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This is a report of a workshop for population and environmental education held in Alexandria in July 1977, and sponsored by the American Public Health Association and A. I. D. An outline of the two week workshop appears as Appendix A. Appendix B shows the worksheets developed to outline each day's activities. Appendix C is the questionnaire used by the participants to evaluate the workshop. Appendix D is a list of suggested resource materials for the planning and conducting of workshops dealing with population and environmental education. Recommendations for future workshops include: a need for fewer and more tightly defined objectives with a considerably lower participant to consultant ratio; a need for training teacher/trainers in areas such as teaching methodologies and environmental and population concepts for the public schools; workshops on integrating concepts into the elementary school curriculum; and a series of workshops for teachers on problem-solving teaching methodologies in the areas of inquiry, value clarification, stimulation, role-playing, and field study.

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REPORT ON A WORKSHOP FOR POPULATION AND ENVIRONMENTAL EDUCATION IN EGYPT

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During The Period:

July 15 THROUGH AUGUST 6, 1977

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I

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REPORT ON A WORKSHOP FOR POPULATION AND ENVIRONMENTAL EDUCATION IN EGYPT

I. INTRODUCTION

This consultation was the culmination of earlier assistance provided to the Egyptian Ministry of Education for planning and conducting a summer workshop for teachers on the study of population through a curriculum organized around the concept of environmental and population education.

The two consultants arrived in Cairo on July 15, and worked there until July 21 when they traveled to Alexandria where the workshops were to be held. Workshop courses were started on Sunday, July 24, and met daily, except July 29, through August 4.

The consultants offer, in particular, their appreciation to Dr. Halim Grace and his staff for the superb support and services they provided. The arrangements were uniformly consistent and satisfactory.

II. BACKGROUND AND ITINERARY

At a meeting with Dr. Halim Grace and Mr. Sayed Ata of the Egyptian Ministry of Education on Monday, July 18 in Cairo, Dr. Grace presented a general outline for the first week of the workshop, and the consultants were asked to develop day-by-day activities for the workshop participants in accord with that outline. At subsequent meetings with Dr. Grace and Mr. Ata, and with Dr. Merrill M. Shutt, USAID/Cairo, Health and Population Officer, the outline of workshop activities were reviewed and plans made for transportation of the consultants to Alexandria where the workshops were to be held.

After arrival in Alexandria on July 21, meetings were again arranged with Dr. Grace and a visit was made to the facilities in which the workshop meetings were to be held. It had also been hoped that arrangements could be made for an early meeting with the Egyptian workshop staff in order to orient them to the program and to give them an experience of some of the proposed learning activities. This meeting with the Egyptian staff, however, could not be established until on Sunday and Monday afternoons.

Because the orientation sessions with the Egyptian staff were fragmentary, they were unable to participate as had been anticipated. The workshop, therefore, progressed with them

mainly serving as support staff and occasional translators, but they were not able to act as teacher/trainees in the interactive parts of the workshop as was originally planned.

The workshop started on Sunday, July 24. An outline of the two-week workshop as planned appears as Appendix A. Appendix B shows the worksheets developed to outline each days' activities. The activities indicated on the worksheets were followed Sunday through Wednesday, but on Thursday extra films were suggested by the Egyptian staff so that there was insufficient time to follow the complete worksheet. Instead, the participants divided into discussion groups and began to complete the survey developed by the Egyptian educators to establish the opinion of participants concerning the place of various facets of environmental and population education in the school curriculum. (See Appendix C). In all other respects the worksheets were followed as indicated. Appearing as Appendix D to this report is a listing of suggested resource materials for the planning and conduct of workshops dealing with population and environmental education. This listing of resources was developed as a part of the earlier planning assistance provided for the workshop reported herein.

III. RECOMMENDATIONS

1. The results of the questionnaire need to be reviewed by the Ministry of Education and should be shared with the USAID Mission.

2. Future workshops should have fewer and more tightly defined objectives, with a considerably lower participant to consultant ratio - approximately 10:1 seems reasonable.

3. The important need is for the training of teacher/trainers. This could best be done in a context of content areas for future workshops; such as teaching methodologies, and environmental and population concepts for the public schools.

4. At the level of the classroom teacher, a series of workshops will be needed on integrating concepts into the elementary school curriculum. The focus should be on designing the learning activities, field testing them, and documenting the activities, as they are developed, into teaching guides.

5. Another series of workshops for teachers would be on problem-solving teaching methodologies in the needed content areas. Workshops could deal with one or more of the following areas: Inquiry, Value Clarification, Stimulation, Role-Playing, and Field Study. The choice of methods should be based on the applicability of the method in Egypt as well as to its potential usefulness in stimulating the solution of problems.

