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ABSTRACT

This unit, designed for upper elementary school students, examines the role of the individual in society in determining the status of the environment. Viewing the earth as an ecosystem, it looks at past and present human events that have influenced the quality of the environment and attempts to provide students with an awareness of the knowledge necessary to plan for the future. Seven general ecological concepts are presented for use with the total group. There is an additional group of concepts that are suggested for individual projects with such topics as: major forms of government, farming methods, educational changes, and city planning to increase understanding of how these factors influence human life and the environment. The unit includes the behavioral objectives and the expected student criteria for evaluation, pretests and posttests, suggested methodologies for teaching each concept, suggested student data sheets, and a bibliography of both teacher and student resources. (MLB)

ENVIRONMENTAL ECOLOGICAL EDUCATION PROJECT

Parkway School District
Chesterfield, Missouri

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Unit: Planning For The Future on Spaceship Earth

Revised: June 1972

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SETTING

This unit on planning for life in the future is one which is intended to allow for creativity on the part of the students and teacher. It is primarily geared to students on the sixth grade level, but could be adapted for lower intermediate levels.

IT IS HIGHLY RECOMMENDED THAT YOU CAREFULLY FOLLOW THE DIRECTIONS WHICH ARE STARRED IN THE BACKGROUND INFORMATION.

The first six concepts are intended to be learned by the entire class as a group. Subsequent concepts (VII through XIII) are meant to be studied (and their related behavioral objectives accomplished) only by those students who choose a particular area for their investigation. The final concept--XIV--is a total class undertaking which ties together the students' individual projects with the theme of career opportunities of the future.

The pre-post test which is to be used with the entire class is on pages 6-9 of this manual; notice that the test covers concepts I, II, III, IV, V, VI, and XIV.

Tests for the other concepts, VII through XIII, are included on separate pages, their questions being determined by the topics. For example, the test on concepts relating to government (VII and VIII) is to be given only to the group of children selecting government for study. The related behavioral objectives (9, 10, and 11) are to be given only as a post-test to that same group. The same pattern is to be followed for all other groups.

INSTRUCTIONS FOR MULTI-MEDIA SHOW

For concepts VII to XIV, the suggested activities may be enriched through a multi-media show. After describing such a show to the class, or developing a demonstration with the assistance of an art consultant, perhaps only the children in one group, e.g., poverty, will choose to do this activity. Or it is possible that one or two children from various groups may work together to plan a show including each of their concepts.

Here is a description of the multi-media show, a futuristic, artistic method of communication. Basically it is what its name implies. A sample show on pollution might be as follows:

a. A row of AV equipment is set up, including an opaque projector, overhead projector, tape recorder, slide projector, and/or film projector.
b. The basic written material and drawings are done on a roll of paper which is run across the opaque projector.
c. Colored transparencies, pop art transparencies, or slides can be shown on the same screen. If another picture was on the transparency, several images will be seen at once.
d. Narration and background music are previously recorded and played.

CONCEPTS

I. The future is that span of time that has not yet come.

II. The earth is an ecological system (eco-system).

III. We can and must plan for the future to fulfill increasing needs for goods and services.

IV. It is necessary for each individual to practice conservation today in order to save and improve the future.

V. An understanding of past and present events and technological knowledge is necessary to plan for the future.

VI. Basic needs of the present are closely related to the needs of the past and future.

THE FOLLOWING CONCEPTS WILL BE DEVELOPED AS INDIVIDUAL CHILDREN OR SMALL GROUPS COMPLETE THE PARTICULAR CULMINATING ACTIVITIES.

VII. Some of the major forms of government are democracy, dictatorship, communism, and monarchy.

VIII. There are different points of view regarding the possibility and necessity of international government.

IX. Poverty exists in our community, state, and nation as well as throughout the world.

X. Concerned individuals, working through many avenues of skills, interests, and professions, will help to lessen the causes of poverty.

XI. Future city planning must consider many areas, among them architecture, communication, transportation, shopping centers, social services, etc.

XII. Farming methods of the future will undergo many changes because of increased demands.

XIII. Educational changes will occur according to the needs of a changing society and scientific developments.

THE FOLLOWING CONCEPT MUST BE STUDIED BY THE ENTIRE GROUP.

XIV. Youth of the future will have to be aware of changing career opportunities and of the many unknown challenges that lie ahead.

