

Review

Pacoima Beautiful: Using GIS as a form Sustainability Education to Combat Environmental Injustice

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Accepted 15th July, 2014

The study of environmental injustice explores environmental inequalities impacting people marginalized on a variety of characteristics namely class/income, race as well as gender, sexual orientation, and age. In the last decade, there has been an increase in the number of nonprofit and nongovernmental organizations that address these issues. Nevertheless, GIS education has rarely been considered or applied as a tool to combat environmental injustices in affected communities. This paper focuses on environmental injustice in one specific city/suburb in Los Angeles: Pacoima and one particular non-profit organization: Pacoima Beautiful. It begins by examining the structural causes of this inequality by exploring the political economy of low-income Latino communities and their geographical expression. It then centers on how Geographic Information Systems (GIS) education could be used at a local level (with the help of non-profits) as a form of social justice activism to contest environmental injustices in this community.

Keywords: Geographic Information Systems, Pacoima, Education, Environmental Injustice

INTRODUCTION

Pacoima is a low-income, working-class community in the Northeast San Fernando Valley covering six square miles at the base of the San Gabriel Mountains. Located in close proximity to 30 landfills, the community is surrounded by three major freeways with a high volume of diesel truck traffic, a railroad line, Whiteman airport and is subject to emissions from numerous toxic risks. As a result, Pacoima has long suffered from environmental neglect, the cause for high rates of environmental health risks and the numerous sources of pollution and toxic waste. In addition to freeways, the airport, railway line, and the 300 industrial sites that have left contaminants behind, polluting the air, soil and water, Pacoima is home to five US EPA CERCLIS (toxic release) sites, two of which are currently being remediated. Lead in paint and in the soil, emissions from freeways, commuter planes, diesel from trucks and equipment, older 'gross emitting' cars, landfills and the widespread use of toxic chemicals.

Pacoima Beautiful

Pacoima Beautiful is a grassroots, non-profit organization that was initially created to help residents

clean-up post Northridge earthquake but came to promote sustainable education and environmental health for the community. Sustainability and environmental justice education includes leadership skills, environmental advocacy and environmental policy. The organization secured a grant from the United States Environmental Protection Agency (EPA) through the CARE (Community Action for a Renewed Environment Program) and officially became established in 1996. Although the EPA had specific expectations, at no time did Pacoima Beautiful deviate from its own agenda. This is on account of developing a specific plan and guidelines by which to use its funding.

The prospect of partnerships with local non-profit organizations including universities and patronage from public agencies and foundations had inspired dialogues around planning Pacoima Beautiful's future as a sustainable education organization. This was especially critical considering it was a trans-migrant community at a time when the American environmental movement was facing a national debate on issues of population and immigration (Faber, 1998). In 1998, the US EPA Environmental Justice Office provided a grant to Pacoima Beautiful in partnership with university-based

researchers, which focused on increasing residents' and local students' awareness of the effects of toxic dumping within their community. Soon thereafter, Pacoima Beautiful's staff members and volunteers were encouraged to learn more about and incorporate the environmental justice movement (Faber 1998, Gottlieb Zool, Bullard et al 2007). In particular, the grant was used to expand the partners' efforts in monitoring pollution, to educate residents and local high school students through a newsletter distributed through neighborhood schools. It emphasized the widespread illegal dumping practices of local residents, businesses, and others who had viewed Pacoima as a dumping ground. Therefore, residents and students, alike are learning how to identify sources of toxics and pollution in the community and the potential risks to their health.

In 2003, Pacoima Beautiful hosted an "Environmental Health Roundtable" for forty community stakeholders, including non-profit and public health agencies, legal services and university scientists, to share what was learned about environmental health issues and how to incorporate environmental justice and sustainability in education. The first goal was to apply for a US EPA Collaborative Problem Solving Grant which would allow educating and providing health (primarily lead blood) screening tests for children aged six and under.

The project's aim was to integrate health hazards in high-risk neighborhoods and present workable solutions to reduce toxic (lead) burdens. This was done by analyzing current data and then holding a stakeholder forum regarding environmental health problems (focusing on lead poisoning), community development and educational awareness.

GIS

By working for the organization, I was able to teach the basic skills of GIS so students could map environmental issues in the community. These maps could then be used to show stakeholders where and to what extent environmental issues in the community were taking place. I worked with students to decide which stakeholders to approach first. It was important to consider who set priorities to develop sustainable strategies and an eventual broad-based action research agenda. This agenda would identify toxic substances and help students and residents understand the health implications of potential toxic risks. Only then could residents work towards ameliorating those health risks. The process of community-based participatory activism and action research together with public policy describes how non-profit educational organizations such as Pacoima Beautiful could use GIS as a strategy to help improve long-term community environmental injustices.