WORKSHOP OUTLINE

Sun. July 24	Opening remarks by the Undersecretary for Alexandria, Mr. Fahmy Gabr, Assistant Director of the Family Planning Board, Dr. El Samaa, AID Representative Dr. M. Shutt Speech on Family Planning by Dr. El Samaa Introduction to the Workshop - Dr. Halim Grace Discussion Groups on Family Planning and the roles of the school in teaching about family planning.
Mon. July 25	Speech - Man and His Environment by Mr. Gamal El Din Ali Hakim Simulation game on food distribution Population content in the present curriculum by Dr. Grace and Dr. Adly Kamel Farag
Tues. July 26	Speech on family planning by Madame Zahia Marzouk Lecture on statistics by Mr. Basumy Skill development in Graphing Evaluation by Dr. Grace
Wed. July 27	Speech on Air Pollution by Dr. Kamel Nuer Environmental content in present science curriculum Mr. Saleh Afifi and Dr. Adly K. Farag Exercise on collection of data
Thurs. July 28	Speech on Population and Economic Development by Dr. M. Sobhi Abdel Hakim 3 films Discussion of and work on opinion survey
Sat. July 30	Preparation and data gathering for field study
Sun. July 31	Report from each group on field study results Division into structure group and workshop group. Structure group worked on revising a structure for Population Education for Egypt. Workshop group began with a discussion of workshop design and then, in small groups developed a list of needs of teachers if they were to teach Environmental & Population Education.
Mon. August 1	Speech on the field work experience of one person by Mr. Ibrahim El Minyawi Structure group continued work on structure Workshop group selected workshop objectives, divided into groups to plan a 30-45 minute teaching segment, and began planning

Tues. Aug. 2	Speech on the population situation in Alexandria by Ibrahim El Naggar Structure group completed work. Workshop group completed plans and began with 2 rounds of actual teaching experiences by the groups. There was time for library work available to groups
Wed. Aug. 3	Workshop group completed their 3rd round of teaching so that each group taught 2 other groups. Summary for workshop group during which a model for workshops was presented. Structure group had time for library work Visit and short speech from Minister of Education A representative team from the workshop group taught the structure group Structure group gave a report Summary by Dr. Grace Speech on Field Studies in Biology, Mr. Afifi
Thurs. Aug. 4	Summary of total workshop activities and assignment for the next year by Dr. Grace Closing remarks by consultants, 2 participant spokesmen and Mr. Afifi

AGENDA FOR EVENING RECREATION

Sunday 24	Meeting for the leaders
Monday 25	Meeting for the leaders
Tuesday 26	Visiting Teachers' Club
Wednesday 27	Visiting the Research Center for Population Studies
Thursday 28	Reception at 8:00 p.m. at the Teachers' Club
Friday 29	Visits tour - places of interest
Saturday 30	Visits to some ancient monuments
Sunday 31	Visits to some historical places (Islamic and recent)
Monday 1	Shopping
Tuesday 2	Invitation to some Egyptian families
Wednesday 3	Ending party

SUNDAY, JULY 24, 1977

TEACHING FAMILY PLANNING

DEFINITION: Family Planning is the deliberate effort on the part of a married couple to control their fertility through decision about the number of children to have and when to have them, as well as knowledge about making the decision effective.

ACTIVITY: Divide into groups of 5 participants with 5 of the small groups in each room or area.

Each small group selects a recorder and discusses: "What do you think the school system - elementary, prepratory and secondary - should do to help students understand Family Planning? What should be taught; when should it be taught; how should it be taught?"

One of the staff members collects reports from each large group (in a room or area) on newsprint.

The staff members post and briefly explain the large group reports. Summary.

SUGGESTION: Group discussion can be a good way to get a variety of opinion expressed. Ideally, each person's point of view is expressed and included in any group report, both agreements and differing opinions. In a short period of time such as 20 minutes there is little chance to come to a final conclusion if opinions are different, but all can be included. Beginning efforts can be made toward plans for the future.

Think about the value of this activity in terms of your ability to express your point of view and the interest it raised in you to explore the relation of teaching Family Planning. Do you think group discussion will be useful to you in your teaching. Would you like to learn more about it as a teaching method?

MONDAY, JULY 25, 1977

TEACHING FOOD CHAIN TECHNIQUES

DEFINITION:

Producer - green plants that get their energy from the sun

Consumer - organism that lives off another organism

Food Chain - transfer of energy by food from one organism to another

Prey - organism used by a predator for food

Pyramid of numbers - food required to support the next organism in the food chain.

Predator-Prey - food chain

ACTIVITY: Participants will be divided into (5) groups of 25 each. Each participant will be given a score sheet. Tooth picks will be distributed on the ground. The tooth picks will be colored (6) different colors: Green, Red, Brown, Black, Yellow and Blue. Each color tooth pick has a point value (check the score sheet). The objective of this game is to collect tooth picks to get the highest score. Notice the score sheet has two energy values: one for when the tooth picks are distributed on grass and one for sand or soil. There are also different survival values; be sure you use the correct one when you are calculating your score. When the signal is given start collecting tooth picks.

When you are told to stop collecting tooth picks, sort the tooth picks you have into different colors and

compute the energy values on your score sheet and total the energy values.

After all the energy values are totaled, we will discuss this activity.

The second part of this activity will be to show a systems technique using food systems as an example. The concept of pyramid of numbers will be used to explain different food chains.

