ABSTRACT
        Supplementary teaching activities at the junior- and
senior-high school level on issues and topics involving population
factors are provided. Topics include population growth, demography,
graphing, population distribution, and population control. Community
and national census factors as well as world population are studied.
Students are helped to view themselves as individuals in relation to
population groups. Certain activities promote decision making between
individual preferences and what would be best for society as a whole.
Several activities focus on the woman's role and attitudes toward
population stabilization and childbearing. Use of media and community
resources is encouraged. Seven of the 54 activities are incomplete
because copyrighted materials have been removed from the document.
(AV)

POPULATION:

54 Activities

An Experimental Unit

First Draft

Prepared by the Center for Teaching International Relations

INTRODUCTION

This volume is not meant to be used as a text or as a complete unit. This volume simply contains a wide variety of supplementary teaching activities on issues and topics involving population factors. Some activities are discussion starters, some provide factual data, some focus on thinking skills, and some are simulation games. All the activities are for experimental purposes. Hopefully, you will look through them and use the activities that will supplement your attempts to teach population education. You can find activities to help teach population growth, demography, graphing, population distribution, population control, and other population topics that are currently dealt with in Junior High and High School classrooms. The following index gives you some ideas on where to use the activities. Remember, these are experimental, supplementary activities.

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Title: The Individual: A Population Actor (Adapted by Richard Schweissing) *

Introduction: Ultimately the demography of a society or of the world is determined by a composite of decisions and actions of individuals. It is the intent of this activity to guide the individual into an understanding of his own role as a population actor and how his individual actions and decisions form an integral part of the whole population picture. The successful completion of this lesson will allow the individual to chart the determinants and consequences of his own population behavior.

This activity should graphically illustrate to the individual that the decisions he makes regarding population factors in his life affect the entire society. By the same token, the society imposes many population decisions upon the individual. Thus, the demography of a society is the result of the interdependence of the individual and his society. Further, the individual will be exposed to some of the necessary components for change in the overall demography to take place.

Briefly, this activity consists mainly of a collection of data about the individual's history and his present and future expectations regarding his role as a population actor. This data will then be analyzed in a composite picture of the entire group, from which the group can then draw conclusions about demographic trends reflected. Each individual can also picture how he influences those trends.

In preparation for this activity it would be useful for the leader to read "Each of Us: A Population Actor," Options, pp. 5-8.

Lesson Objectives:
As a result of participating in this activity, each individual will:
1. Be able to identify and discuss the significant population events in his life.
2. Be able to categorize the population events of a person's life into those which he can control and those over which he has little or no control.
3. Be able to identify one's own long- and short-range values and preferences as they relate to population issues.
4. Know how to assimilate data from individual responses in a form usable for drawing general conclusions.

Mechanics:
Time: One class period (participants should complete questionnaire in advance)
Materials: Individual questionnaires, tabulation chart, life expectancy chart, chalkboard or overhead projector with tabulation chart on a transparency.

Activity:
1. Assign the group in advance the completion of the questionnaires on their role as a population actor. Particularly for students, it is doubtful they will be able to answer the questions in class, since some require checking on ancestors.
2. Begin the session with a brief presentation on the individual as a population actor. This can be either done orally or by having the group read copies of the article from Options. 5 minutes
3. Compile the composite information on the tabulation chart. This should be done by each individual, but the leader should arrange to have a large version readily visible by all either on a chalkboard or an overhead projector. Note: the tabulation chart may need to be adapted to fit the specific group, i.e., if the group is all women, the comparative data between women and men will be irrelevant. 10 minutes.
4. Ask the group to identify visible trends and facts reflected in the composite data. Some items to note would be:
a. size of community represented by births vs. current community setting.
b. average number of times a person has moved.

c. average number of birth expectations vs. the average number of siblings for group members.
10 minutes.

5. Ask the group to make conclusions about the population based on the experience and expectations of the group. Conclusions should include:
a. an estimate of population growth rates
b. determination of where the population is coming from geographically
c. expectations of increased or decreased population rates
d. mobility of the society.
10 minutes.

6. Ask the group to identify those conclusions in which they have direct responsibility and could therefore change, those in which they have only a marginal choice, and those which they cannot influence, but must simply accept. 10 minutes.

7. The activity should be concluded by each individual determining how he fits into the composite of the group. Does he conform to most conclusions? Are his goals different? Why? Does his experience and goals reflect a consistent attitude on population, or does it reflect little concern or awareness of population issues?

Future Resources or Suggestions: Using the almanac or other sources of population data, the group may wish to compare their composite with national trends.

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*Adapted from Options

Personal Population Data Questionnaire

A. Personal Characteristics

Age_____ Year of Birth_____ Sex_____ Race_____

Birthplace_____Approx. Size of Birthplace_____
              Town   State

Present Residence_____Approx. Size_____
                   Town or City

Life Expectancy_____
    (See your group leader for a table and select the age closest to your own.)

Occupational Plans_____Intention to Marry_____Age_____

Expected Number of Children_____

B. Your Ancestors

	Birthplace	Present (final) Residence	Life span

1. Grandparents:
mother's mother_____
mother's father_____
father's mother_____
father's father_____

2. Parents:
mother_____
father_____

At what age did they marry? _____   _____
                           mother   father

You are No. _____ of _____ children

Migration after marriage

Name of Place   rural   urban   suburb

1._____
2._____
3._____
4._____
5._____
6._____

c. You Migration History (after leaving parents)

Name of Place	rural	urban	suburb
1.			
2.			
3.			
4.			

d. Your Present and the Next Few Years

Do you plan to marry?_____ Why?_____

If not, what alternative living styles can you think of? _____

_____

If yes, do you think your spouse will be older or younger? _____

Do you plan to have children?_____ Why?_____

At what age would you like to have your first child?_____

How long after marriage would this be?_____ Why is this the time?_____

_____

How many more or fewer children do you want than your parents had? _____

Why? _____

Where do you expect to live?_____ Why? _____

_____

Tabulation of Personal Characteristics

Average Age_____

Range of birthplace by size of population:	No.	Percent
Under 2,500		
2,500-10,000		
10,000-50,000		
50,000-100,000		
1000,000-500,000		
Over 500,000		

How many different states are represented?_____countries?_____

Present residence:
Living in same house as at birth
In same town
In same state
In same country

Intention to marry:

Males intending to marry
Females intending to marry

Average number of births expected:
By all persons in the group
By all females in the group
By all males in the group
Average number of siblings plus one

Average number of moves_____
Average number of moves for parents_____

Title: Population Pyramid Analysis   (Adapted by Richard Schweissing)

Introduction: One way to help people visualize the effects of various population factors is to study age pyramids of a given population. By looking at the relative size of the population at different age levels in this graphic manner, it is easier to understand what happens in different societies because of wide differences in population factors.

This activity will also show students how the population of a society is interrelated with other important events that are occurring in a society. Specifically, the differences between mature, industrialized societies and developing, agricultural societies reflect how change in this one component of the society results in change in population growth patterns.

This activity consists of analyzing data provided by three population age pyramids to determine the kinds of countries that are represented in each pyramid. Once the general category (industrialized/agricultural) has been identified, the group will use the data to explain the factors which cause the differences in the pyramids.

Lesson Objectives:
After completing this activity, each individual will be able to:
1. read and understand graphs in pyramid style
2. identify the four basic factors that affect population age group patterns.
3. explain some possible effects of changes in the composition of the population on the political system, the economic vitality of the area, and social services.
4. Assess the importance of birth, deaths, and migration on population growth or decline.

Mechanics:
Teaching Time: One class period
Materials: Population Pyramids for 3 nations

Activity:
1. Explain to the group that this session will be devoted to an examination of how age factors affect population growth rates. It will be easier to look at these factors from a comparative view of noting what is happening in different kinds of nations. Their first task is to identify the kinds of nations represented in population pyramids. Pass out the one page with the three population pyramids on it. Ask the group to divide into groups of 3 or 4 and try to identify the countries (or kinds of countries) represented.
10 minutes
2. Ask several groups to report on the conclusions they have reached, along with the reasons for having made them. This phase should finish with the group reaching a consensus on the right answers. The answers are: a. India b. United States c. Costa Rica. It is unlikely that the group will be able to identify specific countries except by random guessing, but they should be able to at least determine that (a) and (c) are underdeveloped countries and (b) is a developed country. The leader may want to announce the specific countries once these general conclusions have been reached, but this is really on of secondary importance.
10 minutes
3. Ask the group to identify those factors which cause the pyramids to be different. Four factors should emerge:
a. Birth rates -- if the percentage of small children is considerably larger than the percentage of people at childbearing ages, the birth rates are high. Low

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birth rates are reflected in relatively equal numbers of children and people of childbearing ages.

b. <u>Death rates</u> -- causes of death for any particular age group are reflected by small percentages at that level. For example, a country involved in war will show a decrease at the age levels of young men. The group may go further to project a decrease in the generation that is born when these men would have been at childbearing age. A ripple effect is felt for several generations. The opposite is true in the United States with the post-W.W. II "baby boom". A second large wave of children came when that generation reached child-bearing ages.

c. <u>Survival rates</u> -- if the death rate for infants and children is low, the survival rate becomes increasingly significant because a larger number of people reach the childbearing age and they in turn increase the base of the pyramid.

d. <u>Migration</u> -- large numbers of people moving in or out of an area will affec⁺ the pyramid significantly. This factor is less important than in earlier days on a national scale, but may have an important impact on particular communities, e.g., a small rural community that seems to hold no future may find a sharp decline in the pyramid at the age where children are leaving home.

15 minutes

4. A final point to be discussed using the information accumulated in the session thus far is: why are there significant differences between the pyramids of industrialized countries and developing countries and yet very common characteristics within the groups. Some conclusions that may be reached are:

a. The need for children as a labor force in agrarian societies
b. the need for children as a form of "social security" in poorer countries
c. the lack of a real utilitarian role for children in industrialized countries
d. the better medical care and sanitation controls in industrialized societies resulting in longer life expectancies.

15 minutes

<u>Future Resources and Suggestions</u>: The group may go from this activity to designing pyramids which project different population growth rates. A good example is an overlay pyramid on page 36 of <u>Options</u> which shows the U.S. with a 2-child and 3-child growth rate.

<u>Student Materials</u>: One page reproduction of population pyramids on page 35 of <u>Options</u>.

Title: Attitudes Toward Childbearing   (Adapted by Richard Schweissing)

Introduction: Many decisions regarding family size are influenced by societal pressures and norms. Other factors include the economic circumstances and career attitudes of the prospective parents. This activity is designed to allow an examination of some of the influences that prevail in the decision to bear children. If people recognize the influence of societal pressures and the need to examine parental vs. career roles, they will be better prepared to make real choices about their own family size.

This activity is designed to guide individuals in their own expectations regarding family size in the context of the perception of what the society expects. By identifying perceptions that are not often articulated, they will be more aware of factors pressuring their own decisions.

Utilizing an individual survey dealing with expectations of marriage relationships and childbearing, the group is directed to examine reasons for the expectations that surface in a composite of the answers of individual group members. The activity is then focused on some of the reasons people have children through the use of a scenario about one couple's plans. The activity culminates with a values discussion of the reasons people have children.

Lesson Objectives:
After completing this activity, each individual will be able to:
1. Suggest various personal actions through which he can influence population changes.
2. Identify factors in American society that influence the types of population-related decisions a person makes.
3. Identify his own long-and short-range values and preferences as they relate to population issues.
4. Suggest several ways of altering existing population trends so that the outcomes are consistent with one's own values and those of society.
5. Assimilate data from individual responses into a useful composite form.

Mechanics:
Teaching time: One class period
Materials: Individual copies of "Survey: Marriage & Childbearing", and "Case Study: Are Boys Better?" Chalkboard or overhead projector and transparency of the survey.

Activity:
1. Each individual should be given a copy of "Survey: Marriage and Childbearing" to complete, preferably prior to the beginning of the session.
2. The session itself should be opened with some basic introduction to the ideas that many of our attitudes regarding marriage and childbearing are the product of the society in which we live. Therefore, the purpose of the session is to identify those attitudes commonly held by the group and then look for the reasons why they exist. The group should be urged to approach the discussion with an open mind prepared to accept the possibility that some commonly accepted values may no longer hold any valid purpose for society.
3. Tabulate the results of the survey. This can be done in a number of ways. If the survey was taken early, the papers may be collected and tabulated in advance. If they are tabulated at the beginning of the class session, it can be done by a show of hands. Unless the group is fairly open, it may be wise to exchange papers randomly so anonymity may be maintained. Be sure that male and female responses are tabulated separately. 10 minutes.
4. With the group, identify those responses that are similar. It is very likely that many of the answers will reflect common plans for marriage and child-

bearing. Call the attention of the group to differences (if they exist) between male and female responses. After common answers and differences based on sex have been defined, ask the group to explain reasons for those views that are held in common and see if explanations can be offered for the differences.

Mentioned or not, tradition will be reflected in many answers. Marriage age for the majority falls within a common age for the whole society. Some probing might reveal that individual expectations reflect the actual experience of the parents. Family size also follows some common patterns. However, trends here may be away from the pattern of previous generations.

Differences expressed between males and females may be reflected in the desire of more women to have careers. It may also reflect the economic perceptions held by many of the need for both members of a marriage to work.

Another area to consider is the correlation between the expectations for a woman to work and the number of children expected. If the results in fact warrant such a response, it would be important to raise the point of expendability of children in a modern industrial society. The group may explore the growing attitudes related to the idea that children are now more a product of choice than either of need or chance.   20 minutes

5. To complete the discussion, the group should focus some attention on the reasons people have children. A springboard for this phase of the discussion is the "Case Study: Are Boys Better?" Questions to raise following the case study:

a. Is Paul and Freda's reason for wanting a boy a common one? Is it valid?
b. What are some other reasons for wanting children, or one of a particular sex?
c. Are there any alternatives to these goals?
15 minutes

6. Once the discussion is over, a repeat of the original survey will show what, if any, attitudes changed because of the discussion.

Title: Mother of the Year (Adapted from Equilibrium)

Introduction: As pressures of inadequate quantities of food and increasing popula-
tion on a finite planet continue to build, the acceptability of large families
becomes less popular. Industrialized nations have emerged with a family pattern
that is much smaller because children no longer perform a contributing economic
function as is the case in dominantly underdeveloped nations. Hence, children
become a matter of choice and are an economic liability to their parents. Each of
these factors has contributed to a general public awareness of the need to question
the historical sex roles of both men and women, but more importantly the latter,
since women are no longer easily left in the home to find fulfillment in rearing
children and maintaining a household, carrying out day-long routine chores. Both
the opportunity and the need to find personal fulfillment in other careers have
converged to start the process of change in viewing the two sexes with greater
equality.
        This activity is designed to guide groups in the discussion of values which
have to be questioned in the context of the changes which are taking place by
using the familiar age-old format of a Mother of the Year contest. The candi-
dates, however, are a mixture of the traditionally expected candidates and women
who have adopted less conventional roles.
        Change becomes the major concept of consideration, as these candidates
represent both traditional and newer roles of women. The group must decide how
much change should be advocated, or would be acceptable.

Lesson Objectives:
After participating in this activity, each person should be able to:
1. Explain some of the trends reflected in the changing roles of women and begin
    to articulate personal attitudes and feelings about these changes.
2. Suggest other roles women are adopting that are not reflected by the candidates
    presented in the activity.
3. Discuss some of the attitudes that influence family size.

Mechanics:
Teaching time: 1 class period
Materials: Duplicated copies of the "Mother of the Year" sheet for each participant.

Activity:
        1. Pass out the Contest sheets, and divide the group into small groups of 5
or 6. Read the instructions with the group as given at the beginning of the
Contest sheet. Have the groups deliberate on their selection of a candidate for no
longer than 15 minutes.
        2. Have a spokesperson from each group which reached a unanimous decision
announce their choice, and the reasons for their selection. This may take the form
of some campaign-style hilarity, and this can be allowed.
10 minutes
        3. Once finalists by group have been announced, any person may be allowed to
speak on behalf of, or against, a particular candidate. Although not to be encour-
aged, a person who strongly favors a candidate not previously nominated may announce
at this time the nomination of the particular candidate. After sufficient time for
campaigning has been allowed, a vote should be taken and the winner announced.
10 minutes
        4. Debrief the experience of the group, using the questions at the end of
the Contest sheet.
20 minutes

Further Suggestions:

Let the group draw their own profiles of the ideal "Mother of the Year" or "Woman of the Year." Also, try writing profiles of the ideal "Father of the Year", taking into consideration how the man's role must be altered to complement the perceptions and roles of the "Ideal Mother" or "Ideal Woman."

MOTHER OF THE YEAR CONTEST

The purpose of this activity is to stimulate discussion of traditional pronatalist attitudes and the new awareness of men's and women's roles

You have been selected to serve on the National Selection Committee (composed of several subcommittees of 6 persons each) for the OUTSTANDING MOTHER OF THE YEAR Contest. Your mission, should you decide to accept it, is to pick ONE from the six regional winners whose qualifications are described below. The selection must be the UNANIMOUS decision of the group.

A spokesperson for your committee will be asked to give the reasons each candidate was selected or rejected.

CANDIDATES

MS. ANN SEMMLER, San Francisco, CA
Sponsor: Association for Voluntary Sterilization
age 29 — husband is sales representative for IBM won court case establishing the right to be sterilized regardless of number of children adopted her two children a boy four and a girl two graduated Phi Beta Kappa from Vassar teaches a course on Women's Rights at the University of California, Berkeley president of local chapter of NOW member of Zero Population Growth and Sierra Club hobby gourmet cooking

MRS. JUNE HUNTER, Boise, ID
Sponsor: American Association of University Women, Greater Boise Branch
age 37 husband manages Montgomery Ward Store in Boise mother of 3 boys, all honor students in high school and junior high BS, Idaho State University MS, University of Idaho elementary school teacher, 10 years experience past president Idaho Education Association presently programming a new math series for slow learners led push for equal pay for equal work for women teachers and State employees Democratic candidate for Idaho House 1974

MRS. JEAN FIXON, Cedar Bluffs, NE
Sponsors: Lincoln Kiwanis Club and Daughters of the Pioneers, Nebraska Chapter
age 72 mother of eleven, grandmother of 73, great-grandmother of 29 resides on farm, built 160 acre homestead into 2000 acre dairy and fruit farm one of the original homesteaders in Nebraska, she and late husband built sod hut as their first home Nebraskan "Mother of the Year" in 1954 and again in 1969 stated in recent newspaper interview "Children are the spice of life and the salt of the earth"

MS. JOANN GREEN, Chicago, IL
Sponsor Cook County ZPG
age 32 unmarried one son, four years old lives with environmental lawyer, past 3 years MA from the University of Chicago in Sociology, Magna Cum Laude organized Chicago chapter of NOW presently writing book "The Future of Women in Eliciting Corporate Responsibility" - refused honorary doctorate from Antioch College as irrelevant organized a day care center which involves both men and women and provides family-like relationships for the children

MRS. BETTY BAKER, Syracuse, NY
Sponsor: Syracuse Chamber of Commerce
age 49 immigrated from England in 1947 husband is prominent corporation lawyer mother of five girls and three boys, five are graduates of CCNY, three in high school, one son has doctorate in nuclear physics from MIT, one is in cancer research graduated from high school at age 40 same class as second daughter — Girl Scout leader since 1953 Matron of Eastern Star - Republican precinct worker Ruling Elder, Episcopal Church — winner of Syracuse Women's Club's Outstanding Woman of the Year, 1959

MRS. JAYNE WATSON, Atlanta, GA
Sponsor: Retail Clerks Union, AFL CIO
age 52 migrated from Montford, AL after husband died five years ago mother of five plus two adopted children three sons have been killed in service last death in Vietnam War employed as a clerk in a chain supermarket — does considerable volunteer work at Community Action Center member of NAACP for 15 years not in leadership role winner of Montford County Fair Cooking Contest in 5 of 8 years she entered

1. What qualities did you consider most important in your selection? Which did you consider weaknesses? Why?
2. Would your selection be the same if you were asked to choose one of these women to be your own mother? your own role in life (if female) or your wife (if male)?
3. What trends and issues influenced your selection? Would your choice be the same if you were older? younger?
4. What is an ideal family size? Take a poll of your classroom and figure the average number of children desired. Compare this to the average number of children per family needed because of the U.S. current age distribution/immigration policy to achieve ZPG (1.4).
5. What attitudes and trends in our society encourage continued population growth? Do these attitudes have any other effects?

(Source: Developed by participants of the 1971 NSF Summer Institute, U. of Cincinnati.

"A forgetful demographer may lose his census."

Title: Find a Million* (by George Otero)

Introduction: For many people, a million is a number with a vague meaning. It is often difficult to get a handle mentally on the meaning of having a million of something. This activity gives participants the chance to explore the notion of a "million" in numerous contexts taken from their own environment. This may not help in understanding what a million is, but it should broaden the participants' knowledge of concepts such as a million miles, a million dollars, or a million people. In addition, participants are encouraged to brainstorm, invent, and explore, utilizing important thinking skills.

Lesson Objectives:
-----to involve participants in recognizing, documenting, and proving the existence of a million of something.
-----to familiarize participants with the concept of a million by utilizing the participants' own environment.

Mechanics:
Time: 1 class period
Materials: none needed for this activity.

Activity:
1. Tell the group to go outside and find a million of something. After they have done this, tell them to prove they have a million.
2. Participants will not respond immediately because the task seems so difficult. Give them time to think and encourage them, yet don't give answers. Once the group determines or discusses a few examples, the list will appear never-ending.
3. Make a list of all the items found; of all the items proven. Discuss these questions with the group:
a. Did this exercise make a million any more understandable?
b. Does a million seem to be a bigger or smaller number than it appeared to be before completing the activity? Does it appear to be the same?

Further Suggestions:
Find a million of something and bring it to class or a group meeting.
What differend kinds of items can you think of such that a million of the item would fit into a 3-ft. cube box?

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* Adapted from an activity in the Environmental Studies Cards

6:1

Title: Car Watching

Introduction: Kids often spend their time in small groups
discussing a wide variety of topics while sitting in a front
yard or next to a street. This activity capitalizes on the
fact that kids do spend their time in this way. Students are
encouraged to learn about population factors and dynamics by
observing and recording what happens on ..eir local street corne:.

Lesson Objectives:
1.   To develop student observation and recording skills
2.   To utilize community sources in studying population factors
3.   To help students develop hypotheses about the people in
     their community after collecting their own data
4.   To document in the students' minds the relationships of a
     simple daily activity to population dynamics

Mechanics:
Teaching time: 1 hour out of class;   1 class period for discus-
     sion of results.
Materials: None

Procedure:

1.   Ask the students if they have ever sat on a street corner
     and talked with their friends. Let students relate some of
     their experiences.
2.   Tell the students that you would like them to do some car
     watching while they are sitting on the curb one evening or
     afternoon.

     Tell them to take a half hour or an hour and observe what
     happens at the street corner. Have them count something that
     catches their attention. Below are some examples of things
     that might be counted. There are many, many more possibilities.

     Number of people in each car
     Number of cars going in each direction at particular times
          of the day
     Number of women drivers
     Number of men drivers
     Number of people wearing sun glasses
     Number of people wearing regular glasses
     Number of people in foreign cars
     Number of people in small cars

3. Once students have collected their data have them bring
   the data to the class and report it. Their data can be
   recorded on the board or on ditto sheets so that the informa-
   tion is available to all students for analysis.

4. Ask the students to make some hypotheses about the people
   in the community using the data they have collected.

   EXAMPLES:
   People use the car as a means of individual rapid transit.
   Most people in the community have poor eyesight.
   People in the community do many things individually between
       3 to 4 o'clock in the afternoon
   People drive around more from 4 to 5 than from 5 to 6 o'clock
   Men are better drivers than women
   Men prefer to drive more than women
   When a family is going somewhere the men usually drive
   In the afternoon more people are going away from town than
       toward the town

5. Students should suggest ways to find out if the hypotheses
   are true. For example, if it is true that men prefer to
   drive more than women, what other things would the students
   expect to find in the community to verify this fact?
   (More men apply for drivers licenses; there are more accidents
   where a man is driving when both a man and a woman are in the
   car; etc.) If there is time and interest students should test
   their hypotheses. If not, you should make it clear that these
   hypotheses are only tentative generalizations from limited
   but useful population data.

6. If students have a difficult time generating hypotheses you
   might have them pretend to be people from another planet who
   have observed these things about this group of people and are
   going to have to report back to the leaders of the planet
   stating what these people are like using the data to make these
   statements.

7. In concluding the discussion ask the students if they think
   the data they gathered is similar in any way to the data collected
   in a census. If the students say "yes" and give examples they
   probably have seen the connection between data collected and
   population dynamics. We count, we generalize, we test, we
   generalize again.

Title: Population Growth--It All Adds Up   (an activity by Richard Schweissing)

Introduction: Many industries and most communities are built with the assumption that there will be ever-increasing populations; that growth is vital to survival. The purpose of this activity is to identify the ways industry encourages population growth and to examine the ultimate utility of such motivation. The ultimate result of an exercise of this sort is to reexamine the values expressed by the cliches, "Growth is Good" and "More is Better."

This activity is designed to encourage the learner to evaluate the perceptions/misperceptions he may have about the role growth plays in influencing the quality of life.

Briefly, this activity is an inquiry lesson in which the group members collect industrial or Chamber of Commerce ads which reflect the desire for growth or to improve the quality of life. The collection, displayed around the room, will form the basis for discussion which will revolve around these basic questions: 1. How does the ad encourage growth? 2. Does the product really improve the quality of life? 3. Could the same results be achieved without growth?

Lesson Objectives:

After completing this activity, each individual will be able to:
1. Identify the possible effects of changes in population growth rates on the demand for resources, the demand for social services, environmental stress, and the economic viability of the area.
2. Distinguish between empirical and value statements.
3. Recognize that quality of life and quantity of life are separate and distinct concepts that may or may not be compatible.

Mechanics:

Teaching time: One class period, plus advance collection of ads by group members

Materials: None, unless the leader chooses to provide a selection of magazines and have the group find ads during the session

Activity:

1. Ask the group members to collect ads which reflect in some way the concept of growth. This may be an ad announcing the growth of a company into some new region or product. It may be an ad that encourages growth by the product it is selling. It may be a promotional ad encouraging movement into an area by industry.

2. Arrange the ads on the wall around the room so the group can see them. Allow the group 5-10 minutes to wander about the room to become familiar with the ads.

3. Begin the discussion with the general question: How do ads encourage growth? Some responses may be:
a. Appeals to better quality of living (housing ads)
b. Appeals with tax incentives (CC ads for industry)
c. Appeals to the right location (access to resources, markets, etc.)
10 minutes

4. Once the kinds of appeals have been identified, the focus should shift to the general question: Does the product really improve the quality of life? A variety of more specific questions should be used to get at this question:
a. How does the product limit the quality of life? (Look at the negative side) For example: a new subdivision of quality homes may appear to be an improvement on the surface, but consideration should be given to such things as the additional demands on resources.

b. What other growth factors must also be considered? An ad to invite industry into an area also implies needs for community planning, support services, etc.

c. What, specifically, is being improved? Often this becomes a difficult answer to ferret out of a glamour ad.

20 minutes

5. A final question to be raised in this discussion should be: Could the same results be achieved without the growth that is being advocated? Answers to this question will require some creative thinking on the part of individuals in the group. The solutions they are now looking for have not been extensively explored. However, the whole growth scheme must be assessed carefully in a world that is becoming acutely aware of its finite resources and continued population growth rates.

Future Suggestions: Students may pursue a similar activity to see if they can identify ads that reflect the desire to limit growth. They may also probe other sources to learn what is being done or suggested in these areas. Talking with local groups may also produce some suggestions.

Sample ads attached.

Title: Changing Migration Patterns to the United States (by Richard Schweissing)*

Introduction: In order to fully understand population growth patterns, it is essential to consider the effect of migration on these patterns. Control of population or even population planning will never be successful if it does not account for the influx or exodus of people by migration. This factor has obviously greater influence in some locales than others; the U.S. is a case where major immigration patterns appear throughout its history. While immigration is not proportionately as great today as earlier in our history, lower birth rates mean that it still has a significant impact on the population growth (see background notes for the teacher). This activity, then, is designed to assist the learner in looking at one aspect of this topic: what can be learned about the kind of person who is entering the U.S.?

This kind of activity is especially good for helping learners develop the concepts of interdependence and perception. Interdependence will become apparent as they compare the areas that have shown sharp increases in immigration with the preference categories under the 1965 law. The perception individuals have of immigrants may change as a result of this activity--at least the individuals will be able to test their perception of immigrants.

This activity is an inquiry lesson using immigration data from the years 1960, 1965, and 1970, and information on the U.S. Immigration and Naturalization Act of 1965 as the information base. The group will identify the important shifts in immigration patterns and attempt to arrive at conclusions about how population growth will be affected by present migration patterns.

Background information for the teacher: Historically, immigration has contributed significantly to the growth and development of the United States. Immigrants now enter this country at a rate of about 400,000 per year. The relative importance of immigration as a component of population growth has increased greatly in the past decade as declining birth rates diminish the level of natural increase.

If immigration were to remain at 400,000 per year and all families were to have an average of two children, then immigrants arriving between 1970 and 2000, plus their descendants, would account for almost a quarter of the total population increase for that period. Once zero growth was reached, the size of the population would ultimately be about 8 percent larger than if there were no international migration.

Immigration affects not only the growth of the population, but also its distribution. Immigrants tend to settle in the largest cities. Assuming the 2-child growth rate, immigrants will contribute about 23 percent of the projected population growth within fixed metropolitan boundaries between 1970 and 2000.

Under the U.S Immigration and Naturalization Act of 1965, "Preference" categories were established for classifying applicants for immigration. Applicants are classified according to relationships with persons in the U.S. or job skills. Preference categories include:
1. Unmarried sons or daughters of U.S. citizens
2. Spouses of resident aliens
3. People with certain professions or skills
4. Married sons and daughters of U.S. citizens
5. Brothers and sisters of U.S. citizens
6. Workers in certain categories that are in short supply in the United States
7. Refugees
Spouses and children of preference applicants are entitled to the same preference if accompanying such persons.

Lesson Objectives:

After completing this activity, each individual will be able to:
1. Identify some of the possible effects of changes in the composition of a population on (a) the economic system and (b) the social system.
2. Read a table containing population information.
3. Assess the importance of migration on population growth.
4. Distinguish between empirical and value statements.
5. Identify one's own values and preferences as they relate to population growth by migration.

Mechanics:

Teaching time: ½ to one class period (30-50 minutes)
Materials: Copies for learners of preference categories of 1965 Immigration Law (may be recorded on chalkboard) and U.S. Census Bureau table on immigration (attached).

