

INTRODUCTION

Many individuals find it difficult to appreciate the reasoning behind some land-use decisions. Seemingly obvious alternatives appear to be summarily rejected. This activity fosters an understanding of the political, economical, social, and environmental factors involved in land-use decision making.

THE ACTIVITIES

TIME REQUIRED

Name, record and
classify possible
land uses

60 to 75 minutes

Develop and give
presentations

Analyze character-
istics of simulations

60 minutes

Develop your own
simulation game

COMBINING THE ACTIVITIES

Although the activities in this unit may be done independently, it is necessary to combine, name, record and classify possible land uses, and develop and give presentations to make a complete game.

Characteristics of Simulations may be used as part of the review of the game, but it is more effective when used as the introductory activity for Develop your own Simulation game.

Note:

The Centerplace City problem has been adapted with permission from the May 1970 Journal of Geography from the article "A Land Use Alternatives Model for upper Elementary Environmental Education" by Dennis Asmussen and Richard Cole, University of Washington.



CURRICULUM RELATIONSHIPS

Social Studies

1. Read about the establishment of your community. Discuss major factors determining growth and the direction of growth.
2. Determine the location of major transportation routes (road, and railway), and theorize how they may have influenced the location of industrial developments, housing, and other facilities.
3. Determine what the current issues and concerns are in your community. Why do these concerns exist?
4. Follow a local current issue through to its conclusion. Attend planning or public meetings held on the issue.

Science

1. Use maps showing features such as topography, drainage, wetlands, floodplains, etc. Determine what effect these may have had on the growth of the community and where housing, industrial facilities, etc., are located.
2. Sample water quality in streams or other bodies of water and infer what effect development in the area may have had on the water quality.
3. Determine what bird and animal species are important to your area. Gather population data on these species. How have numbers changed over time? What affect has this had on the human population? What are the current management policies for the species? How would you change management for the species?

Mathematics

1. Use community or county statistics to determine the cost per person for services such as sewage disposal, garbage disposal, water, law enforcement, etc.
2. Determine percentage of land in the community or county in various types of use categories (e.g. housing, agriculture, industrial).

Language Arts

1. Write a story describing what the community might be like if the major highway or railroad had bypassed the community. Or, if that has happened, write a comparison of the community before and after.
2. Draft a proposal for locating a needed sanitary landfill and supply supporting arguments.
3. Interview local oldtimers about what the county or community looked like when they were youngsters. Try to locate photographs that correspond to that era.

Creative Arts

1. Make a colored map of the community over time. Show the original settlement in one color and then color in growth in different colors showing expansion in 5 to 10 years. If you have the skills and materials, use the overlay system to make the maps.
2. Sketch the view you would like to have from your kitchen window. Expand upon this to include the view from the classroom (if you have windows), the view from the front of the school, or before and after sketches, if you could improve upon the scene.



LAND-USE SIMULATION GAME -- CENTERPLACE CITY -- NAME, RECORD AND CLASSIFY POSSIBLE LAND USES AND GIVE PRESENTATIONS

CONCEPT	Cause/Effect, Change, Population, Evolution, Interaction, Model
PRINCIPLE	Participants become involved in trying to solve some land-use issues for this city. They role play common interests and find out how land-use decisions are often made.
OBJECTIVE given	<ul style="list-style-type: none">• As a result of this activity, the student will be able to predict or postulate at least three different possible points of view on any environmental issue.• The student will be able to identify at least 3 factors which would influence a land-use decision.• The student will be able to discuss how opposing interests might effect a land-use decision.
PREPARATION	<ol style="list-style-type: none">1. Arrange for a room large enough to accommodate five to six tables that will seat up to eight participants per table. The room also needs to accommodate an additional large table with chairs and an easel large enough to be seen from anywhere in the room.2. Look up population figures for the towns in your area, so that Centerplace's population has meaning for the students.3. Arrange for a smaller room nearby to accommodate up to 10 persons, a large table and easel.
MATERIALS NEEDED	<ul style="list-style-type: none">• Large tables (number depends on number of participants)• One chair per participant.• One set of four to five different-colored markers for each table.• One set of markers for facilitators and one set for use in small room.• Two easels with easel paper.• Two sheets easel paper or newsprint for each table.• One roll masking tape or way to fix paper to walls.• Population figures for local communities.• Activity Sheet A: <u>Brainstorming Possible Land Uses</u>, B: <u>Develop & give Presentations</u>, C: <u>County Board Members</u>.
PROCESSES USED	<ul style="list-style-type: none">• Observe• Interpret data• Classify• Question• Predict• Infer• Communicate
TIME	60 to 75 minutes, longer if you prolong the discussion.



