Engage Students in Social Studies by Reaching Out to the Science Teacher Across the Hall

Shannon Salter (the social studies teacher),
Building 21 High School, Allentown, PA

Ian Hanson (the science teacher)
Alexis I DuPont High School, Wilmington, DE

Getting to know you:

- Change your name to give us your first name, grade and subject taught

- Using chat, describe one way you have incorporated a science topic in your social studies instruction (it's ok if the answer is "never!")

TODAY, WE STUDY SCIENCE!
NO...I WANT TO STUDY SOCIAL STUDIES!
imgflip.com

ONE DOES NOT SIMPLY
MIX SOCIAL STUDIES AND SCIENCE

Reasons why science is missing from social studies classrooms

- It’s someone else’s job!
- If I knew science I wouldn’t be a social studies teacher!
- I get that science has influenced human events, but I don’t feel comfortable to talk about it!
- Science-based policy has become too controversial
- I don’t have time to plan something from scratch

Can you think of times when public policy debates were dependant upon the public's understanding of science?

(use the chat)

What happens when STEM and Humanities don't work together?

"Virus Experts Aren't Getting the Message Out"

The Atlantic, May 6, 2020

What does Science need from Social Studies?

Ian?

Social Studies is how learning leaves the classroom!

Let’s look at this example, combining environmental science with civics...

NCSS C3 Framework:

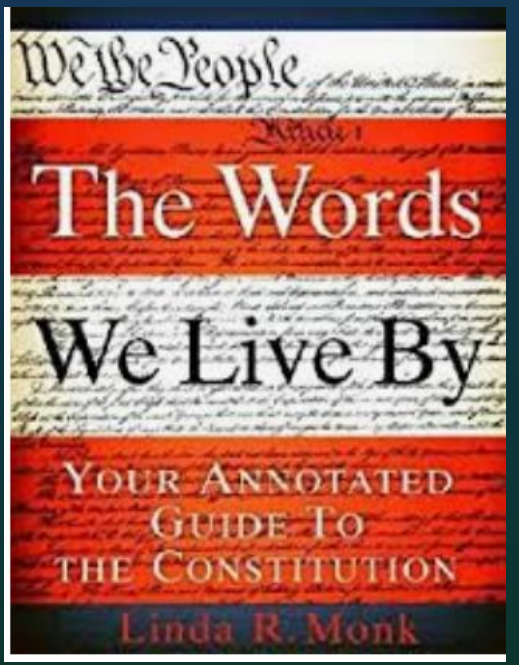
BY THE END OF GRADE 12

D2.Geo.4.9-12. Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences that occur among them.

D2.Geo.5.9-12. Evaluate how political and economic decisions throughout time have influenced cultural and environmental characteristics of various places and regions.

D2.Geo.6.9-12. Evaluate the impact of human settlement activities on the environmental and cultural characteristics of specific places and regions.

Just Ask Linda Monk:

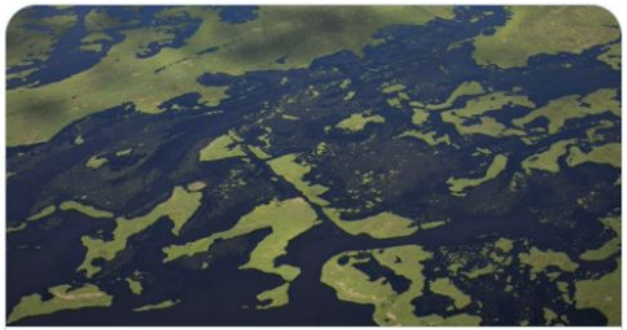


Linda Monk
24.2K Tweets

Tweets | Tweets & replies | Media | Likes

Linda Monk @LindaR... · 10/7/19

Opinion | World leaders are failing our future generations on climate change



Opinion | World leaders are failing our future generations...
washingtonpost.com

2 1

Linda Monk @LindaRMonkJD · Sep 27

Need some feedback from my teacher network for an article I'm working on: how concerned are your students about climate change (is it their #1 issue?) and how do you address it in class? Thanks!

15 6 7

Linda Monk @LindaRMonkJD · Oct 11

For Ts who want to integrate civic action and climate change, here's a field-tested curriculum, along with a T who can answer Qs. eli.lehigh.edu/sesi

Shannon Salter @shannonsalter70 · Oct 11

Replying to @LindaRMonkJD

I'll be at PCSS with this work next Friday. Our team will also be at CUFA and NCSS in November. Our sessions are on other work, but we'd be happy to talk to people.

1 5

Let's Watch Students Change Their World!