Activity:

1. Begin the activity by asking the learners to identify what changes took place in migration patterns between 1960 and 1970, using the Census Bureau table. Important items to note:
a. decline of immigrants from Europe with increasing immigration
b. nearly quadruple growth of immigration from Asia
c. less dramatic, but sharp, growth of immigration from other areas
5 minutes

2. Discuss with the learners the impact on our population, particularly urban population, given present birth rates (use background notes), then ask learners if they can draw conclusions about what impact such people might have on our society. Possible suggestions:
a. greater influence of Asian cultures on American life
b. greater U.S. interest in Asia, with more public orientation toward Asia
c. assumptions may be made about influences on labor market, growth of urban slums, etc. based on perceptions of immigrants being unskilled, incapable of dealing successfully with the American system due to language barriers, etc.
15 minutes

3. Distribute Preference Categories of 1965 Immigration Act copies. Ask the learners to look again at the Census Bureau table and see if the new information might change their reasons for the shift in migration patterns or the kind of people who make up the bulk of migration.
Conclusions should now include:
a. people coming to the U.S. reflect our military involvement in Asia. Orientation may not be as non-western for these people as earlier expected.
b. skilled labor and professionals will be more quickly assimilated into our society than may have been originally expected. This could mean a positive rather than the possibly anticipated negative impact on our economy.
c. attempts are made to limit immigration of those who will compete for scarce jobs.
d. relatives of citizens are likely to receive more successful orientation to America and thus assimilate into society more easily.
15 minutes

4. Summarize final views of immigrants: The final concluding discussion is likely to end on a more positive note toward the caliber of immigrant coming to the U.S. given the two sequences above. This will now allow a more rational discussion of the impact of migration on population growth. Learners should now be able to consider it as a growth pattern free of misperceptions in a way that birth is viewed as a growth pattern.

Final Resources and Suggestions: Developing a rational immigration policy could be the next step for the group is such an activity deals with the problems inherent in such a process due to diverse interest groups in the U.S. A role play designed to demonstrate these problems is included in the packet.

* Adapted from Options

Table 1. U.S. IMMIGRANTS, BY REGION OF BIRTH, 1960-1970

	1960	1965	1970
All Countries	265,398	296,697	373,326
Europe	139,670	114,329	118,106
Asia	24,071	19,778	92,816
North America	85,075	126,729	129,114
South America	13,048	30,962	21,973
Africa	2,319	3,383	8,115
Australia and New Zealand	912	1,066	2,280
Other Countries	303	450	922

Source U S Bureau of the Census. Statistical Abstract of the United States 1971 (1971), chart 133, p. 9.

Title: Immigration Policy -- A Simulation (Adapted by Richard Schweissing)*

Introduction: Being aware of an issue and developing constructive policy about the issue are two separate functions. Once learners have completed some appropriate activities to learn about the impact of migration on population growth, it is important that they consider what desirable policies for migration might be. This activity focuses on policy-making for immigration to the U.S. It should be recognized at the outset that this is only one issue of many that are raised by migration. Other issues, in some instances more serious, are migrations within a country, such as from rural to urban centers or urban to suburban centers, and emigrations from a country. However, since historically one means of reducing population density has been emigration, and since the U.S. was long a target for many emigrants, U.S. immigration policy carries important repercussions throughout the world. This policy development activity is intended to be conducted in an atmosphere that would be realistic--a Senate Subcommittee. During the debriefing, students will look at the implications of their decision for the rest of the world as well as the U.S., in order to better understand the impact of migration patterns on population growth.

This activity is especially good for helping learners develop several concepts. Power and Authority will be demonstrated by the kinds of arguments used in influencing decisions as well as pointing out the persons who actually make the decision. Conflict between competing interest groups will also be a part of the exercise and attempts will have to be made to achieve some conflict resolution. Different perceptions and misperceptions will be expressed and it will be the responsibility of first the Subcommittee and then the entire group in the debriefing to identify what these are.

This activity is a role-play in which some learners adopt the roles of Senators with different vested interests acting as a Subcommittee holding hearings on a new law limiting immigration to the U.S. Other members will represent a variety of interest groups which will testify before the Subcommittee on their respective views on the proposed law.

Background notes for the leader: The extent of background that must be devoted to this introduction depends on what has been previously done to prepare the group for the activity. Successful participation in the activity requires some knowledge of impact of immigration on population growth rates in the U.S. and some awareness of the fact that there are different views within the U.S. regarding the desirability of such growth. This latter will be a major focus in the exercise and acceptance of the reality of the diversity is necessary if it is going to be successful.

Lesson Objectives:
After completing this activity, each individual should be able to:
1. Discuss several arguments for and against immigration to the U.S.
2. Identify some of the effects of immigration on our economic and social system.
3. Distinguish between empirical and value statements.
4. Identify one's own values and preferences as they relate to population growth by migration.
5. Suggest some political actions through which a person can consciously affect population trends as they relate to immigration.

Mechanics:
Teaching time: 3-5 hours
Materials: Room that can be set up in a format for a hearing, i.e., Senators at a table across the front. Desks where the person or persons testifying can sit and confer with associates. Seating behind the

witnesses for the general audience. Role descriptions for each
Senator and Interest Group.

Activity:

1. Explain to the group that they will be involved for the next few days in
a role-play activity in which they will be making a decision on the numbers of
immigrants that should be allowed to come to the United States. Explain briefly
that the role-play involves formation of a Senate Subcommittee which will hold
hearings on a bill to limit immigration to 200,000 annually (learners should be
reminded that this would halve present immigration). Explain also that the
other members of the group will be members of interest groups that will testify
before the Subcommittee.
5 minutes

2. Roles should be assigned. The assignment of the roles will depend on
the leader's knowledge of the group. Younger groups will need to be assigned more
carefully to assure one or more strong individuals in each interest group and a
balance of adequate members on the Subcommittee. Many persons will be more
successful if they are allowed to represent a view they already strongly support
and in more immature individuals, this will be essential. A more mature person
may be able to handle a view he does not support and may benefit from the
experience. With the assignment of roles, each Senator and interest group should
be given their role description card.
10 minutes

3. Ask each person to read their role card and then make the following
assignments:
a. The Senate Subcommittee should become familiar with the views and interests
of each member and on that basis elect a chairman (if the group is somewhat
immature, one of the neutral Senators should be appointed by the leader). The
committee should then determine questions they will want to ask each witness,
and the order the interest groups will present their testimony (again, it may
be important for the leader to assign the order if the group is younger). It
should be emphasized that this does not prevent them from adding other questions
as the testimony develops, but it merely provides a starting point. If two
days are to be allotted for the preparation, individual members may want to re-
search their positions for a day before meeting to establish a list of questions.
b. Each interest group should prepare the basic points they want to present to
the Subcommittee. Tell them that they each will be allowed 3-5 minutes to pre-
sent their basic position prior to any questioning. If two days are to be
allotted for preparation, plans should be made for them to have access to re-
sources at least the first day to research arguments for their position.
1-2 hours

4. The Hearings: Set up the room in the format previously described for
the hearings. The chairman should announce the order presentations will be made
and call for the first interest group. The group will announce who they wish to
be their witnesses. After the opening statement by the witness, the Subcommittee
members may ask questions in any order by seeking recognition from the chairman.
It would be advisable to place time limits on each interest group. Eight minutes
if this is to be a one-day hearing, 15-20 minutes if two days are spent.
1-2 hours

5. The Vote: At the conclusion of the hearings, at least 10 minutes should
be left in the session for the Subcommittee to confer and vote on acceptance,
revision, or rejection of the proposed law. A final decision must be reached.

6. Debriefing: A full period (one hour) should be devoted to the debrief-
ing. Initial questions should deal with "feeling" levels if this pressure valve
needs to be released. This can be done with the following questions:
a. How did you feel about answering questions from hostile (or friendly) ques-

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tioners? Were the questioners fair?

b. How did you feel about attacks on your views by other groups? Were they fair in how they depicted your views?

c. How did you feel about the final decision?

This line of questions will raise substantive points that then should be followed up. Some suggestions:

a What kinds of arguments seemed to have the greatest effect on the decision - factual or emotional?

b. Which views were the most difficult to support?

c. Who changed opinions during the hearings? Why?

d. How many groups were satisfied with the result? Why?

The final phase of questions should look at results. Some suggestions:

a. Who in the U.S. will benefit from the decision (consider jobs, ethnic groups, etc.)? How?

b. Who in the U.S. will be hurt by the decision? How?

c. Given the discussion of the above two questions, did the Senators make a realistic choice or an idealistic choice? Why?

d. How will the other nations react? Why? Direct discussion on this point eventually around to those nations which send the largest numbers of immigrants to the U.S.

Student Materials:

Senator A: Represents New Mexico. Is a second-generation American.

Senator B: Represents California and considers farm owners to be his most important constituents.

Senator C: Represents Oklahoma. Has little influence from immigration, positively or negatively, in his state.

Senator D: Represents New Jersey. Campaign platform included a strong plank on Zero Population Growth.

Senator E: Represents Florida. Views immigrants from the perspective of the negative effect the heavy Cuban refugee influx had on his state's economy.

Senator F: Represents New York. Feels the heavy impact of ethnic votes in his campaigns. Also, deplores the slum conditions which he feels are aggravated by unskilled immigration.

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* Adapted from Options

Title: Population Distribution--A Community Profile   (Adapted by Richard
                                                                    Schweissing)
Introduction: The evolution of our nation from a rural to an urban-dominated
society within a short span of time has raised many problems. A secondary popu-
lation shift from urban to suburban categories has added to the complexity of the
scene. Attempting to understand these shifts or at least the nature of present
trends becomes important to every individual because everyone is affected per-
sonally through availability of jobs, housing, schools, and recreation. This
activity is designed to guide the group in an evaluation of the significant trends
in their own community and lead them to some conclusions about realistic expecta-
tions for that community in the future. These processes will serve as a basis
for the individual to examine his own role in the community.
        The concepts of change and perception/misperception are both an integral
part of this activity.   In evaluating population trends in the community, the
group will discover the dynamics of change that are taking place. The data will
also confirm or alter the perceptions or misperceptions held by the individual
about his community.
        This activity utilizes the completion of a community profile (attached) with
Census Bureau information to provide a data base for drawing conclusions about
the population shifts that are taking place in the community.

Lesson Objectives:
After completing this activity, each individual should be able to:
1. Suggest some possible effects of changes in the distribution of a population
    on employment and social services.
2. Collect, organize, and interpret data about population.
3. Describe the population profile of the community.

Mechanics:
Teaching time: 2 hours
Materials: Community Profile Forms (attached) for each member of the group.
             Census of Population, 1970, General Population Characteristics for
             Colorado. Census Data for Community Action. Census of Population,
             1970, General Social and Economic Characteristics for Colorado. De-
             pending on the size of the group, two or three copies of each of the
             above may be desirable. They are obtainable from the Department of
             Commerce field offices and often from local libraries, city or county
             offices, or the Chamber of Commerce.

Activity:
        1. Divide the group into sub-groups of about five. If the group all comes
from the same community, this may be a random division. If they represent dif-
ferent communities, each sub-group should be composed of members from the same
community.
        2. Each group should complete the Community Profile forms, using the data
in Census Bureau books and then develop preliminary answers to the following
questions:
a. Has the total population grown or declined?
b. What particular age groups reflect the growth or decline most drastically?
c. Are there obvious reasons why the growth or decline is reflected at that age?
    If so, what are they? Possible conclusions for this answer:
    (1) A rural area may see sharp declines in young adult ages, reflecting the
         migration from the community by young people to better opportunities.
    (2) Sharp increases may be the result of new industry (adult ages), a growing
         college (young adults), or an ideal location for families.
d. Have there been significant changes in employment status? Does this reflect

positive or negative prospects for the future? What else do you know about the community that would reinforce or contradict your conclusion?

e. Has the change in educational level (if any) been reflected in the family income level. What might this say about the future of the community?

f. What do you think the profile will be like in 1980? Why? If these are not acceptable conclusions, what actions might be taken to change the trends? Here, groups may want to consider the kinds of services the community offers for recreation, education, etc. They may also consider the economic picture; for example, the need to attract business that would create new jobs, the need to create jobs, or the need to initiate better environmental controls to improve the quality of life. The possibilities are endless, depending on how the groups view the community.

1 hour

3. The final step is to ask the groups to share their findings. If all the groups come from the same community they will want to compare their conclusions and then their recommendations for action. If appropriate, the leader may want to guide them into developing priorities for action and then develop an action plan.

If the groups represent different communities, they will each have to share some of the data they collected in order for the larger group to understand their conclusions. After a brief presentation from each group, the groups should attempt to draw comparisons between the different communities represented. Some sample questions might be:

a. Which communities seem to have common trends? What are they?

b. Did any groups project similar profiles for 1980? Did they arrive at them from different or common bases?

c. Were action plans suggested that may also work to solve the problems anticipated in your community? How will they have to be altered to meet your specific needs?

1 hour

Future Resources and Suggestions: Community groups in particular may want to go on from here to implement an action plan which may have an impact on the future of the community.

Title: <u>World Population</u> (Film, 3 minutes, color) Available from CTIR:
Center for Teaching International Relations
Graduate School of International Studies
University of Denver
Denver, Colorado 80210
(303) 753-3106

Introduction: To understand the dynamics of population growth, it is helpful for
the learner to develop a sense of the geometric patterns of this growth, which
can be achieved through working with mathematical equations showing how such
results are achieved or by creating a visual picture of that growth in a time/
space relationship. World Population does the latter in a dramatic manner by
demonstrating the growth of population on a world map from 0 A.D. to 2000 A.D.
in about two minutes, to the background of a heartbeat. This provides a basis
for examining where population is now as well as the impact of historic population
controls.
     The focus of this film is on the concept of <u>interdependence</u>. As the group
watches the growth of population, they can see how the interdependence of various
societies have influenced population growth, providing a springboard for a
discussion of the interdependent factors of population as they bear upon the
future.

Lesson Objectives:
After completing this activity, each individual should be able to:
1. Suggest several ways population has been controlled in the past.
2. Suggest several ways these population controls were interdependent in nature.
3. Suggest how some of these controls will continue to be operable (or will no
    longer work) in the future.
4. Draw general conclusions about why population issues are more critical today
    than in the past.

Mechanics:

Teaching time: 50 minutes
Materials: Film--World Population

Activity:
     1. Introduce the film briefly, explaining only that the film gives an over-
view of population growth in the world. This film may be shown as many as three
times during the session. The impact of the first showing is usually sufficient
to start the discussion. It is more effective to begin the discussion at this
point with the "gut" reactions of the audience. The historic points are better
left until the group has a chance to register their reactions to the film.
Show the film.   5 minutes
     2. The initial discussion should begin at the "feeling" level, using such
questions as:
a. What did you feel as the white dots swept the globe?
b. How would you describe the last 50 years of the film?
c. Does this film provoke any action on your part.
     Many feelings will not emerge immediately and the leader should not expect
the reactions to be overwhelming. However, a half-dozen sharp comments or feelings
will set the tone for the rest of the discussion.
5 minutes
     3. Once the tone has been set, the group should move on to more substantive
questions to get at why the film took the turn it did. This may be easier to do
by starting from the negative side, examining events which controlled population
in the past. Suggested questions:

a. Did anyone see any dramatic reduction in dots during the film? When and Where? (Central America about the time of the Spanish conquests; Western Europe during the time of the Black Plague; Western Africa with the decline of the Nigerian empire; periods of major wars)

b. What caused each of these declines? (disease, war, famine, possibly migration patterns will show a slow down or stationary pattern in an otherwise growing area)

c. What were major growth patterns and why? (historically, central river valleys; urban centers beginning with industrialization; migration during colonial eras, especially in the Americas)

At this point, the leader may suggest the film be shown again to point out and clarify some of these events to those who missed them the first time. At the same time, ask the group to concentrate on why the rate of growth seems to increase. Show the film.
20 minutes

4. This final phase of discussion should focus on geometric growth patterns. Suggested discussion starters:

a. Does the overall growth tempo steadily increase, or does it go by spurts and stops?

b. Do some of the factors previously identified as causes for declining growth have less impact today? (disease particularly)

c. Does control of diseases have a double impact on population growth? This is an important question for the discussion and time should be spent either drawing out the answers or explaining the dual impact. (First, devastating plagues are almost non-existent today. Second, medicine has greatly reduced infant and childhood fatalities and this results in greater percentages of the population reaching childbearing ages--hence greater growth, even if family sizes remain stable or decrease.)
15 minutes

5. Conclusion on the discussion should be formulated by the leader and include:

a. Population problems have always been interdependent in nature, i.e. witness the spread of disease and the use of colonization or other migration patterns to reduce population pressures along with the resulting impact on new areas.

b. Population used to be controlled largely through war, famine, and disease.

c. Population in just sheer numbers will inevitably grow faster and faster because of the increasing numbers bearing children--it's a spiraling circle.
5 minutes

Future Resources and Suggestions: Two activities that will be especially useful following this one are an activity to teach the group how to calculate growth patterns and activities using the world population data sheet.

Title: Population Stabilization (Adapted by Richard Schweissing)

Introduction: Many authorities agree that significant steps must be taken in the next few years to stabilize population before the growth factors become uncontrollable and massive famine takes place. Some suggest it is already too late, and are therefore willing to advocate extreme measures. Means available to limit population growth generally fall into three categories: those which can be freely chosen by individual families, those imposed by the mores of society, and those legislated by government. The latter, although most readily implemented on a mass basis, may result in the greatest loss of individual freedoms.

Power and Authority becomes the central concept in this activity. Members of the group will be asked to examine alternative means of stabilizing the population and this will lead both to questions of who does have the power to make these decisions and who should have that power.

Briefly, the individuals are given a range of twenty-four proposals for stabilizing the population which are listed in random order. They are asked to rank order the five most acceptable and the five most objectionable proposals. The ensuing discussion is designed to weigh personal preferences, rights, and potential effectiveness of the suggested policies, leading to some conclusions about which are the most viable choices.

Lesson Objectives:
After completing this activity, each individual should be able to:
1. Discuss population stabilization proposals within the context of their impact on personal freedoms.
2. Distinguish between proposals which do not affect freedoms, which exchange individual for social freedoms, or which restrict freedoms.
3. Suggest several population stabilization proposals and comment on their relative potential to be effective.

Mechanics:
Teaching time: 50 minutes
Materials: Individual copies of "Population Stabilization Proposals" and "Summary of Population Control Steps."

Activity:
1. Pass out the student handout sheet entitled "Stabilization Proposals" and ask the group to rank according to directions the five proposals that are most acceptable and the five that are least acceptable.
10 minutes.
2. Go through the list and identify the items that most commonly appeared on one list or the other. If an item appears on both lists, set it aside. These items will be dealt with first.
5 minutes
3. Items that appeared on both lists (if applicable): Ask individuals to explain why the item appeared on their list. The range of answers for these items will be the same as for items the group generally agrees on, covering such considerations as effect on freedom, effectiveness, practicality, or conformity with current social values. Differences in response to a particular item will most likely arise out of the differences in values which individuals placed on these factors; i.e., the proposal may be extremely effective, but destroys human freedom. Once a difference is identified, the entire group should be encouraged to submit their own views of the choices and discuss which value is most important.
4. Reasons for selecting items that commonly appeared on the acceptable and

and objectionable lists should next be drawn out. Again ask individuals to state their reasons. The wording may be different, but the leader should attempt to narrow the responses to general categories such as the choices suggested in item 3. From this discussion consensus of the group may cause certain values to emerge over others. If this happens, ask why these values are more important. If it does not happen, ask the group to backtrack and see if it can identify which values should be most important and if the specific proposals selected are consistent with the values choices they have made.

It is important that no one attempts to force their own values on another member of the group. Such tactics are not productive and seldom result in a real change of views. Emphasis should be placed on rationally discussing views and listening to and respecting differing views.
20 minutes

5. Pass out the student handout entitled "Summary of Population Control Steps." Ask the group to measure their most commonly accepted responses against the criteria of this sheet. Do the responses continue to be acceptable given this approach toward looking at them? Why or why not?

6. The discussion should be concluded by someone (not necessarily the leader or anyone preplanned) summarizing what they view as the overall conclusions arrived at by the group.
15 minutes

Both handouts taken from a list compiled by participants at NSF Summer Institute on Population held at Cincinnati, Ohio, Summer 1973.

POPULATION STABILIZATION PROPOSALS

You pick up the morning newspaper to discover that the President of the U.S. has made an important speech endorsing population stabilization as a national goal and has just signed an important population bill into law. Read the following carefully and decide how ready you are to accept it as the bill the president signed. Place a 5 in front of the law you are most willing to accept, a 4 in front of the law you are next most willing to accept, and continue until you reach zero. Then select the law you find most objectionable and place a 5 in front of that law. Mark the second most objectionable with a 4 and continue as before until you reach zero.

1. Maternal care centers will be established to give birth control information to all women and to distribute free contraceptives on request.

2. Maternal care centers will be established in poverty areas of Appalachia and ghetto areas to give birth control info and distribute free contraceptives.

3. Abortions are legalized in all states. Women need only certification by their physicians that they will suffer no ill effects from the abortion.

4. The government will place a sterility solution into the water supply of all Americans. Couples may apply for an antidote to allow conception, but the request will be denied after the birth of the second child.

5. The government will issue licenses for birth. Each couple will be given two such licences, which may be bought and sold or passed around among families. Unlicensed births will be subject to a fine of $1,000.

6. All girls reaching puberty will be sterilized by an injection. Upon marriage a second injection will allow them to have children.

7. Compulsory sterilization will be required of all males after the birth of a second child.

8. Population education will be a required part of the curriculum for all primary and secondary students.

9. National TV stations will be required to provide 10 hours of prime time annually for the showing of films urging reduction of family size.

10. Money in the amount of $500 or a free color TV set will be given to any male who volunteers to be sterilized.

11. Any couple who has not given birth to a baby during the year may declare an extra deduction on their income tax.

12. Government regulations will be changed to allow any couple to deduct up to two dependent children.

13. All illegitimate pregnancies must be aborted by law. Failure to comply will result in a fine not to exceed $2,000.

14. All health programs must provide maternity benefits for the first two children, Any benefits for additional children are prohibited by law.

15. An addition of $250 will be made to the federal income tax owed for any child beyond two.

16. Government scholarships will be granted for the college education of two children. Any other children must be educated at the family's cost.

17. Each family will be granted a total of 8 years of free higher education to be allotted among the children as the parents decide.

18. The Social Security laws have been changed to allow the parents of smaller families to retire at earlier ages and get higher retirement benefits.

19. Tax laws will be changed to favor unmarried people and couples with few children.

20. The government will require two years of mandatory service in industry or organizations like VISTA or the Peace Corps from all females from 17-25.

21. The government has funded Zero Population Growth activities. The first year the organization will receive 4 million dollars.

22. The government has set aside $40,000,000 to sponsor research projects to develop a 100% effective contraceptive.

23. Federal housing is to be made available at a very low rate to couples having no more than two children.

24. The legal age for marriage is set at 21. Couples wishing to marry earlier must pay a penalty to secure a license. Those marrying later will benefit.

SUMMARY OF POPULATION CONTROL STEPS

Alternative One: Population Control Steps which enlarge the freedom
                   of both individuals and society.

   1. Intensive Educational Programs

   2. Additional family style alternatives

   3. Universal availability of effective contraceptives

   4. Equality for women

   5. Universal Old Age Security

   6. Ability to choose the sex of unborn children

   7. Universal availability of abortion on request

Alternative Two: Population Control Steps which Exchange individual for
                   social freedoms, but which may reduce the population
                   growth rate.

   1. Encouraging Non-Familial Roles

   2. Postponement of Marriage

   3. Incentive Programs

Alternative Three: Population Control Steps which highly restrict freedom

   1. Incentives powerful enough to be coercive

   2. Marketable licenses to have children

   3. Mandatory, temporary, or permanent sterilization

   4. Mass fertility control agents

Title: Factors Influencing Population Growth (Adapted from Inter-
        com #78 by Richard Schweissing)

Introduction: Adults the world over--rich or poor, educated or
illiterate, urban or rural--know where babies come from, and they
know something about the personal consequences of having more
children even if they have not considered the global implications
in terms of population growth. In spite of massive family planning
programs in some countries with rapid population growth, the
change to smaller families is very slow or non-existent. For ex-
ample, India began a massive family planning program over twenty
years ago. The effort was expanded in 1965. India's birth rate,
nevertheless, has shown only a very nominal decrease. Population
experts, then, must begin to look for other reasons why high birth
rates persist. This activity is designed to expose several factors
which influence birth rates and possibly offer alternative plans
which will encourage reduced family sizes.

        Interdependence and perception/misperception are two concepts
developed in this exercise. By looking at the need or desire for
children from another cultural perspective it may be possible to
explain why high birth rates persist in some countries. Also
more effective solutions to population growth may be developed.
If misperceptions of other's views persist, such solutions will not
be possible. The group will also see the interdependent relationship
between a whole gamut of factors which help determine birth rates.

        This activity is data oriented and requires participants to
draw conclusions about birthrates from data presented in a simple
chart which considers such factors as religion, health, education,
income and government programs.

        The leader would find it useful to read some basic literature
on attitudes of peasants in underdeveloped countries toward large
families as a background to leading the discussion.

Lesson Objectives:
        After completing this exercise each individual will be able
to:
1. Read and understand a simple data chart about population.
2. List and explain why some factors used in the chart influence
   growth rates.
3. Suggest some policies governments might adopt that would
   indirectly encourage reduced population growth.
4. Suggest social changes within a country which could lead to
   reduced population growth.

Mechanics:
        Teaching Time: One hour
        Materials: Copies of the Growth Rate Chart (attached) for each
                   individual.

<u>Activity:</u>

1.   List the six factors that influence population growth on
the charts on a chalkboard and ask the group to suggest what effect
each might have on a family's decision about the number of children
to have.   After discussing various considerations a family might
raise due to each of these factors, ask the group to rank order the
list according to which factors they think have the greatest in-.
fluence.   20 minutes

2.   Pass out the Growth Rate Charts and ask the group to
determine which factors seem to be most closely correlated with
growth rates.   Which seem to have little or no correlation?
If these conclusions do not match the previous ordering, ask them
to reconsider why those factors with the closest correlation are
important.   Some guiding questions from the leader will be helpful
here.   15 minutes

3.   Now ask the group to brainstorm what might be done to
reduce population growth in the high growth countries.   Best sugges-
tions should include old age programs, better medical care, educa-
tion, etc.   After these suggestions have been made, ask them to
discuss which are most likely to be achieved, and why.   15 minutes

4.   The discussion could conclude with some suggestions of how
either affluent nations such as the U.S. or international organiza-
tions such as the UN can help change population patterns.   10 minutes

Title: Crowding (by George Otero)

Introduction: Crowding may cause and/or accentuate many psychological and social problems. Crowding is considered to be a negative effect of rapid population growth. In this activity, students identify and cut out pictures or draw situations that demonstrate the concept of crowding and/or its effects. Then students discuss to what degree the effects of crowding which they portray are due to population growth and to what degree the effects are due to social organization, planning, etc.

Lesson Objectives:
1.   Students identify a picture or make a drawing that reflects their ideas about crowding and its effects.
2.   Students infer the causes of crowding using the pictures and drawings they have collected.

Mechanics:
Teaching time: One class period, plus time out of class to collect pictures or complete drawings.
Materials.   If you provide magazines and newspapers for students to use, have them ready with scissors and construction paper.

***Note to teachers--Refer to the teacher insert on the effects of crowding which is included with this activity before actually beginning the activity procedure.

Activity:
1.   Have students collect or draw pictures showing crowding and/or its effects. This picture can portray any area of the world. The more time that students are given to find or draw a picture, the better the pictures should be. This may mean that the teacher could allow up to 3 or 4 days to collect or draw the pictures.
2.   Have the pictures mounted on a background of some kind. Construction paper should serve adequately for this purpose. When this is completed, ask the students to do any or all of the following activities:
   Have each student meet with at least one other student on the basis of some similarity in their pictures. They can form groups larger than 2, but each student must be in a group. List the categories students found as pairs or groups on the board. See if the group can do the task again without using any of the categories listed. They probably can. List these new categories, and use them with the questions in Step 3.
   Have each student write a paragraph stating how his or her picture shows crowding and/or its effects.
   Have students exchange pictures while keeping their paragraphs. Ask them to write a paragraph describing how the picture they have received in the exchange demonstrates crowding and/or its effects, without talking to the person who originally selected or drew the picture. The student may feel the picture does not demonstrate the idea of crowding, and should state so in the paragraph if that is the case.
   Next, have students work in pairs, comparing what they wrote about the pictures they received with the persons who first selected them. Did they see similar things in the pictures? If so, what were the visual clues? If the other person didn't see an example of crowding and its effects, why did the original selector of the picture find such an example of crowding? Maybe one of the two students will change their mind.
   Have students write a story about the feelings or activities of a person

in the situation and setting portrayed in the picture. This could be done with their own or someone else's picture.

    3. Discuss these questions with the class:

a. Which of the effects of crowding that have been listed or discussed are due primarily to population growth itself?

b. Which of the effects of crowding that have been listed or discussed are due primarily to social or economic or political factors such as laws, jobs available, prejudices, opportunities, etc.?

c. Which of the effects of crowding will become worse if the population continues to grow rapidly? (All of them)

d. Which of the problems associated with crowding can and should be solved? Take one and write out or propose some solutions.

The Effects of Crowding (Teacher Notes)

The conclusions to be drawn from physiology are clear enough. Large segments of the human population may be suffering from the "stress response" syndrome without necessarily being aware of high levels of psychological stress at any one time. This has many ramifications which are in need of research. One practical notion is that physiological measures (such as corticosteroids in urine) be utilized to determine average stress levels in different kinds of housing arrangements.

Some conclusions that can be drawn from animal studies thus far are:

A) "Crowding" is in large part a social phenomenon in that the same physical space may or may not be crowded, depending on how it is utilized for social interactions.

B) The effects of overcrowding can be very different, as different as are the individuals in the population. But generally individuals with high social rank will be less affected than lower ranked individuals. This is true for behavioral, "pathological," reproductive, and stress responses. Further, different modes of behavioral adaptation may occur. Some individuals may respond with extreme aggressiveness and hyperactivity, while others may engage in sleepwalking.

C) Effects of overcrowding are more profound for individuals who are born into an overcrowded population than for those who were raised in "better times" and merely had to deal with overcrowding as adults.

D) Population growth is not automatically regulated by overcrowding, but instead results from a number of behavioral and physiological changes that accompany overcrowding.