Did you find these techniques helpful?

Could you use these techniques with your students?

SCORE SHEET

Prey Energy Values		Natural Selection Upon Toothpicks
Grass		Sand or Dirt
Color	Val. X found = E.V.	Energy Value
Green	3 X _____ = _____	1/2 X _____ = _____
Red	1 X _____ = _____	1 X _____ = _____
Brown	3 X _____ = _____	3 X _____ = _____
Black	3 X _____ = _____	2 X _____ = _____
Yellow	1/2 X _____ = _____	1/2 X _____ = _____
Blue	1 X _____ = _____	1 X _____ = _____
	Total E Values _____	Total E Values _____
Grass Habitat: EV Key 40 pts. = Optimum E. V. 35 pts. = Normal 30 pts. = Maintains life, Susceptible to disease 20 pts. or less-Starvation		Sand or dirt Habitat: EV Key 25 pts. = Optimum 20 pts. = Normal 15 pts. = Maintains life, Susceptible to disease 10 pts. or less-Starvation

TEACHING GRAPHING DEMOGRAPHIC AND ENVIRONMENTAL DATA

BACKGROUND: Demographic and environmental data is usually presented to students in numerical or tabular form. Numbers and tables are often difficult to understand and use.

One way to help students understand and use data is to present the data in a visual or graphic form. There are basically five kinds of graph forms:

1. line graph
2. bar graph
3. pie graph
4. figure graph
5. map/area graph

ACTIVITY: The activity leader will present the five kinds of graphs. The graphs will be made using demographic and environmental data. Strengths and weaknesses of each type of graph will be briefly discussed.

Participants will be given a small bit of data and be asked to sketch a graph of the data using one of the graph forms. Examples will be posted for discussion.

Participants will be given two sets of data to be compared and be asked to sketch a graph of this data.

Again, examples will be reviewed.

Last, participants will be given data that are recorded over time and be asked to sketch a graph of these data. Examples will be reviewed.

Questions about graphs:

1. When should students receive data in tabular form and when should they receive it in graph form?
2. Should students learn to make graphs? Why?
3. How should graphs be titled?
4. How can graphs be misleading?
5. Can graphs be used for lectures? for group discussion? for independent learning? How?

WEDNESDAY, JULY 27, 1977

OBSERVATION ACTIVITY

Observational skills are very important to the learning process. To be a good learner one must also be a good observer.

We will direct some observation activities to help you be a better observer.

The First Observation Activity

Each person will select a partner. The partners will stand facing each other. You will make as many visual observations as possible in 5 minutes. At the end of this time you or your partner will leave the room. You will be given a list of questions to answer about the observation you made about your partner. You will be given time to fill out the questions. How well did you do?

The Second Observation Activity

The entire group will be divided into three groups of about 30 people each. In the three groups the people will divide into teams of 3 each. Each team will be expected to make observations about people. First, the teams will design a strategy to decide what data they will collect, such as the number of people who pass a certain point over a certain period of time. After all the teams decide what data they are going to collect, they must decide where they are going to collect the data. For example, in the courtyard, on the street, on the campus. After these details have been worked out they will go to the data collecting site and collect data for 15 minutes. After they have collected

the data they will return to their original groups to discuss what they have done.

Did you have any problems?

How much data did you collect?

How could you use this technique in the classroom?

On our field study on Friday, think of all the ways each of these sites could be used for field study.

THURSDAY, JULY 28, 1977

GROUP DISCUSSION

PURPOSE: To practice group discussion and to move toward consensus regarding the subject under discussion.

ACTIVITY: 1. In each room, divide into groups of 5, select a recorder, and discuss: "What content in Environmental and Population Education needs to be taught in the school and when should it be taught.

2. Staff leader assemble a report in each room at 1:35.

3. Total group meets at 1:45 and staff leaders post and briefly explain to the large group the conclusions of their room.

SUGGESTION: We hope that the groups can be specific in their suggestions and, if possible, can reach agreement on their suggestions. If, for any reason, it has not been possible to reach agreement, note it in the summary. You may not be able to complete the assignment for all content and all classes. Go as far as you can. We are particularly interested in the content you think needs to be included. Your ideas will be background material for those who work to develop a structure and syllabus for Population Education.

SATURDAY, JULY 30, 1977

FIELD STUDY ACTIVITY

This is a one day environmental and population field study of three blocks in the Bab Sharki area of Alexandria.

Group A will study Block A

Group B will study Block B

Group C will study Block C

(See map).

Step I - Planning

A. In each team of three you will be given an assignment of what factors in the environment you will observe.

You must establish your goals (what, how, why, when, etc.)

B. Develop a team strategy, who will do what on our team.

C. Each team must then tell the other teams what they plan to do for their part of the study.

Step II - Conduct the field study - go to the block you are to study.

Step III - Analysis of data gathered - what conclusions can you draw from your data?

Step IV - Prepare a report on your data to present as a report.

Sunday each group will combine all the team data and give one report to the entire group. These three reports will give the information you have gathered about three blocks of Alexandria.