Promoting Geospatial Technologies with Socio-Environmental Science Investigations

Shannon Salter[1], Alec Bodzin[2], Tom Hammond[2], Ian Hanson[1] , William Farina[2], Robson Junior[2], Qiong Fu[2], Kate Popejoy[3], David Anastasio[2], Breena Holland[1], Dork Sahagian[1], and Scott Rutzmoser[1],

[1]Building 21 High School, Allentown, PA , [2]Lehigh University
[3]Popejoy STEM, LLC

DRL-1614216

About Our School

- 4 teachers of 9th grade students - urban public school
- All students economically disadvantaged
- 2/3 Hispanic or Latino
- 21% ELL, 19% IEPs
- Many (~10-20%) are unengaged learners
  - Do not complete tasks
  - Avoid challenging work

Sequence of activities

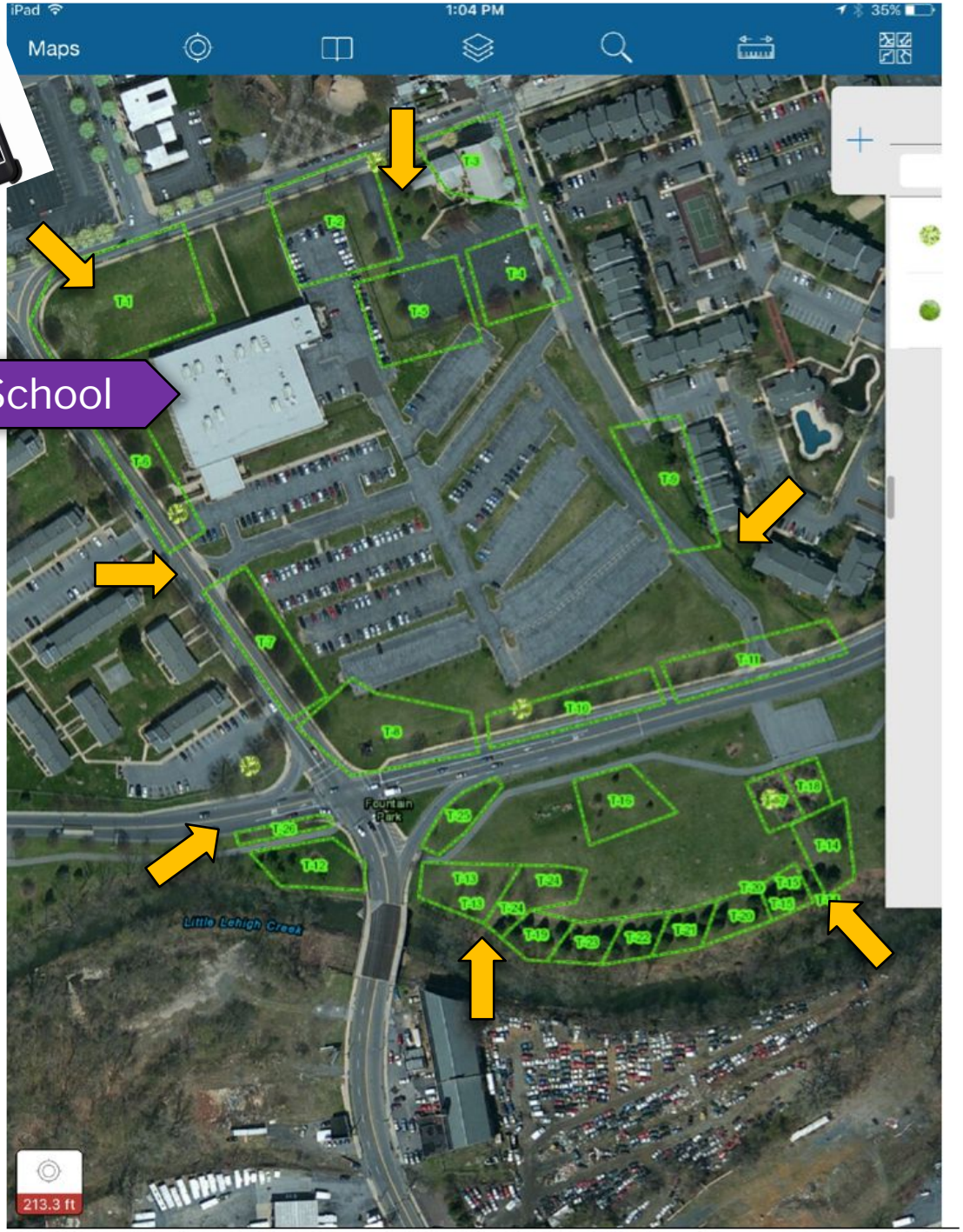
Investigation topics (can be flexibly sequenced):

- Observing: Ecology, built environment (**Sci** & **SS**)
- **Trees & ecological services (Sci & SS)**
- Urban Heat Islands (S**ci**)
- Zoning (**SS**)
- Built Environment activity (**SS**)
- Transportation (**sci** & **SS**)
- Carbon sequestration lab (**sci**)

