LESSON 3

GSI CIVICS: Applications in My City

Problem Statement: How can I apply the practices of engineering design to recommend the best green stormwater infrastructure (GSI) applications for a high priority site in my neighborhood?

Subject: Human Geography, Science, Engineering, Math, Civics, Common Core
Grade Level: Middle School or High Schools

DESCRIPTION

Every city has a Stormwater Management Plan with goals that students can help achieve once we know how it works and where our efforts are needed most.

BACKGROUND

Every city is required by the State Department of Ecology to have a **Stormwater Management Plan.** Sometimes this is called a Surface Water Management Plan. In this plan there is a standard set of BMPs or "best management practices" that each city is required to show progress on. For example, cities are designing ways to promote compact development, reduce impervious surfaces, increase natural areas, plant more trees, protect and restore riparian buffers, and improve water detention and infiltration through green infrastructure strategies. The plan also includes a **component on education and outreach.** That's you!

The questions we want to ask our city…

1. What kinds of GSI strategies have been led by the city or been permitted on private property?
2. Are there before and after photos as well as images of the construction phases that would help us see how it was built?
3. Are there plans or drawings that we could study to understand how the city employed the engineering design practices to implement GSI?

YOUR TASK

1. Search your city website for "stormwater management plan" or "surface water management plan." Learn what you can from how this webpage is organized and from

what the plan itself requires. Find contact information for the city staff person who is coordinating stormwater management.

2. Write a professional email to the person responsible for stormwater in your city asking for examples of GSI around the city. Here's some talking points for your letter…

Official School Letterhead Logo

Hello (Name of Stormwater Manager)

Our classroom is studying the application of green stormwater infrastructure at different scales around our city. We have learned that polluted stormwater runoff is the major source of pollution impacting our Puget Sound ecosystem. We are taking personal action with some of the suggestions at Puget Sound Starts Here but we also want to learn more about how our city is encouraging GSI.

We would love for you to share links and resources for any examples you have related to some or all of the GSI strategies we list below. What kinds of GSI strategies have been either led by the city on city property or permitted on private property? Are there before and after photos and shots of the construction phases that would help us see how it was built? Are there plans or drawings that we could study to understand how the city employed the engineering design practices to implement GSI? Is there an architectural firm or developer who you could link us to?

Here are some GSI strategies that we are interested in.

Rainwater Harvesting	Permeable Pavements
Rain Gardens	Green Streets
Bioswales	Green Roof
Planter Boxes	Urban Tree Canopy

Thank you for helping us learn about green stormwater infrastructure. We have a link to a school folder where you could upload resources. Let us know what you think.

Sincerely,

Names of students in class, school

3. Once you receive some GSI examples, take time to identify where they are on the map of your city. Use the map layers at mywater.world. Perhaps also put up a city map in the classroom with pins for where the projects are located.

    a. Do you recognize any of these projects?
    b. Are any near your school or home?
    c. Glean what data you can from these projects on how much surface area they are designed to capture, filter, and infiltrate.
    d. Using the map layer on mywater.world called **impervious surface area to** estimate what percentage of surface area in your city is yet to be treated.

4. Make a plan for applying one or more GSI strategies to a site nearby your school or home where you think it would make a big impact on reducing polluted stormwater runoff. This will be in the form of a “recommendation.”

5. Develop a folder system for organizing your project research and site recommendations. These can serve as legacy projects for next year's students to start from.

BONUS: Look at the video presented by 11th grade student Basant Apurva on China’s massive engineering design challenge for creating Sponge Cities. [8:40]

WHAT CAN WE DO?

1. Help plant 3 Million Trees
2. Switch to these strategies for Natural Yard Care (in 15 different languages!)
3. Take personal action at Puget Sound Starts Here
4. Don’t Feed the Tox-Ick Monster - 7 Simple Actions
5. See playlist of 20 King County informational videos on Yard Talk
6. Build a Rain Garden at 12,000 Rain Gardens
7. Advocate for Green Stormwater Infrastructure around your school neighborhood
8. Follow the indicators that scientists track on the dashboard Puget Sound Vital Signs

HELP IMPROVE THIS LESSON

1. What advice do you have for making this lesson better?
2. How would you teach parts of this lesson to younger students?
3. Are there broken links that we need to know about?
4. Did you find even better links in your research?
5. Would you like to share examples of your work so that other classrooms can learn by your example?

    CONTACT: info@sustainabilityambassadors.org

FUNDER & PARTNER ACKNOWLEDGEMENT

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