Title: Figure It Out! (by George Otero)

Introduction: Demography is a field in social studies that requires mathematical knowledge. The information that students read about concerning population growth, birth rates, future population size, etc. do not appear like magic. These figures must be calculated. In this exercise students calculate important population factors after they are given census data. Basically, this exercise demonstrates to students the kind of work a demographer does, in addition to improving students' skills in using and applying mathematical formulas.

Lesson Objectives:
1. To present the math processes used in calculating population data.
2. To better understand the work done and the skills needed by a demographer
3. To increase student knowledge of what population figures stand for.

Mechanics:
Teaching time: 1 class period
Materials: Duplicate the two student handouts for the class so that each student has a copy.

Activity:
1. Hand out the worksheets to the students. Tell them they will be working as a demographer works when dealing with population data.
2. You might have pairs of students work on the exercise in order to increase the potential for success.
3. Go over the answers to the worksheet with the class, explaining how the answers are calculated.

15:5

Below are a number of questions you are to answer for the country of S.O.C.
Your data base, as collected by the recent census, is as follows:

Total Population   300,000,000
Births for 1 year   12,000,000
Deaths for 1 year   6,000,000
Immigration for 1 year   2,000,000
Emigration for 1 year   1,000,000

What is the country's birth rate? _____

What is the country's death rate? _____

What is the rate of natural increase expressed as a percentage? _____

_____

What is the country's growth rate? _____

What will the total population be if this growth rate continues for two years?

_____

If births were to increase by 50% next year, what would the birth rate be?

_____ The growth rate? _____

Given the figures above, what would the net migration have to be if the population
was to stay at exactly 300,000,000?

_____

What would the birth rate have to be if the population where to stay at 300,000,000?

_____

Below are data for specific countries. For each country compute the rates asked
for.

The Philippines: --37 million inhabitants (37,000,000)
                            --crude birth rate of 48 per 1,000 people
                            --crude death rate of 12 per 1,000 people

                            The rate of natural increase is _____

Kenya: --11 million inhabitants (11,000,000)
                            --crude birth rate of 51 per 1,000 people
                            --crude death rate of 18 per 1,000 people

                            The growth rate (migration not significant) is _____

_____

Suggest ways in which these countries could keep their population size at the same
level.

Title: Spaceship Earth--a Model (by George Otero)

Introduction: Models can be useful in helping us to understand real processes. Often the system we want to understand is so large or complex that it would be difficult to understand, let alone make predictions, without the use of a model. In this activity students actually see how a model works. They see that it helps to represent real processes, and that it can be useful in understanding a process such as population growth.

Lesson Objectives:
1. Students will work with a model in order to understand how it can be useful.
2. Students will compare two models of population growth to determine the weaknesses and strengths of each model.
3. Students will answer questions to demonstrate that they understand a model.
4. Students will make predictions about population growth using the models.

Mechanics:
Teaching time: Two class periods
Materials: Lab Model Materials
            World Population Model

Activity:
You may use both models, or either one. These models are simple, but they may be difficult for students to understand. You will have to be patient in presenting them. It is suggested that you present the World Population Model in a lecture and in readings.
    1. Present the models. (Instructions for setting up the Spaceship Earth Model follow.)
    2. Compare the two models.
a. Which model does the best job of representing reality? Of showing how population grows?
b. How are the models different?
c. What does the World Population Model include that the Spaceship Earth Model doesn't?

Evaluation:
Now fill in the answer sheet, using the Spaceship Earth Model. You might also use the other model to answer the questions. Mention which model (s) you used to answer the question.

Sources: World Population Model from The Limits to Growth by Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, and William W. Behrens III and from Spaceship Earth Demonstration,adapted from Margaret Palczynski, a participant at the 1972 NSF Population Institute in Cincinnati, Ohio.

"Spaceship Earth"
A Lab Demonstration Set-up or Model

Materials needed:

ring stand
metal ring (size depends on size of glass)
clamps (optional)
2 burettes with stopcocks (as short as possible, or a broken end)
1 round glass with top and bottom openings
2 one-holed rubber stoppers (needed only if burettes do not fit tightly)
colored liquid (in beaker for easy pouring)
collection beaker ("graveyard")

(There is a diagram of the set-up on the following page, which can be used in place
of the physical demonstration if you can't obtain materials.)

Limitations of the Model:
1. The model does not take into account migration factors, but migration factors
   have little effect worldwide.
2. The model does not illustrate population distribution or density; it assumes
   more of an "eveness" of both distribution and density.

Note: Make the birth beaker as large as possible to represent the tremendous
potential for population growth.

Procedure:
Adjust burettes to show the following relations as stated in question form:
1. What happens if both births and deaths occur at the same rate?
2. What happens if births occur much faster than deaths?
3. What happens if deaths occur much faster than births?
4. How could the model be adapted to actually show what would happen eventually
   if births exceed deaths?

"SPACESHIP EARTH"

Large Container to represent Potential

Large container here

CLAMP (optional)

BURETTE

YET TO BE BORN

BIRTH

METAL RING

POPULATION SIZE

CLAMP (optional)

BURETTE

DEATH

"GRAVEYARD"

RINGSTAND

WORLD POPULATION MODEL

births
per year   (+)

WORLD
POPULATION   (-)   deaths
per year
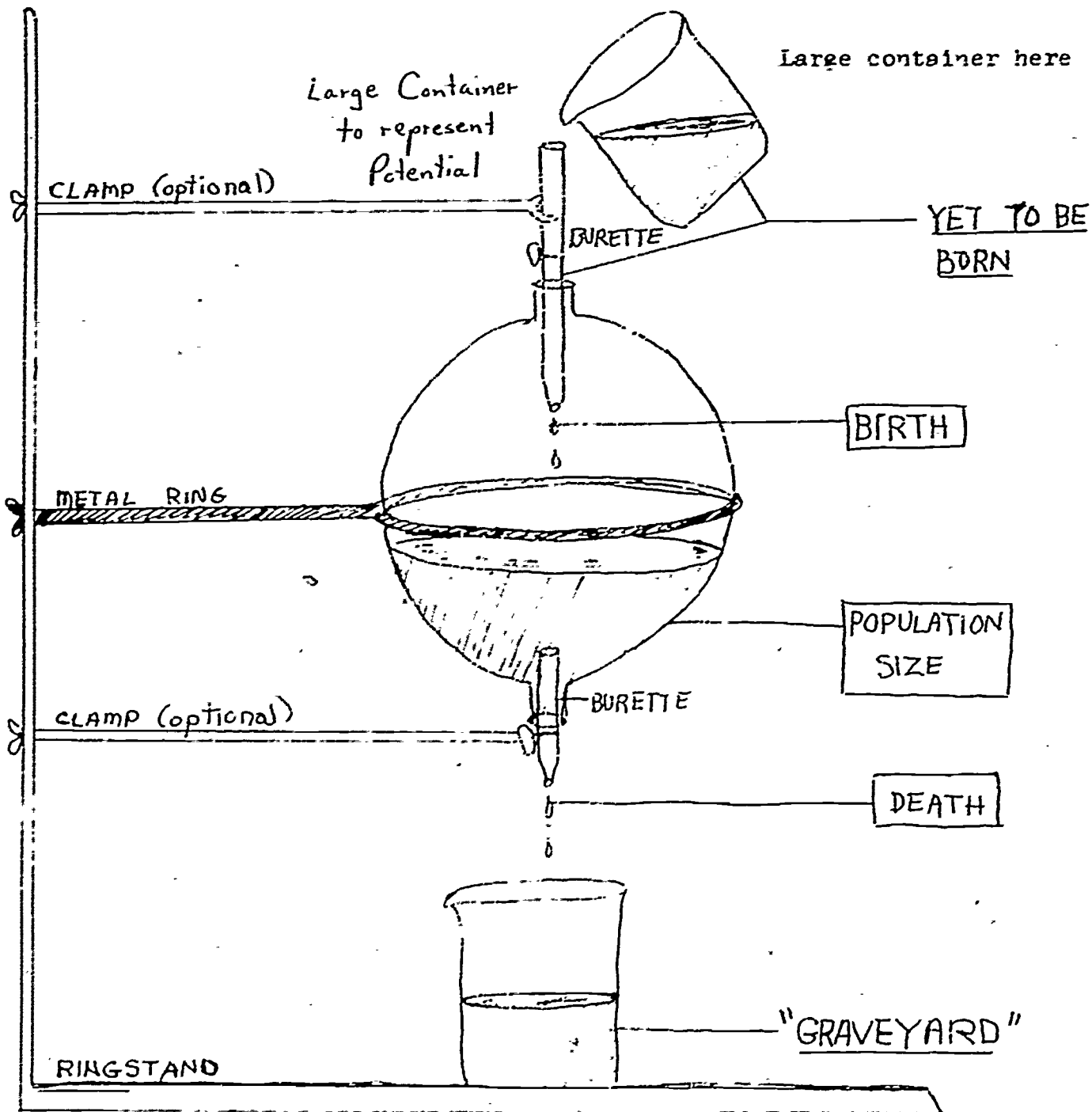
Positive Feedback   Negative Feedback
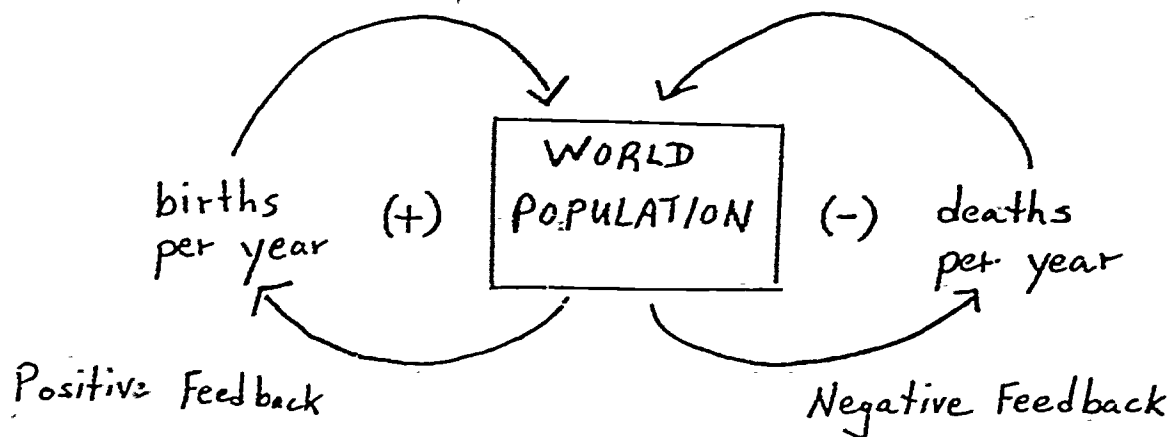
Positive feedback is similar to any action which produces an action which in turn
increases the initial action. An example of positive feedback would be when a
boot attached to a person's back end will kick the person every time he or she
moves. Most of the time, positive feedback situations are uncontrollable or
runaway situations. Once the process gets started, it is impossible to stop un-
less a new factor is introduced. In our example above, this would be accomplished
by placing a brick wall in front of the person with the attached boot which is set
to kick hard whenever the person moves. The birth rate, or number of births in a
year per 1,000 persons, is part of a positive feedback system. If the birth rate
is 40 per 1,000 persons, and the population has 1,000 people, 40 new babies will
be added that year, making the total population 1,040. Next year, since there are
now 1,040 people, more than 40 new babies will be added, making the population
total that much higher. Both the population size and birth rate reinforce each
other, and population can continue to grow indefinitely.

In this model, deaths do not operate in the same way as births do. Deaths pro-
vide negative feedback to world population. A negative feedback system is one
where the activity caused by the initial action tends to control, regulate, or
stop the initial action. Most systems we know are of this kind. A thermostat
works this way. The speedometer in your car works this way. As you step harder
on the pedal the meter rises. This tells you you are either speeding or going
faster than you were. If you did not want to go faster you will withdraw your
foot a little from the pedal. If you lift your foot too much, you go too slow,
and you apply more pressure to the pedal. Negative feedback systems, therefore,
are controlled or regulated systems which keep things in balance with the goal
(desired speed or temperature). The death rate or number of persons dying in
one year per 1,000 persons, has negative feedback on world population. If the
death rate is 20 per 1,000 and the population is 1,000, that year 20 people will
die and the population will be 980. Since the population is smaller now than
it was previously, fewer people will die next year if the death rate remains
the same (constant).

World population is affected by both a positive feedback system (births) and a
negative feedback system (deaths). Use this model and information to answer the
questions on the following page.

SPACESHIP EARTH

When you were little, and someone asked you how big the world was, you may have stretched your arms to form a circle and try to encompass its size. You had no concept of size and your relationship to it. As we get older, this concept of the earth's size is still very difficult to visualize, and yet we know that it is bigger than we can put our arms around. Because of this difficulty, we sometimes employ models which help us to understand something too big for us to see.

In this model, the glass ball represents the earth and the liquid level the population size. If you open the top stopcock, what happens to the population level?

_____

What causes population levels to increase?

_____

_____

If you open the bottom stopcock, what happens to the population level?

_____

What causes population levels to decrease?

_____

_____

Thus we now see that the top liquid = BIRTHS and the bottom liquid = DEATHS. Look at some relationships between birth rates and death rates, and make the model illustrate it for you.

if BIRTH RATE is:	and DEATH RATE is:	POP. SIZE
HIGH	HIGH	
LOW	LOW	
LOW	HIGH	
HIGH	LOW	

Are there any limits to the "high" birth rate? _____

To the "low" birth rate? _____

Does the glass ball ever become filled to capacity?

_____

When?   ___ _____

What can you do to make more room? _____

_____

If the earth gets too crowded, what can you do to make more room?

_____

The glass ball has glass sides which limit its size.   Does the earth
have any limits like this?

_____

_____

Since the moon landing when men were able to stand outside the
earth and view the earth as a whole, the phrase "spaceship earth" has
been coined to describe a special characteristic of the earth.
What does this phrase mean?

Any other related ideas or thoughts?

CONCEPT SUMMARY:

Title: What Do We Do? -- A Modest Proposal (by Don L. Thornton)

Introduction: The earth seemingly cannot produce enough food to feed its hungry. A drastic shortage of food in relation to the population consequently has resulted in many parts of the world. This situation is claimed as a demonstration of the existence of a population problem. All but the most obstinately close-minded concede a problem exists, but no one seems to agree on a solution. The solution obviously will follow one of two approaches: nature "taking its course" or human attempts at intervention. One man in particular, Dr. William C. Paddock, a respected agricultural consultant and author, disbelieves that technology and science will provide any answers. He says the only solution--though cruel--is simply to let people starve to death in societies that fail to cut their birth rates. To support his belief Paddock states that in 1976, world food consumption is estimated at 950 million metric tons. World food production, however, is estimated at 938 million metric tons--12 million metric tons below estimated consumption. Also, last year aggregate production outside the U.S. dropped 21 million metric tons, despite relatively good weather. Over-all, world food reserves are estimated to drop from 100 million metric tons this year to 90 million at the start of 1977. The future is dark for the starving masses; they will probably never receive enough food. So why not let them starve? Critics protest the injustice of starving people to death when Americans overeat and waste food daily. Paddock replys that justification is irrelevant. "If everyone in the world had the same amount to eat, we'd all be hungry, if not starving."[1]

Malthus suggested that following a natural course, a population which grows too big for the amount of available necessities of survival (in this case, food) will ultimately decrease itself naturally (in this case, starvation) until a sort of equilibrium level with the resources is reached once again. Is starvation really the solution to the world population problem? This activity is designed to elicit r ctions to Paddock's proposal and to prod participants to suggest lternatives to starvation as a solution.

Objectives:

1. Participants will critically consider the spectre of mass starvation as a solution to overpopulation, becoming more aware of the practical, personal, and value-oriented aspects of such a proposal.

2. Participants try to develop alternatives to starvation as a solution.

__Time:__ 1 class period, and possibly some time outside of class

__Activity:__

1. On an overhead projector or a chalkboard, copy the figures given in the introduction as support to Paddock's proposal. Read and explain to the class his solution of the population problem.

2. In general discussion, get responses from the partici- pants to the proposal. Can the participants offer any support for their opinions besides "gut reaction?" Try to help the partici- pants realize the value or ideological implications of their responses. How would the responses differ if they were part of the starving masses to be eliminated? Have the participants critically analyze Paddock's proposal. Is starvation really the _only_ alternative remaining? He rules out science, but what about reforms such as unitary world agricultural control and allocation, world government, a global economic alliance, or other such inter- national transformations coupled with all the advances of science and technology? How do the participants' feelings toward these alternatives compare with their feelings toward Paddock's proposal? Finally, have the participants suggest solutions as alternatives to Paddock's solution.

__Further Suggestions:__

1. Have the class read "A Modest Proposal" by Jonathan Swift and compare aspects of his solution to Paddock's solution.

2. To determine reactions in the community to Paddock's proposal, have participants draw up a petition favoring his view and canvas neighborhoods or street corners trying to obtain sig- natures in support of starving the excess people in other countries.

3. If participants strongly agree with Paddock, let them send a telegram to the Congressional representative advocating such a policy and requesting a serious reply.

4. If participants believe other solutions exist besides Paddock's solution, either technological, economic, political, etc., have them research the alternative seeming most workable to them and report their findings to the class.

---

[1]_The Denver Post_, Sunday, January 11, 1976, p. 19.

Title: Birth and Death   Adapted from B. Kassalias

Introduction. Reading a graph is an important social studies skill. Interpreting a graph is also an important skill. This activity focuses on these two skills, using the inquiry approach to learning. The inquiry approach provides the motivation to interpret the charts. In this exercise students will attempt to identify the countries on the charts, utilizing the birth and death rates for each.

Lesson Objectives:
1. To improve the students' ability to read and interpret graphs and charts.
2. To make hypotheses and establish criteria for testing the hypotheses.

Mechanics:
Teaching time: 1 or 2 class periods.
Materials. Duplicate copies of the student handout entitled "Birth and Death Rates."

Activity:
    1. Hand out charts. Ask students to explain what kind of information is included on the charts. Inquire further of students methods of reading the chart.
    2. Have students note similarities and differences between the charts. For example, Country 3 is somewhat like Country 4 in the pattern of birth and death rates.
    3. Ask students to decide which country is which. They may have to start by indicating general areas of the world.
What clues can you obtain from the <u>charts</u>? (i.e., historical, developmental, comparative, etc.)
    4. As students attempt to identify the countries, ask them how they can verify their hypotheses. For example, if country 4 is Egypt, what data would be needed as verification?
    5. Let students spend one or two days gathering information.
    6. After a few days have elapsed, initiate another discussion. Have students come to any definite conclusions? Have any changed their opinions? Have some lost interest? Are there disagreements as to the facts or hypotheses?
NOTE: You may decide to inform students of the correct answers, but is recommended that they pursue the lesson until they feel relatively comfortable with their own hypotheses before doing so. At times the instructor may decide not to give the answers at all.

Correct answers
Country #1 is <u>Japan</u>
Country #2 is <u>Egypt</u>
Country #3 is the <u>United Kingdom</u>
Country #4 is the <u>United States</u>

Title: World Population Data Sheet (by 15 participants at the University of Denver
High School Conference on Food and Population.)

Introduction: What data means depends largely on the questions posed concerning
that data. In the following exercise, the same data chart can be analyzed and
examined in 34 different ways.

Objectives:
1. To familiarize students with data on population growth and economic develop-
   ment.
2. To encourage participants to utilize the data by means of listing and comparing
   data.
3. To encourage participants to recognize the many uses of data in examining popu-
   lation issues.

Mechanics:

Teaching time: One class period. This time factor will vary, depending on the
   number of activities planned.

Materials: You will need copies of the World Population Data Sheet. You can
   duplicate the 1975 data included with this activity, or order large wall-size
copies of the Data Sheet, at 15¢ each, from the Population Reference Bureau, Inc.,
P. O. Box 35012, Washington, D. C. 20013. Request the current copy or copies of
the World Population Data Sheet. These larger charts will have more impact with
students, and it may be necessary to provide only one chart for each five or six
participants. You will also need to duplicate the "ideas" handout if the parti-
cipants will indicate their own choices as to activities to be completed.

Activity:
   1. Hand out the chart. Ask participants to locate the largest five countries
in the world. Explain how to read the chart, and what the categories represent.
This information is provided in the general notes on the chart.
   2. Either identify some of the 34 activities and assign them to the partici-
pants, or allow them to indicate their own choices or preferences.
   3. Discuss the results of each group's work, utilizing any one of the follow-
ing formats:
1. Have people report what information was learned, completing the statement: "I
   learned that _____."
2. Ask participants to decide which of the activities provided them with the most
   new information. Share ideas with the entire group.
3. Have participants explain how data in itself is insufficient in grasping the
   entire picture of an issue. Which activity performed indicated this considera-
   tion the most vividly? Why?

IDEAS FOR USE OF WORLD POPULATION DATA SHEET

1. Hang it up and let students tell you what to do with it.

2. Shade in world map according to birth and death rates, or any other data on the chart.

3. Given x amount of dollars have students decide which country to aid and give reasons why based on data sheet.

4. Why are there no statistics in certain columns?

5. List 10 countries that have the highest and the 10 countries with the lowest growth rates. In groups investigate cultural factors affecting this growth rate.

6. Middle East - What does the information tell you about the present situation?

7. Relate figures to environmental factors, colonial background, energy consumption, dominant religion, etc.

8. By using the chart students will be able to make a hypothesis about the relationship of population growth to per capita gross national product.

9. Students could take information from the chart and transform it on to a graph.

10. Which countries will double in population first? last?

11. Which region has most people now? Which will in 1985?

12. Have student figure out 5 or 10 ways in which they could categorize the data they have. For example, places I would not want to live in, places like us, etc.

13. Can you identify the "developing" nations? What factors would you use to identify those?

14. Politically where are the most populous countries? Economically? Culturally?

15. Are there any countries who have reached or are fast approaching zero population growth? Reasons?

16. Find the "worst" place in the world to live, the "best" place.

17. Using the data write a one page definition of the population "problem" the world is facing.

18. Choose one country - Describe the quality of life there (journal, short story, poem, cartoon, drawing)

19. Descriptive pictures - links to one country, one aspect or more. Where would this situation take place?

20. Relationship of population numbers or GNP to physical size.

21. Space activity
    -- multiply people by birth rate and have students interact with the results
    -- first students occupy the total space in the room
    -- then with new statistics decrease space likewise to accommodate new statistics
    -- continue to decrease space by increasing population in terms of future population projections
    -- ask students feelings on continued population/space relationships-- problems and prospects

22. From data on the sheet write a paper proving a point. Then take the opposite point of view and prove that from the data on the sheet.

23. Find out average per capita income of the "have's" and the "have not's".

24. Which countries would food aid help the most?

25. Is there any relationship between the population growth of a country and its form of government?

26. By using a graph make a comparison between any two factors you choose.

27. Number of years to double populations - Activity designed to find out how many countries of the world will have doubled their population by the time the student is 30 years old, 40, 50 or 75.

28. Simulation idea - Population or food conference using sections of the world or key countries. Every 10 minutes = 1 year. Compute changes in figures if no agreement is reached on population control measures. Goal is to sense pressures to come to some decision.

29. Identify a place you'd like to live other than your own country using data to describe the life you might have. How would you view the United States from the country you choose?

30. Have perhaps 6 regions. Have groups of students examine the data sheet and describe priorities as if they were the political leaders of that country.

31. Pregnant, you live in the following countries and can buy an airplane ticket with your per capita gross national product. ($1 goes 2 miles) Where can you go to increase your child's life expectancy the most from:

> Brasilia, Brazil
> Peking, China
> Calcutta, India
> Kabul, Afghanistan
> Niwot, Colorado

32. What information is included here that is not included in an almanac covering the same countries?

33. Write to the Bureau of Census to get the figures for each column for Colorado.

34. Donut activity

   1. From an almanac, cut out all the colored flags for each nation. (You will need 2 almanacs to get all flags.) Place a number on the back to help you identify the country.

   2. Don't tell anything about the exercise. Tell the student to pick any flag (usually country not known). (Teacher usually "pulls" U.S. for self.)

   3. Student registers nation, is given population and rate of growth. (not per capita income) They are assigned the task of getting certain information about the nation, then predict what is the future of the nation.

   4. Teacher (later that day) records per capita income for each nation, then totals all P.C.I. Buy 1 donut for each $1000 P.C.I.

      (Example: $24,600 = 24.6 or 25 donuts)

   5. Next day, seat students by continent. Call each student forward, tell him of 1 donut per $1000, then given him his "share" of the world's wealth (e.g. $120 gets 1/8 donut). A variation is to use "high quality" donuts for the U.S. and Europe, "medium quality" for some other ($500-$2000 P.C.I.), and "plain donuts" for under-developed nations.

(Not printed at Government expense)

Congressional Record

World Population Estimates

SPEECH
of
HON. BOB PACKWOOD
of oregon
IN THE SENATE OF THE UNITED STATES
Monday, April 7, 1975

Mr. PACKWOOD. Mr. President, for nearly 4 years, I have been placing in the CONGRESSIONAL RECORD monthly estimates of the U.S. population. During this period of time, the United States population has grown by more than 5 million people. I should mention that this growth has occurred—and continues to occur—while most Americans have been led to believe that our population has leveled off, and that we are no longer growing in numbers.

During this same brief 3- to 4-year period, the world's population has grown by over 260 million people, and continues to grow at the rate of 1.9 percent per year. At this rate, the population of the world will double in just 36 years. By the year 2000, the Earth will be "supporting" to one degree or another, 6,253,000,000. That is, Mr. President, 6 billion 253 million people—2 billion 286 more people than the Earth is supporting today.

The Population Reference Bureau, here in Washington, D.C., has just published updated estimates of populations of the nations of the world. To my knowledge these are the most current figures available, and I ask unanimous consent to have them printed in the RECORD.

There being no objection, the estimates were ordered to be printed in the RECORD, as follows:

1975 WORLD POPULATION DATA SHEET OF THE POPULATION REFERENCE BUREAU

Region or country	Population estimate mid-1975 (millions)	Birth rate	Death rate	Rate of population growth (annual, percent)	Number of years to double population	Population projection to 2000 (millions)	Infant mortality rate	Population under 15 yrs. (percent)	Median age (years)	Life expectancy at birth (years)	Dietary energy supply (calories per person per day)	Per capita gross national product (US dollars)
World	3,967.0	31.5	12.2	1.9	36	6,253.0	98	36	22.4	55	2,470	540
Africa	401.0	46.3	19.8	2.6	27	813.0	156	44	17.8	45	2,250	240
Northern Africa	98.0	43.3	15.2	2.7	26	192.0	126	44	17.7	52	2,240	300
Algeria	16.8	48.7	15.4	3.2	22	36.7	(128)	48	16.0	53	1,730	430
Egypt	37.5	37.8	14.0	2.4	29	64.6	103	41	19.4	52	2,500	240
Libya	2.3	45.0	14.8	3.0	23	4.7	(130)	44	17.8	53	2,570	1,830
Morocco	17.5	46.2	15.7	2.9	24	35.9	149	47	16.4	53	2,200	270
Sudan	18.3	47.8	17.5	3.0	23	39.0	(141)	45	17.2	49	2,100	120
Tunisia	5.7	40.0	13.8	2.2	32	10.9	(128)	44	17.4	54	2,250	380
Western Africa	115.0	48.7	23.0	2.6	27	234.0	178	45	17.6	41	2,220	150
Cape Verde Islands	.3	32.8	13.7	1.9	36	.4	91	44	17.7	50		180
Dahomey	3.1	49.9	23.0	2.7	26	5.9	(185)	45	17.3	41	2,260	110
Gambia	.5	43.3	24.1	1.9	36	.9	(165)	41	19.8	40	2,490	140
Ghana	9.9	48.8	21.9	2.7	26	21.2	156	48	16.2	44	2,320	300
Guinea	4.4	46.4	22.9	2.4	29	8.5	216	43	18.5	41	2,200	90
Guinea-Bissau	.5	40.1	25.1	1.5	46	.8	(208)	37	22.1	38		250
Ivory Coast	4.9	45.6	20.6	2.5	28	9.6	(164)	43	18.5	44	2,430	340
Liberia	1.7	43.6	20.7	2.3	30	3.2	159	41	19.4	44	2,170	250
Mali	5.7	50.1	25.9	2.5	29	11.3	(188)	44	18.0	38	2,060	70
Mauritania	1.3	44.8	24.9	2.0	35	2.3	189	42	19.0	38	1,970	180
Niger	4.6	52.2	25.5	2.7	26	9.6	200	45	17.2	38	2,080	90
Nigeria	62.9	49.3	22.7	2.7	26	134.9	(180)	45	17.4	41	2,270	130
Senegal	4.4	47.6	23.9	2.4	29	8.2	(159)	43	18.3	40	2,370	260
Sierra Leone	3.0	44.7	20.7	2.4	22	5.7	136	43	18.6	44	2,780	190
Togo	2.2	50.6	23.5	2.7	26	4.6	(179)	46	17.2	41	2,330	160
Upper Volta	6.0	48.5	25.8	2.3	30	11.0	182	43	18.3	38	1,710	70
Eastern Africa	114.0	48.1	20.7	2.7	26	240.0	160	45	17.5	44	2,240	160
Burundi	3.8	48.6	24.7	2.3	30	7.3	150	44	18.4	39	2,040	70
Comoro Islands	.3	46.6	21.7	2.5	28	.5	(160)	43	18.4	42		140
Ethiopia	28.0	49.4	25.3	2.4	29	53.7	(181)	44	18.2	38	2,160	90
Kenya	13.3	48.7	16.0	3.3	21	31.0	(135)	46	16.7	50	2,360	170
Malagasy Republic	8.0	50.2	21.1	2.9	24	17.8	(170)	45	17.3	44	2,530	140
Malawi	4.9	47.7	23.7	2.4	29	9.5	148	45	17.5	41	2,210	100
Mauritius	.9	24.4	6.8	1.8	38	1.3	66	37	20.5	65	2,360	300
Mozambique	9.2	43.1	20.1	2.3	30	17.6	(165)	43	18.8	44	2,050	300
Reunion	.5	33.2	8.5	2.3	30	.7		43	18.6	63		950
Rhodesia	6.3	47.9	14.4	3.4	20	15.1	122	48	16.1	52	1,660	340
Rwanda	4.2	50.0	23.6	2.6	27	8.7	133	44	17.8	41	2,960	60
Somalia	3.2	47.2	21.7	2.6	27	6.5	(177)	45	17.2	41	1,830	90
Tanzania	15.4	50.2	20.1	3.0	23	34.0	162	47	16.6	44	2,260	120
Uganda	11.4	45.2	15.9	2.9	24	24.2	160	44	17.7	50	2,130	150
Zambia	5.0	51.5	20.5	3.1	22	11.6	(157)	42	16.2	44	2,590	380

Footnotes at end of table
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Title: Too Many People? (by George Otero)

Introduction: The number of people sharing a situation will affect the quality of the experience. Sometimes a lot of people make an event worthwhile; sometimes an activity that is enjoyable with a few people becomes less enjoyable when more people are involved. This activity points out two aspects of population size. First, the question of when there are too many people depends upon cultural views and the situation being considered. Second, the activity points out how all persons are affected by the size of the population.