DOING THE ACTIVITY

A. Set Stage:

Review quickly what will take place--i.e. during this activity we will participate in a simulation game concerning land-use in a hypothetical community, analyze what we have done, and discuss some ideas and ways to develop your own simulation game about local environmental issues or concerns. Techniques used combine elements of simulations, role-playing and games. You will assume roles of decision-makers in a simulated environment and compete for certain objectives according to specified procedures and rules.

B. Procedure:

1. Distribute activity A. Read the problem to the group: The problem is to identify some possible uses for the one-square mile (640 acres) of county farm land, four miles northwest of the city. It is now available for the city's use.
2. Ask participants to read the information given on the activity sheet and list possible uses of the land to meet the city needs.
3. You have 10 minutes. Work individually.

ACTIVITY A: Brainstorming Possible Land Uses

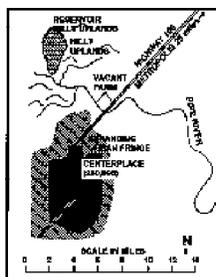
10 Min.
Individual

"One square mile (640 acres or 258 hectares) of unused country farmland, 4 miles (6.4 km) northwest of the city, is now available for the city's use."

Read the background information for Centerplace City, and then list some possible uses of the vacant farmland.

Background Information Sheet For Centerplace City:

- The population is 250,000 and rapidly increasing.
- The city's boundaries are being extended, but the suburban fringe is expanding even more rapidly.
- The rapid population growth is accompanied by demands for more housing, more jobs, additional city services, and recreational areas.
- The power for industrial uses, adequate public transportation, and a skilled labor force are available.
- The city is located near forests, to the north. The land to the east is devoted mainly to farming.
- The Pipe River is unpolluted and is the source of irrigation water as well as the municipal water supply.
- The river is too small for freight transportation, but logs could be floated on it.
- The gravel bed of the river is appropriate raw material for concrete manufacture.
- The present sewage treatment plant and garbage disposal area are at maximum capacity.
- The citizens of Centerplace are concerned about the maintenance of a scenic regional environment.
- The County Board of Commissioners is the authority for land zoning, and many citizens' groups are being formed to influence zoning decisions.



List possible uses of the land

Investigating Your Environment
Land Use Simulation



3. Tell the groups their next activity is to develop a land-use plan for the area in their assigned land-use category (about 20 minutes)
4. NOTE: See 7 for additional direction after each group has started planning. If all directions are given at first, many groups start drawing a map before considering different land uses.
5. Five minutes into their planning make the following announcements:
 - a. We have just received word that due to the current workload from reading environmental impact statements the members of the Board of County Commissioners have all been reassigned. Each group has one minute to elect one member to represent them on the Board.
 - b. Will the new Board representatives please follow _____ out of this room?

6. A staff person takes the new Board to another room, hands out and reviews activity C with them.
 - a. Tell them they have 15 minutes until the meeting begins.
 - b. Have them concentrate on evaluation criteria first.
 - c. Have them elect a chairperson to preside over the group presentations.
 - d. Have chairperson read the announcements at bottom of activity C.

ACTIVITY C: County Board members only 15 min.

"One square mile of unused country farmland, four miles northeast of the city, is now available for the city's use."

1. Using this information, your task is to:
 - a. Develop criteria to evaluate the proposals.
 - b. Develop a system to record your evaluation of each proposal.

Background Information Sheet For Centerplace City:

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The power for industrial uses, adequate public transportation, and a skilled labor force are available.

The city is located near forests, to the north. The land to the east is devoted mainly to farming.