Field Study as a Teaching Technique

BACKGROUND: In the learning process one begins slowly and builds on fact, experiences and exposure to new ideas and places. If the learner does not have a chance to do as many things as possible the learning process may be slow and only consist of facts with no meaning. We can teach students about things and places in the classroom, but it is better after learning the facts about these things and places to go see them and do them for ourselves. We want students to be keen observers and then to be able to make some generalizations about their observations. Unlike facts, concepts and ideas are vague at first and develop gradually over time and with experience.

Field study is a midway point to gaining knowledge. It is a way to collect data in a systematic way about a specific site or location. An example of where field study fits into learning is as follows:

Background information (facts) → Observation (Collecting data) → Field Study (Collecting data with a purpose)
↓
Research (asking questions, collecting data, answering questions or developing new questions)

Field study activities may be centered around one subject matter area such as biology or social science or it may combine several disciplines such as biology, general science, geography, economics, history and others.

The field study in environmental education should take both science and social science into its study, because man is such a dominant creature on the earth today. Everything many does effects the environment. Most environmental decisions made today are made to favor man. These environmental decisions might be made for economic, political or societal reasons, but very rarely for environmental reasons.

Steps in Field Study Preparation

1. Selection of a site:
   a. ecosystem (or bione) (biological)
   b. urban, suburban, rural (social or political)
   c. museum, library, university (cultural)
   d. capitol, national officers, local government (political)
   e. port, train staions, farm, shops (eoncomic)
2. Decide what data will be collected:
   a. specimens (biological)
   b. physical (geography and science)
   c. survey (social, cultural, political, economic)
3. Decide how the data is to be organized for later use:
   a. graph form

b. to answer questions

c. tabulate

d. report

4. Prepare a list of questions you will ask as you collect data.

   a. How is this data related to other observations made?

   b. Are there any other pieces of data to be collected that I did think about before I made some observations?

   c. Are there other studies I could make at this site if I had - (1) more time, (2) a different type of field study, (3) the next time I come, (4) if I had more information about it.

5. Decide the roles of each field study team who will:

   a. collect data

   b. record data

   c. be in charge

   d. produce the report

   e. compute any calculations

   f. conduct survey

6. Conduct field study.

7. Present data and prepare report.

Three groups of 30 people. Each group will divide into 10 teams of 3 each. Each large group will have as its site for field study a block located close to the University.

JULY 31 - AUGUST 3, 1977

WORK SHEET FOR GROUP

PREPARATION TO CONDUCT A WORKSHOP

PURPOSE: To design and practice teaching a short workshop for teachers to help them teach Environmental and Population Education in their classroom.

ACTIVITIES: The activities for the 4 days July 31 - August 3 will focus on designing a short workshop for teachers and on practicing teaching segments that are planned. The activities are sequential, but are difficult to predict in terms of the time each will take. Instead, in the time devoted to our activities we will follow a sequence using group discussion, reports, decision making methods and practice.

1. Make a list of things teachers need to learn or believe in order to teach environmental and population education.
2. Determine which are most needed and can be taught in a 1 or 2 day workshop.
3. Set objectives for a short workshop.
4. Select teaching methods that would be effective in meeting the objectives set in "3".
5. Develop a teaching experience to match the method selected.
6. Practice teaching small groups of participants from among others also developing workshop plans.

Following this sequence, on August 3 and 4 we will practice teaching a small group of participants who have been working on a structure for population in Egypt.

The activity sequence indicated above will not occupy all the time on the 4 days, but will fill the time that is not devoted to a lecture or other type of learning experience.

SUGGESTIONS: The intent of this activity is to prepare you to offer a workshop to teachers on environmental and population education. It is also intended to help you learn the process of planning and conducting workshops so you could use the method to plan other workshops. Use the time as best you can to learn the process as well as how to do a particular workshop.

WEDNESDAY, AUGUST 3, 1977

WORKSHOP MODEL

8:30 - 900	Registration
9:00 - 10:00	Introduction
10:00 - 10:30	Outline and objectives of workshop
10:30 - 11:30	Speaker
11:30 - 12:00	Break
12:00 - 1:00	Organization and activity
1:00 - 1:30	Discussion and activity
1:30 - 2:00	Evaluation and closing

EVALUATION BY PARTICIPANTS

Each workshop participant was given the opportunity to evaluate the workshop by reacting to the following open ended questionnaire.

1. Workshop lectures.

   Sufficient ____ Fair ____ Not sufficient ____

   And if not, how many more? _____

2. Workshop subject matter areas were listed and participants were asked to react to each.

   Benefit ____ Some benefit ____ No benefit ____

   If none, why? _____

3. Field work.

   Sufficient ____ Fair ____ Not sufficient ____

   If not, why? _____

4. American Consultants.

   Sufficient ____ Fair ____ Not sufficient ____

   If not, why not? _____

5. What interest do you have now regarding field work?

6. What use was the "library" set up for participants?

7. Were the publications provided each participant useful?

8. List trends in education that have been found useful.

9. Training was of little value in the following:

10. What will you do when you get back to your work?

Plan teacher training? _____ _____

Plan curriculum? _____

Design new activities? _____

All of the above? _____

11. What was generally most interesting about the workshop?

12. What was least interesting?

13. What should future workshops be concerned with?

14. Was the workshop duration sufficient?

15. Other suggestions.

A RESOURCE LIST
FOR
ENVIRONMENT AND POPULATION
EDUCATION

Marian Smallegan, Ed.D.
Betty Cleaver, Ph.D.