Lesson Objectives:
1. Students make decisions about situations using the criterion of "too many people."
2. To describe situations participants like to be involved in, and describe similar situations which may involve too many people.

Mechanics:
Teaching time: 1 50-minute class period
Materials: You will need a carrousel projector and the slides entitled "Too Many People?" (Available from CTIR. You can make your own slides or use pictures. This is easily done.
Activity:
    1. Have the students list on a sheet of paper ten things they really like to do. Have them put these lists aside.
    2. Show the slides entitled "Too Many People?", asking students to raise their hands if the situation shown has too many people in it.
    The students will not be sure what you mean. When would there be too many people? That is the question you want them to deal with in the activity. As students respond, have some of them give their reasons for thinking there are too many people in the particular situation (crowding, pollution, poverty, lack of space, less fun, etc.). List these on the board. Check with the class to see if other students agree or disagree about the rating students are giving the situations.
    3. Discuss these questions after viewing the slides once:
a. On what basis did students rate the slides the way they did?
b. Were students' judgments based on the number of people alone, or did they consider also the environment, context, and culture ?
c. Which slides did most students agree upon? Why?
d. Which slides did most students disagree on? Why?
    4. Now have the students take the list of ten preferred activities they wrote at the beginning of the period and have them describe in writing when these situations would have too many people involved, as far as they are concerned.
    5. Have students share some of these situations. Have these situations ever had too many people? Is there a chance too many people will be doing this activity in the near future?

Further Suggestion:
Have students find their own pictures of situations with too many people. Post on a bulletin board entitled "Too Many People." You might also have students write a short story about a situation they were in that had too many people.

SLIDE DESCRIPTIONS

1. Traffic jam in Los Angeles.
2. Map of the Peoples' Republic of China.
3. Street scene in downtown Manhattan.
4. Housing in Calcutta, India - one entire family shares each brick-walled room.
5. Fans at a U.S. football game.
6. Soviet determination to keep down pollution on the Volga River makes swimming possible even beneath the smoking towers of this steel mill.
7. Recent rock-festival headline.
8. Sahara desert.
9. Junior high kids riding bikes in a group.
10. Part of Chief Lungu's 36 wives and 25 children--proclaims his wealth as head of a clan in Upper Zaire.
11. Session of the U.S. Congress.
12. Photo of map of the Denver Metro Area.
13. Mountain lake scene in America.
14. Boy in front of makeshift house in Sao Paulo, Brazil.
15. A gazetteer of place names at Watson Lake in the Yukon.
16. Some of the millions of peasant-workers who have worked on projects on the Huai River, China.
17. Auto, airplane, and industrial pollution scene--United States.
18. A person sleeping in the streets of Calcutta. The weather there is humid, often 100 degrees.
19. Suburb--U.S.
20. Rhodesian blacks and whites--represents proportion of blacks to whites in a country where whites rule as a minority.
21. A flotilla of pleasure craft enters the locks of Kentucky Dam, the first upward step in the Tennessee's 650-mile navigation channel.
22. Black kids on a street in a neighborhood of New Haven, Connecticut.
23. New York City from the air.
24. Picture of the Watson family - American T.V.
25. U.S. unemployment lines in the 1930's.
26. Here at the largest square in India, a million people disperse after a rally for Prime Ministers Gandhi and Sheik Mugibur Rahman, February, 1972--India.
27. Shot of the earth from space.

Title: Hide and Seek -- Where is Everybody? (by George Otero)*

Introduction: If students are talking about the world's population, they should know where, geographically speaking, the people are. They are not spread evenly around the earth's surface, and the density and distribution of human beings are important factors to consider when analyzing problems related to population growth. This activity has students make some guesses about population distribution and then has them check those assumptions, using an atlas and attending map skills.

Lesson Objectives:
        Students complete the sequential worksheet on population distribution.
        Students generalize about the factors which determine where people live.
        Students become familiar with the uses of an atlas.
        Students gain knowledge about where people are found on the face of the earth.

Mechanics:
        Time: 1 class period
        Materials: Duplicate copies of the student handout entitled "Introduction to World Population Distribution." Have in addition a classroom or textbook atlas available for students' use.

Activity:
        1. Ask the students the question, "Why do people seem to cluster in some places and not in others?" Write down these guesses on the board.

        2. Hand out the worksheet for students to complete.

        3. Have students read some of their summary paragraphs. Did most of the class write similar statements?

        4. Having discovered where people cluster and some of the reasons for these patterns, have students consider this question: "Since people cluster in some areas and not in others what are the implications for food supplies and distribution?" Answers to this question can be listed on the board and used as a basis for individual research.

Source: Berry Beyer

INTRODUCTION TO WORLD POPULATION DISTRIBUTION

Study Guide

1. The population of the world is distributed unevenly over the land area. In some places large numbers of people live close together. In other places a few people are scattered over a wide area. In which of the following nations do the people live closest together? (This nation has the most dense population.)

China	England
Mexico	Russia

2. In which of the following nations do the people live farthest apart? (This nations has the sparsest population.)

United States	France
Brazil	Nigeria

3. What is ONE reason you think people congregate in certain places of the world, and not in other places?

4. If this is true, in what kind of places in the world would you expect to find people congregated in large numbers?

5. Examine an atlas and answer the following:

    a) List the places where there are large groups of people that are where you expected to find them according to your answer to question #4:

    b) List any places where large groups of people ought to be according to your answer to #4, but are not there:

    c) What reasons help explain this?

6. a) List the places where there are large groups of people that are not where your answer to Question #4 says they should be:

21:5

    b) What reasons help explain this?

7. How well does your answer to Question #3 explain the pattern of population distribution in the world?

8. IF YOUR ANSWER TO QUESTION #3 PROVIDES A COMPLETE EXPLANATION, GO DIRECTLY TO QUESTION #10.

9. IF YOUR ANSWER TO QUESTION #3 DOES NOT COMPLETELY EXPLAIN THE WAY PEOPLE ARE DISTRIBUTED THROUGHOUT THE WORLD, LIST BELOW SOME OTHER REASONS THAT MIGHT HELP EXPLAIN THIS (CHECK YOU ANSWERS TO QUESTIONS #5c AND #6b):

10. Write a sentence that best explains why the population of the world is distributed the way it is. Be prepared to explain your reasons for this statement in our next class.

Title: Limits   (by George Otero, adapted from an activity in An Introduction to
         Population, Environment, and Society, by Lawrence Schaefer, 1974)

Introduction: Space on this earth is limited. It is finite. The number of
people that can live on this earth is determined by many factors, such as food,
land, water, quality of air, etc. But there is a limit somewhere to that
number. This exercise helps students understand that there are finite boundaries
to most situations, and these limits depend upon our assumptions. This activity
will illustrate that available space in which to pack something is finite. The
examples show the difficulty of predicting exact limits, even though we know
that ultimate limits exist. There is a finite surface area available to hold a
given population. The maximum population cannot be determined exactly, but there
is a maximum.

Lesson Objectives:
1. To utilize math skills to calculate the maximum number of inanimate objects
    which can fit into a given space.
2. To recognize that the maximum number of objects, animate and inanimate, which
    can live in a space depends upon complex assumptions.
3. To distinguish between maximum possible and desirable population size.

Mechanics:
Teaching time: 1 50-minute class period.
Materials: You can write the problems on the board or write them on a ditto
             sheet, duplicate, and distribute to students in worksheet form.

Activity:
    1. Tell the students that you would like them to work some puzzle problems
which have to do with calculating how many objects will fit into certain spaces.
    2. Discuss the work the class has done after about 15 or 20 minutes.
    Go over the answers that students have given. On which problems can they
agree to an answer? On which can't they agree? Have the students give reasons
to explain why answers are much clearer for some problems than they are for
others (this is due to the assumptions one uses in working the problem. In some
there are many factors, and in others relatively few determining factors).
    What determines the upper limit that each space can hold? (physical and some-
times social factors) Point out the differences between inanimate and animate,
or living, organisms when predicting maximum populations. Fewer assumptions are
needed to predict a maximum number of inanimate objects for a given area.
    3. What is the difference between the maximum possible a space can hold, and
the desired population of objects for that space? In which of the situations
you worked on would you feel it desirable to have less than maximum occupation?
    4. What factors would you consider in determining the desirable number of
people for the world (nation, town)? What factors would you consider in determin-
ing the maximum human population possible for the world (nation, town)? What are
the similarities and differences in the two lists?

Further Suggestions:
In conjunction with Step #4 of the Activity above, have students divide into
groups and list the factors which also work to establish limits on desirable
occupation for given areas--e.g., environmental factors, terrain, etc. Are limits
established by these factors as well as by the consideration of sheer space
availability?
Have students think of other problems that deal with putting something into a
particular space. Print these, and let students work on them for credit, or as
a contest activity.

PROBLEMS

1. How many shoe boxes (1/2 ft x 1/3 x 1 ft) will fit into a steamer trunk (3 ft x 3 ft x 5 ft)?

   Answer: volume of shoe box $v = l \times w \times h = 1/6$ ft^3

   volume of steamer trunk $v = 45$ ft^3

   # of objects $= \dfrac{\text{volume of large area}}{\text{volume of single object}} = \dfrac{45 \text{ ft}^3}{1/6 \text{ ft}^3/\text{box}}$

   $= 270$ boxes, an exact number

2. How many cars can fit on a parking lot (300 ft x 150)?

   Answer: Some possible assumptions: Car size?

   Do you leave aisles?
   How many levels?

   A student can make any assumptions for car size –
   for 7' x 12' and no aisles
   area car – 84 ft^2/car
   area lot – 45,000 ft^2
   # of cars $= \dfrac{45,000 \text{ ft}^2}{84 \text{ ft}^2/\text{car}} = 525$ cars

   range 300 – 1000 cars

   There is more than one reasonable answer.

3. How many houses will fit on 100 acres of land?

   Answer: Possible assumptions: number of streets
   open spaces
   recreation areas
   number of houses per acre
   Assume – 1 house occupies 1/4 acre
   Answer: 400 houses maximum

   Assume – 1 house occupies 2 acres
   Answer: 50 houses maximum

4. How many people can live in your apartment or home?

   Answer: Assumptions: nationality
   size of home
   number of bedrooms
   how long will they stay - a weekend or year?
   zoning
   Range: 2 - 50

   Discuss: How they make their choice?
   Did they need privacy?
   Did they need room to feed people?
   Did they need recreation area?
   Did they need empty space?

5. How many students will your classroom hold? Comfortably?

    Answer: Value judgement: 15 - 30 students
             A teacher may relate the students answer to population
             growth later. As population grows either more class-
             rooms must be built or more students must go in each
             classroom. Do the students feel a small class size
             maximizes learning? What effect does a large class
             have on learning?

6. What is the maximum number of people that can live in your city
    or town?

    Answer: Open ended. Emphasize the difficulty of predicting a
             maximum population for such a large area. The class
             should realize that, even though the limit cannot be
             exactly predicted, a finite limit exists on the number
             of people that can be accommodated. Discuss the impor-
             tance of resources such as food and water. Have the
             class distinguish between absolute limits and desirable
             numbers.

Optional:

7. How many fish can live in a 20 gallon aquarium?

    Answer: Assumptions: size of aquarium
                          size of fish
                          type of fish
                          oxygen source - plants or mechanical?

             No correct answer. Allow discussion to include need
             for life support, e.g. food, oxygen, spawning area,
             waste removal.

             Generally, goldfish need 1 gallon of water for every
             2 1/2 inches of body.

8. How many people will fit in a car?

    Answer: Assumption: size of car
                         size of people

             Range: 2 - 9 people

9. How many cows can live in a 2 acre pasture?

    Answer: On Western grassland, each cow needs approximately
             1 acre for grazing. If a farmer provides food from
             an external source, more cattle can be accommodated
             in a smaller area, e.g. feedlot. In a feedlot 100 -
             300 cattle/acre.

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Title: Good News - Bad News -- Where Do We Stand?   (by George Otero)

Introduction: We hear all kinds of information about population and food every day.
Issues of Newsweek and Time report on population and food. Newspapers and tele-
vision have articles and special programs on the subject. Depending on what you
read or hear at any one time, the situation related to population and food may
seem good or it may seem bad. This activity allows data to be categorized as Good
News or Bad News. Then comparisons are made to determine some of the relationships
between the data, data we often only evaluate piecemeal.

Lesson Objectives:
1. To decide whether data is "good" or "bad."
2. To compare data to identify relationships.
3. To recognize the need to look at multiple data sources when evaluation is made
   of the population/food situation.

Mechanics:
Time: 1 class period
Materials: The chart and list of statements included should be duplicated.
             The information comes from many sources and may or may not be current.
             That must by tested by the group.

Activity:
1. Ask the participants if they are pessimistic or optimistic about the
chances of feeding the world and slowing rapid population growth.
2. Tell them that you would like them to rate some statements of fact. Using
the chart, have them decide whether the statement, in their own judgment, is "good
news" or "bad news." Have them copy the statement in the appropriate column or
place the number of the statement in the column.
3. Have the participants discuss the ratings. You might identify some state-
ments and discover to what degree the participants agreed on the rating for that
statement.
Then discuss these questions:
    Are there statements in one column that make another statement seem less bad or
    or less good?
    What other statements make a statement seem much better or much worse?
    Take a statement and draw lines to the other statements on the list which
    affect it.
    Does the data confirm your pessimism or optimism? Why?
4. Ask the participants if they have changed their minds about the ratings.
Encourage them to collect more information that will help them evaluate the prospects
for positive solutions to the population/food dilemma.

Evaluation:

Have the students write an opinion paper on the following statements:
1. Although world population is growing at an explosive rate (doubling every 35
   years), this growth is not a large problem at the present time.
2. With modern technological know-how, the world will succeed in feeding its people
   in the future.

Further Suggestions:
1. Make a bulletin board with two sections--Good News and Bad News. Have people
   bring statements and place them on the board. These could be articles, pictures,
   etc. Let the group discuss the new information as it becomes available. This
   points out the continual process of data collection and attitude evaluation.

2. Put together a set of "Good News" statements and a set of "Bad News" statements about the population/food question. Which list outweighs the other?
3. Ask participants to write a paper describing their views of the population/food situation as gleaned from the "Good News"-"Bad News" statements included in this activity.
4. Ask participants to indicate the types of information they would require in order to adequately view the population/food question. The goal here is an appreciation of the multi-faceted nature of population/food issues, and the need to examine a wide variety of sources before formulating any opinions on the question.

GOOD NEWS

BAD NEWS

STATEMENTS

1. Some countries are paying their farmers not to produce food.

2. Fifty nations are three times as crowded as the United States.

3. There are two billion acres of potentially arable land, most of it in the trop-ical regions of the world.

4. One-third of the arable land in the world is now used.

5. Much potential arable land must be irrigated.

6. Tropical land receives greater solar radiation and multiple crops could be raised each year on this land.

7. The soil in the tropics is very poor and erodes easily.

8. Infant death rates are dropping in almost every country of the world.

9. The universities of Latin America are graduating enough dentists each year to maintain the present ration of dentist to population.

10. A U.N. report on world housing estimated that over 900 million persons in Africa, Asia, and Latin America are without proper housing.

11. The world could catch 2½ times more fish from the sea than we now catch.

12. There is now a technique for sterilizing women that is much safer and less time-consuming than previously-used methods.

13. Abortion is now legal in the U.'

14. Most nations of the world now have family planning programs.

15. In the U.S. 40% of women interviewed in 1960 said they wanted 4 or more children.

16. Many of the new high-yield varieties of grains have lower protein content than pre-World War II varieties.

17. Research is now concentrating on developing and testing grain varieties with higher protein content as well as possible additives to enrich the present varieties.

18. The population of the world is growing faster today than at any time in man's history.

19. It is possible, though too expensive at present, to cultivate algae in water or even on petroleum or the sewage from our cities. The algae, after processing, could serve as a food source.

20. Life expectancy has increased in most parts of the world.

21. There are more hungry mouths in the world today than ever before in history.

22. A fifth of the total U.S. wheat crop was shipped to India alone in both 1966 and 1967.

23. The use of improved seed lines, water control, more fertilizer, and disease and pest controls have together brought about sharp increases in grain production around the world.

24. In 1800 the birth rate in the U.S. was 55/1000 women aged 15-49. This rate has decreased to 17.2/1000 women in 1971.

25. America has 6% of the world's people and consumes at least 40% of the world's resources.

26. A map of the cultivated land on our planet shows the Eastern and Central U.S., Europe, the Russian plains, India, and China to be the major cropland areas; the most adequate soils, by far, are those of the American Midwest.

27. Most countries, including the U.S., are running out of land that can be converted into cropland.

28. Land not under cultivation will require immense inputs of money for clearing, irrigation, and fertilization to make it productive.

29. Much productive land is diverted to crops such as tobacco and coffee.

-29. The food that is annually lost in India to pests, poor storage, and bad transportation could feed fifty million persons.

30. Less than five percent of the soils of the tropics are potentially fertile cropland.

31. Many Americans have been reduced to buying pet food as a source of protein.

32. The fastest growing national organization in the U.S. is Weight Watchers.

33. About half the children in the underdeveloped countries perish in infancy from hunger or malnutrition.

34. One farmer in the U.S. now feeds over 30 people.

35. The part of the population with average daily energy (caloric) intake below need minimums is 90% for Asia, 40% for Africa, and 30% for Latin America.

36. Almost three billion dollars are needed annually in the poorer nations to develop new crop lands to keep up with the population growth.

37. It takes 400 years to build up an inch of topsoil.

38. It takes $50 to bring an acre of new land into high productivity.

THE 1970 CENSUS: WHAT IT WILL ASK

EVERYONE MUST GIVE THIS INFORMATION:

PERSONAL: Name, sex, race, birth date, marital status (married, widowed, divorced, separated, never married). Are you head of the household, his wife, son, daughter, or relative? Are you a roomer, inmate. or patient living in this house?

ABOUT YOUR HOUSE: Do you have a phone, complete kitchen, hot and cold water. a flush toilet. tub or shower, private entrance? How many rooms? What kind of heating? Is there a basement? Do you own it, rent it, or other? Is it a one-family home? Is it on a big piece of land with commercial business on it too? How much is your property worth; or how much rent do you pay?

A SAMPLING OF PEOPLE MUST ALSO GIVE THIS INFORMATION:

ABOUT THE HEAD OF THE HOUSEHOLD: Where was he born? Where were his mother and father born? What language did he speak as a child? When did he move to his present home? Where did he live in 1965?

How much schooling did he have? How recent? Was he in the armed services? When?

If head-of-household is a woman, how many babies has she had?

If head-of-household is over 16: Did he work last week? How many hours? Where? How did he get there? Was he absent or laid off? Has he looked for work recently? If so, was there any reason he couldn't take a job? When did he last work at all? What kind of job was it? Where did he work in 1965? Did he work at all last year? How many weeks? How much did he earn last year? Was his income from wages? social security? dividends or other?

ABOUT YOUR HOUSE: How old is it? How many families live there? What do you pay for utilities? How big is the lot it's on? How much money did produce from the land earn last year? Where does your water come from? Are you connected to a public sewer? How many bathrooms do you have? How many bedrooms? How many stories is your building? Is there an elevator? What kind of fuel is used? Do you have a second home? Do you have a washing machine, dryer, dishwasher, freezer, air-conditioning, battery-radio, or TV (and does it receive UHF channels)? How many cars do you have?

Source: U.S. Department of Commerce, Bureau of the Census

POPULATION DISTRIBUTION DATA FORM

(1) BUILDING NUMBER	(2) BUILDING AGE	(3) NUMBER OF RESIDENTS	(4) AGES OF PEOPLE	(5) SEXES OF PEOPLE	(6) BUILDING USE	(7) OCCUPATIONS OF RESIDENTS	(8) ETHNIC PATTERN	(9) BELIEF PATTERNS
449 Apart	2 years	14			Apartment	Students Blue collar White collar	Black man, White, other	Catholic Protestant, Other
451 "	24 years	3	70 73	M F F	Single Family	Retired	White	Catholic
453 "	20 years	—	—	—	Business	—	—	—
455 "	(?)	(± 20)	—	—	Apartment	Students White Collar	Black, White	(?)

Population distribution data form.

Title: Are People the Problem?* (by George Otero)

Introduction: Many people, especially in this country, feel that
the population problem is simply a people problem. They feel that
there are too many people being born in the world today. There are
others, however, who say we must look at additional factors if we wish
to get a clear view of the problems associated with rapid population
growth. In this activity students inquire into the relationships
between numbers of people and energy consumption. The students
formulate some tentative conclusions after having sorted the data
on the two topics. Then the students test some of these conclusions
using another data chart. In summarizing students are asked to
consider this statement based on the data they have examined:
The United States is the most overpopulated nation in the world today.

Lesson Objectives:

To sort two sources of data so that comparisons between the data
    can be made
To consider other factors besides the number of people when discussing
    the problems associated with population growth
To generate tentative conclusions as to whether energy consumption
    is more important than the number of people in considering
    population growth
To test the generalizations formulated by examining further data
To provide students with data that will foster a discussion of this
    statement: The United States is the most overpopulated nation
    in the world today.

Mechanics:

Teaching time: 2 class periods
Materials: You will need to duplicate enough copies of Worksheets
            1, 2, and 3 for every student.

Procedure:

1. Hand out worksheet 1 to the students. Before beginning the
    activity have students suggest some of the ways we use and
    consume energy in this country. What aspects of our lives
    depend on energy being available? List them.

2. Have students complete worksheet 1.

3. Have students complete worksheet 2 either individually, in
    pairs, or as an entire class.

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*Adapted from an activity by Margaret Palcynski: NSF Summer
Institute, Cincinnati, Ohio.

4. Discuss some of the students' answers to the questions in worksheet 2. Tell the class they will test these answers by examining and analyzing one more chart related to energy consumption.

5. Have students complete worksheet 3. Then have a general oral discussion or have students write their responses to this statement, agreeing or disagreeing with it: THE UNITED STATES IS THE MOST OVERPOPULATED COUNTRY IN THE WORLD TODAY.

ARE PEOPLE THE PROBLEM?

If we started cutting down population numbers tomorrow, (by decreasing birth rates, etc.), would this solve the entire problem? Do countries with the smallest population size have the smallest population problem?

Energy has been a vital prerequisite for development in technology, science, medicine, etc. It is an important factor in the world today. By looking at its relationship to population size, we can shed some light on the above questions.

Look at these figures for the 7 basic world areas.

AREA	ENERGY CONSUMED[1]		POPULATION SIZE[2]	
	Metric Tons	%	in Millions	%
North America	1.55	37%	229	6.5%
Latin America	.14	3%	291	8.2%
Western Europe	.79	19%	150	4.3%
Eastern Europe & USSR	.90	21%	375	10.7%
Asia	.64	15%	2104	60.0%
Africa	.08	2%	354	10.0%
Oceania	.05	1%	20	.6%

What does the data tell us? List the world areas in decreasing order of energy consumption and population size. Indicate the percentage after each.

highest   Energy Consumption   Population Size

1.	%		%
2.	%		%
3	%		%
4.	%		%
5.	%		%
6.	%		%
7.	%		%

lowest

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[1]Data: Billions of metric tons of coal equivalent. From Joseph L. Fisher and Neal Potter, "Resources in the U.S. and the World," p. 112, in Philip M. Hauser, ed., The Population Dilemma, 1963, by The American Assembly, Columbia University.

[2]Data: PRB – 1972 Population World Data Sheet

ARE PEOPLE THE PROBLEM?

1. 6.5% of the world's population consumes _____% of the world's energy while..

   60% of the world's population consumes _____% of the world's energy.

   What might account for this?

2. In your opinion, would a decrease in the population growth rate of the U.S. decrease energy consumption?

3. In your opinion, would a decrease in the population growth rate of Asia automatically increase energy consumption in Asia?

4. If all world areas eventually reach an energy consumption level comparable to that of North America, what other problems might result?

5. What does this data suggest is more of a contributing factor to the population problem than a simple rise in numbers of people in an area?

ARE PEOPLE THE PROBLEM?

Below is another chart which shows energy consumption over a set time period in the major regions of the world. You should compute per capita energy consumption for each region and the United States. This can be done by dividing energy consumption by the population to obtain an estimate of the energy used by the average person living in a region. The first area is done for you:

Region	1950: Consumption[1]	Population[2]	Per Capita Consumption
Africa	1,297	217.0	5,976, 959 million
Asia	5,054	1,375.2	
Europe	21,897	*392 1	
Latin America	2,397	161.9	
North America	36,860	166.1	
United States	34,153	152.3	
Oceana	890	12.2	
USSR	8,427	180.0	
World	76,823	2,504.5	

Region	1968: Consumption[1]	Population[2]	Per Capita Consumption
Africa	3,343	336.5	
Asia	26,099	1,947.9	
Europe	52,799	454.7	
Latin America	8,034	267.4	
North America	68,594	222.0	
United States	62,432	201.2	
Oceana	2,240	18.3	
USSR	28,628	237.8	
World	189,737	3,484.5	

Now examine your answers to the questions in worksheet 1. Does this data support your conclusions? Explain.

How would you now answer the first two questions on worksheet 1?

Now, considering what you have studied, respond to this statement:
THE UNITED STATES IS THE MOST OVERPOPULATED COUNTRY IN THE WORLD TODAY.

[1]Trillion Btu's.
[2]Millions
Source: Darmstädter, Joel, "Energy," in Population, Resources and the Environment, ed. by Ronald G. Ridker, GPO, Washington, 1972.

Title: Pop Quotes (Mobiles in the Classroom)* (by George Otero)

Introduction: Quotes can stimulate us to think about a topic. Quotes can interest us in a subject that is not at first of interest, especially if the quote is funny. One way to spark students to think about population-related issues is by making mobiles of quotes about population and then using the quotes in any of the ways described in this activity. Kids can make the mobiles, they add color to the class, and they serve as constant reminders during the unit of some of the important concepts and issues with which the students will be dealing. Believe it or not, the mobiles can also be used as the evaluation instrument for a unit on population! Read on to find out more about the use of pop quotes in the classroom.

Lesson Objectives:
To spark student interest in a variety of population issues by presenting them with short quotes that are funny and interesting
To use quotes as a stimulus for discussion of some of the important population and food issues

Mechanics:
Teaching time: 1 class period to make mobiles; 1 class period to discuss.
Materials: Poster board (different colors), scissors, colored markers or paint, duplicated list of quotes, string to hang the mobiles

Procedure:
1. You can make the mobiles yourself and hang them up or you can make them as a class activity.
2. Hand out the quotes. Let pairs of students make mobiles out of the quotes. Have them vary the sizes and shapes of the mobiles. Also have them write their quotes on both sides of the mobiles. Then hang the mobiles.

(What follows is a description of a number of ways the mobiles can be used once they have been displayed.)

1. You can leave the mobiles up and discuss different ones throughout the unit as students ask about them. Usually one student will ask a question about a mobile and that will lead other students to ask questions about the meaning of other mobiles.
2. You can have students pick two or three mobiles for which they will write explanations. Students should be given time (1 week or 2) to write these explanations. Most of them will be explained or dealt with as you do other population and food exercises during your class' study of population. Students

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*Quotes collected at NSF Summer Institute, Cincinnati, Ohio.

may also do some research on these items. Then students report
their conclusions to the class.

3. You can use approach 1 and/or 2 and then use the mobiles for
   evaluation purposes. Students who can explain the meanings
   and implications of the mobiles probably have a good grasp of
   population dynamics. This approach to evaluation is also less
   threatening as well as being novel to the students.

4. Students can find other quotes or make their own. These can
   be made into mobiles and added to the ones already displayed.

QUOTES FOR MOBILES

1. ZPG is like hitch-hiking--you know you'll get there, the only question is when and how.
2. 1 + 1 ≠ 2 in many families.
3. What makes you different from anybody else? It's probably the genes you're wearing.
4. Support ZPG--go bowling.
5. Replacement level ≠ ZPG.
6. Spaceship earth --a finite system.
7. Population Explosion = Fact
   Population Crisis = Opinion
8. What is optimum population?
9. Quality vs quantity--a crucial concern.
10. Save water--shower with a friend.
11. Calhoun's rats were dense!
12. "To be" has become to mean in the developed countries "to have." Goulet
13. Will the stork pass the plow?
14. Will the baby boom boom?
15. There are so many people in the world, that God cannot appear to them except in the form of food. Gandhi.
16. Growth for growth's sake is the philosophy of the cancer cell.
17. Help ecology: Take a lemming to the beach.

Explanation of Quotes

1. Population cannot grow forever, there are limits. The question is how we will reach those limits: by choice and planning or as a result of natural biological controls such as those mentioned by Malthus? Maybe both?

2. This puns on the fact that simple addition doesn't work in social situations such as families. A woman and a man joining in marriage almost always results in a group of 3 or 4 and NOT 2.

3. Simply a play on the word genes.

4. Going bowling is not the way to support zero population growth. This points out a myth about how we attain ZPG. Abstention is not the approach. Family planning and adequate availability of birth control approaches is probably better.

5. The replacement level is often said to be the same as ZPG. This is not true. With ZPG the total number of people in the population will stay the same from year to year. A nation that has reached the replacement level (1 child for each adult) can still grow in total population because of the distribution of the population by age (people live longer!).

6. The earth is limited in the space, food, water, and shelter it can offer its inhabitants. Although we may not know the exact limits, we must be aware that there are limits and the population cannot grow forever.

7. By most definitions the world population is exploding. Exponential growth operates that way. That is a fact. Yet it is opinion when we consider this growth as a crisis or not. Some countries do, some don't. Some people feel this growth can be controlled and some people believe that growth is already uncontrollable. What do the students think?

8. This quote simply introduces the term "optimum." What is the best or ideal or most people this earth can hold? Under what criteria will you make a judgment?

9. To some people the population issue is stated in this quote. Do we want more people and things or do we want better quality in the people and things we already have around? This is a crucial question.

10. This is again a humorous quote with no large message, but you or your students may find one.

11. Calhoun is a scientist who experimented with crowding and rats. You can locate this experiment in the Reader's Guide under Calhoun's name. These rats became extinct most of the time in the experiments. Not only were they densely crowded but they were dense in letting their group become extinct!