The Pipe River is unpolluted and is the source of irrigation water as well as the municipal water supply.

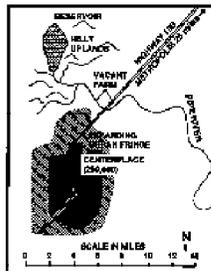
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The gravel bed of the river is appropriate raw material for concrete manufacture.

The present sewage treatment plant and garbage disposal area are at maximum capacity.

The citizens of Centerplace are concerned about the maintenance of a scenic regional environment.

The County Board of Commissioners is the authority for land zoning, and many citizens' groups are being formed to influence zoning decisions.



Group Making Presentation (Use category)	Criteria to Evaluate Proposal (Rating)					
	1	2	3	4	5	6

Elect a chairperson to preside during the presentations to the group and to run the meeting in an orderly manner. (5 minutes). Announcements to be made by chairperson:

- Because of time constraints, there will be no rebuttal after presentations.
- The board may ask two or three clarifying questions of each group after all presentations.
- You have 3 minutes to give your presentation. You will be given a warning when you have 1 minute left.



7. After the new Board members leave the main room, announce to the planning groups: You have about 15 minutes to finish your plan and develop a three-minute presentation for the County Board of Commissioners. The presentation must include a visual display such as a land-use map, and more than one person in each group must participate in making the presentation
 - a. Pass out felt pens and large paper.
 - b. You may have to give some extra time to finish plans and maps.
8. NOTE: Allow 40-50 minutes depending upon number of groups. If you are doing this in a classroom, you can have students develop the presentations one day and present them the next.
9. When all groups are ready, the County Board enters and sits at the front. A time-keeper is appointed to cut off all presentations at three minutes (one minute warning). Chairperson announces criteria on Activity C announcements and adheres to them.
10. When presentations are complete, the Board retires to select the best proposal (5 to 10 minutes).
11. While Board is meeting, each small group develops a list of criteria which they think should be used in choosing among the plans submitted. (See previous page)
12. County Board re-enters the room and reads their criteria aloud.
13. County Board announces their decision and gives their reasons. Board adjourns.
14. NOTE: Person in charge must move rapidly to the next question to avoid shouting matches between losing groups. Have Board members return to the groups who selected them. The main purpose is to evaluate the process, not to get bogged down in the content of the issue.



E. Retrieve Data:

1. Ask participants: What additional data would you like to have had for planning your group's proposal? List on board, e.g.: topography, vegetation, economy of the area, railroad, shopping center, adjacent land, climate, soil survey, historical information, flood plain, wildlife, interest of board of control, money available, educational needs, regulations by State, existing zoning, political climate, population information (age, sex, race, jobs).
2. Where would you go to collect information on these topics?
3. Point out to the group that this is one of the most important parts of the activity because it emphasizes that we need a variety of information and data before we can intelligently make a land management or environmental decision to best meet the needs of people and their environment. This list has many of the elements that need to be considered in studying a local environmental issue or concern. It also includes elements of all the curriculum subject areas (social studies, science, language, arts, etc.). Therefore, we have to use the total community as a classroom or learning environment to collect the information.
4. If there is time, and it is pertinent to the situation, you may want to ask the following questions.
 - a. Did new leadership emerge during this session? What factors enabled this to happen?
 - b. Did your group work as a team? What did your group do to ensure participation by all members of the group?
 - c. Were you assigned to a group or interest you didn't want to represent? How did you feel? Point out that many times we overlook that other people have different needs and ideas and this might be a way to identify them.
5. Discuss any case histories of teachers or groups using this approach. Ask teachers or resource people about computer programs. It is important to do this debriefing step with teachers. Don't do this if you are working with students.

CLOSURE

Use any of the questions in the Retrieve Data section to close. You could also have students share how they felt about participating in this activity. Stress that there are alternative solutions to solving specific problems. The game proved that!

TRANSITION

In the next activity, you will look at how simulation games are constructed and construct your own.



