

INTRODUCTION

The processes and procedures included in Investigating An Environmental Issue were developed because of the need for more meaningful public involvement in the study of current problems and issues related to natural resource use and management. It is designed for individuals or groups interested in investigating an environmental issue. It is a logical process for educators and students to use in school classes.

Most environmental issues are extremely complex involving many varied interest groups and several sometimes opposing factors. Common factors in a given environmental issue might include resource commodity, agency management policies, land-use planning policy, land ownership, weather and climate, local economies, and recent national environmental policy.

An issue's effect and any related action can be local, state-wide, national, international, or regional. An issue has both short-range and long-range effects and implications: economically, socially, politically and environmentally. Environmental issues like many other issues today have no "absolute rights or wrongs," no "cut and dried" answers and are generally more than two sided! Any environmental decision will be a selection of one of several possible alternatives. It may reflect trade-offs in values of the factors involved and the people and groups affected.

Completing some of the lesson plans in the "Investigating Your Environment" series such as the soil investigation, water investigation, or forest investigation may help in collecting and analyzing information about an issue.

THE ACTIVITIES

A complete correlation is impossible without first determining the issue and the direction of study. The depth of study and time spent on the investigations will also cause this correlation to vary. At a minimum level, and with almost any issue, the following goals and guidelines will most likely be involved:



COMBINING THE ACTIVITIES

This series of involvement activities focuses on a current environmental issue or situation. The process is designed so all or selected phases depending upon the objectives of the study can be used. For example, Phase 1 is usable by itself as the basis for analyzing data for an issue and having a group discussion about it. If all phases are used, the elements of role playing with a simulated decision-making process or simulation model are involved.. Each phase identifies sound options to consider (from large group to small group interaction) in studying the issue.

The process and format used here can be easily modified or adapted to fit the study of any environmental issue or concern. The study can be brief or as long as motivation and interest of the audience hold out.

When planning to use this process, follow these steps:

1. analyze the needs of your students
2. analyze the time constraints in your teaching situation
3. analyze the role that this plays in your curriculum
4. decide what phases of the process you want to accomplish
5. decide what modifications will best meet the objectives you want to teach and the needs of the group being taught.

CURRICULUM RELATIONSHIPS

This process can be used to tie virtually any subject areas together into a neat and meaningful package. Curriculum areas would vary with the environmental issue chosen and the direction taken with the investigation; for example:

A class chooses to investigate the proposed damming of a local river for hydroelectric purposes. Curriculum relationships could include science in the preparation of scientific data, such as electrical generation and interruption of migrating fish; social studies/government in testimony at a public meeting involving the decisionmakers for the dam; mathematics/social studies/science (physical science) in preparing electricity needs for the area, calculating the amount of electricity generated and projected increases over the next ten to fifty years, revenues; language arts in preparing various reports (written or oral), and communication arts can be included by having the final report take an oral or visual format.

Following are two optional forms teachers may use to plan an investigation:



TEACHER PLANNING SHEET #1
 (For Optional Use by Teachers in Planning the Activity)

	Rationale for Selecting this Option	Materials/activity sheets needed	Things To Do To Get Ready for This Phase and Option	<u>After-Thoughts</u> Notes and comments about: organization materials, student reaction, adaptations, changes, or additions made in procedures/ materials
PHASE I				
PHASE II				
PHASE III				
PHASE IV				
PHASE V				
PHASE VI				



TEACHER PLANNING SHEET #2

For Optional Use by Teachers in Planning the Activity

You will notice that in each phase several procedural options are given. The teacher or facilitator should select or help the participants select the most appropriate option based on time constraints, needs and capabilities of the student and the objectives of the studying the issue. (See lesson plans for descriptions of options and activities)

PHASE I: A LOOK AT THE ISSUE (Activities A to D) Check Option

Options: Entire class _____
Selected students _____
Teacher _____

PHASE II: IDENTIFY AND INVESTIGATE INTEREST GROUPS
(Activities E to H)

1. Identify interest groups (Activity E & F)

Options: Entire class _____
Teacher/Small groups _____

2. Summarize interest groups points of view (Activity G)

Options: Entire class _____
Small groups _____

3. Divide into interest groups for role playing (Activity H)

Options: Entire class into interest groups _____
Entire class into interest groups and _____
Decisionmakers _____
Selected students represent interest _____
Groups, rest are decision makers _____

4. Note: Phase IV, Decisionmaking, Preparation, Point #4. A decision needs to be made at this point. This group will need to work on this role while others do interest groups.



PHASE III: DEVELOPRECOMMENDATIONSTO PRESENTTODECISION-MAKERS (Activities I to L)

- Options: Verbal presentation _____
- Written statement _____
- Combination of above _____
- (Visual displays to accompany verbal/written statement) _____

PHASE IV: DECISIONMAKING (Activity M)

- Options: Entire class discussion after presentations _____
- Small groups make autonomous decision then entire class discussion _____
- Each interest group elects one person to form decisionmaking body _____
- Selected students are decisionmakers _____
- Outside group is decisionmaker _____

PHASE V: EVALUATE THE PROCESS (Activity N)

- Options: Entire class _____
- Small groups _____

PHASE VI: FOLLOW-UP WITH THE REAL ISSUE (Activity O & P)