12. Get it.

13. The stork represents births and the plow food production. Will it or has it already?

14. The baby boom is the period in US history after WWII up to 1957 where birth rates were very, very high. If all these babies have lots of babies the population will explode because of exponential growth.

15. Good statement from Gandhi about other perspectives on the problem for many people in the world. Also indicates what religion must do.

16. Many people think growth is good anytime and always. By comparing that philosophy with the pattern of cancer helps raise questions about this philosophy.

17. Lemmings are small animals that control their population by periodically throwing themselves in the ocean. Look up the story. What other methods of control are there?

Title: Does Strength Lie in Numbers?* (George Otero)

Introduction: Implicit in many of our daily actions is the value placed on numbers. ("The bigger the better," "100%," "We have more washing machines than anybody else in the world," etc.) In fact, in many cases, although we might not like to admit it, quantity is our goal and not quality. This is not to suggest that people don't value quality, but it is to say that we often value quantity more.

This activity explores our values about numbers: Are numbers (quantities) important and valuable in some cases and not in others? If so, under what conditions should we value numbers?

Lesson Objectives:
Students will document the value of numbers (quantity) in their society
    by practices and customs that reveal attitudes towards numbers
Students consider the value of numbers by examining population data
    for selected countries around the world
Students explore data related to numbers to determine when numbers
    relate to quantity and when numbers relate to quality

Mechanics:
Teaching time: 2 class periods
Materials: Duplicate copies of the student handouts for use during
            the second part of the activity.

Procedure:
1. Open the activity by asking students to divide a paper into
    two columns. One column should be entitled "Useful Numbers"
    and the other "Not Useful." Ask the students to work alone or in
    pairs and identify situations where numbers are useful. Encourage
    the students by seeing who can get the largest list in the
    shortest time.

    Examples from the "useful" column might be money, soldiers on
    your side in war, miles per gallon you get on your car, etc.
    Examples from the "not useful" column might be soldiers on the
    other side in war, number of pimples on the face, number of pages
    to read for homework, etc.

2. Have kids share their lists so that everyone gets some ideas about
    when numbers are valued as useful and desirable by students and
    when numbers are a hindrance to them.

*From an activity by Margaret Palcynski: NSF Summer Institute,
Cincinnati, Ohio.

3. The question to focus on at this point is: When are numbers valuable and when not?

    Ask students the following questions. As they answer the questions list on the board the rationale given by students in their answers. This would provide a set of general statements about numbers and their value as students complete step 4.

    (1) Is a $20 bill better than a $5 bill?
    (2) Is a 200-page book better than an 85-page book?
    (3) Is a 95 on a test better than a 93?
    (4) Is a flower garden with 40 roses better than one with 30 roses?
    (5) Is a family with 8 children better than one with 5?
    (6) Is a nation with 200,000,000 people stronger than a nation with 30,000,000?
    (7) Is a man with 8 shirts better dressed than a man with 5?
    (8) Is a double-dip ice cream cone better than a single-dip?

    Make up your own questions or have students make them up?

4. As the class examines the list you have compiled raise this issue with them: In responding to the questions how many times did you feel that you were deciding on the basis of quantity vs. quality? Give examples. Mention that many nations of the world today feel that strength lies in numbers. But the question is, what numbers? Hand out the worksheets entitled "Does strength lie in numbers?" and have the students complete them.

5. Summary: Ask the students if numbers are always good (They should say "no."). Are they always bad? (They should say "no" again.) Then how does one determine when they are good (useful) and when bad (not useful)? Refer back to the list in answering these questions.

Evaluation:
Have the class discuss or write a reaction paper to this statement: We as Americans are inconsistent since most of the time we value high numbers or quantity, it is not fair for us to be against nations with large populations or rapidly growing populations.

DOES STRENGTH LIE IN NUMBERS?

If you were a leader of a country, would you prefer to have a country

----with the highest total national income (Gross National Product)?
----with the largest population?
----with the highest income per person (per capita)?

What would be of more advantage in terms of your country's prospects for future progress and happiness?

Choose one of these questions or a combination of them and then use the following data to test your answer.

COUNTRY	POPULATION[1] (millions)	TOTAL NATIONAL[2] INCOME (US $)	PER CAPITA INCOME (US $)
Australia	13.0	29,900	2,300
China	786.1	786,786	less than 100
India	584.8	64,328	110
Mexico	54.3	31,494	580
Nigeria	58.0	58	less than 100
Puerto Rico	2.9	4,089	1,410
United States	209.2	886,160	4,240

Now...refer to the above figures to answer the following questions:

1. List these countries by name in descending order:

highest	Population	Total National Income	Per Capita
1.			
2.			
3.			
4.			
5.			
6.			
7			

smallest

2. Connect the same country across the 3 columns by a line. (e.g. from U.S. in 1st column to U.S. in 2nd column to U.S. in 3d column.)

3a. Which is the largest country?
Does it have the largest total income?

_____

[1]Source: PRB - 1972 World Population Data Sheet
[2]Computed from these figures: population X per capita income

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3b. Which is the smallest country?
Does it have the smallest total income?

3c. India, the 2nd largest in population, has the 2nd largest total income. Thus, I could say that India ranks second in terms of potential for progress and development.

Comment:

3d. Why does India have a high Total National Income (GNP) and a low Per Capita Income?

3e. How could India's per capita income also take 2nd place in this list?

3f. Look at Puerto Rico: its population is_____, and yet its GNP is_____, and its per capita is even_____.

4. Large populations and _____(high or low) per capita incomes do not usually go together.

5. If population size increases and total income does not, per capita income will_____.

6. If population size decreases and total income remains same, per capita income will_____.

IN CONCLUSION:

7. Why is per capita income a better measure of a country's development and potential than is total national income?

<u>Title</u>:   World Population Distribution (by George Otero)

<u>Introduction</u>:   People are not spread evenly on the surface of the earth.
The needs and wants of humans are ideally met in only a few places
on the globe. It is important that students know that the earth is
not habitable in all places. Although humans survive in many places,
they would prefer to live in certain geographic locations. In
addition, students should establish that although humans live in
many locations there are varying limits to the number of people who
can survive in many of these places. In this activity students use
maps from atlases and textbooks to explore questions related to
population distribution around the world.

<u>Lesson Objective</u>:
Students will make generalizations about the patterns of distribution
of the human population based on data collected using atlases and
other map materials.

<u>Mechanics</u>:
Time: 2 class periods, 1 to work with atlases and 1 to discuss.
Materials: Classroom atlases for students and textbooks that contain
             atlas sections. Students will need access to vegetation,
             climate, population distribution and density, and landform
             maps. Duplicate copies of the question sheet so that
             each student has one.

<u>Procedure</u>:
1. You can have students do this activity individually or in pairs.
    Tell them you want them to use atlases to answer some questions
    that will aid them in knowing where people are living on the
    earth. Hand out the atlases and the question sheets.

2. Discuss the questions in class emphasizing:

    A. Where most humans live on the globe,
    B. The amount of land suitable for dense human habitation that
        has not been settled, and
    C. The vast amounts of land that are sparsely settled or uninhabit-
        able.

3. Hand out a desk map of the world and have students locate and
    color those areas of the world where 90% of the people live.
    Have the students number and label those areas, #1 for the largest
    in population on down to #6. If students did a complete job
    on the question sheet, pairs of students should be able to do
    the map without referring to the books. Either way the activity
    can be used as an evaluation measure.

4. Students now should be able to make four general statements
    which help explain why people are spread unevenly over the
    surface of the earth.

WORLD POPULATION WORKSHEET

Using the tables and maps in the classroom atlas answer the following questions:

1. List the ten countries with the largest populations. List the population size next to each country.

2. In which hemisphere are most of the people in the world located? List one possible reason for this.

3. Describe the landform regions present in world areas where the population is under 2 inhabitants per square mile.

4. Which continent has the most cities with over 1,000,000 people?

5. Which country of the world has the most people per square mile? Hint: Divide total population by land area in square miles.

6. Assume that a person does not have a map. Describe in a paragraph where people live in the world.

7. Do most people live near coastal areas or in the interior of the country?

8. After studying where people are distributed in the world and after looking at temperature, climate, and landform maps, list five geographic reasons why you think world population is distributed where it is.

WORLD POPULATION DISTRIBUTION
Question Sheet

1. Which country has the largest population in the world?

2. List the 10 largest countries in the world in terms of square miles. Circle those that also are among the 10 largest countries in population size.

3. Total the populations of the 10 largest countries in the world. What percentage of the world's population can be found in these 10 countries?

4. Is the largest percentage of human population in the northern or southern hemisphere? Give two reasons why more people are concentrated in one rather than the other.

5. In which landform region (parts of the world) do you find few if any people?

6. In which landform region (parts of the world) do you find the most people living?

7. Describe in geographic terms the 8 regions or areas of the world where 90% of the human population can be found.

8. Which 5 countries are the most densely populated? (Density = number of people per square mile.)

9. The United States and China are not on this list, yet they have very large populations. Why?

10. Looking at climate, vegetation, and other maps, how much usable space (in percentage) is now left for the growing population?

11. In your opinion, where will most people who are born in the future live?

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Title: Pre-Test/Post-Test* (by George Otero)

Introduction: An important aspect of any teaching unit is an eva-
luation of changes that occur as a result of that unit. If a unit
on population is to be taught the attached pre-test/post-test is an
excellent and concise instrument to evaluate both cognitive progress
and effective change that may take place during the unit. The pre-
test/post-test will not only measure changes which occurred during
the unit, but will give the teacher a basis for determining change
that should be made when teaching that unit in the future.
     The test should be administered at the beginning of the unit,
prior to any instruction. The scores for the cognitive portion
should be recorded, and the average score determined. The answers
on the opinion section should be plotted on a larger graph. At
the end of the unit the same test should be given, and the scores
recorded in the same way as recorded earlier. This will show the
degree of improvement in the cognitive sections and attest to atti-
tudinal changes.

Lesson Objectives:
     The objectives to be accomplished by this activity are for the
benefit of the teacher rather than for the student:
 1. The teacher will be able to evaluate how much factual learning
     took place in the unit.
 2. The teacher will be able to determine any changes in attitudes
     which might result from the unit.

Mechanics:
     Teaching Time: 20 minutes for each segment, on two occasions
     Materials: Two copies of the pre-test/post-test for each
                 participant.

Activity:
     1. Prior to teaching any of the population unit, pass out the
pre-test/post-test and ask the students to answer the questions.
The testing may be done anonymously at the teacher's discretion.
Ten minutes should be sufficient time for the test. After the
tests are collected they should be scored with the average score
calculated for the first part. A graph showing the spread of res-
ponses and average placement on the second part is suggested.
These should not be revealed to the students.
     Answers to Part I:
1. c 2. b 3. c 4. d 5. d 6. a 7. c 8. a 9. b
10. e

PRE-TEST POST-TEST

Part I DO YOU KNOW THE FACTS ABOUT POPULATION (circle the letter of the best choice)

1. What is the population of the world today?
   a. 900 million
   b. 2.2 billion
   c. 3.9 billion
   d. 7.4 billion
   3. 22 billion

2. What is the present rate of growth of world population?
   a. 1 percent
   b. 2 percent
   c. 5 percent
   d. 10 percent
   e. 25 percent

3. If world population continues its present rate of growth, how long will it take to double?
   a. 10 years or less
   b. approximately 20 years
   c. approximately 35 years
   d. approximately 85 years
   e. approximately 120 years

4. What is the population of the United States today?
   a. Under 50 million
   b. About 75 million
   c. About 110 million
   d. About 210 million
   e. Over 5000 million

5. If the U.S. population continues to grow at its present rate, how long will it take to double?
   a. 10 years or less
   b. approximately 20 years
   c. approximately 35 years
   d. approximately 85 years
   e. approximately 120 years

6. Which of the following countries has the greatest number of people?
   a. China
   b. India
   c. United States
   d. Soviet Union
   e. Brazil

7. Which of the following countries has the fastest growing population in the world today?
   a. Soviet Union
   b. United States
   c. Mexico
   d. West Germany
   e. India

8. In the less developed countries . . .
   a. birth rates are high
   b. death rates are high
   c. literacy rates are high
   d. per capita income is high
   e. population growth rates are low

9. Which has NOT been a major cause of the population explosion:
   a. modern preventive medicine
   b. increase in birth rates
   c. improved sanitation
   d. lower infant mortality
   e. longer life span

10. What portion of the U.S. population growth is due to immigration?
    a. 1 percent
    b. 5 percent
    c. 12 percent
    d. 18 percent
    e. 25 percent

Part II WHAT IS YOUR OPINION?
For each statement below, place a check mark in the space which indicates your response. There are five possible responses:

SA	strongly agree	D	- disagree
A	agree	SD	strongly disagree
N	neutral		

1. The growth of world population is a serious problem.
2. The growth of the United States population is a serious problem.
3. Population growth causes other economic and social problems to be worse.
4. Population growth is more serious than pollution.
5. The U.S. high standard of living may eventually decline because of too many people
6. Population growth has a significant effect on our energy reserves.
7. Freedom and individual rights are threatened by overcrowding.
8. Population distribution is a more serious problem than population growth.
9. To control population, tax exemption should be provided for only two children
10. If underdeveloped countries do not control their population growth, the U.S. should cut off their foreign aid.
11. The U.S. should put more money and effort into research for new, safe and effective birth control methods.
12. The government should set up birth control clinics and provide contraceptives to anyone who requests them.
13. After two illegitimate births a woman should be sterilized.

SA	A	N	D	SD

Title: If I Could Live Any Place on Earth!! (by George Otero)

Introduction: People often remind themselves and others about the
seemingly nonsensical statements made by persons who try to maintain
that there are too many people on the earth: "Just look at all of the
land that isn't occupied and then try to tell me that we are over-
crowded in this country or on this planet." Well, neither group of
people may be completely correct, but both groups really need to
consider factors of population distribution that are often overlooked
when we ask ourselves how many people the earth can hold. This activity
explores population distribution by first having students locate the
ideal place to live. After examining the class' data, students can
recognize that there are certain locations on the globe where it is
desirable or necessary to live. This fact must be considered when we
attempt to decide how many people the earth can hold.

Lesson Objectives:
Students will consider the one place in the world that they would like
    to live and write down 3 to 5 reasons for selecting such a place.
Students will share their choices with the class.
Students will use group processes to compile a list of the 10 most
    common reasons for choosing the ideal place to live.
Students will consider how much of the world's land meets the criteria
    generated by the class and discuss the implications of such findings
    for the question: How many people can live on this earth?

Mechanics:
Time: 1 class period
Materials: None needed, except for paper supplied by students. You
            might want to supply each student with a map to use in
            identifying the ideal place to live.

Procedure:
1. Ask students if they think there is room for more people on the
    earth. Have students explain their responses.
2. Hand out the blank map of the world and ask students to locate
    the place on earth they would want to live if they could live
    anywhere they liked. Make atlases available so that students can
    look at different countries. You may also want to give students
    the evening to do this activity so that they can talk with friends
    and parents. After students locate a place be sure they write down
    3 to 5 reasons for selecting that location.
3. If possible locate each student's choice on a map large enough
    for every student to see. An overhead projector and a transpar-
    ency would work quite well.

4. Have students get together in pairs to combine their lists of reasons. Then have the pairs group as fours and combine their reasons. Then have students form groups of 8 and have them arrive at the 10 most common reasons given for choosing the ideal spot to live on earth. List these on the board.

5. Have the students look at the list and the compiled map. Do people in the class tend to want to live in similar locations? In what ways are the places similar?

Would people choose to live in deserts? Would most people choose to live in very cold regions? Would most people choose to live far from or close to water?

Have students consider their answers to these questions. Then ask them to think again about the question you asked at the beginning of the class. Do any of the factors discussed in class affect their answers and thoughts about the question now? Can we say there is room for people on the earth just because there is open space? Can people live anywhere? Do people want to live anywhere?

<u>Title</u>:   Women and Population: A Simulation (by Theresa Noland,
             Westminster Public Schools)

<u>Introduction</u>:   What role do the women of the world play in the
population "problem"? What role can they play? What choices must
be made? Can the population be controlled? By what means? Will
it be possible to control the population in ways which increase the
freedom of both individuals and society? Must we restrict population
growth by means which are highly coercive and which limit personal
freedom? These are all serious questions to which students living
in the twentieth century will have to find answers. The following
simulation tries to help the student understand many viewpoints by
experiencing the conflicts inherent in any discussion of the popu-
lation "problem."

     In order to develop this simulation the following conditions
were established:

     1. Definition of problem
     2. Limitation of plausible solutions
     3. Selection of relevant variables
     4. .Establishment of roles for conflict

<u>Lesson Objectives</u>:

     As a result of participating in this activity, each individual
will:

1. Become practiced in simulation role-playing.
2. Be able to experience the complexity of formulating solutions
    by consensus.
3. Be able to appreciate cross-cultural differences of women's
    roles in approaches to the population problem.

<u>Mechanics</u>:

     Time: 1-2 class periods
     Materials: role sheets, proposals, background information

<u>Activity</u>:

     Quantifiable information should be provided for the conference
participants to allow them greater leverage in the discussion.

     A possible teaching plan for this unit might be:

     1. Introduce the simulation:

                           Introduction

          This exercise simulates a meeting of a committee
     formed at the International Women's Year Conference in
     Mexico City with the task of adopting a "women's" posi-
     tion on population growth and possible solutions to the
     growth problem. You will each be assigned the role
     of a participant in the meeting. We will form as many
     committees as necessary. Each committee must come to
     consensus on a proposal to be presented to the United
     Nations General Assembly.

2. Remind the students that the roles they will play are those of individual persons and should not be used in a stereotypical fashion.
3. Divide the class into groups of five students each. Any extra students may be assigned the role of United Nations observers.
4. Hand out role sheets, proposals, and background information.
5. Provide time for each country's representatives to meet together to clarify their positions.
6. Call the committees to order and allow time for discussion and consensus seeking.
7. Ask for reports from groups on resolutions adopted. (This part of the lesson should be kept short.)
8. Debrief. A list of possible questions follows.
   a. How did your group function?
   b. Was it hard to come to consensus? Why?
   c. How was this simulation like the real world? Give examples.
   d. How was this simulation unlike the real world?
   e. How might this simulation be improved?
   f. What factors favor the solution adopted by your group?
   g. What factors work against the solution adopted by your group?
   h. Would the solution adopted by your group solve the population growth problem?
   i. What will happen to the women in our simulation if they (and the other women of the world), because of overpopulation, are denied the role of mother?

This last question is perhaps the crucial question and may be the beginning of a new unit.

BACKGROUND INFORMATION

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Role 1 India	yes	no	no	yes	no	yes	open
Role 2 El Salvador	yes	no	no	no	no	yes	open
Role 3 Nigeria	yes	yes	no	no	no	no	open
Role 4 USA	yes	yes	no	yes	yes	yes	open
Role 5 China	Does not favor ANY solution . . . .

- -

ROLE SHEETS (Cut between roles)

REPRESENTATIVE OF INDIA

You are a young married woman with five live children. Several of your pregnancies have ended in miscarriage, and one of your children dies at age two from malnutrition. You would like to become pregnant again because only one of your children is a male and "life is precarious." You must have more male children so that in your old age you will have a family to support you since you know that your daughters will marry and be lost to you. As the youngest wife in the family compound you have no status and not too much hope of advancement in status. As a mother-in-law, however,, you would be "top dog." You are a person who is not deeply religious. but you feel strongly that it is immoral to interfere with the processes of conception and birth.

You are completely non-political. Your nation is the world's largest democracy, but you are disillusioned with the political process. Your major concern is food: how more can be grown; how people can earn the money necessary to buy it; and how it can be better distributed.

You would not support what has come to be a major facet of population control: jobs for women. You do not work outside your home, and you feel that job opportunities for women and child care centers would be destructive for your culture.

ROLE SHEETS

REPRESENTATIVE OF EL SALVADOR

You are a thirty year old married woman with four live
children. You have had three children die in infancy. Your
husband equates status with family size and frequently brags
about his family. Both of you want, and expect, more children.
You need children to help you work the land which you rent on
a tenant basis. Your religion prohibits birth control and you
agree with the position of your church.

You are especially interested in increased health care,
including pre-natal care and pediatric clinics. You do not
feel that population growth is a problem, and you attempt to
focus the discussion on food, resource use and abuse, and
world aid for health care to keep your children alive. You
will not support a position which is contrary to your religious
beliefs even though you know that many women in your country feel
the necessity of social, economic, and political revolution.

* *

REPRESENTATIVE OF THE UNITED STATES OF AMERICA

You are a young married woman with two school-age children.
You believe that your children are only a part of your life.
Your career in government, your service to the community, the
nation, and the world also seem very important to you.

As a representative of a highly industrialized society,
with a high level of education, and a low birth rate, you also
believe that increased industrialization, compulsory education,
and availability of family planning advice will solve the world's
population growth problems, and you support efforts which seem
to advance these goals. On the other hand, because you believe
in individual choice, you will not agree to any solution which
calls for population control by non-democratic means.

Your country has in the past supported various United Nations'
projects, but support is dwindling, and additional funding may
not be possible. At the same time, you are frequently critical of
the underdeveloped countries' failure to control the birth rate in
the third world. You spend a great deal of time in the meeting
trying to prove the superiority of the democratic way of life.
You also urge the women on the committee to act "responsibly"
and limit the births in their countries by whatever means are
necessary.

* *

ROLE SHEETS

REPRESENTATIVE OF THE PEOPLE'S REPUBLIC OF CHINA

You are a twenty-eight year old single woman, a member of
the Communist Party, and a worker on a very successful commune.
You plan to marry "at the right time" and to have the proper
number of children. The size of your family will be determined
by the needs of the state. Of course you agree with this method
of family planning.
As a party member, selected by the party to represent the
People's Republic at this important international conference,
you are a strong advocate for revolution. You will not accept
any proposals which do not include the elimination (or at least,
weakening) of capitalism and imperialism. You believe that only
a collective world effort will solve world population problems.
You believe, however, that population is not the essential pro-
blem, but that resource abuse by the capitalist nations is.
You will not, of course, agree to any outside control or inspection
of your country's efforts in any area. You feel the solution
to world problems is best stated in Chairman Mao's words,
"REVOLUTION PLUS PRODUCTION", as well as, "SERVE THE PEOPLE".

* *

REPRESENTATIVE OF NIGERIA

You are a young married woman with seven live children, the
second wife of a farmer. You realize that you will not be mis-
treated as long as you continue to have children. Your children
are your life's main pride, but you would like, somehow, to limit
your family to its present size because your land will not support
a larger family.
You would like to see your daughters minimally educated,
as well as your sons, but you do not support any efforts to
train girls for jobs outside the home. You believe also that
people should remain close to the earth, and would resist efforts
to increase industrialization beyond minimum levels. You would
oppose very strongly any program which called for late marriages
and limits on the number of children a family would be allowed to
have. Your country cannot afford large scale education or family
planning efforts and so you look to the world community for help.

* *

PROPOSALS

ALTERNATIVE 1: Resolved: National health and nutrition programs
should be instituted to provide health care for mothers during and
after pregnancy, and for infants until they reach two years of age.
Advice regarding proper nutrition and food aid, if necessary, should
also be provided. United Nations funding and supervision will be
available wherever necessary..

ALTERNATIVE 2: Resolved: A Family Planning Program should be
instituted to provide contraceptives and vasectomies to people who
desire such birth control aid. Information will also be dis-
seminated on the health benefits to both mothers and children when
there is adequate spacing between births. United Nations funding
and superivision will be available wherever necessary.

ALTERNATIVE 3: Resolved: The nations of the world should require
that all marriages be postponed until each member of the couple has
reached twenty years of age. In addition, the nations of the
world should limit family size by law to three children.

ALTERNATIVE 4: Resolved: The nations of the world should provide
at least eight years of education for all children. Girls should
be taught skills which will qualify them for jobs other than those
which are low-paying, menial, and domestic. United Nations funding
and superivsion will be available wherever necessary.

ALTERNATIVE 5: Resolved: The nations of the world should embark
on a program to expand job opportunities for women. No discrimina-
tion should be allowed against women in hiring programs. Women
must receive equal pay and equal benefits with men. Pregnancy
should not be a basis for dismissal from a job. Parental leaves
of absence for at least six weeks after the birth of a child must
be guaranteed. An adequate child care program should be developed
so that mothers who work can be sure that their children are re-
ceiving proper care. United Nations funding and supervision will
be available wherever necessary.

ALTERNATIVE 6: Resolved: The nations of the world should institute
a program of social security to care for the elderly who have no
relatives or other means to support themselves. United Nations
funding and supervision will be available wherever necessary.

ALTERNATIVE 7: Resolved: This is an open option. Your resolution
must be clearly stated.

105

Title: A Population Pyramid (by Loyal Darr, Denver Public Schools)

Introduction: Analyzing the population pyramid of any country is fun and challenging. To analyze the population pyramid of one's own country (without knowing it!) is especially fun, challenging, sometimes revealing--and sometimes embarrassing! In addition, interpreting and analyzing the population pyramid of one's own country gives the student a major, especially meaningful, reference point from which he can analyze, interpret, compare and contrast, and make inferences about any other country's population pyramid.
      This activity develops for the student the characteristics of his own country based on his country's population pyramid.
      This simple inquiry activity will require that the student interpret the population pyramid of his own country.

Lesson Objectives:
      After completing this activity, the student should be able to:
1. Analyze, interpret, and make inferences from, his country's population pyramid.
2. Use his own country's population pyramid structure as a meaningful reference point from which he can analyze, interpret, compare and contrast, and make inferences about other countries based on their population pyramids.
3. Make an educated guess to where geographically a particular pyramid structure refers.

Mechanics:
      Time: 2 class periods
      Materials: "A Population Pyramid" handout

Activity:
      1. Make advance preparation. Duplicate the student handout, "A Population Pyramid," one per two pupils--make a few additional copies. (The teacher may want to read several resources concerning the interpretation and use of population pyramids--many general sociology and population geography textbooks will contain this information.)
      2. Divide the class by pairs.
      3. Pass out the student handout, "A Population Pyramid," one per pair of students.
      4. If necessary, briefly explain to the students what a population pyramid is. Invite questions from the students. Make sure that each pair of students understands the make-up of a population pyramid. However, do not answer substantive questions--leave that task to the students!
      5. Give each pair of students about 20-30 minutes to complete the activity sheet.

6. Divide the class into groups of 4-6. Ask each group to elect a chairperson. Give the chairperson of each group a blank "A Population Pyramid" handout.

7. Assign each group to discuss and come to a consensus on a group completed "A Population Pyramid" handout. (20-30 minutes)

8. Have each chairperson report on his group's responses. (The teacher may want to analyze these responses on the chalkboard.) (15-20 minutes)

9. Debrief the activity by telling the students that this population pyramid is that of the United States. Based on what they, the students and you, the teacher, know about the United States, conduct a discussion on which of the responses are correct and incorrect, and what ones are questionable. Discuss thoroughly as as you talk about responses. (20-30 minutes)

Further Suggestions: Based on their experience with this activity assign students in pairs or groups to "guesstimate" (draw and justify) a "rough" population pyramid of one or more of the following countries: Australia, Japan, India, Sweden, Canada, Peru, Mexico, Soviet Union, France, China, etc. (The teacher will want to re-search and obtain pyramids of these countries before making the assignment.)

"A Population Pyramid"

male   female

```
75+
70-74
65-69
60-64
55-59
50-54                           *percent of total
45-49                            population
40-44
35-39
30-34
25-29
20-24
15-19
10-14      6   4   2   0   2   4   6  *
 5-9
 0-4
```
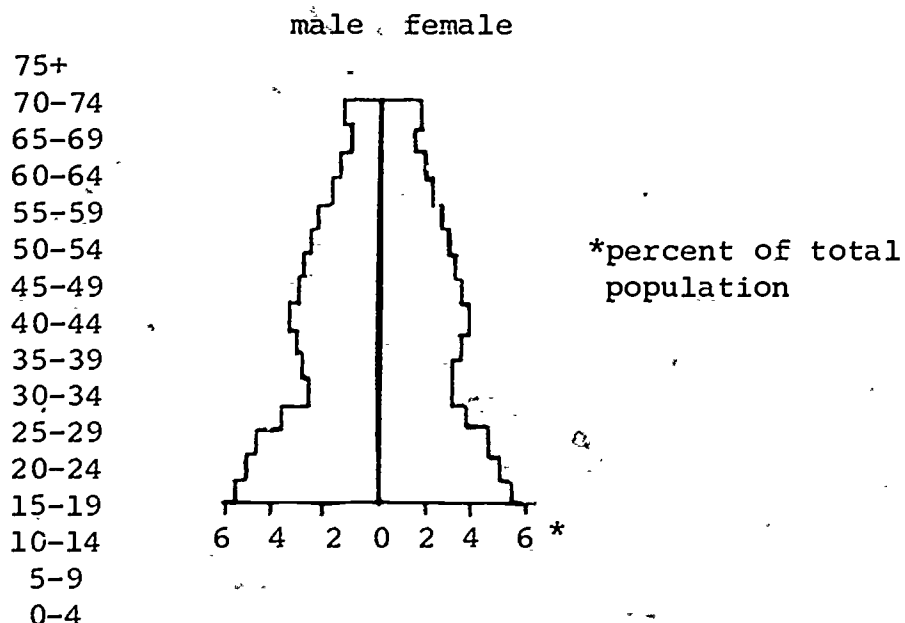
Study the population pyramid above. List anything that this pyramid tells you about this country.

Make inferential statements about this country's: (place an X by any item about which you feel you cannot justifiably make such a statement based on this pyramid) (use the back of this paper or your own paper)

. population   . technology   . natural resources
. birth rate   . food   . environment
. death rate   . government   . social security
. education   . standard of living . economic development
. health   . foreign relations   . religion
.. language   . involvement in wars . (others your teacher
                                               might assign)

Write a brief paragraph describing this country.

In what general areas of the world might this country be located?

Do you detect any trends in the structure of this pyramid that would enable you to predict what this country might be like in the year 2000?

WHAT COUNTRY IS IT?   108

Title: Comparing Population Pyramids   (by Loyal Darr, Denver
        Public Schools)

Introduction: The age-sex population pyramid is a powerful tool in
helping to analyze some basic characteristics of a given population
or society. All populations/societies are made up of men and women,
children, working people, and the aged. However, the proportions of
these divisions vary greatly in different societies/countries. The
age-sex population pyramids of given populations/societies enable
one to perceive age proportions and this in turn aids one in specu-
lating on the interrelationships of societies, economics, lands, etc.
        This activity develops for the learner the utility of popula-
tion pyramids in interpreting, comparing and contrasting, and making
inferences about different countries.
        Briefly, this simple inquiry activity will require that the
learner interpret two population pyramids--one of a so-called
developed country and the other one of a so-called underdeveloped
country--compare and contrast certain relationships in each country,
and in general make certain inferences about the two countries.