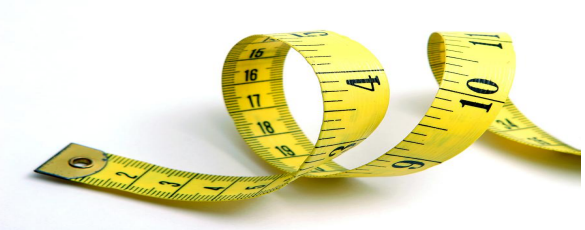
Project topics

- Tree planting
- Culminating project (urban planning for social, environmental, & economic sustainability)

TES Data Gathering Areas



TES Data Gathering Interface



AT&T 5:14 PM 85%

Cancel Submit

Location
No valid Location
98.4 ft

Tree_Observation:

Tree Type
Deciduous (leaves)

Genus

Species

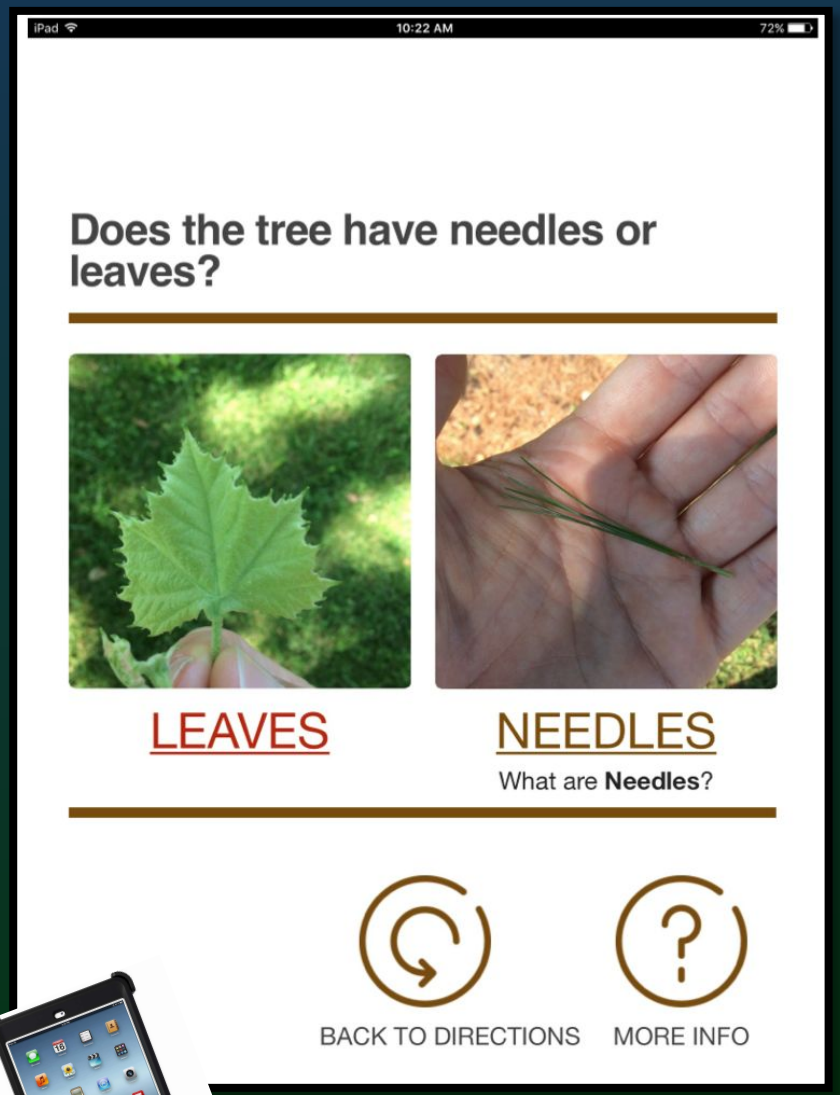
Origin
native

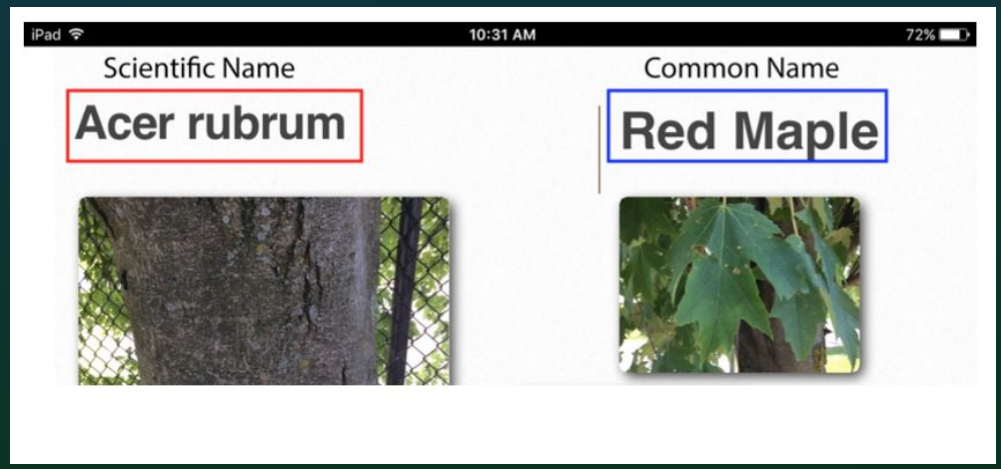
Height meters

Circumference cm

Notes or Observations

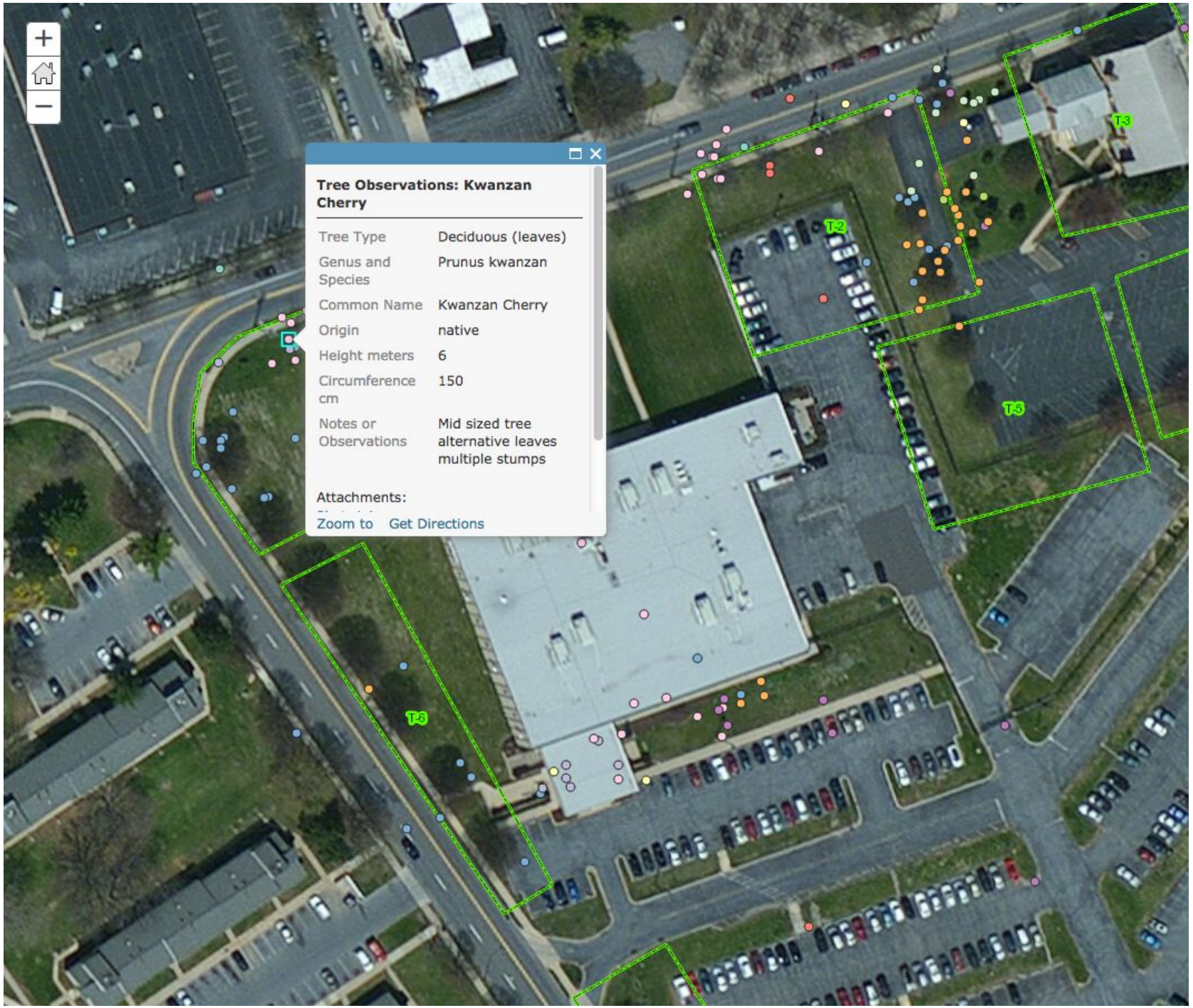
iBook pages


iPad
10:22 AM
72%
Does the tree have needles or leaves?
LEAVES
NEEDLES
What are Needles?
BACK TO DIRECTIONS
MORE INFO


