

ENVIRONMENTAL JUSTICE

"He who refuses to remedy a wrong is guilty of a second wrong." –*Mencius, "The Second Sage" (372-289 B.C.)*



A Contextual Teaching & Learning Case Study Activity On the Theme of Environmental Justice

Overarching question for study: *Does the decline of a local neighborhood represent an environmental injustice caused by pollution or some other environmental factor, or are other causes responsible for the neighborhood's condition, such as general economic downturn in the community (i.e., market, production problems such as supply shortages or labor strikes) or natural disasters (e.g., flood, fire, tornado)?*

Origin of the Activity: One of the groups of science, math, and environmental teachers participating in the 2000 ATEEC Fellows Institute was assigned the task of developing a contextual teaching and learning activity on Environmental Justice (EJ) to use with high school or associate degree students.

To begin their design of the activity, the teachers identified local Brownfield and Superfund sites by talking to local residents of the community, searching the Internet, and delving into EPA's Brownfield web site (<http://www.epa.gov/brownfields/>) and the US Geological Survey web site (<http://water.usgs.gov/>). From these inquiries, the team selected for their case study a neighborhood by the Rath Meatpacking Plant—a Brownfield according to the EPA—and by the Waterloo Coal Gasification Plant—a former Superfund site.

The teachers worked their way through online data collection, city government contacts, and interviews with neighbors. Through this process, they developed the “Rath Neighborhood Case Study,” with the intention that the case study may stimulate ideas for teachers and students in their own communities.

In approximately five days during the Institute, the group collected data, wrote the case study, and prepared their presentation for other Fellows Institute teachers. Afterward, they felt the most important considerations to pass along to learners are these:

Activity Goal: Identify and describe issues from various stakeholders' point of view.

- Identify the positive and negative environmental impacts
- Identify the positive and negative economic benefits for different groups in the neighborhood, keeping in mind that one stakeholder group may benefit at the expense of another group.

Thus, the goal of this particular environmental justice activity is for students to identify and describe issues from various stakeholders' point of view.

Designing a CTL Environmental Justice Activity for Your Students: In this contextual teaching and learning activity, students will identify a local blighted area, which may be a Brownfield site, a Superfund site, or an industrial area close to a residential area.

- Invite a guest speaker who has an appropriate background in communications to prepare students for interviewing the stakeholders in city government, the neighborhood, etc.
- Using multiple resources in their community and on the Internet, students gather data about the chosen neighborhood.
- Read about the principles and issues concerning the Environmental Justice movement. One possibility is the National Academy Press book, *Toward Environmental Justice: Research, Education, and Health Policy Needs*, available online (text box).
- Arrange a field trip to see the site firsthand. Consider interviewing local residents and city personnel. (For the high school level, this part of the activity would require support of parents and the school administration.)
- With all their information gathered and synthesized, student teams create class products to share their findings and their responses to the overarching question (see page 1 of this file): for

Read this book online for free:

Toward Environmental Justice: Research, Education, and Health Policy Needs (National Academy Press)

Introduction: Driven by community-based organizations and supported by a growing body of literature, the environmental justice movement contends that poor and minority populations are burdened with more than their share of toxic waste, pesticide runoff, and other hazardous byproducts of our modern economic life.

Is environmental degradation worse in poor and minority communities? Do these communities suffer more adverse health effects as a result? The committee addresses these questions and explores how current fragmentation in health policy could be replaced with greater coordination among federal, state, and local parties.

The book is highlighted with case studies from five locations where the committee traveled to hear citizen and researcher testimony. It offers detailed examinations in these areas:

http://www.nap.edu/catalog.php?record_id=6034#toc

example, portfolios, oral presentations, videos, and posters. The students may try a simulated town meeting in which they are assigned the roles of stakeholders in the neighborhood.

- The team feels that this project would reasonably be of a four-week nature, assuming students meet three times a week for an hour a day.
- For a high school class, display any standards and benchmarks pertinent to the class. Have students determine which standards the project addresses plus any standards that the project might address if activities are adjusted for the purpose.
- The “rubric” approach to evaluation allows the teacher to help the students stay mindful of the overarching question and to assess the quantity, quality, and usefulness of their data collection and the attainment of standards and benchmarks. (See last page of this file for access to a comprehensive web site on “Rubrics, Scoring & Grading.”)

The following few pages briefly describe the Rath Neighborhood situation and the Fellows' considerations regarding an environmental justice activity. Because of the Fellows' time limitations at the Institute, they could not collect all the data and determine all the stakeholders for a complete model to show here. These pages are presented to stimulate ideas to be used with a class over a longer time.

Fellows' Commentary on a Rath Neighborhood Activity

Premise

Neighborhoods change through population growth or emigration, economic development or demise, natural disasters, and by other means. Environmental justice is a consideration where groups, often minority populations, are experiencing, or have suffered, environmental inequities as compared to others in the area.