BEHAVIORAL OBJECTIVES

Upon completion of the unit, "Planning for the Future on Spaceship Earth"...

Concept Number		
I.	1.	Ninety percent of the class will be able to write a definition of the "future" in a paragraph of not more than twenty-five words.
II.	2.	Sixty percent of the students will be able to select the four characteristics of an eco-system, from a given list.
II.	3.	Sixty percent of the students will be able to list in writing one abiotic factor and one biotic factor and explain what effect each would have on an eco-system.
III.	4.	Seventy-five percent of the class will be able to list in writing one advantage and one disadvantage regarding the possibility and necessity of planning for the future, in terms of the increasing need for goods and services.
IV.	5.	All students will show an awareness of the need to personally practice conservation by becoming actively involved, through self-motivation, in one school conservation activity; e.g., collecting aluminum cans or newspapers for recycling.
IV.	6.	Each student will be able to write, in a paragraph of twenty-five words or less, at least one reason why it is necessary for him to participate in an activity relating to conservation practices which will save and improve the future.
V.	7.	a. Each student will list one invention from each of these fields: transportation, communication, or industrial machinery. b. Having selected one invention, each student will give in writing three characteristics of the invention in its early stage, three of a later stage, and three characteristics of a future stage.
VI.	8.	Each student will show an awareness of the similarity between the needs of people living in the past, present, and future by selecting from a given list five human needs which are timeless.

The following behavioral objectives will be achieved as the children complete the particular culminating activity they have chosen.

A. Government:

VII. 9. Seventy percent of the students will be able to list in writing four types of governments and be able to define each in one sentence.

10. Each student will be able to draw one bar, line, or pictograph comparing the populations of any two countries under different types of governments.

VIII. 11. Eighty percent of the students will be able to write a paragraph of not more than 50 words telling why he thinks there will not be an international government in the future.

B. Poverty:

IX. 12. Each student will be able to list in writing one example of poverty in his community, his state, and his nation.

X. 13. Seventy-five percent of the students will be able to list in writing four jobs which are concerned with helping people overcome their poverty.

14. Upon completion of this activity, the group will set up a display on poverty illustrating and labeling the problems of the poor and the methods and personnel needed to lessen their condition.

C. Pollution:

IV. 15. Upon completion of this activity, the group will set up a written and pictorial display on pollution problems and various possible colutions.

16. Each child will write a letter to one person of his choice (Politician, business leader, school, local, or city newspaper editor, etc.) dealing with the topic of pollution.

17. The group that has studied pollution will plan and direct behavioral objective #5:

(All students will show an awareness of the need to personally practice conservation by becoming involved through self-motivation in one school conservation activity; e.g. collecting coat hangers or newspapers for recycling.)

D. Wise City Planning:

XI. 18. Architecture: Each child in this group will find, with teacher guidance, an article on building materials or new designs in architecture. After reading it, he will write a summary of not more than 50 words, including any relevant pictures or drawings.

XI. 19. Communication: Each child in this group will survey the school site to determine forms of communication in and around the school, and will record his findings in written and/or illustrated form, naming at least six forms of communication.

20. Transportation: Upon completion of this activity, each child will list in writing two advantages and two disadvantages of a rapid transit system.

21. Each child will write a paragraph of not more than 25 words citing at least two reasons why development of rapid transit may be slow to achieve on a large-scale basis.

22. Shopping Centers: This group of students, working together, will be able to summarize its findings and write one letter to the individual stores or shopping centers the group has investigated, listing any commendations and/or recommendations.

23. Social Services: Each student in this group will be able to define "social services" in a paragraph of twenty-five words or less.

24. Each child will select one social service center and describe its assistance programs in a paragraph of at least 25 words. In a second paragraph he will list two advancements that will have to be made for this center to meet the needs of the future.

E. Farming Food Production:

XII. 25. Each student in this group will list in writing four changes in farming methods that will be necessary in the future due to increased demands.

F. Education--"Classroom of the Future":

XIII. 26. Each student will describe orally to the class what the "classroom of the future" will be like, based on scientific and technological developments, and then summarize his report in writing.

27. Each student in this group will be able to list in writing two advantages and two disadvantages of a twelve-month school year; or will be able to give two opinions pro and con on the issue of whether all children should receive the same amount or type of education.

28. Each student will report to the class what subject(s) , if any, he feels should be added to or omitted from the curriculum, and support his opinion with valid reasons. He will then be able to summarize his report in writing.