ANALYZE CHARACTERISTICS OF SIMULATIONS AND DEVELOP YOUR OWN SIMULATION GAME

CONCEPT	Cause/Effect, Change, Order, System
PRINCIPLE	This activity provides application of the skills and knowledge experienced in the first activity. After discussion and more exploration, participants see if they can produce their own simulation game.
OBJECTIVE	<ul style="list-style-type: none">• The student will be able to identify and describe three component parts of simulation games.• The student will be able to outline a plan of action for developing a land use simulation or construct a simulation game based on a current environmental issue.• The student will be able to name and describe at least ten important types of data needed before making a land-management decision and describe how that data could affect their life, community and management of the environment.• The student will be able to identify cause-and-effect relationships that exist in environmental management.• The student will be able to describe alternative solutions to solving a specific problem.
PREPARATION	Secure a room large enough to provide adequate working space with large tables. Copy activity sheet for students.
MATERIALS NEEDED	<ul style="list-style-type: none">• Copies of newspaper articles on community issues and concerns• Two easels and easel paper• Extra pad of easel paper or butcher paper, minimum two sheets per table• One set, 4 to 5 different-colored markers per table, plus one set for facilitators• One roll masking tape• Activity Sheet D: <u>Developing a Simulation Game</u>• Commercially available simulation games for display or computer simulation games such as <u>Oh Deer</u> (optional)
PROCESSES USED	<ul style="list-style-type: none">• Question• Formulate model• Communicate• Design experiments• Control variables• Interpret data• Predict
TIME	60 minutes



DOING THE ACTIVITY

A. Set Stage:

One group of people working with simulation games has identified at least three basic characteristics of most simulation games. As I state each characteristic, think back to our game and see if you can find that characteristic in our game.

1. There is a clearly defined problem.
2. There are factors that influence the decision.
3. There are individuals and groups interested in the decision.

B. Procedure:

1. The most exciting simulation games are ones people develop themselves, based on local environmental issues in their community, state, or region.
2. Can you think of some current environmental issues in your own community around which you could develop a game? List responses on board or paper.
3. For the next 30 minutes work with one or two other people to develop a format for a simulation game based on a local land-use issue or topic of your choice. Copies of current newspaper articles are available if you want to use them. At the end of that time, we would like to hear from several of you about what you've developed.
4. Hand out the Activity D to each participant.

30 min.
small groups

ACTIVITY D: Developing a Simulation Game

Using a newspaper article about a local environmental land use problem, develop the format of a simulation game, considering the following items:

Identification of the problem or issue to be decided upon.

Identification of some factors having an influence on the decision.

Identification of individual or group roles (those people or groups that will be affected by, or interested in, the problem).

Other things you may want to consider in developing simulation games:

- Establishment of conditions for the players (noting procedures, available resources, money, etc.).
- Development of specific goals or objectives for players.
- Inclusion of limits, or rules for what is permissible behavior (time factors, trading, point system, money allocations, etc.).



C. Retrieve Data

1. Discuss the activity they have been working on. Following are some discussion questions. Use those which pertain to your situation and to the type of learner you are working with.
 - a. How can you use the techniques in this session in your job? Classroom? At home?
 - b. How could a game like this develop decision-making skills in environmental management?
 - c. How can we take this process and use it to involve the public in social and political decision-making action projects in the community?
 - d. What did you think was hard about writing this game? Easy? Were there any unexpected obstacles to getting this activity completed?
 - e. What educational value does an activity like this have or, why did I (your teacher) make you do this activity?
 - f. Please share any new learnings or insights from this activity.
 - g. How can we summarize the use of simulation games in environmental interactions?

CLOSURE

Simulation games can help people understand about problems in the environment, develop awareness and concern about those problems, and develop skills needed for citizen action and involvement in environmental management. Please evaluate this session in writing. Tell me how you felt about it and if there is any more you would like to do about it.



TEACHER BACKGROUND MATERIALS

GUIDELINES FOR DEVELOPING YOUR OWN SIMULATION GAMES

- I. Develop a set of procedures to be followed in playing the game.
 - A. Goals and/or objectives
 - B. Rules for playing the game
 1. Voting procedures
 2. Process for recording data
 3. Time limits
 4. Procedures for presenting data
 - C. Responsibilities of the players
 - D. Provisions for students to collect data, where obtainable, how best to obtain data.

