STEM Virtual Learning- IMPACT

2nd & 3rd Grade Civil Engineering

Lesson 7: Urban Planning 2

May 18 , 2020

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Written by: Katrina Stark-Godinez, *Mrs.G*

Learning Targets:

Students will…

- Understand constraints on planning & building
- Understand challenges of engineers and the Engineering Design Process

Background: **This is a review lesson from 2nd Grade Civil Engineering**

- Students learn about the job of an urban planner.
- Students learn about community planning.
- Students learn to make and plot maps.
- Students learn about building green.

Let's Get Started:
Watch & Read-

1. Creating Sustainable Cities
2. Building Green

Monday-

Practice:

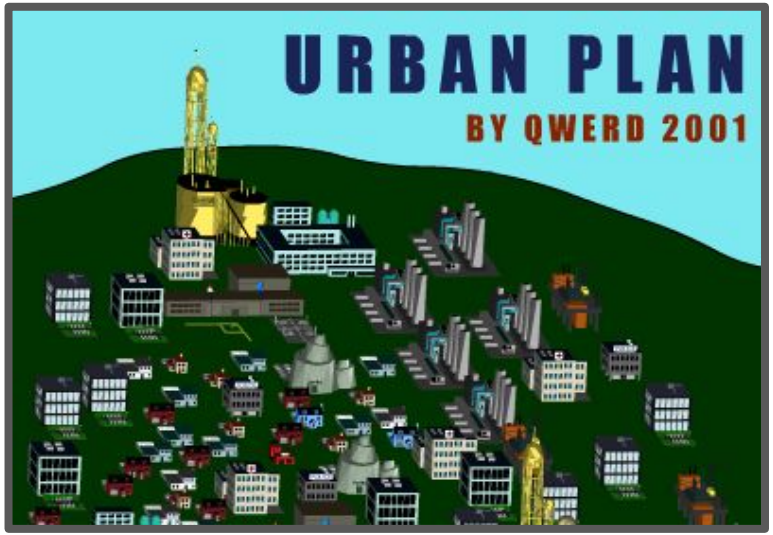
Let's meet building green contractor, Blaine Rowland.
Read the interview and answer the questions below.

- How many years has Rowland worked in construction?
- What program does he have Special training in?
- What kind of award did one of his houses receive?
- Can houses be built from recycled materials?
- Can any job be done in a green way?