Situation

In 2000, the year of this activity's development, the Rath neighborhood in Waterloo, Iowa, has a high incidence of deteriorated housing stock, many families in poverty, and a higher minority population compared to city averages. The neighborhood is on the periphery of a large tract that was formerly used by a coal gasification plant that has been cleaned up under a Superfund program, and by a large slaughterhouse and meat-processing facility of Rath Meatpacking Company.

Does the situation of the neighborhood represent an **environmental injustice** caused by pollution or some other environmental factor, or are other factors responsible for the neighborhood's condition – economic downturn (i.e., market, production problems such as supply shortages or labor strikes), natural disasters (e.g., floods, fires), etc.?

Study Design

These possible approaches can be taken to study the Rath neighborhood situation:

- Collect empirical data on environmental factors. Assess possible correlations of the factors with inequalities experienced by neighborhood residents;
- Make a historical time-line study with before-and-after data on events, patterns, trends, etc., that indicate possible causes or strong influences on the environmental conditions in the neighborhood.

Both approaches involve geographical boundaries. In this study the railroad tracks, Mobile and Cottage Streets, and the Rath company tract lines are the traditional boundaries that date to about 1910. That era is when ethnic groups began arriving to work at the Illinois Central Railroad, the Rath packing plant, other industrial facilities, and later the coal gasification plant.

Some factors and impacts (e.g., pollutants, worker residences) can go beyond the neighborhood boundaries, and accordingly can affect the study design.

In the empirical data option the following studies are possibilities for consideration:

- Soil and blood sampling with analyses of a persistent, polluting chemical that is relatively unique to the area, if one exists. This sampling can be conducted in accordance with distances from the points of pollutant generation (e.g., radial distances from the coal gasification and meat packing plants). This sampling needs to reflect local physical conditions, as along a corridor downwind from potential atmospheric emissions from the coal gasification plant, or water channels downstream from the Rath wastewater outfall into the Cedar River. (Note: For these types of studies, students may need to participate under a project conducted under environmental monitoring organizations, health department officials, and others.)
- The correlation studies essentially require survey research or other data (e.g., Census information on residents in the Rath Neighborhood and elsewhere in the city), data on property values and plat sales, health information, etc., followed by statistical analyses. The studies may involve separate samples from the neighborhood and surrounding city, with statistical tests for significant differences performed. Depending upon the types of data collected, various statistical measures can be used (e.g., Chi square, regression coefficients, etc.) Of interest are correlations that suggest association among factors, even cause-and-effect relationships.

The historical time-line study is important both for revealing new factors that can affect environments, and for showing their times of potential interaction and impact. This can guide the selection of particular Census information that may show before-and-after consequences of events (e.g., a disastrous fire or flood that severely disrupts a dominating place of employment or major residential areas), or declining health of residents following the occurrence of pollution). The information for the historical time-line study is diverse. It may include interviews with residents and officials, books, reports, maps, media pieces, photographs, remote-sensing images, Geographic Information System files, etc.

The principal aim of the exercise is the development of skills and insights for students through the inquiry and discovery process, not the end product. Absolute determinations on environmental justice are not possible in many studies. It is likely that the Rath Neighborhood situation is not an instance of environmental injustice; socio-demographic coincidence and demise of elements of the economy (i.e., the Rath and coal gasification plants) are the main factors responsible for present circumstances.

Our research was accomplished using these general resources:

- Internet
- City Planning and Development Department
- Colleagues
- Media Sources
- Local and Industrial Experts
- Publications

- Conrad, Rebecca, Principle Investigator, October 1991. Rath Packing Company, Waterloo, IA. Historic Resource Evaluation under 36 CFR 800. PHR Associates: Lake View, IA.
- Long, Barbara Beving, 1986. Waterloo Factory City of Iowa. Midland Research: Des Moines, IA.
- “Proposed EPA Brownsfields Assessment Demonstration Pilot, Roth Neighborhood Area near Cedar River”, February 2000. Quick Reference Fact Sheet, City of Waterloo.
- Land Use Policy Plan, July 1987. Planning, Programming, and Zoning Commission, City of Waterloo: Waterloo, IA.
- “Population and Housing Characteristics for Census Tracts and Block Numbering Areas, Waterloo-Cedar Falls IA, USA.” Bureau of the Census, Economics and Statistics Administration, U.S. Department of Commerce: pp. 84-88, 92-93.