Lesson Objective: After completing this activity, each individual
learner should be able to:
1. Read and interpret a population pyramid.
2. Compare and contrast the "lifestyles" of two countries.
3. Make inferences about two different countries.

Mechanics:
    Time 2-4 class periods
    Materials: Student handout entitled "Population Pyramids"

Activity:
        1. Advance preparation: Duplicate the pupil handout, "Popu-
lation Pyramids," one for each pupil--make a few additional copies.
The teacher may want to read several resources concerning the use
and interpretation of population pyramids. Many general sociology
and population geography textbooks will contain this information.
        2. Pass out the pupil handout, "Population Pyramids," one
per student.
        3. Explain briefly what a population is. Invite questions from
the students. Try to make sure that each student understands the
make-up of a population pyramid. However, do not answer substantive
questions--it is the ask of the students to do that!
        4. Give each student about 20 minutes to complete the activity
sheet.
        5. Divide the class into groups of 4-6. Ask each group to
elect a chairperson. Give the chairperson of each group a blank
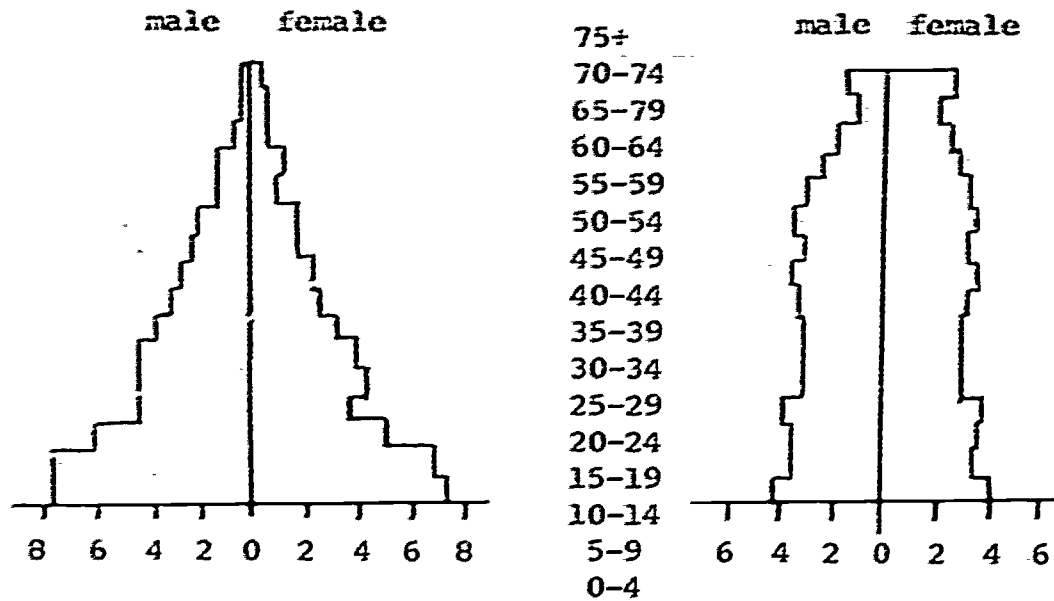"Population Pyramid" handout.

6. Instruct each group to discuss (using as a basis each individual member's "Population Pyramid" completed handout) and come to a consensus on a group-completed "Population Pyramid" handout. (20-30 minutes)

7. Have each chairperson report on his group's responses. (The teacher may want to list, in outline form, these responses on the chalkboard, pointing out agreements and disagreements between groups.) (15-20 minutes)

8. Debrief the activity by telling the students what countries A (India) and B (Great Britain) are and giving them substantive data on the conditions found in each. As you share basic data with the class, refer to the groups' responses pointing out those statements or conclusions that have a logical basis, those that might be marginal or open to question, and those that remain open-ended, subject to various interpretations by the "experts." (20-30 minutes)

Further Suggestions: Have each group or the class as a whole construct a rough population pyramid using data collected about the age and sex of each pupil's family. Pupils may also survey an area of their community (perhaps two or three blocks around their homes) and obtain information on the age-sex structure of each family--then construct a population pyramid. This exercise could be repeated for the entire community (based on census data) and would provide a realistic base for comparative analysis of population pyramids for selected countries.

"Population Pyramids"

male female		male female
	75+	
	70-74	
	65-79	
	60-64	
	55-59	
	50-54	
	45-49	
	40-44	
	35-39	
	30-34	
	25-29	
	20-24	
	15-19	
8 6 4 2 0 2 4 6 8	10-14	6 4 2 0 2 4 6
	5-9	
	0-4	

Country A   Country B

List statements about Country A you believe might be accurate.

List statements about Country B you believe might be accurate.

Compare and contrast countries A and B based on statements you have made above.

Compare (similarities)   Contrast (differences)

Make inferential statements about each country's present and future relationship to the following: (use back of paper if needed)

-population   -environment   -health   -government
-natural resources   -food   -technology   -standard of living

Speculate on what each country will be like in the year 2000.

111

Title: Don't Tell Me About Planning! *

Introduction: One more woman from a sub-culture in our own
country tells her story revealing yet more attitudes toward
childbearing. Excerpt is read and discussed by students.

Objectives:
     1.. Given a statement by a woman representing a sub-culture
in the United States, students will articulate her reasons for
desiring children.
     2. Students will generate hypotheses regarding opportunities
available to others and relate this to reasons for childbearing.

Time: ½-1 day
Materials: Student handout "Don't Tell Me About Planning" and
            accompanying questions

Activity:
     1. Pass out handout, "Don't Tell Me About Planning!"

     2. Read the introduction aloud. Ask if there are any
disagreements to the statement regarding "welfare rewards" for
large families among the poor.

     3. The questions following the reading are intended to be
discussion prompters. They may be written out and turned in at
the teacher's discretion.

     4. Too often we have the tendency to apply our assumptions
to the condition of others. For many Americans, children have
become an economic liability. The question of family size in the
U.S. is often phrased: "Can we afford to have more children?"
The woman in this reading is not using this same value system.

     5. Pay particular attention to the third paragraph: "To
me, having a baby inside of me is the only time I'm really alive...
I know I can do something..." Ask the class what they think she
means by this statement. What other opportunities does this woman
have for status in her life? What alternatives does she have?

     6. Try a "role-reversal" format. Ask one student to role
play a family planning advocate urging the woman to use birth
control. Ask another student to role play the woman in the
reading, giving her reasons for rejecting birth control. After

     * An activity by Jacquelyn Johnson, Westminster Public Schools

a few minutes into the role play have the students "switch"
parts. Each person should now be acting--or arguing--from
the other's point of view.

(7) Culminate the activity by summarizing the introduction and
posing the question:

What does this woman need--or need to feel--before she will
choose to limit her family size?

Discussion might center around equal access to opportunities
within the United States.

(1) Who do you think are "they" in this woman's story?

(2) What is this woman's perception of "planning"?

(3) Does she feel "they" are imposing on her rights as a human being? Why or why not? Do you agree or disagree with her? Why?

(4) How does she "feel" when she is pregnant? Cite evidence in her story.

(5) Are babies important to her? Cite evidence in her story.

(6) What aspirations does she have for her children?

(7) Does this woman think she neglects her children? Do others think she neglects them? Why?

(8) Why do you think this woman chooses to have so many children?

(9) What other opportunities are available to the woman in this story?

(10) What do you think the title, "Children of Crisis" means?

Title: VALUES AND POPULATION: FOUR ACTIVITIES, by Nancy Miani

Introduction:

The Values Clarification Process. Values clarification is a simply-outlined process by which persons can become aware of their own values and beliefs and move in the direction of making their actions more consistent with their values. Developed by professional educators, values clarification has since 1966 achieved great popularity among classroom teachers who report it both effective and popular. The process is outlined as follows:

I. Choosing Values
    1. Values must be freely chosen.
    2. Values must be chosen from among alternatives.
    3. There must be thoughtful consideration of the consequences of each alternative.

II. Prizing Values
    4. The value must be prized and cherished.
    5. We must be willing to publicly proclaim our values.

III. Acting on Values
    6. Acting on values.
    7. True values will be acted upon repeatedly.[1]

Although comprising a simple outline, the process --as is apparent on examination-- is not at all simple to effect. It is obvious that classroom application of the values clarification process is dependent on very special leadership on the part of the teacher --an adult who can build the trust necessary to allow defenses to fall, who can permit free choosing of values without imposing one's own values, however slightly. The teacher, in short, has to practice what is preached, or the whole technique will likely dissolve into so many empty gimmicky exercises. The teacher has to drop her or his own defenses, be willing to admit his or her own values and provide a genuine model of a productive, self-directed adult.

Lesson Objectives:

-- To let participants consider global issues from the locus of their own personal values system

-- To give participants practice in determining and vocalizing decisions based on personal values

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[1] Sidney B. Simon and Jay Clark, MORE VALUES CLARIFICATION: STRATEGIES FOR THE CLASSROOM (San Diego, CA: Pennant Press, 1975), pp. 31-35.

35:2

Mechanics:
     Teaching Time: 1 or 2 class periods
     Materials: pencil and paper

Activities:

VALUES WHIP / POPULATION

     (Adapted from Sidney B. Simon et al., VALUES CLARIFICATION,
Hart Publishing Co., New York, 1972, pp. 130-131). The Values
Whip is a strategy readily adapted to many lessons. It provides a
simple and quick means for members of a group to see how others in
the group respond to certain issues. The group leader presents
the group with a question to consider for a few seconds. Then the
leader "whips" around the group soliciting brief answers to the
question. Of course, any student may choose to "pass."

          How many children do you plan to have?
          Do you believe the world has a population problem?
          Are you in favor of setting the size of families by law?
          How many family members should such a law allow?
          _____?
          _____?

TWENTY THINGS YOU LOVE TO DO

     Participants each make a list of twenty things they love to
do. When lists are complete, participants should place a P next
to items on their list which would be more difficult or less pleasant
to do if the world population were double what it is today. Then
participants should complete this statement: "I have become more
aware that . . . ."

POPULATION EXPLOSION

     Participants write down three statements about the "population
explosion," leaving spaces between the statements. Follow each
statement with a phrase beginning "I see that I need to . . . ."
Form groups of 3-5 and compare statements.

     IF YOU'RE NOT PART OF THE SOLUTION YOU'RE PART OF THE PROBLEM

     Have the group brainstorm ways in which individuals can in
small ways help to alleviate the world population problem. Make a
grid:
     1. _____   WILL TRY WILL CONSIDER WON'T TRY

     2. _____

     etc.

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Title: A Woman's Stake *

Introduction: Ms. Patsy Mink, U.S. Congresswoman from Hawaii, speaks about women's stake in population stabilization in America. Comparisons between population growth represented by 2 and 3 child families are made. Ms. Mink believes that as women achieve equal status with men and acquire more opportunities for alternative roles, they will choose to have fewer children.

Objectives:

Given a statement by U.S. Congresswoman Patsy Mink, students will articulate her views regarding a woman's stake in population stabilization in the United States.

Students will articulate an agreement or disagreement with Representative Mink's views.

Students will draw conclusions regarding U.S. population growth based on 2- and 3-child families.

Mechanics:
Time: ½ - 1 day
Materials: Student handout "A Woman's Stake" and accompanying questions plus U.S. Population graph

Activity:
1. Pass out handout, "A Woman's Stake."

2. Questions following the reading and graph are intended as discussion prompters. They may be written out and turned in by students at the teacher's discretion.

3. Ms. Mink believes that as women enter the professions they will choose to have fewer children, thus helping to stabilize the U.S. population growth. The activity could be culminated by citing statistics from the local area.

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* An activity by Jacquelyn Johnson, Westminster Public Schools

Title: Am I a Population Actor ? *

Introduction: Students fill out a questionnaire regarding their own personal convictions toward family planning and share their views with the rest of the class.

Objectives:

   1. Given statements about childbearing students will clarify and articulate their own reasons for choosing to have or not to have children.

   2. Students will view themselves as population actors, expressing a sense of efficacy regarding population growth.

   3. Students will articulate similarities and differences between their own views about childbearing and the views of others represented in other activities.

Time: 1-2 days
Materials: Student worksheet, "Am I a Population Actor?"

Activity:

   1. Pass out student worksheet, "Am I a Population Actor?"

   2. Students should rank order the statements according to their convictions regarding childbearing.

   3. Tabulate the responses of the class before discussion.

   4. Discuss the class responses:

       What reasons/ideas about childbearing have been omitted?

       What influenced your rank ordering of the ideas about childbearing? Family? Personal views? Population concerns?

       What "write-in" responses were made by students?

   5. Culminate with a comparative emphasis:

       How do your views compare with those of Raksha in India, Kawe in Nigeria, and Mei-ling in China (Activity 55)?
       How do they compare with the black woman in Activity 56?

       How are they different? How are they alike?

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* An activity by Jacquelyn Johnson, Westminster Public Schools

Which statements if any might these women rank first? last?
Add statements not on the list that might apply to these women.

Did any of these women have the choice of <u>not</u> having children?

If these women had the same opportunities as you, do you think
they would rank these statements differently? Why or why not?

AM I A POPULATION ACTOR?

Below are some ideas people consider when planning to have a family. Rank order these statements to match your own thoughts for planning a family: #1 would be your strongest reason; #6 the one that would least influence you while planning a family. You may also "write in" your own ideas at the bottom and rank them accordingly.

_____ I want to have children and grandchildren around me when I grow old. Children make a happier, more stable marriage. I want children to carry on the family through future generations.

_____ A family with children is the most satisfying lifestyle. I want to watch my children grow up and enjoy them, to love them and feel that they love me.

_____ Having children insures the survival of the human race. Our children provide the manpower which keeps our country strong.

_____ When deciding to have children, the teachings of my religion will provide an important guide and influence.

_____ Having children is the normal way of life. Everyone expects a married couple to have children. Families look forward to grandchildren and are disappointed if there are none.

_____ I will choose not to have any children. Some of the things I want to do in life will be easier if I am not tied down by the responsibility of children. I will perhaps decide not to marry if I feel that would tie me down too much also.

_____

_____

_____

_____

Title: Population Control: Where Do You Stand? *

Introduction: A summary of population control steps are presented. The statements represent a wide variety of programs, some enlarging the freedoms of individuals and others greatly restricting individual freedoms. Students are asked to identify those steps they feel are necessary now to curb population growth.

Objectives:

Given a number of alternatives related to population growth, students will categorize them according to steps which enlarge both individual and societal freedoms, steps in which an individual gives up freedoms for the betterment of society and steps which greatly limit the freedoms of individuals.

Students will articulate relationships between population control programs and amount of individual and societal freedoms.

Students will articulate which steps are most urgent and which will be necessary in the future if growth rates continue.

Students will articulate how individual choices and actions can influence population growth (i.e. the student will see himself as a population actor).

Time: 1-2 days

Materials: Student card sort: Population Control: Where Do You Stand? (2 pages)

Activity:

(1) Begin with a discussion of population control. Is it necessary now? How do students view population growth--as a problem or a crisis?

(2) Introduce the following categories for steps in population control:

   a. Population control steps which enlarge individual freedoms and the freedom of society.

   b. Population control steps in which the individual gives up freedoms for the betterment of society.

   c. Population control steps which greatly limit individual freedom (i.e. totalitarian controls).

   Poll student responses for examples of population control steps in each category.

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* An activity by Jacquelyn Johnson, Westminster Public Schools

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(3) Divide the class into groups of 4-5 and assign the card sort activity. Students should read the alternatives and categorize each one into one of the three categories outlined above. They should also identify the reasons for their choices and be prepared to defend why they placed each population control step in a particular category. Encourage students to develop their own cards for this activity, also.

(4) Allow time for groups to compare their results with one another. Class results should resemble the following:

Group I: Education Programs; Equality for Women; Social Security; Ability to choose sex of unborn child; Abortion.

Group II: Postponement of Marriage; Incentives and rewards.

Group III: Penalties for large families; licenses to have children; sterilization of parents.

(5) Share the above categorization with the class. Poll the students for agreement and disagreement to this categorization. Ask students to share their "write-in" population steps with the rest of the class.

(6) Next, instruct groups to categorize the alternatives according to those they feel are necessary now to curb population growth and those which will be necessary in the future if present growth rates continue.

(7) Ask students which alternatives they themselves would be willing to adopt. Have they changed their opinions related to family size as a result of these activities? If so, in what way?

Directions: Cut out each alternative and place in the appropriate category on the next page. Be able to defend your choices.	EDUCATIONAL PROGRAMS Making people aware of our population growth problem might help to solve it.	ABORTIONS If safe, legal abortions were available on demand, population growth might be limited.
BIRTH CONTROL Make birth control means available to anyone who wants it. The effect will be to curb population growth.	STERILIZATION After two children one or both parents will be sterilized to halt population growth.	EQUALITY FOR WOMEN Equalizing opportunities for women will provide them with other roles to fulfill and they'll have fewer children.
POSTPONEMENT OF MARRIAGE Raise the age of consent so people would marry later in life, thus reducing the number of child-bearing years.	SEVERE PENALITIES FOR LARGE FAMILIES People will be fined or heavily taxed for any children beyond the legal limit of two.	INCENTIVES AND REWARDS FOR SMALL FAMILIES A reward system will be set up for people who limit their family size. They would pay less in taxes.
CHOOSING THE SEX OF AN UNBORN CHILD People often continue to have children until they get the boy or girl they want. Families could choose the sex of their children, thereby limiting their size.	SOCIAL SECURITY IN OLD AGE If people were financially cared for in old age they wouldn't need large families and families would choose to limit their size.	LICENSES TO HAVE CHILDREN People must meet certain qualifications to get a legal license to have children.

CARD SORT: POPULATION CONTROL: WHERE DO YOU STAND?

CATEGORY I: Population control steps which <u>enlarge</u> individual
freedoms and the freedom of our whole society.

CATEGORY II: Population control steps in which an individual
<u>gives up</u> freedoms for the betterment of his/her society.

CATEGORY III: Population control steps which greatly <u>limit</u> our
freedoms.

Title: Free A Woman, Free A Nation (by Jacqelyn Johnson, Westminster
         Public Schools, and Barbara Miller, Aurora Public Schools)
Introduction: Students hypothesize and examine reasons for child-
bearing through the eyes of three different women immersed in three
different cultures. After completing their hypotheses, students are
given statements regarding childbearing in India, Nigeria and the
People's Republic of China. Students complete this activity by
hypothesizing other opportunities for women and cultural attitudes
toward child bearing in each respective culture.

Objectives:
     1. Given role profiles of three women from three different
cultures, students will hypothesize the reasons these women have
for bearing children.
     2. Given statements from the three cultures these women
represent, students will hypothesize about opportunities avail-
able to women in India, Nigeria and the People's Republic of
China.
     3. Students will draw relationships beween attitudes toward
childbearing and opportunities available for women in India,
Nigeria, and the People's Republic of China.

Time: 3-4 days
Materials: Student Handouts

Raksha
Attitudes Toward Childbearing in India
Kawe
Attitudes Toward Childbearing in Nigeria
Mei-ling
Attitudes Toward Childbearing in the People's Republic of China
Free a Woman, Free a Nation

Activity:
     (1) Begin by introducing the topic of childbearing. Why do
people choose to have children? Poll some student responses.
However, do not dwell on students' personal reasons for desiring
children at this time. Activity 58 will deal with personal convic-
tions regarding childbearing in greater detail.
     (2) Explain to the class that they are going to look at
reasons for childbearing through the eyes of three different women,
each immersed in different cultures.
     (3) Pass out the story of Raksha in India. As students read
her role, have them underline clues in the story Raksha has for
bearing children.
     (4) The questions at the end of the role can be answered at
the teacher's discretion.

(5) Next, in groups of 4-5, have students generate a list of hypotheses about the reasons Raksha has for bearing children.

(6) Caution students about generalizing experiences of one individual to an entire nation. However, ask students to try to put themselves in Raksha's shoes and look at the issue of childbearing through her eyes.

(7) After the groups have reached consensus about Raksha's reasons for having children, put the class's responses on the board.

(8) Next have the students read the handout, "Attitudes Toward Childbearing in India."

(9) Class discussion can focus on the similarities and differences between the groups' hypotheses and the statements on the handout.

(10) Repeat the same procedure for the remaining two profiles, Kawe in Nigeria and Mei-ling in the People's Republic of China. Students should also read the accompanying handouts regarding childbearing in Nigeria and China.

(11) Once the class has discussed all 3 women within their respective cultures, pass out the handout "Free a Woman, Free a Nation."

(12) In groups of 4-5, students should complete the top of the worksheet, "Reasons for Childbearing."

(13) Next, have groups develop hypotheses about opportunities, other than childbearing, Raksha, Kawe and Mei-ling have in their respective cultures.

(14) Finally, students should complete the bottom portion of the worksheet, "What relationship do you see between opportunities for women and attitudes toward childbearing for Raksha, Kawe, and Mei-ling?"

Possible student responses: China

"There are controls in childbearing--governmental and society."
"Children are not necessarily most important aspect of life for each woman. Women are encouraged to work for betterment of state. Status and role are not dependent upon bearing of children."
"When women are encouraged to participate more fully in society, they become more than reproductive instruments."
"Women have attained legal and economic equality since 1949, and are considered vital to the welfare of the state."

"Although we may consider it a lack of freedom, women and the community decide on the number of children to be born during a certain year."

"Women can work with more assurance, knowing that their children are being cared for properly."

Possible student responses: India

"Any status or importance a woman might have or feel is dependent upon her role as childbearer."

"Women have traditionally accepted their role as childbearers. It is difficult to change this perception, or change the educational status of women."

"God wills women to have as many children as possible."

"Children as economic assets--they provide future needs of parents."

"Education is basically for men, not women."

Possible student responses: Nigeria

"The main occupation of women is pleasing their husbands--little if any opportunity for education."

"To be successful, women must have many children."

"Childbearing justifies the existence of women--the state does not encourage women to better themselves."

"Bearing male children is the primary objective in life for women."

"Children are needed for security, and women without children are treated as outcasts."

"Life is centered completely around the home and the family."

(15) Compare the effectiveness of birth control in Nigeria and India with China. Hypothesize why birth control techniques have been more successful in China. (With high infant mortality and the economic necessity of many children, birth control means are probably not the answer in Nigeria and India.)

(16) Hypothesize what conditions would promote both smaller families and equal opportunity for women in developing nations. Encourage answers regarding development and underdevelopment. As a nation industrializes, it needs fewer "hands to work the fields." Dependence on children for economic old age security is replaced by social security and pensions. Before we can expect others to limit the size of their families, there must be conditions which provide for economic security.

(17) As women are integrated into economics of developing nations and assume alternative roles, they will have fewer children. (Our current national birth rate is the lowest in our history. Women can fulfill other roles in our society. Opportunities for women are increasing at a rapid pace. As women enter the professions, they choose to have fewer children.)

RAKSHA

My name is Raksha, and I live in a small village not far from Bombay. I think I am about 25 years old, but I am not sure. I have five children and expect my sixth soon. I will be glad when my pregnancy ends, since I have been weak and ill. The doctor feels that I should not have more children since I am not well, but in our country it is important to have a male child since that is the only way the man's family continues. My mother-in-law lives with me, and she feels that I should have as many children as God gives me. I will do as she says. After all, it is she who has power. My parents paid a dowry for me and arranged my marriage, too, and I must not disappoint them.

Some women in my country hold jobs, and a few go to school. Women work in factories, hospitals, and offices, something they never would have done 20 years ago. The female literacy rate is still only 18.9%, however.

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Raksha is a real woman who lives near Bombay, India. Based upon
what you know about her, answer the following questions.

(1) Why do you think Raksha can only estimate her age?

(2) Why is it important for her to have children?

(3) What is a dowry?

(4) What does literacy mean?

(5) Why do you think the literacy rate is so low for women in her
     country?

(6) It appears that Raksha's mother-in-law has certain "powers" over
     her. Why do you think she would tolerate this?

Attitudes Towards Childbearing in India*

(1) More children can earn for the family. The father can also rest if there are more children to earn for him.

(2) A son is important for the family's name. He keeps the "door" open. Many people do not stop having children until a boy comes. At least one son is necessary to keep the family name going.

(3) If there is only one son, then he has the whole economic burden... supporting the family and paying for all the ceremonies such as his sisters' weddings.

(4) If there are only two children, a boy and a girl, and the boy dies, the mother is considered barren.

(5) The advantage of having many sons is that they will have different occupations and earn more.

(6) Having many sons means more fame for the family. This way one's own name remains at the top.

(7) When there are five or six children, a parent can have a peaceful life in old age. Mothers can depend on their sons because they can rightfully claim anything from them.

(8) The biggest advantage of the large family is that when all the brothers unite nobody dares bother them. They can live with power in their hands.

(9) If a woman has many children, others will look up to her. When someone asks a woman if she has children, she can say proudly: "I have many children!"

(10) Suppose a woman has a daughter and a son. If her son dies, then she has only one to look after her. This happens after God may take away one child...If a mother has five children, then at least two or three of the children will live.

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* -- Indiana University, Population Education Project, 1973.

KAWE

I am Kawe, and I live in a northern farming village of my modernizing country.
We grow oil palms and farm for a living.

I am now thirty-five years old. I have been married to my husband for 20 years.
I am not the only wife of my husband. Even before he married me he already had
two wives. I would have been the third except that he divorced the second wife
for not bearing a child during the first two years of their marriage. In our
society a childless woman is a person to be despised because the spirits did not
find her a fitting person and did not wish to be incarnated in her. Both my
husband's first wife and I are successful wives, for we have borne children,
including sons. Our children can help us farm, can support us in our old age,
and can bury us when we die.

My son is going to school to learn to read and write. He needs these skills to
become an important person in our village. None of my girls go to school, nor,

I think, have any girls from our village. They need to learn skills to help their husbands-to-be on their farms. Some people say that if the girls get educated they might get bad ideas and elope.

Overall I try to keep my husband happy, provide him with children, who are more precious than wealth to our people, and make him satisfied with the "bride price" he paid for me.

Kawe, like Raksha is a real woman. She lives in Nigeria. Based upon what you know about her, answer the following questions.

(1) Under what conditions did Kawe marry her husband?

(2) Why does Kawe try to keep her husband satisfied with the "bride price" he paid for her?

(3) What is a "bride price?"

(4) Why are girls not encouraged to go to school?

(5) What happens to women in Kawe's society who do not bear children?

Attitudes Toward Childbearing in Nigeria *

Generally parents have a warm attitude towards having children in
Nigeria. Whether in the rural or in the urban communities, Nigeria
expressed positive attitudes towards having children. If African
mothers love their children, African fathers adore them. The high
regard in which children are held is reflected in the names usually
given them. Typical names for children in Iboland include the
following:

> Nwakaku, meaning "the child is greater than wealth";
> Nwabueze, meaning "children are priceless";
> Chinyere, meaning "God's gift".

The first and foremost desire of a married couple is for children;
having children is regarded as the chief aim of all marriages.
Childlessness therefore is regarded as a disease. A woman who can't
have children is treated almost as an outcast and has little influence
among her people. She is everywhere despised and distrusted. If
she cannot have children, everyone is certain it is her fault.
The ancestral spirits will not insert a soul in her womb or do not
want to be reincarnated in her. Childlessness often leads to divorce
or polygamy.

Only in the large cities in Nigeria do some people among high income
groups believe there is a need to limit family size.

As was the belief in ancient Egypt, "child making is a great and
most pious think in life for them who think aright, and to live
life on earth without a child a very great misfortune and impiety;
and he who hath no child is punished by the daimons after death."

Parents want children for many reasons and mothers in particular
cherish the idea in spite of the ordeal of childbearing.

Reasons for Having Children in Nigeria

(1)   Children are the yardstick for measuring the success of marriage.

(2)   Children are a source of social prestige. Parents who have
      many children are greatly respected, and are addressed by
      special titles.

(3)   Children prove their father's manhood and mother's womanhood
      and remove the stigma of barrenness. Children prevent
      accusations of impotence and witchcraft.

(4) Children are of economic value. They are valued for their help on the farm and in the home. In the olden days they could be pawned to pay off a debt.

(5) Children are a great investment. They support the parents in old age and are their heirs for ever. Children perpetuate the family and the family name, and ensure decent burial and fame for their parents.

(6) Since one is sent into the world to be fruitful and multiply, a large family is evidence that one is loved by the gods.

(7) Without children marriage would break up, and even if it continues, the couple would live unhappily.

(8) When parents reach old age, their children are expected to clothe and feed them and to give them comfort. In this sense, children are a sure means of social security, pride and happiness to parents.

(9) Most families have their traditional occupations and parents always wish the skills of their trades to be passed on to their children.

(10) "It is better to accumulate children than to amass wealth", is a common saying among Nigerian people.

MEI-LING

My name is Mei-ling. Before the revolution of 1949 in my country women were treated poorly. Husbands beat wives, peasants beat children, and mothers-in-law beat their sons' wives. Peasant women worked hard in the fields, or as servants to the wealthy; upper class women did no manual work, but concentrated instead on their families and the raising of children. Some upper class women went to universities, but the main purpose of all women was to produce male heirs to continue the husband's name and control his property. Women were denied education and were supposed to stay at home and be subordinate, one reason for the painful practice of binding the feet of girls.

With the revolution of 1949 came many changes in the status and roles of women. In 1950 the first Marriage Law was passed in my country, by which arranged marriages were abolished and widows given the right to remarry. Women are no longer "commodities" of sorts, but have attained full economic and legal equality. Family planning is considered a vital policy area by the government, both in economic terms, and in national planning that will determine the prosperity of the country and the way of life for future generations. Women have taken the lead in family planning programs, and have full rights in determining the size of their families. This is in accord with state policy, which justifies family planning as leading to the emancipation of women, based on their equal rights to study, participate in political decisions, exercise their social conscience, and work to build a socialist society. Thus the potential of women is recognized and sponsored by the government. Women work together in family planning at the village and neighborhood levels. As an example, women on a particular street in a village or rural area decide together the number of children which can be reasonably added to the population for that year. They then determine from this how many will be able to have a child. Many women volunteer to wait a year before having a child. The solidarity of women working together in family planning has proven successful in reaching the people, as seen in

the fact that the annual population growth rate has remained stable in the period 1973-75, at 1.7 rate of growth. The key to family planning in my country is persuasion rather than coercion. Through education women can see positive advantages in practicing family planning. It is more advantageous, for example, to have fewer and healthier children, and thus be free to contribute to the building of the nation, than to have a very large family. To be able to "take the helm," control the destiny of the nation, is a major reason the government has emphasized family planning, and encouraged the emancipation of women.