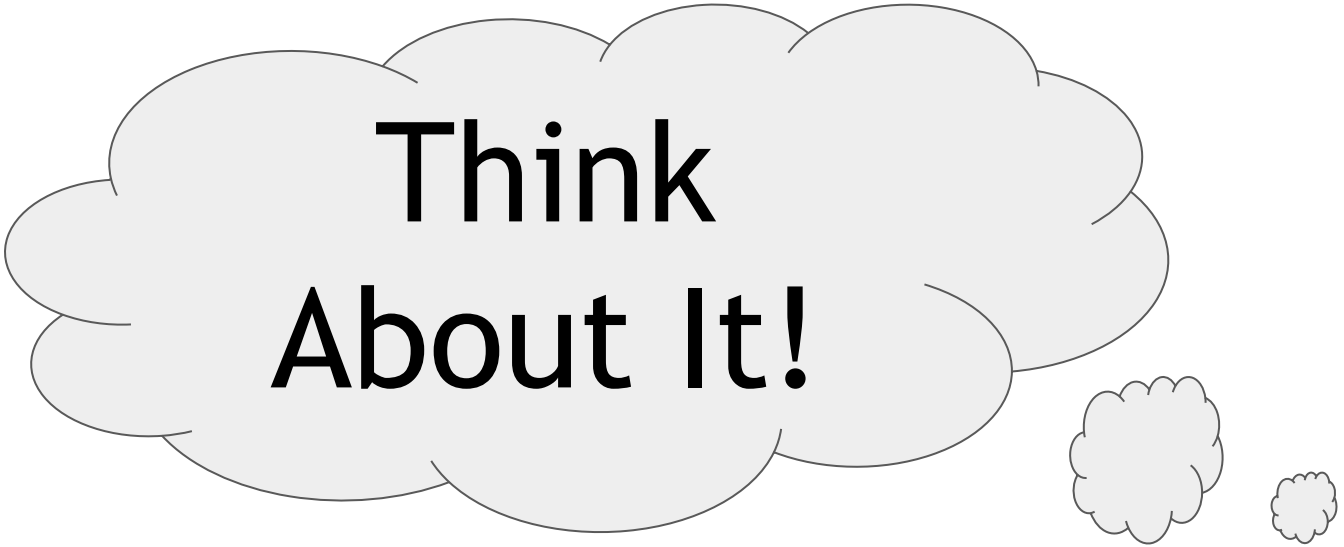
Monday-

More Practice:

Go to this website to practice planning a city. Pay attention to your budget and think about the location of buildings that makes the most sense.



Monday-



What does it mean to “go green”?

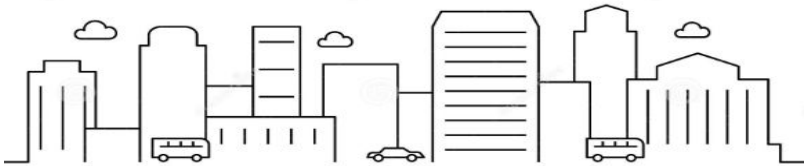
Tuesday-

Future City Planning:

Watch this video and think about what cities need to function properly and also allow people to live there and be happy.

Tuesday- Future City Planning continued:

What will you need in your city? Look at the list. Choose at *least* 2 things from each category and write them on your *Future City Log*. Remember, you're trying to build green.



Residential
Places where people live

- Single family home
- Apartment building
- Condominium
- Townhouse
- Retirement home
- Duplex
- Mobile home

Commercial
Places where people buy and sell things

- Grocery store
- Clothing store
- Bank
- Gas station
- Shopping mall
- Pharmacy
- Office building (business transactions occur in office buildings)
- Sports arena
- Movie theater
- Restaurant

Institutional
Places where people get help, learn, or receive government services

- Hospital
- School
- Library
- Place of worship (e.g., mosque, church, synagogue)
- Police station
- Fire station
- City Hall
- Community center
- Museum and zoo
- Courthouse
- Military base
- Government building

Industrial
Transportation centers and places where things are made, disposed of, or processed

- Landfill
- Trash transfer station
- Recycling center
- Water-treatment plant
- Power plant
- Factory
- Transportation facilities (e.g., airport, train station)