May, 1977

CURRICULUM: Conceptual Frameworks, Study Guides, and Activities

A CONCEPTUAL SCHEME FOR POPULATION-ENVIRONMENT EDUCATION, by Robert Stegner and Val Arnsdorf. Population Curriculum Study, College of Education, University of Delaware, Newark, Delaware 19711. 1973.

This conceptual scheme is based on the theme, "Man is part of a natural system, the earth, and is ultimately subject to the limits of the system." Seven concepts are identified. The expanded scheme is an outline of sub-concepts to be developed, differing in complexity for each of three grade levels (K-4, 5-8, and 9-12).

ENVIRONMENT AND POPULATION: A SOURCEBOOK FOR TEACHERS, by Kathryn Horsley, et al. National Education Association, 1201 Sixteenth Street N.W., Washington, DC 20036. 1972. $3.75.

This sourcebook includes background information, classroom activities, and lists of some audiovisual and reference materials. Appropriate population concepts are identified for both junior and senior high school grade levels.

ENVIRONMENTAL DISCOVERY UNITS. The National Wildlife Federation, Educational Servicing, 1412 16th Street N.W., Washington, DC 20036.

Activities for classroom use, appropriate to particular subjects and grade levels. Units include:

Order No.	Title	Grade Level	Price
79007	Plants in the Classroom	3-6	$1.50
79016	Vacant Lot Studies	5-9	1.50
79025	Differences in Living Things	4-8	1.00
79034	Shadows	1-8	1.00
79043	Wind	3-6	1.50
79061	Man's Habitat--The City	4-9	1.50
79070	Fish and Water Temperature	4-9	1.50
79105	Nature Hunt	Spec. Ed. K-1	1.00
79098	Sampling Button Populations	3-9	1.00
79114	The Rise and Fall of a Yeast Community	6-9	1.00

ENVIRONMENTAL EDUCATION: A SOURCEBOOK, by Cornelius J. Troost and Harold Altman. 1972. John Wiley and Sons, 605 Third Avenue, New York, NY 10016. $14.95.

This gives extensive background information for teachers, includes reading lists, and has a section devoted to lesson plans for use in the secondary school.

ENVIRONMENTAL EDUCATION: K-3 ACTIVITIES. Department of Public Instruction, Division of Science Education, Raleigh, NC 27611. $2.00.

This book of activities teaches concepts of environment to primary children.

ENVIRONMENTAL EDUCATION INSTRUCTIONAL UNITS: POPULATION; POLLUTION; NATURAL RESOURCES/Gr. 7-12. Department of Public Instruction, Division of Science Education, Raleigh, NC 27611. $1.25.

These units may be used in the science curriculum for the class or for small group instruction.

ENVIRONMENTAL EDUCATION: PROBLEMS, PROJECTS, AND EXERCISES/Gr. 4-10. Department of Public Instruction, Division of Science Education, Raleigh, NC 27611. $1.00.

FAMILY PLANNING/HOME ECONOMICS. American Home Economics Association, 2010 Massachusetts Avenue N.W., Washington, DC 20036. Order No. SM-12/72M. $3.00.

Materials representing Nigeria, Tanzania, Sierra Leone, and other countries are included in this packet which suggests a variety of ways to train field workers.

FAMILY PLANNING IN HOME ECONOMICS. American Home Economics Association, 2010 Massachusetts Avenue N.W., Washington, DC 20036. Order No. 3M-7/74 GM.

This packet gives instructions for workshop activities and includes sample games and workshop plans.

AN INTRODUCTION TO POPULATION, ENVIRONMENT, AND SOCIETY, by Lawrence Schaefer. E-P Education Services, 625 Orange Street, No. 38, New Haven, Connecticut 06511. 1972. $4.50.

A three to five week unit in high school social studies is provided in this resource manual for teachers. An appendix includes: discussion questions; glossary; bibliography; film list; reprints of newspaper and journal articles, census forms and other official documents.

NSTA ENERGY-ENVIRONMENT MATERIALS. National Science Teachers Association, 1742 Connecticut Avenue N.W., Washington, DC 20009. $9.00.

This includes a source book, a listing of instructional materials and a mini-unit.

OPTIONS: A STUDY GUIDE TO POPULATION AND THE AMERICAN FUTURE, by Kathryn Horsley et al. Population Reference Bureau, Inc., 1754 N Street N.W., Washington, DC 20036. 1973. $.50.