- Options: Entire class _____
- Small groups _____
- Selected students _____



PHASE I: A LOOK AT THE ISSUE

CONCEPT	Concept depends upon the issue you select, the direction you take. Perception is a part of any issue you select. Cause and effect, change, interaction, system, model and scale will (most likely) also apply.
PRINCIPLE	In the next four activities, participants discover the basics of an issue by learning how to explore sources of information from which to begin an issue analysis.
OBJECTIVE	As a result of participation in this investigative process, the student will be able to: <ul style="list-style-type: none">• Identify, collect and analyze data and information about an issue.• Summarize facts about that issue.
PREPARATION	<p>Identify an environmental issue that you would like your class to investigate. Collection of data can be done by either the teacher or students, depending upon grade level and time available. Information sources include but are not limited to: newspaper reports, data from appropriate agencies, state and federal agency reports, magazine articles, interviews, maps, etc.</p> <p>Select one of the following options to use with class in Phase I</p> <p>_____ a. Entire class researches problem using basic data provided in written material. Students complete activities A - D individually or in small groups. Class discussion about the problem.</p> <p>_____ b. Selected students introduce the problem in oral presentations. Students each present one part of the problem or make presentation "through the eyes of" one of the interest groups affected by the issue. Students complete activities A - D from the information given in the presentation(s) and written material provided.</p> <p>_____ c. Teacher introduces issue with an oral presentation about the problem. Students complete activities from information gathered from the presentation and written material.</p>
MATERIALS NEEDED	<ul style="list-style-type: none">• Copies of activities A, B, C (2 pages) and D for each student• information sources for each activity, depending upon option selected in Phase I
PROCESSES	<ul style="list-style-type: none">• All processes may apply depending on issue selected and the direction the class proceeds with it.
CURRICULUM CORRELATIONS	See unit introductions under "Activities" for Oregon Common Curriculum Goals (CCG's) for Science and Washington Environmental Education Guidelines (EEG's). Each activity is also cross-referenced on matrices in the appendix.
TIME	Depends upon how in-depth you get, what means of information gathering you choose, i.e. interviewing people takes longer than looking up references and how complete of an issue analysis you want.



DOING THE ACTIVITY -- indoors

Activity A – Describing the Issue

A. Set Stage:

Discuss with the class what they already know and how they feel about the issue.

B. Procedure:

Depending upon option selected, the class:

- (a) conducts own research
- (b) receives information from oral student presentations
- (c) receives information from teacher's oral presentation.

Then students complete activity sheet A. They have about 40 minutes.

ACTIVITY A : Describe The Issue 40 min.
individual/groups

Title of issue: _____

Description of issue:
What is happening?

Where is it happening? (Past history and events, etc.)

Who is affected?

How are they affected?

What are the impacts of the issue? (Economically, aesthetically, socially, politically, etc.)

What are the possible courses of action about the issue?

Is there an environmental impact statement required and available? Where?

Name, address and telephone number of agency/organization
with major responsibility for final decision and management:

C. Retrieve Data:

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Investigating an Environmental Issue 

In a class discussion, class comes to an agreement on a statement of the issue.



Activity B -- Choosing a Direction

A. Set Stage:

"We have stated a problem, now we need to agree on what direction we need to take to understand this problem."

B. Procedure:

Using data gathered in Phase 1, activity A students complete activity sheet B, taking about 45 minutes.

ACTIVITY B: Collect and Record Information 45 min.
Individual/Groups

List some factors that might contribute to the issue.

Describe what you want to find out about this issue and/or its factors.

Describe the kind of data that needs to be collected.

Information sources about this resource or activity (people, places, reports, etc.).

- 1.
- 2.
- 3.

Based on the information we have read and the things we've discussed, our group would like to find out more about:

- 1.
- 2.
- 3.

Questions we will ask to find out these things are:

- 1.
- 2.
- 3.
- 4.

In order to find out more about these things, we will make specific observations about:

- 1.
- 2.
- 3.

We will use the following data recording procedures:

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C. Retrieve Data:

Discuss the activity. On the board or chart paper, summarize questions students generated to find out more about the issue.

Activity C -- Exploring Interrelationships and Identifying Conflict

A. Set Stage:

"Let's take a look at how the various players fit together in this issue." What are some interrelationships of this issue? What are some potential or existing conflicts inherent in this issue?

B. Procedure:

1. Refine data gathered in Phase 1, activity A & B if necessary. Students may want to dig deeper into some aspects of the issue.
2. Student complete activity C, taking about 45 minutes, for both pages.

ACTIVITY C: Interpret The Information Collected (page 2) 45 min. Individual/groups

Describe what the collected data tells you about the issue.

List comparisons, contrasts, or cause-and-effect relationships that can be inferred from the collected data.

What big ideas are suggested by the interpretation of this data?

What implications do these big ideas have to environmental management?

Extending the Investigation
List parts of the investigation that can be explored more fully by further data collection.

Describe data that still needs to be collected. (Where? How often? Time of year?)

Describe what might be significant about collecting the additional information.

C. Retrieve Data:

Discussion and charts are needed for summation. Ask questions such as: "What significant information did you discover?" "What relationships do you think are critical to our investigation of this issue?" "Where do we go from here?"



Activity D -- Analyzing Impacts

A. Set Stage:

"You've defined the problem, figured out how to obtain more information and looked at the players involved. Now let's put this issue into perspective in its broadest context. Let's look at potential impacts this issue could have."

B. Procedure:

Data collected in the previous phases will be helpful. Students work in small groups to complete activity D. They have 45 minutes.

C. Retrieve Data:

Using Activities A through D, construct a brief statement which would summarize the general impact of this resource or activity.

35 min.
Individual/groups

ACTIVITY D: Analyze The Impact

Based on the data you have collected so far, describe the general interest and impact, as you see it, that the issue can have in the following areas.

Area	Impact on Other Nearby Environments	Social Patterns	Economics	Politics	Other
Locally (county, city)					
Interest					
Impact					
Regionally (State or states)					
Interest					
Impact					
Nationally					
Interest					
Impact					
Internationally					
Interest					
Impact					

From the chart above, your observations and the analyzing of information about the issue—construct a brief statement which would summarize the general impact of this resource or activity.