I myself am a full-time worker. I was a medical student before marriage, and worked as a nurse before entering medical school. I did not marry until the age of 25, feeling it important to complete schooling and begin my profession. The state favors late marriage, as it has aided in reducing the population and encouraging young people to work and serve their country. I have 3 children, who attend school six days a week, and eat their meals in state dining halls. Children are often separated from their families for periods of time, and learn early to interact with other people. Yet family ties remain close despite separations. My three-year old girl lives in a full-time kindergarten, but I see her on Sundays. It is good that the state cares for her, since we women need to be free to work for the revolution. I spent a year in the countryside 2 years ago giving medical care to the peasants. I did not see my family during this year; my children were proud of my service to the peasants. Since 1949 the state has greatly encouraged me in my profession, as it has encouraged women in general to contribute to the welfare of the nation.

Mei-ling is also a real woman. Her home is the People's Republic of China. Answer the following questions based upon what you know about Mei-ling.

(1) Why does Mei-ling believe women were treated poorly in her country before the Revolution?

(2) What was the main purpose of all women in her country in the past?

(3) What was one custom for girls that Mei-ling mentions?

(4) Why does Mei-ling's government favor late marriage?

(5) Why does Mei-ling feel it is good for her three-year old girl to be in a full-time kindergarten?

(6) How did Mei-ling's children feel when she spent a year giving medical service to the peasants?

Attitudes Toward Childbearing in China*

(1) Woman are encouraged to marry at a later age, to decrease the number of years during which they could potentially have children.

(2) It has been the policy in China since the Revolution to develop family planning programs through <u>persuasion</u> rather than <u>force</u>. Most women do not want to have 7,8, or 9 children, but they must have the opportunity to make a decision to limit family size themselves. Education is therefore very important.

(3) In China today, women made the decision as to how many children they will have. Family planning represents the demands of the many women who want to be freed of the burden of many children in order to be able to work for development of the country.

(4) The policy of limiting family size is considered an important decision-making area by the government, in order to promote a better life for the Chinese people. Each individual should have as good a life as possible. Quality of life—rather than quantity—is important.

(5) Women must be able to see positive advantages in limiting the number of children they have. Education is most important. For example, if women realize that it is better to have fewer and healthier children, and also have more time to study and free themselves, this is a good reason to limit the number of children they have.

(6) Family planning in China is justified as a liberation of women, based on the equal rights of women to study, to participate in government decisions, to work to solve their country's problems and to work side-by-side with men in building a socialist society.

(7) Women teach one anc.her about family planning going from village to village. They even decide how many children should be born on a particular street or in their village, and then determine how many women can have children that year. Many women volunteer to wait a year to have a child.

(8) Every Chinese woman breast-feeds her baby until the age of at least a year and a half. There is no such thing as artificial baby food in China, and closeness with the child during feeding is considered important.

(9) Most Chinese factories have nurseries attached to them, and the working mother is allowed half an hour off every two or three hours to feed the baby, with this considered as working time. It is considered important that the baby see the mother regularly.

(10) In China, people are much closer than in many other countries. Children do not feel strange when around people other than their parents. Many people feel as though the children of another are their own.

(11) In China, children may live apart from their families for short periods of time while attending school. Yet family ties remain closely-knit, and children begin at a very young age to interact with people.

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* Compiled by Anna Chung, Center for Teaching International Relations

FREE A WOMAN, FREE A NATION

Part I: Reasons for Childbearing

Raksha   Kawe   Mei-ling
India   Nigeria   China

Part II: Hypotheses about Opportunities Available to:

Raksha   - Kawe   Mei-ling
India   Nigeria   China

Part III: What relationships do you see between opportunities
          for women and attitudes toward childbearing for:

Raksha in India:

Kawe in Nigeria:

Mei-ling in China:

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Title: Of Imaginary Numbers

Introduction: Numbers can be deceiving. They are very useful, but they can also be manipulated to say or to exclude whatever one wishes. In reading this article, participants are exposed to different types of numbers and asked to discuss the place of statistics in our lives.

Objectives:
   ---to introduce participants to some questions concerning the nature and function of numbers in our society.
   ---to encourage participants to question the validity, reliability, and function of numbers or statistics when used to support a point of view.

Mechanics:
   Time: 1 class period
   Materials: Duplicate and distribute copies of the handout titled, "Of Imaginary Numbers"

Activity:
   1. Hand out the article, "Of Imaginary Numbers" to the participants. You may want to determine a way to introduce the article. One way might be to ask the question, "What is an imaginary number? Can you give me an example?"
   2. After the group has read the article, have the participants attempt to summarize the major points in the article. (Note: You could effectively use the activity "The Rice Game" at this point.)
   3. Have the group list examples in which figures were used in a potentially misleading manner, and examples of figures used acceptably. Ask the group to provide examples of figures that are confusing or difficult to understand.
   4. Ask the group to give their opinions concerning the statement, "in almost any area of life today, the best--certainly the most honest--answer to a request for a figure or statistic would be,'no one knows.'"
   5. Have the group collect their own examples of statistics or figures that should be regarded with skepticism. Post them for discussion.

Title: Census Questions (by George Otero, adapted from an activity in
the Holt Data Bank, Holt, Rinehart, and Winston)

Introduction: Nations take a census in order to gather data that will
help governmental decision makers meet the needs of the people. The
questions on a census indicate what data the government considers
important to collect. In this activity, participants judge the
kind of questions found on the U.S. and Indian censuses. Students
explain the choices they made and check their ideas with the actual
census questions, exploring discrepancies in their responses.

Lesson Objectives:
1. Students will make decisions by placing questions in the
column of the country in which they think the question would be
asked.
2. Students will verbally explain their choices and check these
reasons after finding out which questions go with which country.

Mechanics:
Time: 1 class period
Materials: Duplicate copies of student handout titled "Census
Questions" for each student or pair of students.

Activity:
1. Hand out Census Questions and ask the students to sort the
questions by placing the number of the question in the column in which
it belongs. For example if a participant thinks question #3 is a
question that would be found both on the Indian and the U.S. census,
a number 3 would be placed in the column marked both.
2. After the participants fill in the chart, discuss the
responses people made. Why did they put questions in the columns
they did?
3. Give the participants the correct responses. Which ones
did the group get right? Which did they get wrong? How can the
discrepancies be explained?
4. Discuss these questions:
   a. Why were these questions selected?
   b. Which questions would you expect to find in a census in
      your state? In China? In France?
   c. What questions do you think should be added to the census?
      Explain.
   d. Would you eliminate any questions? Explain.
   e. Would you refuse to answer any of these questions on
      the censuses?
   f. What would the government be able to use the informa-
      tion for?
5. Get a copy of the 1970 census. Were the other questions
you would have added included in the real census? Are you surprised
by any of the questions you find on the census?

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CENSUS QUESTIONS

1. What is the name of each person who was living here on Wednesday April 1, 1970 or who was staying or visiting here and had no other home?
2. How is each person related to the head of this household?
3. Does the household live in an owned or rented house?
4. Was place of birth rural or urban?
5. Purpose for which census house is used.
6. Is there a telephone on which people in your living quarters can be called?
7. Age of each individual?
8. Literacy of each individual?
9. Month and year of birth, and age last birthday.
10. Number of living rooms in the census household.
11. Name of the Head of Household.
12. Do you have a flush toilet?
13. Sex of each person.
14. Is there hot and cold piped water in this building?
15. Does the household cultivate land?
16. Name of village or town.
17. Color or race.
18. Scheduled Caste or Scheduled Tribe.
19. Mother tongue of each individual.
20. Construction material of census house.
21. Marital status of each individual.
22. Is this building a one family house?

Place the number of the question in the column you feel that question belongs.

United States Census	Indian Census	Both

CENSUS QUESTIONS

1. What is the name of each person who was living here on Wednesday April 1, 1970 or who was staying or visiting here and had no other home?
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17. Color or race.
18. Scheduled Caste or Scheduled Tribe.
19. Mother tongue of each individual.
20. Construction material of census house.
21. Marital status of each individual.
22. Is this building a one family house?

Place the number of the question in the column you feel that question belongs.

United States Census	Indian Census	Both
1	3	2
6	15	7
11	19	13
14	20	11
23	16	10
12	21	22
9	5	
17	4	
	8	

Title: Mapping Migration (an activity by Mack Fair, Denver Public Schools)

Introduction: Denver faces a problem common to many similar communities caused by the influx of people from other states and other areas within Colorado. Urbanization, particularly of "desirable" localities such as Denver, causes a local "population explosion" even if the birth rate is stabilized.

Objective: To determine the origin of a number of Denverites and examine some of the possible reasons for, and effects of, migration to Denver.

Mechanics:
    Time: 1 class period, plus time to gather data individually
    Materials: old copies of newspapers (from several dates), large map of the U.S., map pins and string; possibly a world map

Procedure:
Each student should randomly select obituaries of people who were not born in Colorado (but are native to the U.S.), determine their birthplace, and by using a map, map pins, and string, show the route they took in locating in Denver. Collect enough data to show at least 50 individuals on the map. If students cannot find data in the obituary column of a newspaper, they can interview people to find out their previous residential locations. If a larger view is preferred, a student may include individuals from foreign countries, using the world map to show the route to Denver.
    Discussion:
    1. Can you see any trends in the migration patterns to Denver from other areas in the U.S.? What are they?
    2. What was the percentage of native Denverites in the obituary columns you examined compared to non-natives from (a) other areas of Colorado; or (b) foreign countries?

    3. Is it possible to infer the reasons the individuals moved to the Denver area? Make a few guesses. Students might test some of these hypotheses by surveying people to determine their reasons for moving to the area
    4. What are some of the problems that come about because of urbanization and particularly the rapid growth of metropolitan Denver?

For Further Discussion and Study
    Determine the average number of descendants (children plus grandchildren plus great-grandchildren) of the people you studied.

Title: What If? (Roll over, Beethoven)   by George Otero

Introduction: Life expectancy is a population concept. Today most people living in the United States can expect to live 65-75 years on the average. In other countries of the world, especially Latin American and African countries, life expectancy might average 50-55 years.

    At different periods in human history, life expectancy was as low as 30 years. Yet we often assume that people have always lived as long as people tend to live today. In this activity, participants are involved in creative writing about situations involving life expectancy changes.

Objectives:
---Given hypothetical situations involving life expectancies, participants will express in writing their predictions and reactions to the hypothetical situations.
---Participants will learn about the variability of life expectancies in human history and its effects on human culture.

Mechanics:
Time: 1 class period
Materials: You might ditto the situation sheet for each participant or read the situations to the group.

Activity:
    1. Ask the group to write on a sheet of paper how long they expect to live (a specific age). Collect the responses, and determine an average. You might have some participants share their reasoning with the group.
    2. Tell the group that you have a list of situations involving life expectancies to which you would like the group's reactions. Mention to the group that life expectancies have not always been so high. Were people different when they thought they would only live to be 35 or 40 years old? Do low life expectancies promote or hinder creativity? Were people's energies consumed caring for illness and disease when many of these maladies were uncontrollable?
    3. Give the group the list of situations and have each student choose one to write about the effects of the change on the person or society. These can be read and discussed by the group. The writing can be done in different forms, such as short story writing, poetry, etc.

Further Suggestions:
    The group might want to do some research on the life spans of people that interest them. They could make hypotheses about certain groups of people in certain periods and then attempt to verify those guesses.

WHAT IF?

1. What if Beethoven had lived to be 65 instead of dying in his 30's?

2. What if President Kennedy had lived to be 60 years old instead of dying a violent death while in his 40's?

3. What if women lived 20 years longer than men rather than the present 6-8 years longer which is the current average?

4. What if you could only expect to live to the age of 35? Would you change your goals? Your behavior?

5. What if you could expect to live to the age of 150 years?

6. What if Joe Namath could be healthy and strong and play football till the age of 60 years?

7. What if you could buy pills (at $20,000 each) that would allow you to live 5 years longer for each pill taken?

8. Pick another famous person. What would have happened if that person's life span was doubled?

9. What if you could pick 3 people's lives to shorten in life expectancy---who would you choose?

10. What if you could pick 3 people's life spans to double in length---who would you choose?

Title: If You Can't Count It, Does It Exist? (Adapted from an activity in the Environmental Studies Cards)   by George Otero

Introduction: This is a very simple, open-ended activity designed to help participants focus on measurement as it relates to the concept of counting. The activity can involve a single individual or an entire class or group.

Lesson Objectives:
-----to give participants the opportunity to explore ways of counting things they
    never thought could be counted.
-----to introduce participants to a variety of ways to count things.

Mechanics:
Time: 1 class period
Materials: none needed for this activity

Activity:
    1. Give the group the following task: Make a list of things that appear to be impossible to count...then count any three.
Give the group time to think about and explore the task. Encourage participants, get involved yourself, but refrain from giving any answers. Allow the participants to discover what they can.
    2. Possible follow-up activities and discussion questions:
a. Do the numbers of something that is impossible to count change from time to time?
b. What makes something impossible to count?
c. How does it become possible to count it?

Title: Graphing Population Growth (by George Otero)

Introduction: Why is population growth of concern to many people today? One reason is that population grows exponentially. This activity demonstrates how population grows regardless of the human population we consider. Students can learn about the growth of a population by reading graphs. Making a graph on population growth for the nation and then comparing this growth to world population growth will help students understand and read graphs and also understand the exponential nature of population growth.

Mechanics:
Time: 1 class period
Materials: Duplicate a sheet of graph paper for each participant. You may give the data for the graph on either a separate handout, on overhead transparency, or the chalkboard.

Lesson Objectives:
1. Students will make a live graph given the raw data.
2. Students will compare the data on their graph of U.S. population with a graph of world population.
3. Students will figure the doubling time of various populations, both animate and inanimate.

Activity:
1. Hand out graph paper and data for the U.S.
2. Have students graph the data.
3. Ask students why the curve rises sharply and quickly on the graph.
4. Using the slide or transparency of world population growth, explain the nature of exponential growth. Something that grows exponentially grows at a constant percentage of the whole in a constant time period. It is useful to compare this to the interest collected at a bank or the doubling of a penny each day. It is also useful to think of exponential growth in terms of doubling time, or the time it takes a growing quantity to double in size. The following chart applies to any quantity:

Doubling Time Chart

GROWTH RATE % per year	DOUBLING TIME years
0.1	700
0.5	140
1.0	70
2.0	35
4.0	18
5.0	14
7.0	10
10.0	7

5. Compare the world population data sheet to the graph drawn for the United States. In what ways are they similar? In what ways are they different?

Further Suggestions: Get the data of a town or county or state and graph it. Compare your graph to the graphs of other students.

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<u>Title</u>:   The Census 1790-1970*(by George Otero)

<u>Introduction</u>:   The United States under the rule of the constitution
must take a census every ten years. The first official United States
census was taken in 1790, and one has been taken every ten years
since then. In this activity the participants are presented with
summaries of the questions asked on each of the census question-
naires. Participants use this data as a springboard for a discussion
of any number of population-related issues.

<u>Lesson Objectives</u>:
        1.   To promote discussion of population-related is ves using
the data provided regarding questions asked on U.S. census question-
naires.
        2.   To allow participants to make inferences about political,
social, and economic conditions, using the census data.
        3.   To compare the types of questions asked on the censuses
suggesting possible explanations for the similarities and differences.

<u>Mechanics</u>:
        Time: 1 or 2 class periods
        Materials: You will need to duplicate copies of the handout
                     "Population and Housing Census Questions 1790-
                     1970" for each participant.
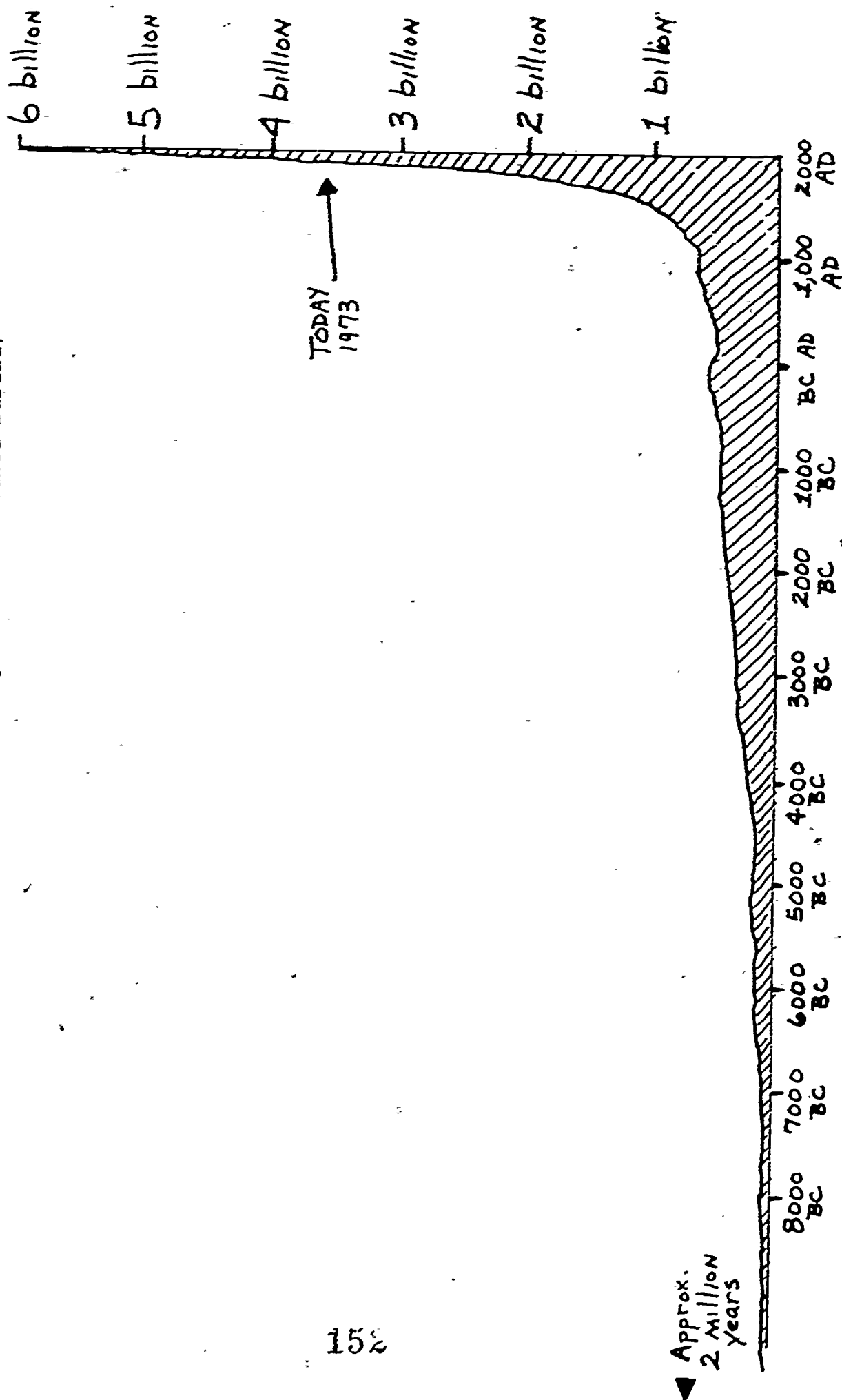
<u>Activity</u>:
        1.   Handout the census questions to the participants. Ask the
participants to look over the questions noting similarities and
differences. Which questions are of interest to you? Which questions
remind you of a period, action, or policy you dislike? Which questions
remind you of a period, action, or policy you like?
        2.   Ask the participants to explain the similarities and dif-
ferences in the questions.
        3.   At this point the data could be used in a multitude of ways.
             a.   The group could make up the <u>ideal</u> 1980 census explain-
             ing why they would include the questions they suggest.
             b.   Participants could do research to answer questions about
             certain census items that may have arisen during discussion.
             c.   The group could attempt to use the data to make a general
             statement about what a census is and what the data gathered
             is used for.
             d.   The group could make hypotheses about how the data collec-
             ted was used.
             e.   The group could make guesses about what the results
             were on certain questions and check these guesses with the
             census records.

_____
*Using "Population and Housing Census Questions 1790-1970," U.S.
Dept. of Commerce, Bureau of the Census, Form 70-82-1 (4-18-69).

WORLD POPULATION GROWTH

(Graph adapted from The Population Reference Bureau)

- 6 billion
- 5 billion
- 4 billion
- 3 billion
- 2 billion
- 1 billion

TODAY 1973

Approx. 2 Million Years

8000 BC, 7000 BC, 6000 BC, 5000 BC, 4000 BC, 3000 BC, 2000 BC, 1000 BC, BC AD, 2,000 AD, 4,000 AD

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Population and Housing Census Questions 1790 - 1970

1970

Population

Information obtained for all persons: Address, name, relationship to household head, sex, race, age, marital status

Information obtained for [...]-percent sample: [...] educational attainment, [...] number of [...] hours, employment status, hours worked [...] week, last worked, occupation, industry, and class of worker, [...] weeks worked last year, income last year, location of residence five years ago

Information obtained for 15-percent sample: Country of birth of parents, length of residence at present address, language spoken in childhood home, school attendance, veteran status, location of place of work, means of transportation to work

Information obtained for [...]-percent sample: If foreign born, whether naturalized and year of immigration, whether married more than once, date of first marriage and whether first marriage ended because of death of spouse, vocational training, for persons of working age, presence and duration of disability, occupation, industry, and class of worker five years ago

Housing

Information obtained for all housing units: Occupied or vacant, owned, rented, or [...]; if vacant, vacancy or for sale [...] rent; and whether for occupancy; number of units at this address, single or multiple family structure, trailers, number of rooms, basement, access to unit, water supply, toilet facilities, bathing facilities, kitchen facilities, telephone available, value or contract rent

Information obtained for [...]-percent sample: Whether on a farm, year built, number of units in structure, gross rent, heating equipment

Information obtained for 15-percent sample: Number of bathrooms, source of water, sewage disposal, air conditioning, automobiles

Information obtained for [...]-percent sample: [...] number of stories, elevators, heating fuel, cooking fuel, water heating fuel, television sets, radio sets, clothes washing machines, clothes dryers, home food freezers, air conditioning

1960

Population

Information obtained for all persons: Address, name, relationship to household head, sex, race, age, marital status

Information obtained for [...]-percent sample: Birthplace, if foreign born, language spoken, [...], residence at present address, location of residence five years ago, school attendance, educational attainment, whether married more than once and date of first marriage, for women ever married, number [...] born, employment status, hours worked [...] week, occupation, industry, and class of worker, means of transportation to work, weeks worked last year, veteran status

[...] Americans overseas

Housing

Information obtained for all housing units: Occupied or vacant, owned, rented, if vacant, year-round or seasonal occupancy, [...], number of rooms, condition, water supply, toilet facilities, bathing facilities, [...]

Information obtained for [...]-percent sample: Whether on a farm, [...]

1950

Population

Information obtained for all persons: Address, whether house is on farm, name, relationship to household head, race, sex, age, marital status, birthplace, if foreign born, whether naturalized, employment status, hours worked in week, occupation, industry, and class of worker

Information obtained for 20-percent sample: Whether living in same house a year ago, whether living on a farm a year ago, location of residence a year ago, country of birth of parents, educational attainment, school attendance, if looking for work, number of weeks, weeks worked last year, income last year, veteran status

Information obtained for 3 1/3 percent sample: For persons who worked last year but not in current labor force, occupation, industry, and class of worker on last job, if ever married, whether married more than once, duration of present marital status, for women ever married, number of children ever born

Supplemental schedules for persons on Indian reservations, infants born in the first three months of 1950, Americans overseas

Housing

Information obtained for all housing units: Occupied or vacant, owned or rented, if vacant, whether year-round or seasonal, type of living quarters, type of structure, number of rooms, year built, number of units in structure, condition, water supply, toilet facilities, bathing facilities

Information obtained for all nonfarm housing units: If owned, whether mortgaged, market value, if vacant, monthly rental or sale price; if rented, contract rent, gross rent, and if furnished, estimated rent unfurnished

Information obtained for 20-percent sample: Lighting, heating equipment, heating fuel, cooking fuel, refrigeration, kitchen sink, radio set, television set

Supplemental schedules for Indians and residential finance

1940

Population

Information obtained for all persons: Address, home owned or rented, value or monthly rental, whether on a farm, name, relationship to household head, sex, race, age, marital status, school attendance, educational attainment, birthplace, citizenship of foreign born, location of residence five years ago and whether on a farm, employment status, if at work, whether in private or nonemergency government work, or in public emergency work (WPA, CCC, NYA, etc.), if in private or nonemergency government work, hours worked in week, if seeking work or on public emergency work, duration of unemployment, occupation, industry, and class of worker, weeks worked last year, income last year

Information for 5-percent sample: Birthplace of parents, language spoken in home in earliest childhood, veteran status, whether wife or widow of veteran, whether child of veteran and, if so, whether father living, whether has Social Security number, and if so, whether deductions were made from all or part of wages or salary, occupation, industry, and

Housing

1930

1920

1910

1900

1890

1880

1870

1860

1850

1840

1830

1820

1810

1800

1790

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Title: Footprints   (Adapted from an activity in the Environmental
                       Studies Cards)* (by George Otero)

Introduction: By examining the indirect or direct evidence of the
actions or existence of a population we can learn something about
that population. In this activity participants explore, discover,
and evaluate the direct and indirect evidence left by populations--
their "footprints," so to speak.

Lesson Objectives:
     1. To demonstrate to participants that most populations leave
evidence of their existence.
     2. To allow participants to make inferences about a population
from the evidence it leaves.
     3. To improve participants' observational skills and their
abilities to understand the consequences of the actions of populations.

Mechanics:
     Time: 1 class period
     Materials: You need to duplicate handout titled "Evidence."
                 You might want to supply camera's, paper, and
                 other recording and measuring devices for use by the
                 participants.

Activity:
          Tell the group that you would like them to focus on the
different types of evidence that a population leaves behind--
evidence that describes the population, affects other populations,
and documents the existence of the population itself. A number of
activities for participants are on the handout titled "Evidence."

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*Environmental Studies Project, American Geological Institute, National
 Science Foundation, 1970.

EVIDENCE

1). Go outside and observe <u>indirect</u> evidence of a population of something.

2). Go inside the school, home, or other places and observe <u>in-direct</u> evidence of a population of something.

3). Find "footprints" or evidence of the existence of a population that you think should be reduced.

4). Find "footprints" or evidence of the existence of a population that you think should be increased.

5). List 10 kinds of indirect evidence for populations.

6). Estimate the size of the population from the indirect evidence.

7). Take some evidence about a population. Using the data alone describe that population.

8). Check your evidence. What makes your direct or indirect evidence conclusive? How can you be sure that the evidence you have is direct or indirect evidence of a population?

Title: Modeling Population Growth (by John Crouch, Denver Public
                                                    Schools)

Introduction: This exercise is designed to help the student under-
stand exponential growth and doubling time when applied to human
population.   It explores human population growth in three situations:
unrestricted exponential growth, institution of a limited birth control
program, and a zero population growth plan.   Additional information is
given in the exercise to help the student develop attitudes regarding
the effects of population growth on the human condition.

Lesson Objectives:
        Upon completion of this activity, each student should be able to:
1.   demonstrate an understanding of exponential growth and doubling
     time,
2.   list several effects that exponential growth of the human popu-
     lation may have on the human condition,
3.   operate more effectively in a group situation.

Mechanics:
        Time: Two to three class periods.
        Materials: Student handout which includes instructions, charts
                     for completion, additional information concerned
                     with population growth, and questions for response.
                     You will need 200 dice per group.   One side of the
                     dice should be blue, one side should be red, and one
                     side should be black.   The other three sides can be
                     white or blank.   Cubes can be obtained from math
                     and science catalogs or cut for you in the shop.

Activity:
        1.   This exercise should be used when dealing with the subject
of population growth in the classroom.
        2.   Divide the class into groups of four to six.   Do not
explain the reason for the exercise to the students.   Allow the
students to reach their own conclusions.   Handout the student exer-
cise sheets and the cans of dice.   Go over the directions with the
students and then let each group operate as much as possible on
their own.
        3.   After the students have collected the data on their charts,
they may transfer this information onto graphs if you wish.
        4.   In a class discussion allow the groups to compare their
results.
        5.   During the class discussion raise questions of the following
nature:
                a.   What did you learn from this exercise?
                b.   Which population plan had the greatest appeal to you?
                c.   Which population plan has operated during most of man's
                     history?

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d. How often did your population double and how often do you predict it to double under each population plan?

e. Comment on the following: "If we solve the population problem, we will have a chance at solving all other problems. If we don't solve the population problem, none of the others will matter." Do you agree with this statement? Why or why not?

MODELING POPULATION GROWTH

NAME _____

Introduction:

In this experiment you will use dice to model population growth.
Each die represents a person. Each throw of the dice represents a
year. A blue or a red represents the birth of a child, so each time
one of them comes up, add a die to the population. If a black comes
up, a death has occurred, so remove it from the population. Hence
you are modeling a situation where the birth rate is twice the
death rate. You also have a population growth rate of 1/6 or about
17%.

Procedure:
PART A: Unrestricted Exponential Growth

Put 6 ordinary dice into a container (Adam, Eve, Cain, Abel, Sally,
and Alice). Shake the container and dump the contents out onto a
smooth, hard floor. Remove and count all the black sides that appear.
A "black" is analogous to a death. Record the number of deaths on
the chart. Count up all the reds and blues that appear. Since they
correspond to birth, add a die for each of them. Then fill in the
required information in the chart. Repeat the above procedure until
the total population exceeds 200 people.

PART B: The Effect of Instituting a Limited Birth Control Program

Return to the population you had after 10 years had passed. Put that
many dice into the can. But now introduce a limited birth control
program. This will be modeled by saying that a blue represents a
birth, as before, and so does every other red. However, the remaining
half of the red represent women who are on birth control and so
a birth has been prevented. If an odd number of reds come up, round
off in favor of a birth half of the time, and in favor of a reverted
birth in the other half of the cases. Model this situation for the
years 21 through 30. You have essentially cut the population growth
rate from 17% to 8%.

PART C: The Zero Population Growth (ZPG) Plan

Return to the population you had after 10 years had passed. Put that
many dice into the can. But now introduce a large scale birth control
program. This will be modeled by saying that all the reds represent
women using effective birth control techniques or women married to
men using effective birth control techniques. Hence, a black repre-
sents a death, a blue represents a birth, and a red represents a
prevented birth. Model this situation for the years 10-20.