This study guide may be used with the U.S. Commission's written report or filmed version of POPULATION AND THE AMERICAN FUTURE, or it may be used independently. Learning objectives, class activities, and background information are presented.

PEOPLE AND POPULATION: A PROFESSIONAL DEVELOPMENT MODULE. Module 4. East-West Communication Institute, East-West Center, Honolulu, Hawaii, USA.

This module was developed to help workshop leaders be better prepared to answer questions and provide their audiences with information about population.

PEOPLE AND THEIR ENVIRONMENT: TEACHERS' GUIDE TO CONSERVATION EDUCATION, ed. by Matthew J. Brennan. J.G. Ferguson Publishing Co., 6 North Michigan Avenue, Chicago, IL 60602. $27.50 plus postage.

There are eight curriculum guides in this series which deal with the interdependence of living things. It includes: Guide for Gr. 1, 2, 3; Guide for Gr. 4, 5, 6; Science Guide/7, 8, 9; Social Studies Guide/7, 8, 9; Social Studies Guide/10-12; Home Economics/9-12; Biology; and, Outdoor Laboratory/Gr. 1-12.

POPULATION EDUCATION TEACHER'S KIT. Zero Population Growth, 1346 Connecticut Avenue N.W., Washington, DC 20036. $2.00; also POPULATION LEADER'S KIT, $3.00.

The Leader's Kit includes suggestions for organizing workshops and the Teacher's Kit includes activities, games, and a bibliography.

POPULATION, RESOURCES, ENVIRONMENT: ISSUES IN HUMAN ECOLOGY. 2nd ed. W.H. Freeman & Company, 660 Market Street, San Francisco, CA 94104. $9.50.

Although this was intended as a textbook for a problems course in environment and population, this book is an excellent resource for the teacher or workshop leader.

A SOURCEBOOK FOR POPULATION-ENVIRONMENT STUDIES, by Robert Stegner and Val Arnsdorf. Population Curriculum Study, University of Delaware, Newark, Delaware 19711. 1973.

The authors of A CONCEPTUAL SCHEME. . . wrote this sourcebook to help teachers select appropriate materials for population studies. The book contains annotated bibliographies of books, films, and periodicals.

A STRUCTURE FOR POPULATION EDUCATION, by Mary Turner Lane and Ralph E. Wileman. Carolina Population Center, University Square, Chapel Hill, NC 27514. 1974. $4.00.

The elements of this structure or framework are goals, generalizations, and behavioral objectives for teaching population concepts. An annotated list of instructional materials is included in the appendix.

TEACHING ABOUT FOOD AND HUNGER: 33 ACTIVITIES/Gr. 5-12. Center for Teaching International Relations, Graduate School of International Studies, University of Denver, Denver, CO 80208. $5.95 plus postage.

Another list of activities for the teacher to use in the classroom.

INSTRUCTIONAL MATERIALS

General Guides

THE ENVIRONMENT FILM REVIEW. 1972. The Environment Information Center, Inc., Film Reference Department, 124 East Thirty-ninth Street, New York, NY 10016. $20.00.

There are 627 films described and reviewed. They are organized under 21 categories, all relating to environmental concepts.

POPULATION EDUCATION: SOURCES AND RESOURCES, edited by Judith Seltzer and JoAnn Robinson. Population Reference Bureau, Inc., 1754 N Street, N.W., Washington, DC 20036. 1975. One copy free to educators.

This booklet lists the major agencies related to population and describes their services and their publications. Also included are lists of audiovisual and printed instructional materials, with publisher's address and price.

POPULATION EDUCATION RESOURCES. Zero Population Growth, 1346 Connecticut Avenue, N.W., Washington, DC 20036. 1973. Donation or free.

This folder contains seven lists of resource materials and information sources. They are: Audiovisual Materials; Birth Control; Population Bibliography; Population Careers; Population-Related Organizations; Resources for Elementary Teachers; and Secondary School Resources.

AUDIOVISUAL MATERIALS

THE ECOLOGICAL CRISIS. (filmstrip) 6 filmstrips with records or audiotape cassettes. Approximately 55 frames each. Color. Teacher's Guide. Singer/Society for Visual Education, Inc., 1345 Diversey Parkway, Chicago, IL 60614, with records, $69.00, with cassettes, $72.00. Junior-Senior High. Includes: Population Statistics; Population Trends; Some Ecological Considerations; Evolution and Extinction; Pesticides; Pollution.

The first two filmstrips, "Population Statistics" and "Population Trends", combine drawings, graphs and photographs to explain the doubling rate, suggesting that eventually man's reproduction may exceed the sustaining capacity of the earth. "Some Ecological Considerations" explains ecosystems and the food chain, and shows the population explosion in certain animal species. "Evolution and Extinction", "Pesticides" and "Pollution" point out the problems man must face. The question of personal responsibility is raised. "How much garbage accumulates in your house in one day?" "What has your community done about pollution?"