CLOSURE Not necessary if continuing this investigation. If ending here: have students share aloud facts or data they learned or something about the process or both - make a class list.

TRANSITION Using the data you've collected, we are going to go further with this investigation. Let's take a look at the groups of people who are directly involved with this issue.



PHASE II: IDENTIFY AND INVESTIGATE INTEREST GROUPS

CONCEPT	Change, Population, Perception, Interaction System
PRINCIPLE	These activities should lead to increased understanding of special interest groups and the beliefs and concerns which lead them to action.
OBJECTIVE	<p>As a result of the participation in this investigative process, the student will be able to:</p> <ul style="list-style-type: none">• identify and list individual and/or groups who might be interested or affected by an issue, and;• identify and list questions and concerns they might have about an issue.• The student will be able to describe in writing a summary listing of interest groups and point of view of those interest groups.• The student will be able to describe in writing the history of an assigned interest group and role play that group's position in a simulation model about an issue.
PREPARATION	<p>Complete Phase I of this process. Decide how you wish to run each of these activities by selecting one of the following options in Phase II. Each student fills out an entire lab sheet.</p> <p>_____ a. Entire class does research for activities E and F:</p> <ol style="list-style-type: none">1. Individually2. Small Groups <p>_____ b. Teacher provides list of interest groups for a "starter":</p> <ol style="list-style-type: none">1. Students fill out list of questions and concerns<ol style="list-style-type: none">a) Individuallyb) Small Groups2. Divide class into small groups. Each group lists five to six questions or concerns for <u>one</u> of the interest groups. Each group list is compiled into a "master" list.
MATERIALS NEEDED	<ul style="list-style-type: none">• Copies of activities E, F, G* and H for each student (*Note: if option G is chosen each student will need one copy of sheet G for <u>each</u> interest group)• Reference materials on groups• Chart paper and markers
PROCESSES USED	<ul style="list-style-type: none">• Classify• Question• Interpret Data• Observe• Infer• Define operationally• Predict• Communicate
CURRICULUM CORRELATIONS	See unit introductions under “Activities” for Oregon Common Curriculum Goals (CCG's) for Science and Washington Environmental Education Guidelines (EEG's). Each activity is also cross-referenced on matrices in the appendix.
TIME	Depends upon how in-depth you get, what means of information gathering you choose, i.e. interviewing people takes longer than looking up references and how complete an understanding you want students to have of interest groups.



DOING THE ACTIVITY -- indoors

Activity E -- Listing Possible Special Interest Groups (Skip this if option "B" selected - see "Preparation")

A. Set Stage:

"It is important to identify groups and individuals who have a right to be involved in investigating, reporting and solving an issue."

B. Procedure:

Students complete activity sheet E either individually or in small groups (see options in "Preparation"). Take 35 minutes.

ACTIVITY E: List The Possible Interest Groups 35 min.
Individual/Groups

It is important to identify the groups and individuals who have a right to be involved in investigating, reporting, and solving this issue. List key groups or individuals in the categories below.

<p style="text-align: center;">Who</p> <p>Those groups or individuals interested in the issue.</p> <hr/>	<p style="text-align: center;">Why</p> <hr/>
<p>Those groups or individuals that should be interested in the issue.</p> <hr/>	<p style="text-align: center;">Why</p> <hr/>
<p>Those groups or individuals affected by the issue. (May include some from above.)</p> <hr/>	<p style="text-align: center;">Why</p> <hr/>

C. Retrieve Data:

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"What are some of the groups/individuals that may be affected by this issue?" You may want to summarize group findings on the board or chart paper and add groups as the participants discover those who weren't considered.



Activity F-- Analyzing the Interest Groups

A. Set Stage:

"By taking a close look at what each interest group is concerned about, we can learn a lot about what role these groups might take concerning this issue."

B. Procedure:

Students conduct research as needed. This may involve interviewing group representatives or reading files. Then students complete activity sheet F.

30 min.
individual/groups

ACTIVITY F: Analyze The Interest Groups

<ol style="list-style-type: none"> 1. List interest groups and individuals who might be interested in (or affected by) this issue. 2. List questions or concerns each group might have. 3. Check each interest group who would share question or concern. <small>(From Dr. Mike Giannatelo)</small> 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="text-align: center; padding: 2px;">Interest groups and individuals <small>(list vertically by name)</small></th> </tr> </thead> <tbody> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Interest groups and individuals <small>(list vertically by name)</small>																																																																												
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C. Retrieve Data:

How many of the interest groups share concerns? What are the concerns they share? How many sides of this issue are there as far as the special interest groups are concerned? Were there any surprises for you in doing this activity? Were any of your beliefs about a specific interest group either confirmed or shaken. Record data for all to see.

Activity G -- Summarizing the Points of View of Interest Groups (May be done after Activity Sheet H)

A. Set Stage:

"Understanding the interest group's points of view and concerns will help us predict what roles they may play in confronting the issue."

B. Procedure:

1. Select one of the following options to use with the class.
 - _____ a. Individuals (If this option is chosen each student will need multiple copies of Activity Sheet G).
 - _____ b. Small groups can use activity sheet G or can wait and use after each interest group has developed their own "group's history" (Activity H)

2. Complete the research and discussion based on method chosen; activity sheet G.

25 min.
group

ACTIVITY G: Summarize The Points Of View Of Interest Groups

Analyzing the information in Activity H and other information you can gather about the interest groups, complete the following chart:

Interest Group: _____	History of Interests— Past, Present, Future
<u>Concerns they have about the issue</u>	
<u>How they are affected by the problem</u>	
<u>Alternatives they might choose and why</u>	

C. Retrieve Data:

"How can we summarize each interest group's points of view?"

