

Tyngsboro Town Meeting: A Lesson in Land Planning

Overview

This lesson is designed to help students visualize the future of a land parcel that is familiar to them. Although this particular lesson is set in suburban Tyngsboro, Massachusetts, the lesson can be adapted for nearly any setting. Students are asked to play the part of different stakeholders to create a plan for the Tyngsboro Golf Course, an 85 acre parcel that came up for sale in May 2019. Using data from the New England Landscape Explorer, students visualize different possible scenarios for the town and create a multimedia presentation to persuade the town to adopt their proposal through a mock “town meeting.”

Objectives

Length of Lesson

2-3 double block periods (This can be shortened by assigning the reading and building the presentation as homework)

Grade Level

11 and 12, although this can be adapted for younger students

Standards

AP Environmental Science Standards:

- 5.1 Tragedy of the Commons
- 5.10 Impacts of Urbanization
- 5.11 Ecological Footprints
- 5.4 Impacts of Agricultural Practices
- 5.12 Introduction to Sustainability

AP Environmental Science Practices

- 2.C Explain how environmental concepts and processes represented visually relate to broader environmental issues.
- 5.C Explain patterns and trends in data to draw conclusions
- 7.D Use data and evidence to support a potential solution
- 7.F Justify a proposed solution, by explaining potential advantages

Materials, Handouts, and Presentations- *See attached*

Background

The Tyngsboro Country Club is a beautiful parcel of land situated by the Merrimack River in Middlesex County. In May 2019, voters were met with a question which, if it had passed, would have allowed the town of Tyngsboro to borrow money to purchase the country club. Although this ballot question was rejected, thinking about the future of the parcel allowed students to learn about satellite imagery, land planning, and town government. Many students reported that they had rich conversations with their parents about the land, and one student was inspired to design her own park for the property. This was an ideal setting for my students, as many of them drive by it every day on their way to school. You can use this lesson for nearly any property. I suggest

reaching out to community members who may have a pulse on this information in order to make the lesson as authentic as possible for your students. You are certainly welcome to use Tyngsboro as an example if you do not have time to research one in your community; the property is interesting and is located right on the Merrimack River.

Activities

Day One: (88 Minute Class)

Engage:

- Have a picture of the property on the SmartBoard and a satellite image from Google Maps. Begin a discussion to assess the students' prior knowledge of and experience with the property.
- Introduce/outline the activity and learning objectives: tell them they will be creating a proposal to determine what to do with the property.
- Students read Part I: Introduction to the case and then answer the focus questions in their lab notebooks.

Explore:

- Break students into small groups. Each group should have a ChromeBook or laptop and a copy of "Voices from the Land." The teacher should have a SmartBoard or projector.
- Walk students through the New England Landscape Explorer Tool. Upload the link into Google Classroom prior to class. Go through the activity either as a class or ask students to explore on their own, perhaps asking them to complete a 3-2-1 ticket as they go through (3 things you learned, 2 questions, and one thing that was particularly interesting). The teacher should model how to use the tool on the SmartBoard and give students time to explore and get comfortable. Students should begin to learn how to navigate fairly quickly. Pages 18-21 in the "Voices from the Land" book have excellent information on the future scenarios.

Explain:

- Assess students on their understanding of the four future scenarios through an exit ticket, conversations, or a minute paper.

Day Two: (88 Minute Class)

Elaborate:

- Pull the artist depictions of the four scenarios from the website and display on the board. Ask students to describe people to represent each scenario, and to justify their response.
- Students choose one of four stakeholders to represent for Town Meeting (The CEO of a cutting edge graphics design company, a contractor, a member of the Audubon Society, and a hunter).
- Students will use the NELF tool to develop their stakeholder position. They will need chromebooks. The teacher will circulate and assist students. They can complete the focus questions in Part II of the handout.
- Crafting the argument: students will prepare their case. They can fill out the table in the handout which outlines the pro's and con's of their argument.
- Presentation: students will work to create their presentation. Adobe Spark, Google Slides, and even the ArcGIS StoryMap are all good resources to try.

Day Three:

Evaluate:

- Students present their proposals to town meeting (perhaps another class- this is a good time to invite your administrators to visit your classroom, too!)

- While their classmates are presenting, students will write down two pieces of “warm” feedback and one piece of “cool” feedback on the presentation. Ask a student to help you screen these before you give them back to the group in case there are any surprises in there that need to be censored!
- When everyone finishes, the class will vote on the strongest proposal. A prize can be given to the winning group!

Assessment

Students will be assessed on their video or slideshow, the actual presentation, their classwork leading up to the presentation, and “REACH,” which is our school’s version of employability.

Presentation

Students will present their proposal for the property to their classmates through a mock town meeting. Suggested programs include: ArcGIS Story Maps, Google Slides, and Adobe Spark.

Presentations should include:

- ❖ Descriptive statistics from the New England (NE) Landscape Explorer tool
- ❖ Screenshots from the NE Landscape Explorer
- ❖ Claims that touch four out of the following eight Environmental Science Concepts:

| | |
|--|---|
| <input type="radio"/> <i>Ecosystem Diversity</i> | <input type="radio"/> <i>Forestry</i> |
| <input type="radio"/> <i>Human Population</i> | <input type="radio"/> <i>Pollution</i> |
| <input type="radio"/> <i>Agriculture</i> | <input type="radio"/> <i>Energy resources</i> |
| <input type="radio"/> <i>Smart Growth/Land Use</i> | <input type="radio"/> <i>Global water resources</i> |

Grading Checklist:

Data:

_____ Visual data in the form of satellite imagery are used and analyzed correctly (minimum three screenshots)

_____ Descriptive statistics are used as evidence to support claims (minimum four statistics)

C-E-R

_____ **Claims** are logical and are supported by **evidence** in the form of data

_____ Claims are connected to at least three broader environmental science concepts

_____ Information is accurate

Presentation

_____ Everyone in the group speaks and presents.

_____ Writing is free from spelling and grammatical errors

Grade Suggestion for Overall Unit:

- Adobe Spark Video/Google Slides: 50%
- Oral Presentation: 25% (Individual)
- Focus Questions/Table: 15%
- REACH Grade: 10%*

**I ask students to grade each other when they work together, and take this feedback and my own observations into account when assigning the REACH grade, which is essentially an employability grade.*

Reflection

I piloted a (less polished) version of this lesson with eleventh grade students at the end of school year 2019. Students were engaged throughout the process, and some even had conversations with their parents about the golf course and the town meeting process. I did not have the time to ask students to present their plan to the “town meeting,” which I plan on doing next year. I found that my students did struggle with matching their stakeholder to the Future Landscape Scenario, so this is why I built in an activity on Day 2 where the class looks at the future scenarios together and discusses what types of stakeholders would benefit from each future scenario.

My timeline may not be the most realistic depending on the students’ comfort with technology; many of my students are enrolled in a programming and web shop, so that definitely gave us a leg-up as far as their introduction to the New England Landscape Explorer tool. I definitely need to do a better job in the future explaining the nature of the tool itself and emphasize the fact that the tool shows *possibilities*; we need to avoid using the tool to look at specific properties. Instead, the tool should be used to look at patterns and trends as a whole. This is a difficult concept for high school students, so I would love to hear your ideas on how to navigate that!