ECOLOGY: UNDERSTANDING THE CRISIS. (filmstrip) 6 filmstrips with audiotape cassettes. Approximately 80 frames each. Color. Teacher's Guide. 1972. Encyclopaedia Britannica Educational Corporation, 425 N. Michigan Avenue, Chicago, IL 60611. Approximately $80.00 for the set. Junior High-Adult. Includes: Environments and Ecosystems; Man in Ecosystems; Human Communities Simple and Complex; Creating Imbalances; Destroying the Future; Creating the Future.

These filmstrips are designed to be used sequentially, with each building on concepts and understandings previously established. "Environments and Ecosystems" defines ecological processes and terms, showing how a natural community functions. "Man in Ecosystems" introduces man's effect on the natural community. "Human Communities Simple and Complex" contrasts the demands on the environment of villages in Africa and South America with those of industrial cities in California. "Creating Imbalances" points out that some primitive societies are as destructive of their environment as are more advanced ones--showing scenes from a Guatemalan village and an Arizona mining town. "Destroying the Future" points to areas in the Great Smokies that have been devastated by logging practices. "Creating the Future" suggests some alternatives man will have to choose to survive. The student who works through these should gain understandings of the interrelationship of population, environment, and industrialization around the world.

ECOLOGY ACTIVITY CARDS. BFA Educational Media, 2211 Michigan Avenue, Santa Monica, CA 90404. Series 1, No. T01001. $9.00. Gr. 5-8

This is a collection of 50 cards with a different activity on each card. Instructions to the student are detailed enough for him to work independently.

ECOLOGY AND ENVIRONMENTAL STUDIES. (motion picture) Silent Super 8mm filmloop. Color. 4 min. each. 1971. Singer/Society for Visual Education, Inc., 1345 Deversey Parkway, Chicago, IL 60614. $22.95 each. Intermediate-Adult. Includes: Biosphere; Ecosystems and Ecology; Ecosystem Processes; Physical Environment; Biomes; Man in Biosphere; Man and Living Things; Man, Technology and Pollution; Population.

Each filmloop demonstrates a single concept in the ecological process. There is a study guide for each film, with a verbal summary of the film and review questions and answers. Although each of these filmloops can be used independently, they form a sequence of instruction when used together. Because they are silent, they are especially suitable for use in an inquiry situation. They provide a cross-discipline approach from grade 4 on. For the young learner they serve as an introduction to ecological concepts, while they may clarify or illuminate concepts the older student has already studied.

INTERACTION OF MAN AND HIS ENVIRONMENT. (study prints) Rand McNally and Company, School Department, Post Office Box 7600, Chicago, IL 60680. Gr. 5-8. Order No. 92-2082. $27.00.

There are 24 study prints, 18" x 24", in this kit. On the reverse side of the large picture, guidelines are printed--the basic generalizations, inquiry questions, and teaching suggestions. The pictures deal with the interaction of man and his environment--near water, at different elevations, in extreme climates, and with environmental change.

NO ROOM FOR WILDERNESS. (16mm film, color, 26 min.) Macmillan Films, Inc., 34 MacQuesten Parkway South, Mt. Vernon, NY 10550. Gr. 9-Adult. $315.00.

Man's impact on wilderness is dramatically emphasized, starting 250 years ago with the decline of the South African wilderness.

POPULATION INQUIRIES. (Kit) Population Education Project, Indiana University, School of Education, Bloomington, Indiana 47401. Gr. 8-12. $45.00.

This kit includes games, activities, posters, and 3 filmstrips. It presents information about population and is a self-contained six-week course on population problems.

THE SCIENCE AND ETHICS OF POPULATION CONTROL: AN OVERBURDENED EARTH. (slides) Science and Mankind, Inc., White Plains, NY 10603. #1003. Gr. 9-Adult. $99.95.

This package includes two carousel slide trays and 2 records. Part 1 is concerned with the individual and his values while Part 2 expands the discussion to concerns of the whole world.

TOMORROW'S CHILDREN. (16mm film, color, 15 min.) Perennial Education, 1825 Willow Road, Northfield, IL 60093. 1968. Gr. 7-Adult. $225.00.

This film shows the damage man has done to his earth by failing to observe the laws of nature, and it suggests alternatives for the future.

TOMORROW'S WORLD: FEEDING THE BILLIONS. (16mm film, color, 54 min.) Contemporary Films/McGraw Hill, 330 West 42nd Street, New York, NY 10036. 1968. Gr. 10-12. $600.00.

This film presents the effects of population growth on world food supplies and focuses on the ways man is trying to farm the seas and desert areas.

THE TOTAL ENVIRONMENT. (multi-media kit) Steck-Vaughn. 3-color filmstrip with records or audiotape cassettes, 8 black/white photographs, student workbook and Teacher's Guide. 1972. Steck-Vaughn, P.O. Box 2028, Austin, TX 78767. Gr. 4-6. $48.50.

These filmstrips emphasize the two-way relationship of the individual to his environment. The ABC's of environment are Abiotic, or nonliving things, Biotic or living organisms, and Cultural or man-created things. The workbook contains lesson activities grouped under four learning experiences: What is an environment?; How do I know about my environment?; What are the parts of my environment?; and, How do the parts of my environment interact? An interesting feature of the program is that two separate audiotapes accompany the filmstrip, Using the ABC's of the Total Environment; one is for students and one for the teacher.