MODELING POPULATION GROWTH

Graphs and Conclusions:

PART A: Unrestricted Exponential Growth

Use your data to plot graphs of:

1. Population vs. Time (years)
    a. plot first on ordinary graph paper
    b. plot again on semi-log paper

2. Population Growth Rate vs. Time (years)

3. Population Growth Rate vs. population

Examine each graph and write a conclusion for each one

PART B: The Effect of Instituting a Limited Birth Control Program

Use your new data to plot graphs of:

1. Population vs. Time, 0-30 years. (ordinary graph paper)

2. Population vs. Time, 0-30 years. (semi-log graph paper)

Examine each graph, compare them to the Population vs. Time graphs in Part A, and then write a conclusion.

PART C: The Zero Population Growth (ZPG) Plan

Use your new data to plot graphs of:

1. Population vs. Time, 0-30 years. (ordinary graph paper)

2. Population bs. Time, 0-30 years. (semi-log graph paper)

Examine each graph, compare them to the Population vs. Time graphs in parts A and B, and then write a conclusion.

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MODELING POPULATION GROWTH

Data:
PART A: Unrestricted Exponential Growth

Throw No. (Year)	Number of Births (N_b)	Number of Deaths (N_d)	Number of Dice (population)	POPULATION GROWTH RATE $\frac{\Delta N}{\Delta t} = \frac{N_b - N_d}{1} = \frac{people}{year}$
-				GROWTH RATE
0	−	−	6	0%
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Data:
PART B: The Effect of Instituting a Limited Birth Control Program

Throw No. (year)	Number of Births (N_b)	Number of Deaths (N_d)	Number of Dice (population)		Population Growth Rate $\frac{\Delta N}{\Delta t} = \frac{N_b - N_d}{1} = \frac{people}{year}$
				%	
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Data:
PART C: The Zero Population Growth (ZPG) Plan

Throw No. (year)	Number of Births (N_b)	Number of Deaths (N_d)	Number of Dice (population)		Population Growth Rate $\frac{\Delta N}{\Delta t} = \frac{N_b - N_d}{1} = \frac{people}{year}$
				%	
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

THE LIMITS TO GROWTH

Notes on the Book

NAME _____

I. The Nature of Exponential Growth
  1. Exponential growth occurs whenever the rate of growth is directly proportional to the quantity of material present.

  $$\frac{\Delta N}{t} \propto N$$

  2. A quantity exhibits exponential growth when it increases by a constant percentage of the whole in a constant time period.

  $$\frac{\Delta N}{N} \propto t$$

  3. Exponential growth is deceptive because it generates immense numbers very quickly.

  4. It is useful to think of exponential growth in terms of doubling time.

II. The Factors Which Influence Growth
  There are five basic factors that determine and, in their interactions, ultimately limit growth: on our planet. They are:

  1. population growth
  2. agricultural production
  3. consumption of nonrenewable resources
  4. industrial output
  5. pollution generation

III. Characteristics of the Five Basic Factors

  1. They are interrelated and cannot be studied separately.
  2. They are all growing exponentially.
  3. Because the earth is finite, they all appear to have an upper limit.

IV. The World Model
  To make mankind's predicament more visible, more easy to grasp, the Volkswagen Foundation granted the Club of Rome $250,000.00 in 1970. They hired an international team of scientists led by computer experts at MIT. They used a computer model that could simulate the major ecological forces at work in the world today -- a model that contains the basic equations that interrelate the five factors.

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V. The Findings of the Club Rome:

1. If there are no major changes in the physical, economic, or social relationships that have historically governed the development of the world system, the system will continue to grow exponentially until the rapidly diminishing resource base forces a collapse (2020 A.D.).

2. Positive feedback loops operating without any constraint generate exponential growth. In the world system two positive feedback loops are dominant now, producing exponential growth of population and of industrial capital. In any program designed to produce a world of the future that is stable, the exponential growth of both of these factors must stop. Any combination of the variables that influence growth that does not stabilize both population and industrial output together eventually leads to collapse. A no-growth world is man's hope in this planet.

VI. Priorities for Obtaining a No-Growth World

1. Require that population be stabilized by equating births and deaths.
2. Stabilize the world's capital stock by requiring that the investment rate equal the depreciation rate.
3. Reduce resource consumption/unit of industrial capital.
4. Shift the economic preferences of society from factory-produced material goods to services such as education and health facilities.
5. Reduce the pollution generation per unit of industrial and agricultural output.
6. Produce sufficient food for all people by diverting capital to food production.
7. Make soil enrichment and preservation a high priority to achieve #6.
8. Increase the average lifetime of industrial capital be demanding better design for durability and ease of repair.

VII. Characteristics of a No-Growth World

1. It is sustainable without sudden and uncontrolled collapse.
2. It is capable of satisfying the basic material requirements of all of its people.
3. Average life expectancy = 70 years/person.
4. Material inequalities between groups of people would be minimal.
5. More leisure time to devote to nonpolluting, nonconsuming activities could flourish.
6. Education, art, music, religion, basic scientific research, athletics, and social actions.

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7. Technical advances would continue--for the need would still be there.

8. Incentives would still be there--improve the "quality" of life.

VIII. How much time?

IX. Attitudes

Title: Population: To Be or Not To Be A Problem? (by George Otero)

Introduction: This is a short activity designed to introduce the participant to two views about population changes. For many persons population growth is a "problem." Yet for many other persons population growth is not a problem. Participants read the two positions and decide which side they belong to, taking into account the knowledge and attitudes they hold at the present time.

Lesson Objectives:
1. To introduce participants to the two positions, namely whether or not population growth is a problem.
2. To encourage participants to make a decision about their position on population growth based on the knowledge and attitudes they presently hold.

Mechanics:
Time: 1 class period
Materials: Duplicate copies of the handout Current Positions on Population Growth.

Activity:
1. Ask the group members to raise their hands if they think population growth is a problem. Have them keep their hands raised if they think population growth is the most important problem facing mankind today. Mention to the group that there are many people who think population is not a problem.
2. Hand out the reading. Tell the participants to read the material carefully. Then have each participant make a decision. Based on what you know and on your own personal values, is population growth a problem or is it not a problem? Have participants write responses.
3. Collect the responses. These can be used as an evaluation procedure if the group further examines the issue using other materials and activities. Participants would then have the opportunity to read what they wrote and compare that response with a later position which might incorporate knowledge and attitudes not present when the activity was initially completed.
4. In concluding the activity, you could raise a few questions for discussion.
   a. If the symptoms are similar, why do people have different explanations for the causes and solutions behind those symptoms?
   b. Which position do you think the president holds? Which position do you think people in Japan hold? Russia? China? Which position do you think is held by people living in the developing countries of the world?

In a rough way these positions on both handouts may illustrate the range of current opinion. They at least state major points about population growth although they are simplistic and have many varia- tions in context. In addition, these positions are not exclusive of one another. People holding different beliefs might support the same policy by the government but for different reasons. This activity should at least start some thinking.

CURRENT POSITIONS ON POPULATION GROWTH

(1). Population Growth is Not a Problem*

1. Population growth as a problem in itself is not important compared to other problems facing the world, such as peace, poverty, racism, and health. The people coming into the world today can be taken care of in the same ways people have been provided for in the past.

2. The problem is not population growth but economic development. Under correct economic conditions -- ideally a situation where the public is in control of production of goods and services -- population will take care of itself and disappear as a problem. Development is the problem facing humans today.
The problem is not population growth but environmental and resource depletion. The problem is the over-consumption of developed countries like the United States and not the growth of population in developing countries like Ghana or Chile. This consumption uses up resources on the one hand and produces pollution on the other.
The problem is not population growth but health levels. If we would control disease and death rates, birth control will follow. We must provide for the basic health and nutrition of every person.
The problem is not the growth of population but its distribution. It is not the total numbers that create problems, but the way those people distribute themselves on the earth, leading to the bad effects of urbanization (big cities).

3. Population growth is a false issue. It is a tactic used by rich countries to keep control of poor countries. Rich countries focus on population control instead of the real problem of development.

4. Population growth, at least in some places, is desirable. Increased population is needed in some areas to fill up and develop available lands. Increased population is needed to build the labor force in some areas. Increased population is also desirable politically to build the nation, supply the army, and build a young generation of people to vitalize the nation.

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*Adapted from World Population: Status Report 1974 A Guide for the Concerned Citizen, prepared by the Population Council, 245 Park Ave., New York, New York 10017, Jan. 1974, p. 18.

(2). Population Growth is a Problem[*]

1. Population growth is a major crisis now facing mankind, perhaps _the_ major crisis. Continued population growth endangers the environment and our living standards in many, many ways. The population growth must be halted or slowed down a lot even if harsh, tough measures must be taken.

2. Population growth makes other social and economic problems much worse. It makes development in the poor countries go much slower and it increases the environmental pollution and use of resources in the rich countries. Population growth can and should be stopped by changes in women's roles, living standards, education, health care, and so on. Population can and should also be stopped by controlling the births in a nation through the national family planning programs.

_____

[*]_Ibid._

Title: Clues   (Adapted from an activity in the Environmental Studies Cards)
         by George Otero

Introduction: Many sources of data can provide clues about the population existing
at a certain time. Literary and/or visual clues can be used to estimate the size
of a population if it is incalculable or simply unrecorded. In this activity,
participants explore the kinds of evidence that artistic works provide for learning
more about population or food.

Lesson Objectives:
-----to provide participants the opportunity to explore population through works
      of art and literature.
-----to increase participant sensitivity to evidence about populations existing in
      literature and the arts.

Mechanics:
Time: 1 class period
Materials. Novels, paintings (copies or illustrations of paintings), and/or other
       works of art.

Activity:
       1. This is a very open-ended exercise, and it can be a most interesting
experience. Encourage participants to do any or all of the following activities:
(Note: The actions can be applied to food simply by changing the word "population"
to "food" in the suggested activities listed below.)

a. Study literary evidence for a population of something.
b. Study the evidence for a population of something in a painting, a photograph, or
    any other art work.
c. What kind of population evidence does the art of past societies give? What
    sort of evidence do you suppose our art will provide future societies?
d. Estimate the size of the population using the evidence found in a and/or b
    above.

Title: Yes, No, or Maybe (by George Otero)

Introduction: Many potential changes can affect one's opinion of population changes. In fact, many changes are suggested by various groups every day. Some suggest we farm the sea and grow more food. Some suggest we concentrate on slowing the birth rate. There are pros and cons for every suggested change. In this activity students document and/or recognize the pros and cons for proposed changes relating to population changes. In addition, the participants discuss their preferences and opinions about the likelihood and desirability of these changes.

Lesson Objectives:
    1. To document positive and negative implications of proposed changes that could affect population growth or food production.
    2. To recognize and verbalize personal preferences and evaluations concerning population-related predictions and possibilities.

Mechanics:
    Time: 1 or 2 hours for research
            1 class period for discussion
    Materials: Duplicate copies of the handout titled "Yes, No, or Maybe."

Activity:
    Hand out the ditto titled "Yes, No, or Maybe." Tell the group to complete the worksheet based on the knowledge they have. (Time can also be given for research if that is needed). Go over the questions on the worksheet with the participants.

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YES, NO, OR MAYBE

Below are suggested future approaches and changes related to population and food issues.

Give an argument for each suggestion and an argument against each suggestion.

a. farming the sea

b. irrigation of arid (dry) lands with desalted sea water

c. sending excess people to colonize other planets.

d. voluntary family planning

e. addition of contraceptives to drinking water

f. increased use of fertilizers and pesticides

g. clearing and farming tropical rain forests

h. abortion on demand

i. taking care of our own country first; letting the rest of the world go its own way

Questions:

1). Which suggestion would you like to see occur first? How do you overcome the negative arguments suggested?

2). Which of the suggestions is most likely to occur? Explain.

3). Overall, which suggestions do you feel have more plus factors than minus factors? Vice Versa?

Title: __Boomsville__ (Film, 16 minutes, color) Available from NAFSA:
National Assoc. for Foreign Student Affairs
1860 19th Street, N. W.
Washington, D. C. 20009
- (202) 462-4811 (see page 9:2)

__Introduction:__ It can be helpful to look at population growth and its effects on
a long-term basis, but the concepts involved are often difficult to grasp. One
means that is effective is some kind of visual presentation. The film
__Boomsville__ provides that image in a graphic concise manner using animated de-
scriptions. The purpose of this film is to show the advancement of urbanization
and related technology in American history from the discovery of the New World
to the present. This sequence provides the learners with a useful overview of
the growth process as it occurred in this country and provides a springboard
for discussions about population, urbanization, and environment.
     The film most clearly protrays the concept of __change__ as it has affected the
course of American history.

__Lesson Objectives:__
After completing this activity, each individual should be able to:
1. Suggest some turning points in American history related to protection of the
    environment.
2. Discuss the impact of urbanization on American development.
3. Explain how migration is a significant factor in population questions.

__Mechanics:__
Teaching time: 50 minutes
Materials: Film--__Boomsville__

__Activity:__
     1. Introduce the film. Explain briefly that the film is one depiction of
American history with heavy emphasis on factors related to population. Ask the
group to specifically watch for: (a) possible effects of each stage on the en-
vironment, (b) factors that may describe the urbanization process, (c) direction
of population shifts. Show the film.
20 minutes.
     2. After the film has been shown, use the following questions as a basis
for discussion:
a. What immediate effects on the environment were obvious when the settlers
    came? (clearing of forests, etc.)
b. What other impact on the environment came later? (pollution by transportation,
    industry; concentration of population in limited areas)
c. What seemed to have drawn people to the urban centers? (availability of
    products, jobs; national needs such as industrial production during wars)
d. What generalizations can be made about population shifts in our history?
    ("safety valve"--move to relatively uninhabited areas; trend toward the
    cities) What about these options in the future?
e. What general conclusions may be drawn from our experience as a nation?
    (constant conflict between man and the environment; populations will urbanize
    as they industrialize; life has a tendency to become both more uniform, e.g.,
    suburban hoursing, and more diverse, e.g., the division of labor.
30 minutes

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Boomsville should also be available for rental from the film library at your state university. If it is not, contact one of the following distributors:

ACI Films, Inc
35 W 45th St
New York, New York 10036

Audio Visual Center
Indiana University
Bloomington, Indiana 47401
(abb IU)

Arthur Barr Productions, Inc
P O Box 7-C
Pasadena, California 91104

BFA Educational Media
2211 Michigan Ave
Santa Monica, California 90404

Carousel Films, Inc
1501 Broadway
New York, New York 10036

CCM Films, Inc
34 MacQuesten Parkway South
Mount Vernon, NY 10550

Colonial Williamsburg
Williamsburg, Virginia 23185
(abb CW)

Coronet Instructional Films
65 East South Water St
Chicago, Illinois 60601

Encyclopaedia Britannica
Educational Corporation
425 North Michigan Ave
Chicago, Illinois 60611
(abb EBE)

Films Incorporated
1144 Wilmette Ave
Wilmette, Illinois 60091
(abb FI)

General Motors Corporation
General Motors Building
Detroit, Michigan 48202

The Graphic Curriculum
P O Box 565
Lenox Hill Station
New York, New York 10021
(abb GC)

International Film Foundation, Inc
475 Fifth Ave.
New York, New York 10017
(abb. IFF)

Learning Corporation of America
711 Fifth Avenue
New York, New York 10022
(abb. LCA)

McGraw-Hill Films
1221 Avenue of the Americas
New York, New York 10030
(abb McGH)

Time-Life Films
43 West 16th Street
New York, New York 10011

University of California
Extension Media Center
Berkeley, California 94720
(abb U of C)

University of Southern California
Film Distribution Service
University Park
Los Angeles, California 90007
(abb U of SC)

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<u>Title</u>: <u>Population Explosion</u> (Film, 15 minutes, color) Available from local
UNA-UNESCO office

<u>Introduction</u>. This animated film provides a delightful way to launch a discussion
of a serious topic. In looking at solutions to the population explosion, it is
essential to view the issue from a variety of perspectives. This film suggests
solutions offered by one perspective, and also identifies some of the reasons why
the population surge exists.

Concepts touched upon in this film are <u>interdependence</u> and <u>change</u>. The film
presents a vivid picture of the global significance of the population explosion
and relates well how changes in man's standard of living have influenced the
population explosion.

The group leader has the responsibility of drawing out the viewpoints offered
by the film, as well as alternative points of view which may be suggested in a
discussion following the film.

<u>Lesson Objectives</u>:
After participating in this activity, each individual should be able to:
1. List three factors that have traditionally limited population growth.
2. Suggest why these three factors have ceased to be significant.
3. Suggest several ways in which man may be able to cope with the growing
    population.

<u>Mechanics</u>:

<u>Teaching time</u>: One Hour
<u>Materials</u>: Film, <u>Population Explosion</u>*

<u>Activity</u>:

*Film also available by mail order :
- McGraw-Hill Films
  Distribution Center
  Princeton Road
  Highston, New Jersey 08520
  rental: $25.00

1. Introduce the film as one that provides an introduction to viewpoints on
the population explosion. Without attempting to color the groups's views on the
issue, show the film.
15 minutes.
2. Discussion of the film: Draw out two levels of discussion. First re-
view the data presented and then discuss the validity of the conclusions made.
Suggested questions:
a. What were some of the factors that traditionally limited population growth?
    (war, famine, disease)
b. How have these been limited in their effect?
c. Has famine become a renewed factor? Why or why not?
d. What are some of the solutions suggested to the current population boom?
e. What is the hope of implementing the above solutions? What happens if they are
    not implemented?
f. Most of the solutions offered are long-range in nature. How can the immediate
    problems be alleviated?
g. Are there other solutions that may be better? What are their assets and lia-
    bilities?
h. Is there any single solution? How can one implement one or more of the factors
    for solution?

<u>Future Resources</u>
The exercises "Food Power" and "Age Structure" would both integrate well into
this lesson. This lesson also provides an excellent companion to "Baldicer,"
either before or after the playing of the game.

Title: Planet Management Game (Simulation) To obtain, contact the Houghton
        Mifflin Co. in Boston, New York, Atlanta, Geneva, Ill., Dallas, or Palto Alto

Introduction: One of the difficulties with teaching about food, population,
and environment is that too often these problems are dealt with singly, or, at
best, in pairs. Rarely are the three problems examined simultaneously, and
almost never are they considered together as an integral part of a larger
whole. As the name implies, the Planet Management Game provides a vehicle by
which a group can attempt to integrate the total system. Obviously, of
necessity simulations must be limited in scope. Even so, the interrelationships
of food, population, and environment with other societal factors are clearly
drawn in this exercise. For this reason, this simulation becomes an ideal
culminating activity to any study of the above three issues or combinations of
these issues, because it helps to put them in their proper perspective.
        Interdependence is the whole thrust of this simulation as the participants
attempt to integrate a variety of factors to produce the best standard of
living.
        Briefly, in teams of approximately five, individuals play the roles of
managers of Clarion, an earth-like planet with problems of overpopulation, pol-
lution, food shortages, and insufficient income. The game begins in the year
2000 and runs for 50 Clarion years, or ten rounds of play. The manager's goal
is to improve the planet's living conditions by selecting specific projects
from a large list of projects provided, and spending a limited amount on each.
The projects include increasing imports of fertilizer and pesticides, conducting
research to cure the Clarion disease, Holobinkitis, and building mile-high
apartment buildings with surrounding parks. A "cardboard computer" tells each
team how well it has done in each round to improve the planet's situation in the
four problem areas. Once the game is complete, teams compare their results and
attempt to define which team achieved the "best" results.

Lesson Objectives:
After participating in this simulation each participant should be able to:
1. Suggest several ways in which food, population, and environment are inter-
    related.
2. Define what is meant by the "quality of life."
3. Identify several values questions that arise when choices about development
    are made.
4. Understand that to improve the quality of life one cannot limit progress to
    one area, but must move ahead in several areas simultaneously.

Mechanics:
Teaching time: Three hours
Materials: One Planet Management Game kit. Rules and Planetary Status Ledgers
            must be reproduced so that there is at least one set per team. A
            set of evaluation questions for each group should be prepared.

Activity:
        1. Introduce the game as an opportunity to find out what would happen if
we could really control all important decisions regarding the quality of life.
Would we do better or worse than those who are now making decisions? Follow
these general comments with the specific rules of the game. Reading the rules
from the book is probably the most systematic way to present the game. Answer
questions after the rules have been explained.
30 minutes.

2. Play the game. Participants may be a little unsure of themselves at first. Emphasize that the game will become clearer after the first round or two. Let each team move at its own pace. If one team gets more than a couple of rounds behind everyone else, give that team a time limit so that it will not fall further behind. Groups that finish early should be given a copy of the evaluation questions so that they can analyze their results while they are waiting for the other groups to finish.
1½ hours.

3. Debriefing: All members should have an opportunity to respond to the evaluation questions in their groups before a general discussion begins. The last groups to finish should be given only about five minutes to survey briefly their possible responses. They can develop their responses more fully in the course of the discussion.

Evaluation Questions

1. How have living standards on Clarion improved as the result of your management? How have they deteriorated?

2. What were significant projects in determining your outcomes? Do you approve of the steps you took to achieve your goals?

3. Could the same results have been accomplished with less money?

4. Would you now prefer to live here rather than on earth? Why or why not?

5. Do you have any moral concerns about present conditions on Clarion?

6. If your present trend continues, what will Clarion be like in another 50 years?

While the groups are answering the evaluation questions, and after all are done with the game, post the results of each team on the board. Them begin the discussion, using the following questions as a guide:

a. Which team appears to have been the most successful? Use the justifications from the evaluation questions in the answer. What criteria determines "most successful?"

b. What dilemmas were confronted in managing the planet? What did your responses say about your values as far as the quality of life was concerned? For example, did a group maintain more desirable population levels by refusing any action that would curb holobinkitis?

c. Is it sufficient to compare the population, food, income, and environment rations to determine the best management?

d. What cumulative effects became apparent in later rounds? What does this tell you about where the earth currently is?

e. What would be come significant steps that could be taken on earth to achieve the group's consensus of the "best" results?

1 hour.

Further Suggestions:

Based on the above discussion, one or two teams may want to replay the game the game to see if they can make the necessary adjustments to improve their living standards. Evaluate the adjustments they made.

LIST OF AVAILABLE POPULATION/FOOD MATERIALS

Center for Teaching International Relations (CTIR)

POPULATION RESOURCES--Resource and Teaching Units

(1) Options - A Study Guide to Population and the American Future (Population Reference Bureau, Washington, D. C.)

(2) Focusing on Global Poverty and Development: A Resource Book for Educators. Jayne C. Millar, Overseas Development Council (ODC), Washington, D. C.

(3) Population Education Resources (Zero Population Growth)

(4) Equilibrium (Zero Population Growth)

(5) Population Inquiries Teaching Unit (grades 9-12) (Social Studies Development Center, Indiana University)

(6) The People Packet (National Association for Foreign Students Affairs)

(7) Teaching About Population: A Guide to Discussion, Study, and Resources. INTERCOM, Center for War/Peace Studies, New York)

(8) Environment and Population: A Sourcebook for Teachers. Kathryn Horsley (National Education Association) 1972

(9) Population Bulletin, series; World Population Data Sheet; Population Profile, series (Population Reference Bureau)

(10) Teaching About Population, Secondary School Teachers Kit (U.S. Committee for UNICEF)

(11) An Introduction to Population, Environment, and Society. Lawrence Schaefer, (Educational Services, New Haven, Conn.) 1972. Grades 7-12

(12) Teaching Notes on Population--Foreign Area Materials Center (New York) and Lawrence University (Appleton, Wisconsin). Fall/Winter, 1973, Spring/Summer, 1973, Fall/Winter, 1974

(13) Population Profiles: Series of 13 Units for the Study of Demography. Center for Information on America, Wash., D. C., 1971

(14) Population and Development Issue Packet (American Freedom From Hunger Foundation, Washington, D. C.)

(15) Communique (various issues) Overseas Development Council, Washington, D. C.

(16) Guide to Teaching About Population (UNICEF--U. S. Committee for UNICEF) New York, 1974.

(17) Interchange, Population Education Newsletter, Population Reference Bureau, Inc. (various issues)

(18) The Inter Dependent, United Nations Association (various issues), New York-UNA-USA

(19) Population: The U.S. Problem, the World Crisis. Population Crisis Committee, 1972 (Washington, D. C.)

(20) U.N. Population Year 1974, United Nations. Secretariat for World Population Year UNFPA, New York

POPULATION RESOURCES--Articles, Books, & Publications

(21) "How Many People," Headline Series, No. 218, Foreign Policy Association (N.Y.) 1973.

(22) "People! People!" Great Decisions 1974, Foreign Policy Association, New York

(23) Materials on Protein Gap, Food, and Development (Agency for International Development)

(24) Earth Our Crowded Spaceship, Isaac Asimov. New York (with UNICEF). 1974

(25) Food and Population Report No. 19, Summer-Fall, 1974. Victor-Bostrum Fund for the International Planned Parenthood Federation.

(26) Population, Valerie K. Oppenheimer (Foreign Policy Association, Inc.) 1971

(27) "The Human Population" Scientific American, Sept., 1974

POPULATION RESOURCES--Articles, Books, & Publications (cont.)

(28) INTERCOM #77, Teaching About Population (New York-Center for War/Peace Studies, 1975)

(29) INTERCOM #78, Teaching Interdependence: Exploring Global Challenges Through Data (New York, Center for War/Peace Studies, June, 1975)

(30) The Limits to Growth, by Donella Meadows, Dennis Meadows, Jorgen Randers, and William Behrens, III. New York: New American Library, 1972.

(31) Population, Environment, and People, ed. by Noel Hinrichs. McGraw-Hill, 1971.

(32) The Population Bomb, by Dr. Paul R. Ehrlich. New York: Ballantine Books (with the Sierra Club), 1968.

(33) The Population Dilemma, ed. by Philip M. Hauser. Prentice-Hall, Inc., 1963.

(34) This Crowded World, by Lillian Frankel. Washington, Population Reference Bureau. Columbia Books ((Washington), 1971.

(35) People!, by Robert Cook and Jane Lecht. Washington, Population Reference Bureau. Columbia Books (Washington), 1973.

(36) Brown, Lester. World Without Borders. New York: Random House, 1973.

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FOOD RESOURCES

(1) American Freedom From Hunger Foundation (AFHF). Bulletin
(2) The UNESCO Courier, May, 1975. "The Hunger Gap". (UNESCO Office, Paris)
(3) Interchange, Population Education Newsletter (various issues). Population Reference Bureau, Washington, D. C.
(4) Focusing on Global Poverty and Development-A Book (Resource) for Educators. Jayne C. Millar, Overseas Development Council, Wash., D. C.
(5) American Friends Service Committee. Hunger on Spaceship Earth: A Resource Packet. New York
(6) Brown, Lester. By Bread Alone. Praeger, 1974.
(7) Meadows, Donella, et. al. The Limits to Growth. New York: New American Library, 1972,
(8) Brown, Lester. The Interdependence of Nations. Headline Series No. 212. Foreign Policy Association (New York), 1972 (Oct.)
(9) Agency for International Development (AID). War on Hunger. Washington, D. C. (State Department). (monthly)
(10) Mead, Margaret. Hunger--A Scientists. Institute for Public Information Workbook. New York: Scientists' Institute for Public Information, 1970.
(11) The Protein Gap: AID's Role in Reducing Malnutrition in Developing Countries. AID, Washington, D. C., 1970
(12) Food and Agricultural Organization of the U.N. (Rome). Things to Come: The World Food Crisis--The Way Out. U.N. World Food Conference, 1974.
(13) Department of State. Special Report (no. 19). Crisis in Food. General Foreign Policy Series 293 (June, 1975)
(14) Crusade Against Hunger. The Crusader (Newsletter). New York
(15) UNICEF- The United States Committee for UNICEF. "The Quiet Emergency?". 1974
(16) Institute for World Order (New York). Ways and Means for Teaching About World Order. #18--"Teaching About Global Hunger" June, 1975
(17) Food and Agricultural Organization of the U.N. (FAO, Rome). A Strategy for Plenty: The Indicative World Plan for Agricultural Development. 1970
(18) Lappe, Frances Moore. Diet for a Small Planet. New York: Ballantine Books, 1971.
(19) Tannahill, Reay. Food in History. Stein, 1973.
(20) Rocky Mountain Farmers Union, Washington, D. C. Newsletter
(21) "Why Can't We Just Give Them Food?", by R. Sherrill. New York Times, March 22, 1970.
(22) Issue Packet -Hunger and Development. American Freedom From Hunger Foundation (AFHF)
(23) B. Milbauer and G. Leinwand. Hunger. Simon Schuster, 1971.
(24) Citizens' Board of Inquiry Into Hunger and Malnutrition in the United states. Hunger-U.S.A.. Washington: New Community Press, 1968.
(25) R. Coles. Still Hungry in America. Cleveland, Ohio: World Publishing Co., 1969.
(26) Pemberton, Dixie A. Food: A Crisis or Not? Utah: Student Education Material, 1972.
(27) Lerza, Catherine and M. Jacobson. Food For People Not For Profit. New York: Ballantine Books, 1975.
(28) "Global Hunger and Poverty" Social Education, Nov.-Dec., 1974.
(29) Communique (various issues). Overseas Development Council, Washington, D. C.
(30) Schlichting, Harold E., Jr. and Mary Schlichting, The Food Crisis. Steck-Vaughn Co., Austin, 1973.

PLUS "40 Activities for Teachers on the Issues of Population/Food, in preparation e Center for Teaching International Relations (CTIR)

ORGANIZATIONS WITH INFORMATION
ON FOOD AND POPULATION

African-American Institute, 832 United Nations Plaza, New York, New York 10017

Agency for International Development, Office of Public Affairs, Department of State, Washington, D. C. 20523

American Freedom from Hunger Foundation, 1717 H Street, N. W., Washington, D. C. 20006

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Foreign Policy Association, 345 East 46th Street, New York, New York 10017

Management Institute for National Development (MIND), 230 Park Avenue, New York, New York 10017

National Council for the Social Studies, 1201 16th Street, N. W., Washington, D. C. 20006

National Association for Foreign Student Affairs, 1860 19th Street, N.W., Washington, D. C. 20009

Oversees Development Council, 1717 Massachusetts Avenue, N. W., Washington, D. C. 20036

Population Council, 245 Park Avenue, New York, New York 10017

Population Crisis Committee, 1730 K Street, N. W., Room 713, Washington, D. C. 20006

Population Reference Bureau, 1755 Massachusetts Avenue, N. W., Washington, D. C. 20036

United Nations Fund for Population Activities, 485 Lexington Avenue, New York, New York 10017

U.S. Catholic Conference, Campaign for Human Development, 1312 Massachusetts Avenue, N. W., Washington, D. C. 20005

U.S. Committee for UNICEF, 331 East 38th Street, New York, New York 10016

World Bank Publications, 1818 H Street, N. W., Washington, D. C. 20433

Zero Population Growth, 1346 Connecticut Avenue, N. W., Washington, D. C. 20036