Activity H -- Developing the Interest Group History (may be done before Activity G) and Role Playing

A. Set Stage:

We have had a chance to identify some of the special-interest groups and analyze their relationship to this issue. Now, take a look at how these groups behave.

B. Procedure:

1. Select an option on how to form groups:
 - ___ a. Divide entire class into interest groups.
 - ___ b. Divide part of class into interest groups; rest of group are decisionmakers.
 - ___ c. Selected students become individual representatives of interest groups; remainder of class are decisionmakers.
2. We have had a chance to identify some of the special-interest groups and analyze their relationship to this issue. Now we need to look at how these groups behave. To help do that, you need to do a capsule history for the group first.
3. Divide the class into groups. (May use previous groups)
4. Caution the groups to not become too involved in the answers or solutions to the problems. Before analyzing who they are or what group they represent, determine the philosophy of the group they represent and prepare a capsule group history.
5. Students complete activity H, assess how they will behave, and determine what they will say in the role-playing.

C. Retrieve Data:

Students role-play their assigned group in the context of a public hearing, a T.V. debate, a radio show, a panel discussion, or any situation the class chooses.

CONCLUSION Summarize your experience with these activities.

TRANSITION Now that you are familiar with the points of view of the various special interest groups, it is probably clear that different groups would hope for a different final decision to be made about this issue. Let's see how the different groups affect that decision-making process.



PHASE III: DEVELOP RECOMMENDATIONS TO PRESENT TO THE DECISION MAKERS

CONCEPT	Cause/Effect, Interaction, Model
PRINCIPLE	A conclusion to researching an issue and understanding groups, is to make recommendations to the decisionmakers.
OBJECTIVE	The student will be able to: <ul style="list-style-type: none">• Identify factors contributing to an issue, identify possible alternatives to the present condition of an issue and analyze the alternatives.• Generate possible courses of action to solve problems and analyze the advantages and disadvantages of these courses of action.• Select a proposed solution, recommendation, or course of action; determine its feasibility and plan its implementation.• Prepare an effective presentation to forward their group's plan.• Construct a list of criteria to evaluate the presentations of the action plans.
PREPARATION	The presentation of recommendations is made by each special interest group identified and analyzed in Phase Two. Each group should use a combination of verbal and written presentations and make visual displays.
MATERIALS NEEDED	<ul style="list-style-type: none">• Copies of Activity Sheets I, J, K, L and M for each participant• Chart paper, colored pens, and tape• Materials from which to create visual displays: paper, markers, pens, chalk, camera, film, overhead transparencies, etc.
PROCESSES USED	<ul style="list-style-type: none">• Classify• Communicate• Infer• Question• Hypothesize• Interpret data• Predict• Formulate models• Communicate
TIME	Depends on how in-depth you get, what methods of information presenting you allow (i.e. film development takes longer) and how complete the recommendations need to be.



DOING THE ACTIVITY -- indoors

Activity I-- Analyzing Factors and Alternatives to Present Conditions

A. Set Stage:

Now that we have some knowledge about the issue and the interest groups, see if we can generate and analyze some alternatives to the present condition.

B. Procedure:

1. Brainstorm, using Activity I for the format. Record in group memory all the factors contributing to the issue.

NOTE: See example of Activity

2. Now analyze how each factor contributes to the problem.
3. After all factors have been analyzed, take each factor and ask: How can we change (eliminate, modify, substitute) this factor to bring about change in the issue? Consider all alternatives no matter how silly they seem.
4. Students complete Activity I including the last column, and describe how the change will affect the problem or issue.

C. Retrieve Data:

Are you surprised that some of the alternatives that seemed silly at first seem plausible now? How will the interest groups view these alternatives?



Activity J-- Analyzing Possible Courses of Action

A. Set Stage:

We have devised some alternatives to the present conditions which should suggest various courses of action. Let's see how many courses of action we can develop and look at the advantages and disadvantages of each.

B. Procedure:

1. Divide students into small groups that include a representative of each special group from Phase II.
2. Groups discuss and develop a list of possible courses of action and the advantages and disadvantages of each. Since the groups contain members of all interest groups, opinions may differ about the advantages and disadvantages of the course of action. All students need to write on their sheets, as they will need the data for the next activity.
3. Students complete Activity Sheet J.

C. Retrieve Data:

Based on the interests, needs, and history of your assigned group, select one or more courses of action that your interest group might support.



Activity K -- Developing an Action Plan

A. Set Stage:

You have all seen that there are many possible courses of action at this point and that people disagree about which one(s) might be the best. Let's take this opportunity for the special interest groups to get together and each come up with what they feel is the best plan of action.

B. Procedure:

Special interest groups from Phase II get together and review data from activities I and J and then complete activity K. NOTE: See example for Activity K. More than one sheet may be needed per group.

C. Retrieve Data:

How is the action plan your group has selected, consistent with your group's history and values?



Activity L -- Preparing to Present your Action Plan

A. Set Stage:

Now that your groups have developed action plans, you need to consider how you will present these plans. Your presentations can make the difference between having your plan or someone else's plan selected. I will give you all an outline of the information that should be included in your presentation. It is up to your group to decide the best way to present your plan.

B. Procedure:

Small groups meet, review, and complete Activity Sheet L.

ACTIVITY L: Make Recommendations By Interest Groups 40 min.
group

We recommend (this action about the issue) _____

because (of these facts) _____

(and these opinions from our group) _____

The following steps would be necessary to implement our recommendation _____

By _____
Interest Group

Investigating Your Environment
Investigating an Environmental Issue 

C. Retrieve Data:

Prepare presentations within guidelines set by instructor.

