

LESSON 1: LAND USE GAME: COMPLEX DECISIONS

OVERVIEW:

The purpose of this lesson is for students to simulate decisions that may influence land use patterns in a city. To do this, the students will play a board game that has both mandated Policy Event cards and decision cards that students control. The decision cards consist of three potential options and each option has different monetary, ecological, and social consequences. The students play the game in groups of two to three and then discuss the impacts of their decisions on the future of their city. The lesson concludes with a discussion of how well the data collection went and whether students feel they need to revise their methods.

Ways of Knowing Urban Ecology:



Students will...

Understand

- Land use is the way that society manages the way that cities grow and develop over time utilizing land as a geographic resource
- Understand that land use decisions are not simple but are *complex* and must take into account the social, economic, and ecological impacts of how land is used Recognize that zoning is a tool that society has developed to manage land use

Talk

No specific goals connected with talking urban ecology in this lesson.

Do

- Engage in simulated land use decisions by playing a board game.
- Begin a process of “cultural journalism” by talking with local residents, community leaders, neighbors, and family members to better understand changing local land use practices over time.

Act

No specific goals connected with acting on urban ecology in this lesson.

PREPARATION:

Time:

2-3 class periods

Materials:

Activity 1.1

Land Use PowerPoint (focus is on Boston)

Satellite image of different areas of your students’ city that you can get from Google Earth or <http://maps.google.com/>

LCD projector is ideal, but an overhead projector would work

Activity 1.2

For each group of students:

1 Dice

1 board game

Set of Event Policy Cards (duplicate on cardstock for reuse)
 Set of Decision Cards (duplicate on cardstock for reuse)
 Copy of game play recording and summary sheet (for each student)
 Action Plan Rubric

INSTRUCTIONAL SEQUENCE

Activity 1.1: What does land use mean?

This activity is designed to get students thinking about how land is used in their city and what factors influenced how the land in their city was used. Start this activity by asking the kids:

1. When you hear the term “Land Use”, what does that mean to you? After discussion and gathering of students’ ideas about Land Use then have the students think about and discuss the next question.
 - *Some potential student responses to this question could be:*
 - *How people live*
 - *How many buildings or other structures are used on land*
 - *Is the land used for farming, parks, roads, trains or other transportation.*
2. Think about your trip from where you live to school today. What did you notice? You will probably need to prompt your students to get them thinking about what they saw. For instance you can ask your students
 - Was it mostly residential?
 - Mostly businesses and offices?
 - Mostly stores and shops?
 - A mix of different kinds of buildings?
 - Mostly roadways, parking lots?
 - Most grass and trees?
 - Were the buildings tall or short? Was there a lot of space between the buildings?
3. After your students start to think about their trip you can either break your class into small groups or have a whole class discussion around the issues of land use. The following questions can be used as a guide for you and your students in examining their ideas about urban land use:
 - How is the land that they observe on their way to school being used? Who do you think made the decisions that allowed the buildings to be built or allowed the businesses to be built? How do you think those decisions are made? What factors do you think the people who make the decisions about how the land is going to be used in neighborhood take in account when they make their decisions?
 - This latter question is an excellent location to show the zoning map which is part of the powerpoint presentation (slide 6). Ask the kids what they think zoning means? If your students are unsure as to what zoning means then show them the zoning map slide and ask them if they notice any trends (you may need to point out the legend of the map to them).
 - Get your student responses and then engage them with the following set of questions.

- Who do you think makes decisions about zoning? City council, zoning board, conservation commissions, neighborhood groups, mayors?
- What role do you think you play, or can play, in making land use decisions?
- What factors do you think the people who make zoning decisions take into account when deciding to zone an area residential or commercial or industrial?
 - *There are many factors and your students will likely come with a variety of them. For instance:*
 - *conservation of open space*
 - *Economic decisions*
 - *Improve traffic congestion*
 - *Development may allow for more affordable housing*

Activity 1.2: Land Use Game

Pre-Game Activities

1. Remind the students that urban ecology is a science that integrates the natural world and the social world by recognizing that the urban ecosystems are complex ecological, social, and political systems that provide feedback on one another and that to understand an urban ecosystem it is necessary to understand the relationships between those different systems.
2. In this lesson, students are going to explore the potential impact of decisions on a city's systems.
3. Before playing the game. Ask students to describe decisions they have made recently. Have them describe any examples of particularly good or poor choices. Why was the choice a good one or a poor one? As an example, ask:
 - What considerations are important to you when you are choosing a pair of shoes to buy? (*Considerations could include the cost, the quality, the color or style, the impact of the manufacturing process on the environment, whether or not workers in the factory received a fair wage, and so on.*)
 - How can poor choices be a good experience? (*We can learn from our mistakes.*)

Teaching Alternative

There are two approaches that you can use to play the game. The first is outlined below in numbers 4 and 5. The second is just to let the students play with little background provided by you. In this latter approach, have your students start to play the game and have them discover the interconnections of the ecological, social, and economic factors and discuss their findings in more detail at the conclusion of the game. This approach you provide little background for the students other than what they already have learned in other classes and from what they gather through the reading of the game introduction. It is recommended that you use the more open ended approach if you are comfortable with your students exploring ideas more on their own.