Public Space and Parks
Places where people play, exercise, or enjoy nature

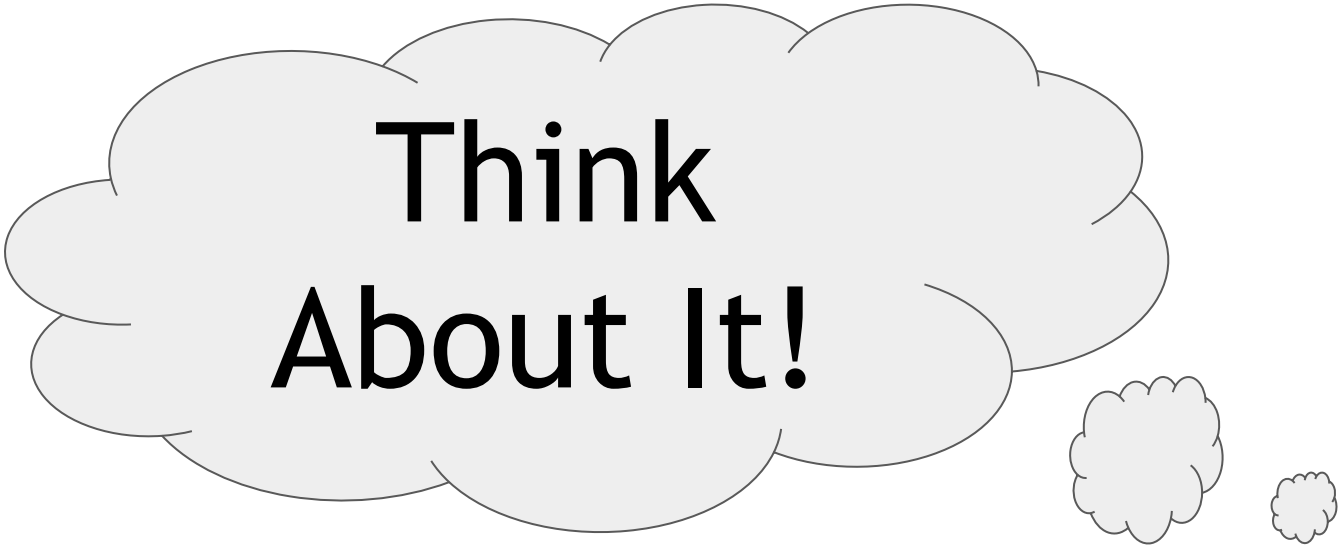
Open space can be included in other land use categories or be a separate category. Open space is important because in areas where many people live and work, public plazas or small parks allow people to enjoy the outdoors and nature. Open space also breaks up the expanses of asphalt or concrete, thereby reducing the urban heat island effect.

- Park
- Playground
- Town square
- Plaza
- Hiking and/or biking trail
- Recreation center
- Basketball or tennis court
- Monuments

Tuesday- Future City Planning continued:

Make a quick drawing (*rough draft*) of a few buildings that will be in your city. Sketch your ideas in your *Future City Log*. Remember, you must have at least one skyscraper, one bridge, one tunnel, one dome, and one dam. Be creative in how you use these structures. Use the internet for reference if needed.

Tuesday-



What do people need to be able to live in a city?

Wednesday-

The Ideal City:

Watch this video to see a city planner in action.

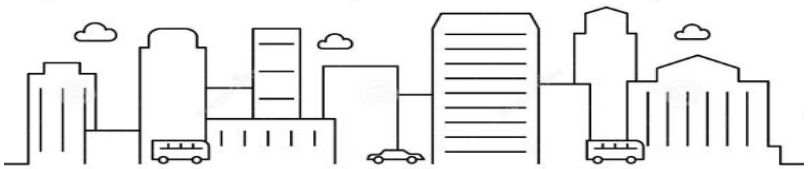
- Why do you think he chose to put certain buildings, roads, parks, etc in certain areas?
- What were some natural resources on the land that he used in his city design?

Wednesday-

Future City Planning continued:

Think about the city you live in. Make a T chart in your *Future City Log*. List 5 things that are good about the city you live in, and 5 things that are not so good. Search the internet if needed. This will give you an idea of what to or not to put in your future city.