PHASE IV: DECISION MAKING

CONCEPT	Interaction, Model
PRINCIPLE	This activity allows participants to become decisionmakers or evaluate the decisionmaker's decisions against established criteria. It is an opportunity to do a better job than we perceive decisionmakers as doing.
OBJECTIVE	<ul style="list-style-type: none">• The student will be able to make the presentation prepared in Phase III and make a decision based on the evaluation criteria generated in Activity M.
PREPARATION	<p>Set up the room to accommodate the option selected. Options are:</p> <ol style="list-style-type: none">1. No decisionmakers. After presentations, the entire class evaluates and discusses the proposals, analyzing the consequences of each of the alternatives.2. Entire class is divided into small groups. Each new group consists of one member from each interest group. The new groups each act as an autonomous decision-making body.3. Appoint, select, or elect one person from each interest group to be a decision-making body.4. Selected students (by chance or appointment) are designated as the decisionmaking body early in the game and do not become involved in an interest group.5. Outside groups come in, hear the presentations and become the decisionmaking body. Could be: 1) Another class studying the problem (2) Another class not studying the problem (3) Group of students from different classes or (4) A group of local adult decisionmakers. <p>Decisionmaking body needs time to prepare the operating rules and the stage-setting details.</p>
MATERIALS NEEDED	Multiple copies of activity M with left column completed for each decision maker. Each decisionmaker will need one of these sheets for <u>each</u> presentation to be evaluated.
PROCESSES USED	<p>Depends somewhat upon option selected above and in Phase Three Activities L presentation mode. At a minimum:</p> <ul style="list-style-type: none">• Communicate• Interpret data
TIME	60 minutes, depending upon number of groups presenting, and how you want to close this activity.



DOING THE ACTIVITY -- indoors

A. Set Stage:

Present the decisionmakers, and let them set the stage for the presentations.

B. Procedure:

1. Student groups make their presentations.
2. Decisionmakers listen, use Activity Sheet M, make a decision, and present their decision to the group depending upon the option selected above.
3. There are many ways to make a decision, voting is only one of them. Decisionmakers need to know how they will decide prior to hearing the presentations.

ACTIVITY M: Establish Criteria To Evaluate Recommendation

25 min.
group

To be used by decision making body. After hearing the presentation, rate the recommendations on the chart below.

Note: There are many ways to make a decision. Voting is only one of them.

Criteria (List items needed to consider in evaluating presentations)	Recommendations by Interest Groups
	Name of Interest Group
	(Rate recommendations against criteria)

Summary of the Decision-makers evaluation and report:

C. Retrieve Data:

After group has analyzed factors affecting the problem, analyzed alternatives and made a decision on a possible course of action in activity M, it is important to actually write a letter with their recommendations for solving the issue, including justification and data, to the appropriate group responsible. (See activity A).

*Decisionmakers need 10-15 minutes to decide how they want presentations made. After they set the ground rules, give groups 5-10 minutes to set up.

CLOSURE None. Go to next activity.

TRANSITION An evaluation of what has been accomplished is always necessary, so that you know how to complete the process again, and how to improve it.



PHASE V: EVALUATE THE PROCESS

CONCEPT	Model, Change
PRINCIPLE	Students will have spent some time in this activity. This lesson offers the opportunity to evaluate what they have done and how it might have been done better. Evaluating the process will allow students to increase the effectiveness of their participation in subsequent processes similar to this one and to actively design better processes for decisionmaking in all phases of their lives.
OBJECTIVE	<ul style="list-style-type: none">• The student will be able to describe in writing his/her ideas about the processes in which they have been involved.
PREPARATION	Select one of the following options for this phase: <ul style="list-style-type: none">a. Entire class discussion.b. Small group discussions.c. A written evaluation.d. Any combination of the above.
MATERIALS NEEDED	<ul style="list-style-type: none">• Copy of Activity Sheet N for each participant
PROCESSES USED	<ul style="list-style-type: none">• Observe• Infer• Communicate• Interpret data• Question• Hypothesize
TIME	30 minutes



DOING THE ACTIVITY -- indoors

A. Set Stage:

We have just spent a lot of time studying environmental issues. The processes we used may have been different than those you are used to in school. You will have a chance to evaluate this process and, as you do, think also about what my reasons for involving you in this type of investigation may have been.

B. Procedure:

Using the option selected, students complete Activity Sheet N.

C. Retrieve Data:

Discuss what they think is the value of doing this activity. Do make the point of the real life transferral of the skills they have gained in participating in this activity. Don't let them see it just as information accumulation!

CLOSURE

Make sure students realize the process they went through is important in addition to the information they have gained on the issue. List answers to the question: What things have you learned that you consider important?

TRANSITION

Not necessary, if the issue used was not one currently being worked on. If issue is currently before the public, then lead into the next activity.

ACTIVITY N : Evaluate The Process

95 min.
Individual/group

Respond to the following questions:

1. Group Interaction and Individual participation

a) How did you feel about your participation as an individual? Is there anything you would change about the way you participated for another time?

b) What were some factors that helped people to work together in a group?

c) What things were done to encourage participation by everyone?

d) Did new leadership emerge during these activities? What factors enabled this to happen?

e) How did you feel playing a role with which you were only slightly familiar?

f) What things have you learned about yourself and/or groups that will help you participate better in your real life group decision-making processes?

2. Content and Procedures

a) In what ways was the decision-making process similar to real decision-making processes in your life? (in our school, in our community)

b) What techniques were used to convince, persuade, or sell an idea?

c) What additional information would you like to have had in order to prepare a better presentation or to gain more understanding about the issue?