iPad
10:31 AM
72%
Scientific Name
Acer rubrum
Common Name
Red Maple

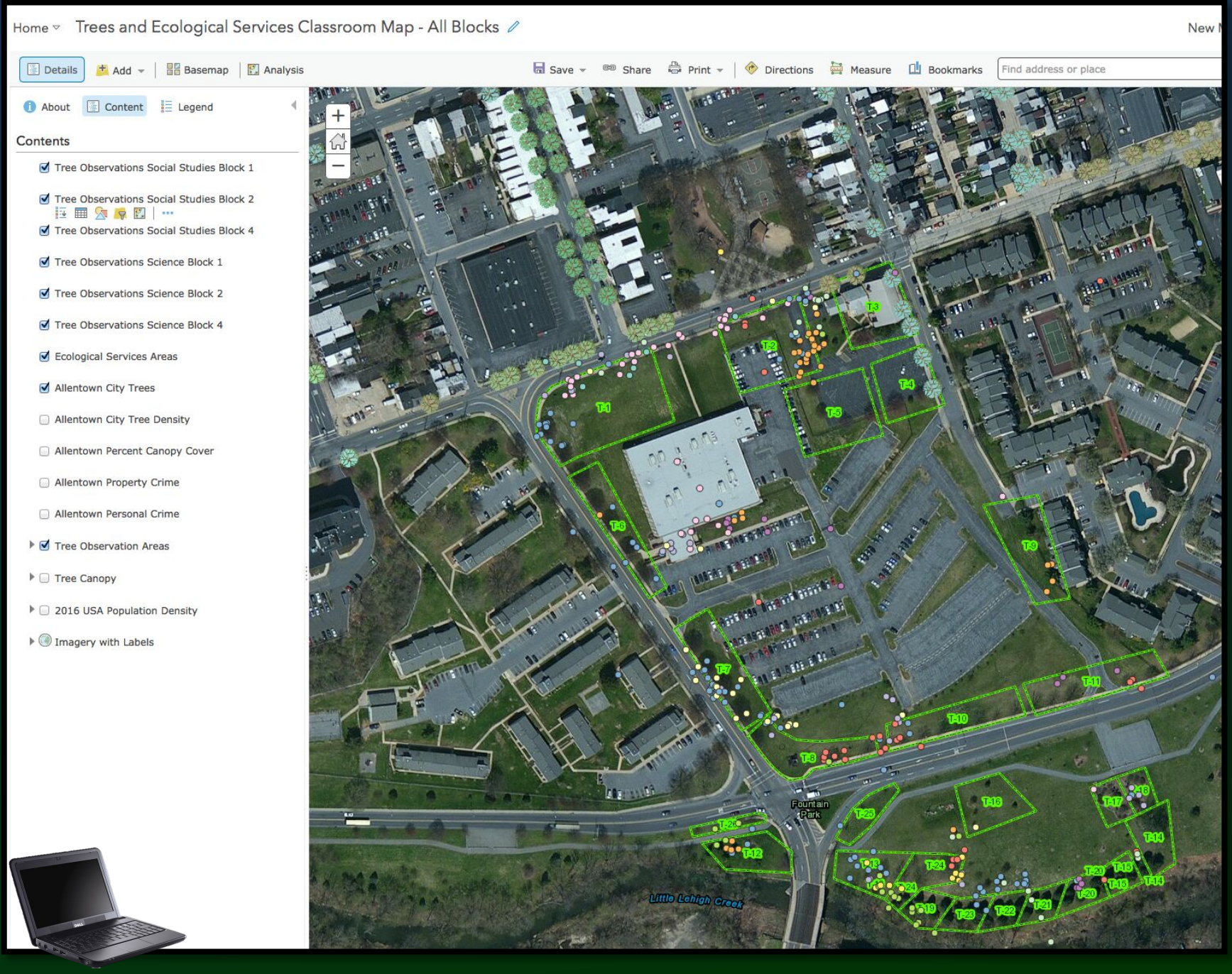
Student Photo

Mentors

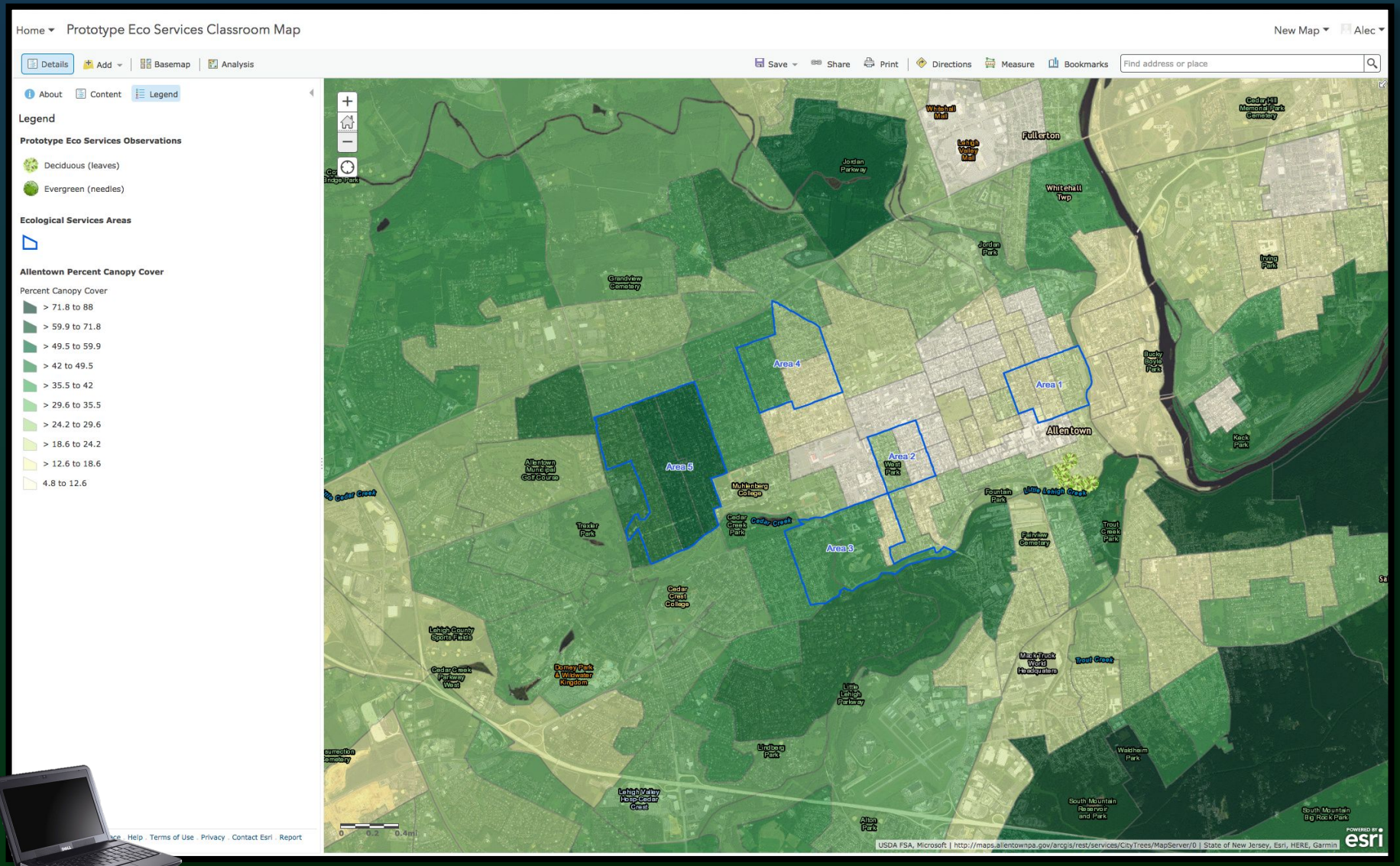


Student Data

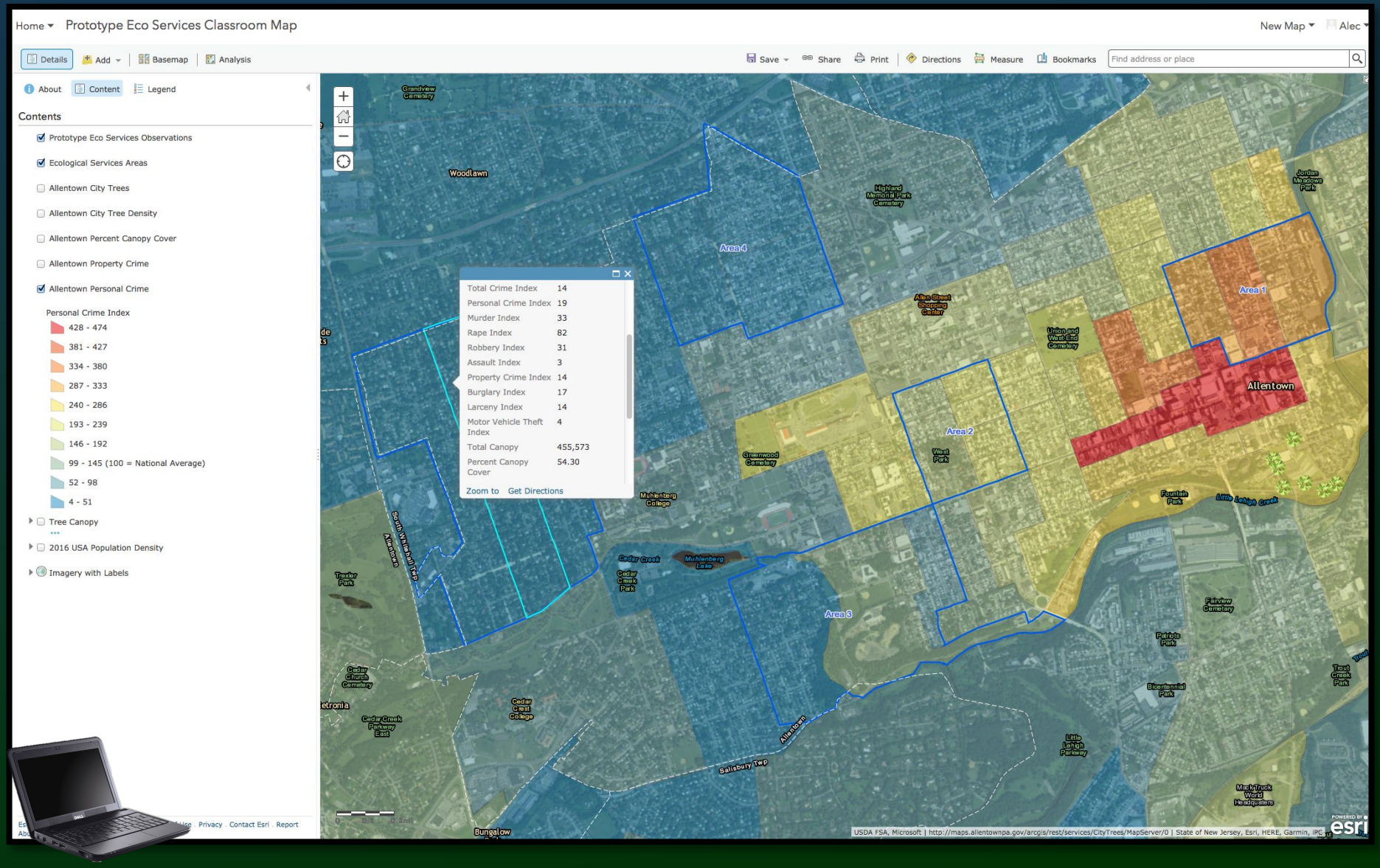
Using Filters for Data Analysis



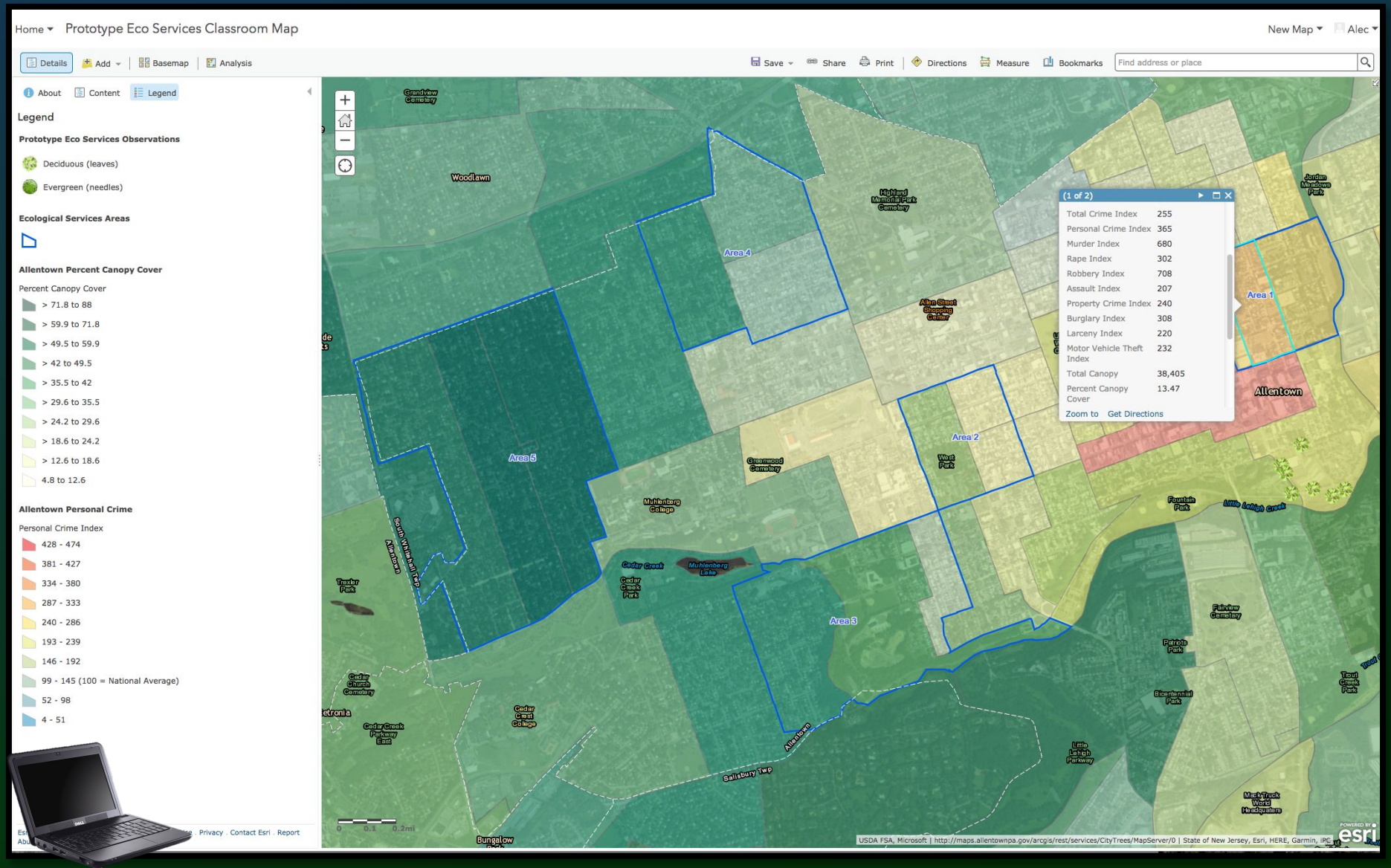
Percent Canopy Layer



Personal and Property Crime Layers



Personal and Property crime and % tree canopy



Data Comparison by Area

12. a. Complete the class table below. You will need the data from other groups in the class.

Area	Property Crime Index (USA Average = 100)	Personal Crime Index (USA Average = 100)	Percent Tree Canopy Cover (Allentown Average = 30%)
1	218.7 ⬆	325.7	17.05% ⬇
2	139	196.3	15.35%
3	73.7	69.3	31.69%
4	45.7	23.7	26.89%
5	25.3 ⬇	22.3	52.94% ⬆

Authentic Culminating Task

Area 6 Tree Planting

Feasible Site Selection