Population data were searched at ArcData OnLine (ESRI's Internet Mapping and Data web site. Examples of census data w as follows:

POPULATION PERCENTAGES OF WATERLOO, IA				
<u>YEAR</u>	<u>WHITE</u>	<u>BLACK</u>	<u>OTHER NON-WHITE</u>	
1980	88%	11%	1%	
1990 (TOTAL)	87%	12%	1%	
1990 (ROTH AREA)	65%	33%	2%	

Figure 1: 1980 and 1990 Census Data of Waterloo

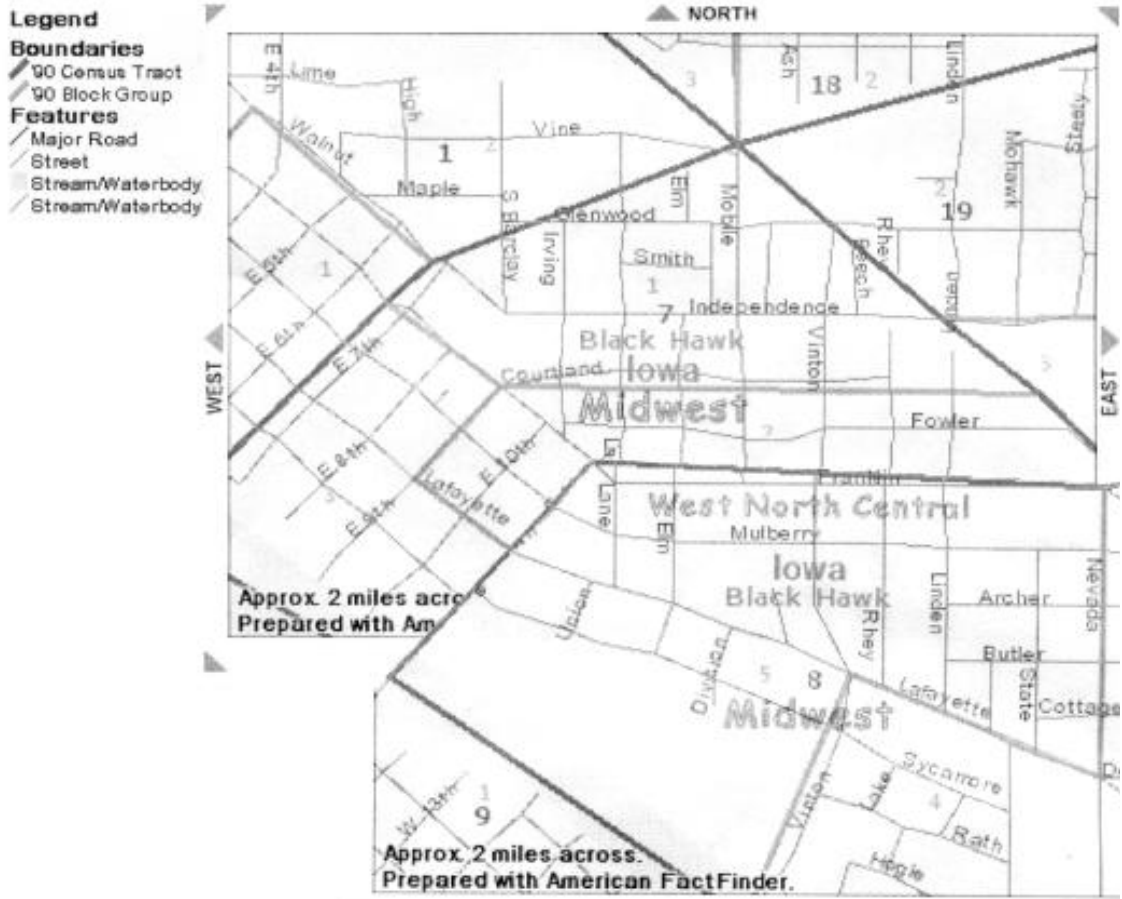


Figure 3: Rath Area Census Tract

Resources

Census Data Web Sites

- Census data can be found through a variety of websites, such as the U.S. Census Bureau, (<http://www.census.gov/>), Federal Agency Stats, (<http://www.fedstats.gov/>), or Healthfinder™ (<http://www.healthfinder.org/>).

Multimedia

- "Brownfields in a Box" CD ROM, ATEEC, 2000. On the ATEEC web site, go to menu > Products.

Data Sources Information Available on the Internet

- ARCDATA geographic information systems available on-line, <http://www.esri.com/data/>

Authentic Assessment Resources

- "2Learn" (Canada), <http://www.2learn.ca/profgrowth/assessmentindex.html>
- "Critical Issues/Essays on Assessment, North Central Regional Educational Laboratory," <http://www.ncrel.org/sdrs/areas/as0cont.htm>

Information on Developing and Using Rubrics

- "Rubrics, Scoring & Grading." Michigan Engineering -Teaching at the College web site. Accessed January 12, 2007. http://www.engin.umich.edu/teaching/assess_and_improve/handbook/direct/rubric.html