Investigating Your Environment
Investigating an Environmental Issue



**PHASE VI: FOLLOW UP WITH THE ISSUE AS IT ACTUALLY HAPPENS
(OR HAPPENED)**

CONCEPT	Interaction, System
PRINCIPLE	Students compare their environmental investigation and how it turned out with the actual issue or an issue in contention. Perhaps their work and analysis is better than what is currently happening or they can see where their work is lacking.
OBJECTIVE	The student will be able to: <ul style="list-style-type: none">• Construct a matrix of at least six different information sources.• Make a comparison between the study and the real issue.• Compare their discussions and decisions with those of the people responsible for the management of the particular issue being studied.• Compare their data collection techniques and processes with those of people in the professions concerned with the issue.• Have the opportunity to write for additional information about the actual decision.
PREPARATION	Complete phases I through V of this lesson plan
MATERIALS NEEDED	<ul style="list-style-type: none">• Copies of activities O and P (2 pages back to back) for each student• Access to media or information on the actual issue
PROCESSES USED	<ul style="list-style-type: none">• Communicate• Infer• Question• Interpret data
TIME	2 to 3 hours depending upon the depth of the research.



DOING THE ACTIVITY -- indoors

Activity O -- Analyzing Information Sources

A. Set Stage:

There may have been some differences between our study and the real issue. See whether any differences exist.

B. Procedure:

Students research actual issue and gather sources of information, then complete Activity Sheet O.

45 min.
groups

ACTIVITY O : Analyze Information Sources

Examine sources of information about the real issue.

Media (Newspaper, TV, Interview report, etc.)	Source of Information (Who put it out) (Agency, Indiv., Org.)	Title	Date	Purpose of Publication or other info.	Points of view Expressed

C. Retrieve Data

How different were the sources of information for our study and those of the real issue?
What difference(s) would this make to the final outcome of the real issue compared to that of our study?



Activity P-- Comparing Results

A. Set Stage:

How well did we do? Take a look at the results of our study and those of the real issue. How well do you think they will match?

B. Procedure:

Discuss questions as a class or in small groups. An option is for students to complete activity sheet P first and use this as a basis for discussion and a final report.

<p>ACTIVITY P: Compare Results (page 1) 35 min. group</p> <p>Compare your study of the issue with the actual issue as it developed or after it happened.</p> <p>Interest Groups Were the interest groups you identified in your simulation the same as those in the real issue?</p> <p>Which interest groups were most vocal in your simulation?</p> <p>Which questions on your list (Activity B) were most important?</p> <p>What additional questions were asked in the real issue?</p> <p>Points of View Compare your summary of points of view (A) during the real issue.</p> <p>Did any of the groups in the real issue change their position? What reasons could account for this?</p> <p>Was there dissent within the various groups in the real issue? What was the nature of this dissent?</p> <p>What new facts and figures were brought out in the real issue?</p>	<p>ACTIVITY P: Compare Results (page 2) 30 min. group</p> <p>Decision-Making Compare the decision-making process in your simulation (if this was a part of your study) to the actual decision-making process.</p> <p>Who were the decision-makers in each?</p> <p>What factors had the most influence on the decision in each?</p> <p>What did each group "win" and "lose" in the real issue?</p> <p>What compromises were made?</p> <p>Implications of the Decision What provisions are going to be made for followup studies of the proposed action?</p> <p>What future issues or situation might have components similar to this issue?</p> <p>In general, what are the implications of the final decision . . .</p> <ul style="list-style-type: none"> --- politically --- economically --- scientifically --- environmentally --- other
---	---

C. Retrieve Data:

Students report on questions raised in Activity P. The entire environmental investigation lesson should be discussed in terms of how the students felt about this exercise and whether or not they would recommend it for other students to experience.

CLOSURE How can this process be applied to _____ (name or use a current issue).

A QUICK WAY TO INVESTIGATE AN ENVIRONMENTAL ISSUE

CONCEPT	Cause/Effect, Change, Interaction, System, Model, Perception, Scale (perhaps others depending on issue selected)
PRINCIPLE	In some cases it may not be necessary or desirable to devote the time needed in the previous <u>Investigation of an Environmental Issue</u> . This may be true when the process used is less important than a capsule analysis of the issue, or when a less complete understanding of the issue is all that is necessary for your purpose. This quick way to investigate an environmental issue may then be useful.
OBJECTIVE	The student will be able to: <ul style="list-style-type: none">• State the issue in his/her own words.• Identify the main groups and individuals who would be interested or affected by this issue.• Analyze the major factors affecting the problem.• Postulate some courses of action to bring improvement to the issue.• Develop a plan of action for implementation of a proposed solution.• Summarize the process they used to explore an environmental issue.
PREPARATION	<ol style="list-style-type: none">1. Do the activity yourself using the attached sample issue on <u>Opossum Population Increase</u>.2. Select an issue for your class.3. Select and reproduce copies of newspaper articles that will be the basis for your student's understanding of the environmental issue you have chosen.4. Reproduce copies of Activity Q.
MATERIALS NEEDED	<ul style="list-style-type: none">• Copies of the article and lab sheet for each participant
PROCESSES USED	<ul style="list-style-type: none">• Observe• Communicate• Infer• Interpret data• (And others depending on issue and article selected)
TIME	60 minutes



DOING THE ACTIVITY

Activity 1 -- Gathering Information

A. Set Stage:

Many times we need ways to analyze environmental issues in order to better understand them. Maybe we want to provide a logical way for our students and citizens to analyze a situation before coming to a conclusion. For the next hour, I want to share with you a quick way that will start to do this.

B. Procedure:

1. Distribute a newspaper article and ask participants to read it.
2. Briefly discuss the article and analyze the situation.
3. Distribute Activity Sheet Q and say: Working in groups of two, discuss the article and complete items one through six.

C. Retrieve Data:

Discuss lab sheet with class, let them complete sheet with information from other groups. Make sure everyone has the data they need to continue.

CLOSURE

Ask groups about difficulties they had with filling out the sheet, and how they would go about getting more information.