READINGS

Guides and Models

SOURCEBOOK ON POPULATION EDUCATION, 1970-1976, ed. by Tine Bussink, Jean van der Tak, and Connie S. Zuga. 1977. Population Reference Bureau, P.O. Box 35012, Washington, DC 20013. $3.50.

This sourcebook lists citations or references in more than 1,000 publications, with brief annotations.

"XCAM: A MODEL FOR THE CROSS-CULTURAL ADAPTATION OF LEARNING MATERIALS," by Marilyn L. del Rosaria. Initiatives in Population, Vol. 1, No. 2 (December 1975), pp. 34-39.

This article describes the model developed by Dr. Jacquelin Blondin to help identify cultural values contained in the text or in the visual components of learning materials, with the objective of then modifying those components which are in conflict with the cultural values of the intended audience.

Background Information

THE CLOSING CIRCLE: NATURE, MAN AND TECHNOLOGY, by Barry Commoner. 1971. Alfred A. Knopf, Inc., 201 East 50th Street, New York, NY 10022. $6.95.

A discussion of the environmental crisis which has been caused by man's misuse of technology.

HUMAN POPULATION, A SCIENTIFIC AMERICAN BOOK. 1974. W.H. Freeman & Co., 660 Market Street, San Francisco, CA 94104. $3.75.

This is a reprint of the September 1974 issue of Scientific American. Outstanding authorities contributed articles dealing with many facets of population.

THE LIMITS TO GROWTH, by Donella H. Meadows, et al, 1972. Universe Books, 381 Park Avenue South, New York, NY 10016. $2.75.

This is the report of an internationally known group of scholars who collected data on resources, population, technology, and agricultural production. They fed the data into a computer and asked for predictions concerning man's future on the earth.

POPULATION: A CLASH OF PROPHETS, ed. by Edward Pohlman. 1973. New American Library, 1301 Avenue of the Americas, New York, NY 10009. $1.95.

These readings offer diverse opinions on the impact of population growth on the potentials of the developing countries and developed countries. The "prophets" represented include Garrett Hardin, Karl Marx, Thomas Malthus, and Robert McNamara.

ADDITIONAL MATERIALS INCLUDING SOME FROM NON-U.S. SOURCES

1. "Course Guides in Population Education and Health", "Course Guides in Population Education and Science", "Course Guides in Population Education and Social Studies", "Course Guides in Population Education and Home Economics", and "Resource Units in Population Education (Family Planning)", J. Zamora Elementary School, Manila.

   Learning experiences are planned for different grade levels.

2. Curriculum Materials: "Population Education and World History", High School Level, "Population Education and Social Studies" and "Population Education Health and Science" for 4th Grade Level. Philippine Wesleyan College, Cabanatuan City, Philippines.

3. POPULATION GROWTH IN THAILAND, by National Economic Development Board, 1970. Clear and colorful graphics for displaying the magnitude of population change.

4. Population Education Program, Department of Education and Culture, Manila, Philippines. (Much curriculum change has been developed by this group.)

5. Regional Workshop on Population and Family Education, Final Report - UNESCO Regional Office for Education in Asia, Bangkok, 1971.

6. Interchange - Population Reference Bureau, 1337 Conn. Ave., N.W., Washington, D. C. 20036.
   (A small, regular publication giving many ideas.)

7. Materials from the Baltimore Schools - Urban Life/Population Education Institute, 2418 St. Pauls St., Baltimore, Md. 21218
   (They have been active in Population Education for some years.)

8. Food for Thought - Population Reference Bureau, 1337 Conn. Ave., N.W., Washington, D. C. 20036 $3.
   (A game that can be used to convey such concepts as 2 vs. 3 child family; exponential growth; or distribution of people, food & land.)

9. Teaching about Population - UNFPA.
   (A summary of lesson plans.)

10. New Field worker Training Materials - International Family Planning Project of the American Home Economics Association, 2010 Mass. Ave., N.W., Washington, D. C. 20036
    (Basic & experientially oriented learning experiences.)

11. Population Education Resources Kit.

12. Population Education Leader's Kit: Recipe for a small workshop. Both 11 & 12 are from Zero Population Growth, 1346 Conn. Ave., N.W., Washington, D. C. 20036. The first is for teachers (and is renamed from "Population Education Resources" listed on p. 4). The other is for leaders of workshops.

13. Poste Your Umbrella before the Rain, Taiwan Provincial Institute for Family Planning, P. O. Box 1020, Taichung 400, Republic of China. (Background material for High School students.)

14. World Neighbors based in Oklahoma may have some things as they develop practical and basic ideas.

15. Hunger: The World Food Crisis, (plus another book about to come out on Population) - by Kathryn Mervine Fowler, The National Science Teachers Association, 1742 Conn. Ave., N.W., Washington, D. C. 20009 (Annotated bibliographies for teachers and students. Also films and audio-visual aids.)