The points in the black oval are the ones being planted in area 6. The pink points are the Kwanzan Cherry Trees and the blue points are the Flowering Dogwood Trees

Authentic Culminating Task

Benefits to the Built Environment

-Trees can create lasting impression on how a community is perceived by visitors and affect the mood and community pride of its residents.

-The feeling of community pride created by trees can help reduce crime.

-By absorbing and deflecting falling rain, trees can reduce the floods.

-Reduces carbon dioxide, dust and other potentially harm gases in the air.

Benefits To The Natural Environment

-Trees can reduce air temperature by blocking sunlight. Further cooling occurs when water evaporates from the leaf surface.

-Trees create an ecosystem to provide habitat and food for birds and other animals.

-Trees absorb carbon dioxide and potentially harmful gases, such as sulfur dioxide, carbon monoxide, from the air and release oxygen.

-Trees cool the air, land and water with shade and moisture thus reduce the heat-island effect of our urban communities.

Authentic Payoff to Place-Based Learning

The work continues

Culminating Project

The city government is creating a new comprehensive plan for future sustainable development and is interested in smart growth.

Students …

Identify locations for reuse of existing sites or changing existing infrastructure.

Identify locations for new development, features, facilities, parks, or open spaces.

Create a Web GIS map for their area that reflects their proposed changes.

Justify their proposed changes with data from the Web GIS.

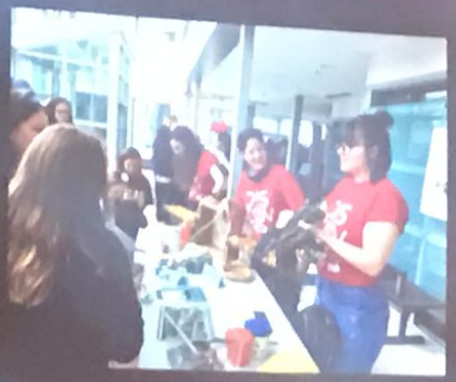
Describe how their proposed changes promote Smart Growth principles for their city.

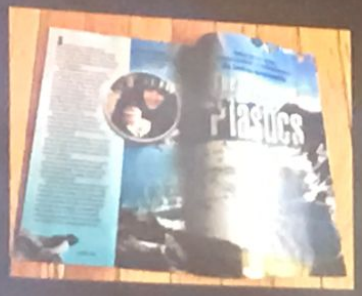
Explain how those changes are environmentally sustainable for their city.

Explain how the city will be more livable for its citizens.

Learning Impact of Cross-Curricular SS/SCI Instruction

- Real world application (authenticity) increased student engagement (“How will I use this in the real world?”
- STEM kids find themselves at home in the SS classroom and vice versa
- ELLs and Diverse Learners benefit from hand on, less text-driven learning activities
- Impact projects attract community partners/resources that support student learning





Science isn't useful unless it's communicated

JUSTINE AMMENDOLIA

Twitter: Jam
Instagram: mendolia

Questions and Comments

SESI materials are available at:

http://eli.lehigh.edu/sesi

Assessment access:

Login: eliteacher Password: 87dja92

Papers and this presentation available at:

https://eli.lehigh.edu/publications/research

For a free ESRI/ArcGIS Educational Account

https://www.esri.com/en-us/industries/education/licensing

ArcGIS

SOCIO-ENVIRONMENTAL SCIENCE INVESTIGATIONS

SESI