TRANSITION

Analyzing an issue is only half the solution; the other half comes in identifying actions.

ACTIVITY Q: A Quick Way To Analyze An Environmental Issue

25 min.
pairs

1. Read the article and complete the following items. Write the article name, date of publication and publication name here.

2. Impact of Issue (Circle appropriate words)

Local None Some A lot

Regional None Some A lot

National None Some A lot

Why?

3. List some groups or individuals that would be interested and/or affected by this issue.

4. List at least four additional things you want to find out about this issue and how you would collect and record the information.

Things to find out

Where to find

How to record

1. _____
2. _____
3. _____
4. _____

5. List the major factors that you feel are affecting the problem.

6. List at least three possible courses of action to bring about an improvement or solution to the issue.

Investigating Your Environment
Investigating an Environmental Issue



ACTIVITY A : Describe The Issue

40 min.
individual/groups

Title of Issue: _____

Description of Issue:
What is happening?

Where is it happening? (Past history and events, etc.)

Who is affected?

How are they affected?

What are the impacts of the issue? (Economically, aesthetically, socially, politically, etc.)

What are the possible courses of action about the issue?

Is there an environmental impact statement required and available? Where?

Name, address and telephone number of agency/organization
with major responsibility for final decision and management:



ACTIVITY B: Collect and Record Information

45 min.
individual/groups

List some factors that might contribute to the issue.

Describe what you want to find out about this issue and/or its factors.

Describe the kind of data that needs to be collected.

Information sources about this resource or activity (people, places, reports, etc.).

- 1.
- 2.
- 3.

Based on the information we have read and the things we've discussed, our group would like to find out more about:

- 1.
- 2.
- 3.

Questions we will ask to find out these things are:

- 1.
- 2.
- 3.
- 4.

In order to find out more about these things, we will make specific observations about:

- 1.
- 2.
- 3.

We will use the following data recording procedures:



ACTIVITY D: Analyze The Impact

35 min.
individual/groups

Based on the data you have collected so far, describe the general interest and impact, as you see it, that this issue can have in the following areas.

Area	Impact on Other Nearby Environments	Social Patterns	Economics	Politics	Other
Locally (county, city) Interest Impact					
Regionally (State or states) Interest Impact					
Nationally Interest Impact					
Internationally Interest Impact					

From the chart above, your observations and the analyzing of information about the issue — construct a brief statement which would summarize the general impact of this resource or activity.



ACTIVITY E: List The Possible Interest Groups

35 min.
individual/groups

It is important to identify the groups and individuals who have a right to be involved in investigating, reporting, and solving the issue. List key groups or individuals in the categories below.

<p style="text-align: center;">Who</p> <p>Those groups of individuals interested in the issue.</p> <hr/>	<p style="text-align: center;">Why</p> <hr/>
<p>Those groups or individuals that should be interested in the issue.</p> <hr/>	<p style="text-align: center;">Why</p> <hr/>
<p>Those groups or individuals affected by the issue. (May include some from above.)</p> <hr/>	<p style="text-align: center;">Why</p> <hr/>



ACTIVITY F: Analyze The Interest Groups

30 min.
individual/groups

1. List interest groups and individuals who might be interested in (or affected by) this issue.
2. List questions or concerns each group might have.
3. Check each interest group who would share question or concern.
(From Dr. Mike Giammatteo)

Interest groups and Individuals (list vertically by name)							

Questions/Concerns
(place x in each column of group that shares this question or concern)

1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									



ACTIVITY G: Summarize The Points Of View Of Interest Groups

25 min.
group

Analyzing the information in Activity H and other information you can gather about the interest groups, complete the following chart:

Interest Group: _____	History of Interests— Past, Present, Future
<u>Concerns they have about the issue</u>	
<u>How they are affected by the problem</u>	
<u>Alternatives they might choose and why</u>	



ACTIVITY H : Develop The Interest Group History

35 min.
group

Complete the following chart for the group you represent.

Your group represents (Is made up of)	Questions or Concerns/Comments
<p>Interests</p> <hr/> <p>Past - Historically, your group has been interested in (supported)</p> <p>Present - At the present time your group is involved in</p> <p>Future - Trends indicate that the future of your group</p>	
<p>How your group is affected by the problem</p> <hr/>	
<p>Additional information from data supplied</p> <hr/>	



ACTIVITY J: Analyze Possible Courses Of Action

30 min.
group

Develop a list of possible courses of action from Activity I and all the other information and data you have collected. List below, analyze advantages and disadvantages of each.

Possible Courses of Action	Advantages	Disadvantages

Based on the interest, needs, and history of your assigned group, select one or more courses of action that your interest group might support.

Before deciding on your final recommendations, your group should analyze these courses of action using the chart in Activity K.



ACTIVITY L: Make Recommendations By Interest Groups

40 min.
group

We recommend (this action about the issue) _____

because (of these facts) _____

(and these opinions from our group) _____

The following steps would be necessary to implement our recommendation _____

By _____
Interest Group



ACTIVITY N : Evaluate The Process

35 min.
individual/group

Respond to the following questions:

1. Group Interaction and Individual participation

- a) How did you feel about your participation as an individual? Is there anything you would change about the way you participated for another time?

- b) What were some factors that helped people to work together in a group?

- c) What things were done to encourage participation by everyone?

- d) Did new leadership emerge during these activities? What factors enabled this to happen?

- e) How did you feel playing a role with which you were only slightly familiar?

- f) What things have you learned about yourself and/or groups that will help you participate better in your real life group decision-making processes?

2. Content and Procedures

- a) In what ways was the decision-making process similar to real decision-making processes in your life? (in our school, in our community)

- b) What techniques were used to convince, persuade, or sell an idea?

