultural development of the United States.

#3 All students describe the development and operations of economic, political, legal and governmental systems in the United States and assess their own relationship of those systems.

#4 All students examine and evaluate problems facing citizens in the United States by incorporating concepts and methods of inquiry of the various social sciences.

#5 All students develop and defend a position on current issues confronting the United States conducting research, analyzing alternatives, organizing evidence and arguments, and making oral presentations.

## *Materials*

Students will need pictures of the time period. This can range from a single print to having the students choose out of a book of prints such as in *Pittsburgh Revealed*.

## *Lesson Description*

This lesson should take one to two class periods. Students will begin with a discussion of Andrew Carnegie's Dilemma Lesson by making predicts on how the use of raw materials might affect the environment. Students will then be asked how we know what it was like to live in a certain time period. Answers that the teacher should look for are diaries, pictures, paintings, letters, novels, and such. Students will then either be assigned a picture or allowed to choose a picture depending on the availability of pictures and the size of the class. Their assignment will be to create an historic fiction based upon the picture. They must make themselves a character in the picture and describe what their job is and describe the environment around them is like. Students will be asked to write a minimum of two pages on the topic.

The lesson will be concluded by having a group of students read their pieces aloud with the class and discussing them to get a group consensus of what it must have been like to live in Pittsburgh during this era. Students will be given notes and data to support the fictional pieces that they created.

## *Evaluations*

Students will use the notes and discussion topics to incorporate into the unit-culminating essay.

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