



GET CITY - Green Energy Technology at the Boys and Girls Club of Lansing

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Objectives

To provide low-income and minority youth from Lansing youth a year round science and engineering program focused on green energy through application of advanced IT skills.

· To investigate how a university-community-business partnership program fosters youth knowledge and skills in the areas of energy production and sustainability in the urban center & greater awareness and communication around the energy issues that face cities and around STEM trajectories for youth in IT, engineering, and energy production and sustainability

Business & Community Partners: Lansing Board of Water and Light & Michigan Energy Options

Program Design

GET City consists of a set of *six integrated* components, which include:

- 1. Year-round Program: Two year cycle (280 hours) emphasizing energy technology themes.
- 2. Mentors
- **Community Energy Events** 3.
- Parent involvement 4.
- Youth-designed Website: http://getcity.org 5.
- Youth Leaders 6.



		Units	IT Skills			Cross Cutting Content Big Ideas
	•	How healthy is Lansing? Investigate and model the relationship between energy use and the environment through urban heat islands. The Energy Crisis!: Investigate and	Data gathering and analysis: GIS, Digital Probes, MS Excel, Digital photography & video editing,	Energy and its forms	:	Energy is the ability to do work Energy can be changed into many forms (stored & moving) Electrical energy can be generated in a variety of ways. Each method has its economic, environmental, and physical advantages and disadvantages.
Votes 1	•	model Lansing's energy production and demand and its relationship to the carbon footprint. Taking action Part I: How can we save energy? Energy conservation & efficiency in the local community: audits, practices & policies.	Electronic concept mapping; on-line survey technology; <i>Communication</i> : Web design; i-movie	Energy and the environment	•	Traditional electricity production emits pollutants (carbon emissions & particulate) that can cause health & environmental problems Increased use of electricity impacts the environment. Renewable vs. non-renewable energy sources; Clean burning versus non clean burning versus non clean burning versus non clean burning trens non-renewable energy sources;
	•	Green Jobs: Investigating the role of green energy technologies in the current job and market place Should Lansing build a new power	Data gathering and analysis: Accessing & analyzing local and national	Energy technologies	•	Comparing and contrasting forms of renewable energy: biomass, wind, solar (efficiency, effectiveness in Lansing, harvesting, carbon emission Energy conversion (from electricity or hydrogen as intermediate forms
Van 7	-	plant? Arguments a coal/biomass hybrid power plant & the science of renewable energy and its connection to climate change. Taking Action Part II: Green Design. Investigate green design through the case study of green roofs in and around Lansing.	databases; Advancing with GIS, Digital Probes, MS Excel, Digital photography & and video capture <i>Communication</i> : Blogging; podcasting; advancing with video editing : inovie	Climate change & Environment Sustainability	:	Humans can take action to reduce climate change and its impacts Humans may be able to mitigate climate change by reducing greenhous gas concentrations through processes that reduce carbon emissions A combination of strategies is needed to reduce greenhouse gas emissions. The most immediate strategy is concervation of oil, gas and coal, including short term (renewable and alternative sources) and long term (change in how humans use energy) strategies. Actions taken by individuals, communities, states, & countries all influence climate.

Research Design

Research Questions Program Evaluation

•To what extent was GC implemented successfully each year and over time? What adaptations occurred? What factors supported and impeded implementation? In what ways do participating students: grow in their knowledge & confidence of IT? exhibit interest in pursuing careers related to science and IT?

Research into student learning

What forms of knowledge, identity, & engagement frame youth's changing participation in energy and IT? . How do youth articulate the relationship between green energy and environmental sustainability (i.e., climate change), seek to acquire new information about it, and take a stand in their community?



Quantitative: Pre/Post instruments on Knowledge Attitudes Values

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The youth in GET City take up the identity and practice of a **Community Science Expert** [CSE] when given opportunities to engage in authentic IT driven activities Engaging in rigorous science conten exploration Situating rigorous science content in their community with onsite investigations draw

upon local knowledge and experience themselves as knowledgeable in green energy science Taking Up an Expert Stance: concepts and practices. They Supporting scientific accounts with multiple representations take positions within the community that allow them to act upon this knowledge.

The youth position

Detailed scientific accounts using hybrid Work ethic of an expert

Authentic audience

Deve are un

Making the [urban heat island] movie made me feel... it made me feel good to know that I am a super starrer! And I am a movie starrer! And it made me feel really good that I could do a lot of work, and that I'm really not lazy! Ok, I like the people to think of me as a smart intelligent person, that knows what she's talking about. And, and to think that she's very smart and intelligent.

This is are reporter Ron. Boys and Grits Club News. I am surprised that people don't link link is an urban heat Island. Right now you can actually see the basic cannot believe that. The people around here are so unknowledged. We should really do something about this. Heve a heat island awareness day Yah. This is fon Brown, from Boys and Grits Cub News signing Grit Cach you on the flip set for Brown. For the flips and calls cub News signing Grit Cach you can the flip set and the source believe that the people around the set specified for the flip set on Brown. For the source of the set of the --UHI Documentary. We're Hot! What about You?

Calabrase Barton, A. & Tan, E. (2010). We be burning: Agency, Identity and Science Learning Journal of the Learning Sciences... Calabrase Barton, A. & Tan, E. (in press). The Evolution of Da Heat: Making a Case for Scientific and Technology Latence, Among and Science (Ed.). Immaniforal Technology Hardbook. Amondarias: Smora Publishem.