Positives	Negatives



Wednesday-

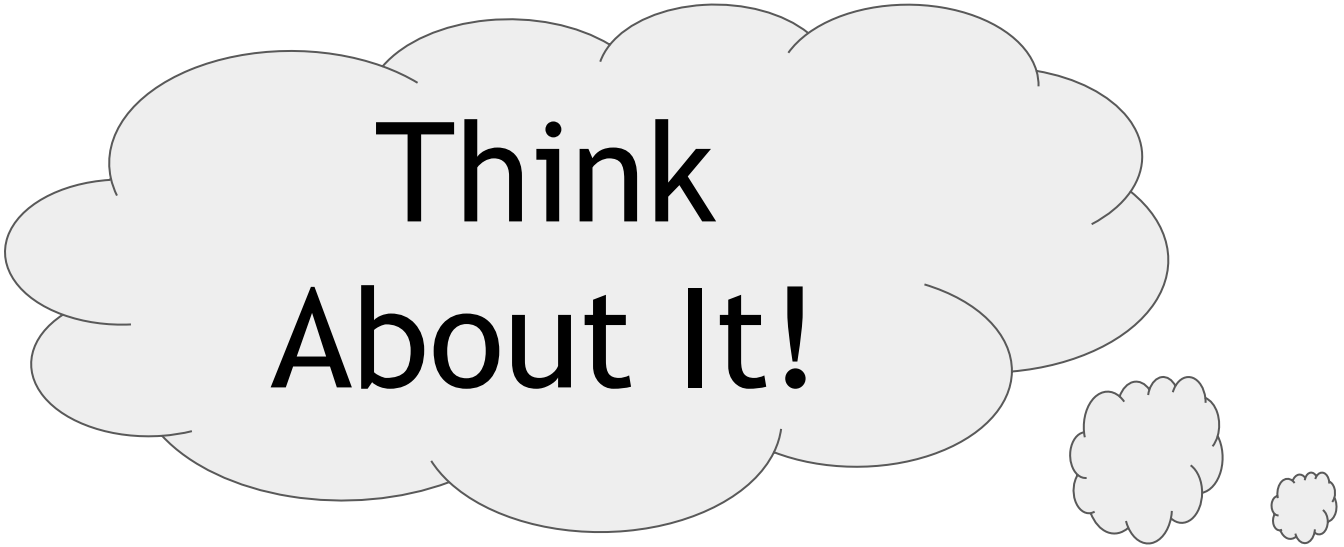
Project:

Future City

You are going to be making a map of your city design. First look at the location you chose on the map of North America from last week. What natural resources are in the area? Begin your drawing by adding in those landforms, then follow the directions below to make your *Future City* plan.

1. With landforms in place, decide on an area for your city's downtown. This will include skyscrapers and other buildings.
    - Buildings and structures can be represented as symbols. For example, a skyscraper may look like this on your map- ⊗
    - As you draw symbols keep a KEY in your *Future City Log* so you (and others) will know what they are.
2. Draw in roads and other paths.
3. Decide on locations for residential homes, businesses, industrial, a park, and other things in your city. Be creative and think about what you would want in your perfect city.
4. Don't forget to also include a bridge, tunnel, dome, and dam.

Wednesday-

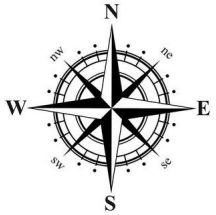


What will you name your future city?

Thursday-

Project continued:

Put finishing touches on your map. Make sure you are drawing and coloring neatly! You will need to present this plan to the city council for approval. Don't forget to add a compass, and name roads, parks, etc. If a natural landform is a part of your city, include it's real name.



Thursday-

Future City Report:

Finally you will need to write a report about your city to present at your city council meeting. Make sure to include the following information.

1. The name of your future city.
2. The exact map location (region, state, and coordinates).
3. Why you chose that location.
4. Description of your city according to the map you made.
5. What natural resources are available to your city and people?
6. Why is this a good design for future cities?
    a. What makes this city different or better than cities that currently exist? How have you used green building?

Thursday-

Self Check:

Share your Future City plan and report with the city council (your family). IMPACT students, share in Seesaw.

Did you...

- ❑ Share the location of your city and why you chose it?
- ❑ Share your map and city plan?
- ❑ Explain your use of resources and green building?
- ❑ Share what makes your plan for a future city unique?
- ❑ Get approved by the city council?

Seesaw

★ **Wonderful job, friends! I'm so proud of all the work you have accomplished these last few weeks! I hope you have a great summer!**

Friday Funday-

Paper City:

Watch the video to see how to make buildings and houses out out paper. You could make multiples to create your own 3D paper city!

Friday Funday-

Math Game of the Week!

Summer Math Games

Click the link. Choose a math game with a summer theme. Feel free to print them, or be creative and draw your own versions to play!