- II. Select a particular land area in your community, for example:
 - A. A vacant lot.
 - B. An older building - possibly condemned.
 - C. A small park.

- III. Establish a land use problem involving the selected area. The land-use problem might be developed from a newspaper article from your local newspaper. Examples are listed below:
 - A. An apartment building is being proposed for a large vacant lot that is used for a sandlot ball field.
 - B. A service station is being proposed on a corner across the street from your school.
 - C. A low-cost housing area is being proposed on some land next to some expensive homes.
 - D. A small shopping area is proposed next to a residential area.

- IV. Establish the groups which have a vested interest in the development of the selected land area.
 - A. Residents who own homes near the property, planning commission, apartment building owners, construction workers, store owners near the area, children who play on the lot.
 - B. Oil company representatives, residents, construction workers, parents of the school children, school officials, city planning commission.
 - C. Residents from the more expensive homes, construction workers, contractor, prospective residents of low cost housing, church groups, planning commission.

- V. Identify the possible effects this change could have on the community:
 - A. On taxes for this land and surrounding land.
 - B. On land values of the area.
 - C. On traffic density and pattern.
 - D. On population density and pattern.
 - E. On schools, playgrounds, churches, stores of the area.
 - F. On wildlife, and other natural environment land, water, air.
 - G. On utilities - such as garbage, sewage, electricity.



ACTIVITY A: Brainstorming Possible Land Uses

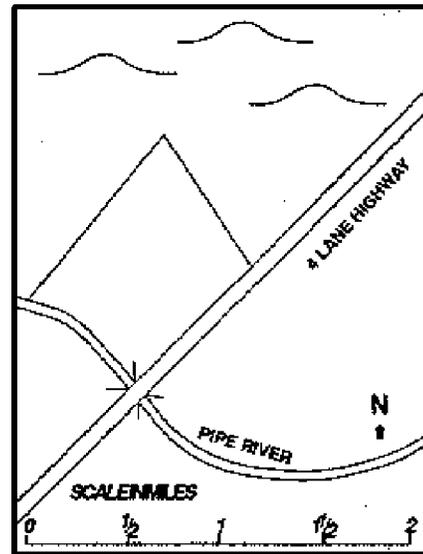
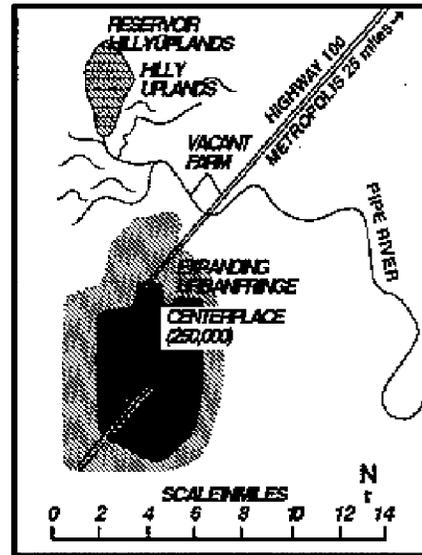
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List possible uses of the land

_____	_____
_____	_____
_____	_____



ACTIVITY C: County Board members only

15 min.

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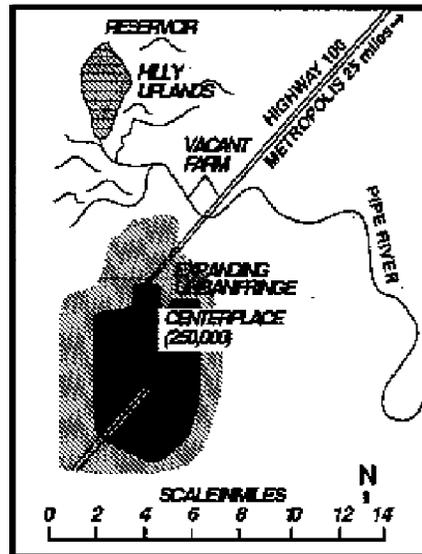
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30 min.
small groups

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