In particular, as a teacher for Pacoima Beautiful, I helped design a participatory evaluation approach using

GIS. This combined teaching the ethos of community-based participatory action research with public policy and qualitative methods (unstructured interviews and surveys). Based on some of this work, the evaluation team provided a framework for reporting progress. Pacoima Beautiful reports included developing a platform of an environmental issue that a team of five students worked on. These teams worked on developing guidelines for a report. The team would then conduct research in the field. It was crucial for the students to develop a unique voice in explaining the study results and their meaning (Figure 1 GIS).

By working with community residents and students from San Fernando High School, we created a network that helped us (myself and the students) gather data to understand the effects of environmental hazards on health. The data collection was coupled with more than 1,000 resident surveys.

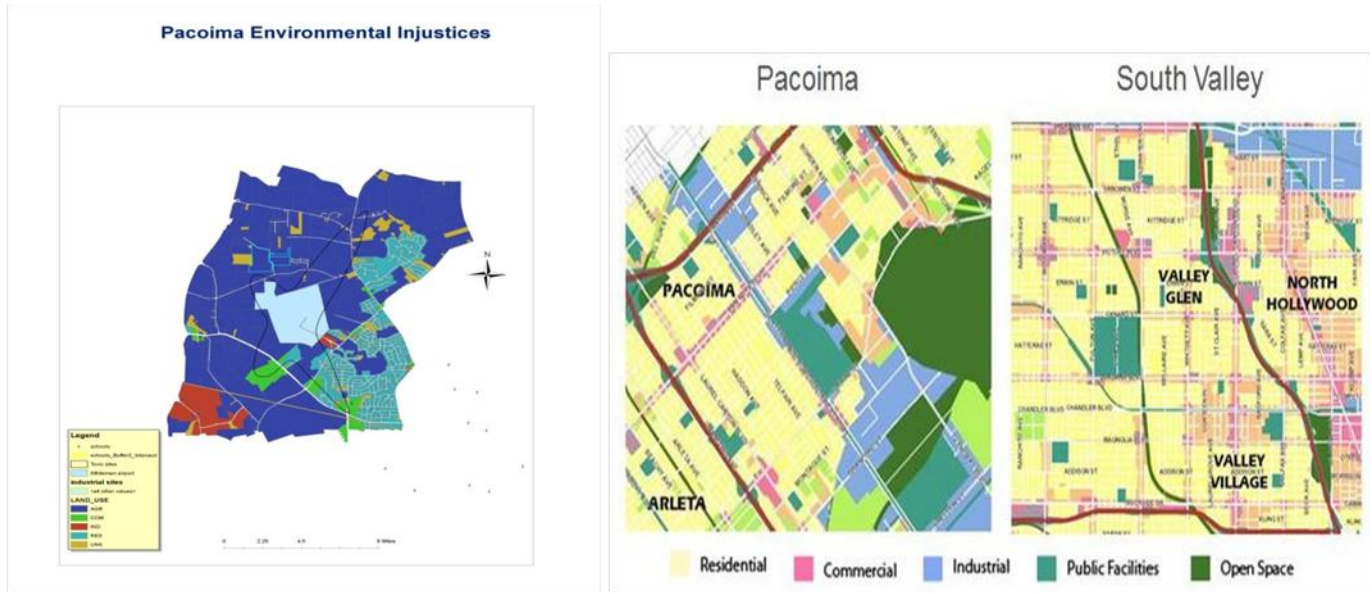
One example of how we used GIS was looking at lead-safe work repair practices and mapping pre-1978 housing. This came to be helpful to policy makers as well as educating contractors, workers, landlords, and homeowners in lead-safe work practices and work with city government to develop a housing registry for lead-free homes and apartments. The US EPA CARE Level 1 program identifies toxics in the community to address scientific issues (i.e. monitor all diesel sources in the community). I used GIS to teach how to identify and map potential toxic sites (facilities listed in the US EPA Toxic Release Inventory).

One of my main methodologies was taking students to the illegal dumping sites in Pacoima. This enabled students to map and draft environmental audits that deal with environmental problems, industrial-residential relations, land-use, enforcement and zoning. These drafts include discussions with inspectors and modifications based on the group's suggestions such as developing a Spanish-language version of the survey (Pacoima is currently about 85 percent Latino).

Students continue to map sites of environmental pollution in Pacoima using GIS. One of the first ways in which we used GIS was displaying results of the community inspector reports visually. This formed the basis of a website containing a map locating pollution risks and hazards which can be updated continuously and used for reporting purposes.

One of the main goals continue to be developing and teaching about an ongoing community monitoring system for toxic dumping, solid waste disposal, hazardous housing conditions, safety in the community, parks and residential areas, and environmental health and safety of residents.

Teaching about collaborative efforts using GIS has been one of the most effective ways of reducing toxic exposures and environmental injustices in the community. It has resulted in local level coalitions between businesses, government, non-profits, and universities to implement sustainable changes.



GIS

Furthermore, teaching about how to identify issues through an education-based nonprofit organization helped engage others in the community to address issues and sustain an effort to combat environmental injustices through sustainable practices.

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