- c) What additional information would you like to have had in order to prepare a better presentation or to gain more understanding about the issue?



ACTIVITY O : Analyze Information Sources

Examine sources of information about the real issue.

Media (Newspaper, TV, interview report, etc.)	Source of Information (Who put it out) (Agency, indiv., Org.)	Title	Date	Purpose of Publication or other info.	Points of view Expressed



ACTIVITY P: Compare Results (page 1)

35 min.
group

Compare your study of the issue with the actual issue as it develops or after it happened.

Interest Groups

Were the interest groups you identified in your study the same as those actually involved?

Which interest groups were most vocal in your study? In the real issue?

Which questions on your list (Activity B) were actually asked in the real issue?

What additional questions were asked in the real issue?

Points of View

Compare your summary of points of view (Activity G) with the points of view expressed during the real issue.

Did any of the groups in the real issue change their original position as the issue developed? What reasons could account for this?

Was there dissent within the various groups during the issue and following the final decision? What was the nature of this dissent?

What new facts and figures were brought out during the real issue?



ACTIVITY Q: A Quick Way To Analyze An Environmental Issue

25 min.
pairs

1. Read the article and complete the following items. Write the article name, date of publication and publication name here.

2. Impact of Issue (Circle appropriate words)

Local None Some A lot

Regional None Some A lot

National None Some A lot

-W/by_?

3. List some groups or individuals that would be interested and/or affected by this issue.

4. List at least four additional things you want to find out about this issue and how you would collect and record the information.

Things to find out

Where to find

How to record

1. _____
2. _____
3. _____
4. _____

5. List the major factors that you feel are affecting the problem.

6. List at least three possible courses of action to bring about an improvement or solution to the issue.



ACTIVITY R: Action Planning Chart

20 min.
group

1. Suggested course of action (from step 5, Activity Q);
2. Action necessary to implement (technological, social, political?);
3. Identify change agents who can help implement this course of action.

Individuals:

Groups:

Agencies:

4. Implementation steps (what must be done, what order, when?);

5. How would you evaluate the effectiveness of your actions?



ACTIVITY C: Interpret The Information Collected (page 1)

45 min.
individual/group

Management Analysis Matrix

Management Practices Used for this Resource or Activity	Why	Factors to Consider in Managing: _____		
		Special characteristics of the land or resource (suitabilities, limitations, constraints)	Economic Considerations	Effect of current management practices on the total environment



ACTIVITY C: Interpret The Information Collected (page 2)

individual/groups

Describe what the collected data tells you about the issue.

List comparisons, contrasts, or cause-and-effect relationships that can be inferred from the collected data.

What big ideas are suggested by the interpretation of this data?

What implications do these big ideas have to environmental management?

Extending the Investigation

List parts of the investigation that can be explored more fully by further data collection.

Describe data that still needs to be collected. (Where? How often? Time of year?)

Describe what might be significant about collecting the additional information.



ACTIVITY I: Analyze Factors And Alternatives To Present Conditions (Example)

Activity I is designed to brainstorm all possible alternatives. List the factors contributing to the issue. Take each factor and ask: How can we change this factor (eliminate, modify, substitute) to bring about a change in the issue? Consider all alternatives, no matter how silly they may seem.

Factor	How it contributes to the problem or issue	ALTERNATIVES TO ITS PRESENT CONDITION Select one or more alternatives below and describe how the factor might be changed (<u>Elimination</u> <u>Modification</u> <u>Substitution</u>)	Describe how the change will affect the problem or issue
<u>Example: Traffic Management</u>			
Width of streets	Cause traffic jam	Put in walking or bicycle paths one-way streets Mass transit Adjust starting, closing, working hours	Eliminate car traffic, cause changes in working-social patterns Ease congestion because of one-way flow Minimize number of vehicles, no congestion, less air pollution, etc. Spread out traffic over a longer period of time
Everyone start and quit work at same time	Cause traffic jam		



ACTIVITY I: Analyze Factors And Alternatives To Present Conditions

40 min.
group

Activity I is designed to brainstorm all possible alternatives. List the factors contributing to the issue. Take each factor and ask: How can we change this factor (eliminate, modify, substitute) to bring about a change in the issue? Consider all alternatives, no matter how silly they may seem.

Factor	How it contributes to the problem or issue	Alternatives to its present condition Select one or more alternatives below and describe how the factor might be changed (<u>Elimination</u> <u>Modification</u> <u>Substitution</u>)	Describe how the change will affect the problem or issue.



ACTIVITY K: Develop an Action Plan to Implement Your Proposed Recommendations (Example)

Select one of the solutions, recommendations or courses of action suggested by your group. Write it below under "Suggested Solution." Complete the rest of the chart. This Activity can help you determine whether your solution is feasible and what course of action you plan to take for its implementation.

Suggested solution (or recommendation or course of action)	Type of action necessary to implement your idea	Identify change agents who could help implement your idea	Implementation steps	Evaluation methods How will you follow up and evaluate the effect- iveness of your actions?
(Write in solution suggested by the group in Task J)	<p><u>Technological</u> What kinds of tech- nological action would be necessary to implement this idea?</p> <p><u>Social</u> What kinds of social action would be nec- essary to implement this idea?</p> <p><u>Political</u> What kinds of politi- cal action would be necessary to imple- ment this idea?</p>	<p><u>Individual</u> What kinds of things could be done through individual action?</p> <p><u>Groups</u> What kinds of things could be done by/ through groups? Informal/Formal (organizations)</p> <p><u>Agencies</u> What kinds of things could be done by/ through agencies?</p>	<p>(What must be done?-- in what order?---When?)</p> <p><u>Steps</u> <u>Target Date</u></p> <p>1.</p> <p>2.</p> <p>3.</p>	