4. You should discuss with your students that making local land use decisions are often complex and involves many individuals and teams working at all levels of government including the city, county, state and federal levels. Sometimes the decisions that are made are not easy and are often controversial. In fact, it is rare that a land-use decision does not raise controversy today. But the question is, What is it that compels individuals/institutions/communities to make the decisions they do? Money (economics) is probably the first factor that occurred to you, however, land use decisions are often far more complex than just money. For example, personal interests and preferences play a major role. Decisions also can be influenced by the community's values such as concern for the environment or social equity or by the community's needs such as a need for affordable housing
5. Also before you play you can follow up on the previous discussion by asking students to identify values that should be considered when land use decisions are being made. Conclude with a review of the many economic, social, and ecological factors that should be considered when making land use decisions. These can include:
 - Ecological factors - preserving and protecting natural areas for wildlife habitat, rainwater capture/flood control, or wise/ thoughtful land use development.
 - Social factors - ensuring that development does not place one social class at an advantage over another (such as zoning that excludes low income housing).
 - Economic factors - contributing to economic production and vitality, personal gain, wise thoughtful land use development.

Starting the Game

6. State that the class will be playing a game to explore land use decisions. Tell the students that they should carefully weigh economic, social, and ecological factors when making their choices.
7. Go through the game instructions for the students and have them read the game introduction about their city as it is important to contextualize for them the characteristics of their city.
8. The game is best played in groups of three with one student in charge of recording their decisions, another student in charge of rolling the dice and reading the decision cards, and another student in charge of moving the game piece around the board and reading the policy cards. The game can be played with as few as two, but group sizes should not exceed four students.

During Game Play (Class)

9. As the students play the game, walk around the room listening to what the students are discussing or how they are making their decisions. You may need to mention to your students that choosing one option may have consequences that are unforeseen in the future. You also should make sure that the students are recording their choices and their ideas as they play the game.

Concluding the Game

1. When concluding the game have each group of students share their game results with the class. Each group can then share their final results for their city. Then the students can

discuss each groups decisions and outcomes and vote on which city they think will be the best place to live in and the city that think will be the most prosperous while being the most ecologically sustainable.

Activity1.3: Community Project

1. This activity is to start students on a longer-term project which will culminate in presentations and a discussion in Lesson 6 of this module. For this project, students conduct interviews as individuals, small groups, or as a whole class with community members, neighborhood leaders, or family members who have been involved in the local area for an extended period of time.

Instructional Strategies

You may wish to help students locate appropriate community members, especially if they do not have access to family members or neighbors that have lived in the area for an extended period of time. Local neighborhood associations and community centers are good places to contact.

2. *The students' task is to understand, from the perspective of the interviewee, the way that land use has changed over time in the local community.*
3. The students will be engaging in a practice known as *cultural journalism* and by doing so, they will be constructing a local *social history* with respect to changing use of the land over time (they will engage in constructing a local natural history in Lesson 5).

Teacher Background Knowledge

For more information on cultural journalism in the context of environmental science, see David Gruenewald's "Foundation of Place: A Multidisciplinary Framework for Place-Conscious Education." *American Educational Research Journal*, 40(3), 619 -654.

4. Let your students know that they will be writing a short report based on their interview with a community member. They will also be making a short presentation based on their interview as well as their local natural history that they complete in Lesson 5. Let your students know that they will also be making a presentation based on what they learn.
5. In both their reports and in their presentations, students are expected to make at least one strong claim concerning land use in the neighborhood and to support their claim with evidence from the local social and natural histories.
6. Share the rubric with the students in your class and go over the categories and scores with them. In Lesson 6, you will be evaluating students according to the rubric. Optionally, you may allow students to evaluate themselves according to this rubric as well (if you do encourage self-evaluation, tell them this point now, and meet with each student afterward to discuss the similarities and differences in the evaluations).

Teacher Background Knowledge

You are free to utilize any writing process you wish, especially if there is a framework or process with which you are particularly familiar or comfortable or if your school has adopted a particular writing process. You may wish to work with an English or Social Studies teacher, especially if most or all of your students have the same teacher in one of these subjects.

John Marshall Carter developed a 6-step approach to complement cultural journalism that he calls the "Historical/Anthropological Approach to Writing." The steps are:

1. *Digging up the past* by introducing students to the particular field of inquiry (in this case,

land use over time). This has been accomplished through Activity 1.1, and will continue with Activity 1.3.

2. *Recording the past* by conducting the interviews and taking notes.
3. *Organizing the past* by examining what was discussed and said in the interviews and organizing it in some manner, either chronologically or topically. The topics can be found by analyzing the responses to the questions, or can be set by the questions asked of the interviewee to begin with.
4. *Extracting writing ore from the mine of the past* by finding particular points of interest to students in the interviews about which that they may want to write in depth.
5. *Writing across time* by writing and editing over multiple iterations.
6. *The questions the student brings to the inquiry* by having the student develop questions to delve into further about the nature of land use over time in the local area based on what he or she has learned or come to understand through the interviewing and writing process.

As noted above, you are not expected to follow this particular process, especially if you are more familiar and comfortable with a different process.

Source: Carter, J. M. (1984). The Historical/Anthropological Approach to Writing. *The Clearing House*, 57(8), 358-361.

An example rubric is included which covers the following categories:

- Focus on Land Use over Time
- Making Claims
- Reference to the Ecosystem Services Model
- Use of Evidence and Context
- Language Use
- Conventions and Mechanics
- Presentation

Please feel free to adapt the rubric as you wish, or to replace it entirely with a different rubric. If your students are working in groups or in teams, you may wish to modify the rubric so that there is a “Teamwork” category.

5. Provide a due date for the report for students that will roughly coincide with the beginning of Lesson 6.
6. If you believe it will be helpful, you may set up a series of checkpoints along the way (e.g., interviewee found, interview, report rough draft, presentation rough draft, etc.) and discuss a timeline with your students.