G. Youth in the Future (The following objective must be met by the entire class).

29. Upon completion of this unit, each student will be able to list one vocation of the future, and in a paragraph of not more than 25 words, tell why it will be necessary in the future.

PRE-POST TEST

BEHAVIORAL OBJECTIVE NUMBER

1. 1. Write your definition of the "future" in 25 words or less in the space below.

_____

_____

_____

_____

2. 2. From the following list, select the four characteristics of an eco-system. Indicate your choices by circling the letter in front of each correct answer.

a. living things.
b. a closed system
c. non-living things
d. The influence of living things on each other
e. "green house" effect
f. influence of non-living things on living things

3. 3. List one abiotic and one biotic factor of an eco-system. Explain in one sentence how the abiotic factor affects an eco-system, and explain in another sentence how the biotic factor affects an eco-system.

a. Abiotic

_____

_____

_____

b. Biotic

_____

_____

_____

4. 4. List one advantage and one disadvantage regarding the <u>possibility</u> of planning for the future, in terms of the increasing need for goods and services.

a. advantage _____

_____

BFHAVIORAL
OBJECTIVE
NUMBER

b. disadvantage _____

_____

List one advantage and one disadvantage regarding the necessity for planning for the future, in terms of the increasing need for goods and services.

a. advantage _____

_____

b. disadvantage _____

_____

5. 5. Those of you who have participated in a school conservation project are to write in a paragraph of not less than 25 words an explanation of how and why you became involved. If you have not been involved in a conservation project, do not answer this question.

_____

_____

_____

_____

_____

_____

_____

_____

6. 6. Write a paragraph of 25 words or less, giving at least one reason why it is necessary for you to participate in an activity relating to conservation practices (e.g., collecting returnable bottles and newspapers, using natural resources wisely, etc.) which will save and improve the future.

_____

_____

_____

_____

_____

_____

BEHAVIORAL
OBJECTIVE
NUMBER

7. 7. List at least three technological inventions, one each from the fields of transportation, communication, and industrial machinery.

a. _____

b. _____

c. _____

Select one of these inventions and give three of its characteristics in the past, three of its characteristics in the present, and three of its possible characteristics in the future.

Past characteristics

a.

b.

c.

Present characteristics

a.

b.

c.

Possible future characteristics

a.

b.

c.

8. 8. From the following list select five items which have been, are, and will be <u>necessary</u> for human existence. Indicate your selections by circling the letter before each correct answer.

a. food	d. shelter	g. television
b. cars	e. clothing	h. radio
c. pencils	f. air	i. water

BEHAVIORAL OBJECTIVE NUMBER

29. 9. List one vocation of the future.

_____

In a paragraph of not more than 25 words, tell why this job will be necessary in the future.

_____

_____

_____

_____

_____

PRE-POST TEST ANSWER KEY

Note: All answers except two and eight can vary. These are possible examples.

1. The future is that period of time that is one minute, one hour, one day, or one year or an indefinite time.

2. a, c, d, f

3. Abiotic - rain - Rain provides moisture for growth, water for human consumption and cleanses the air.

   Biotic - trees - Trees use carbon dioxide and provide oxygen.

4. Advantage - We can plan for the future because experiences of the past give us an idea of possible needs.

   Disadvantage - We can not plan for the future because the future is uncertain.

   Advantage - We must plan for the future or our natural resources may be depleted dangerously.

   Disadvantage - We have no reason to plan for the future because pollution is to far advanced to ever recover.

5. Answers will vary according to types of experiences. Some may have been in Scout programs, church centered activities or school activities.

6. They should include in their paragraph some conservation practices such as paper recycling, the wise use of natural resources, and any other items you as a teacher feel would be acceptable.

7. a. Plane
   b. Phone
   c. Tractors

   Past Characteristics of Phone
   a. Hung on the wall
   b. Must be cranked to use
   c. Had to have an operator for each call

   Present characteristics
   a. Colors
   b. Dial or punch number system
   c. Direct dialing

   Future
   a. Picture phones
   b. Continued improvement of cross country communication
   c. Use of phones as terminals to help teach elementary mathematics

8. a., b., e., f. i.

9. This answer will vary according to types of jobs and careers you choose to discuss under this area. Computer jobs could be one.

Behavioral Objective Number

GOVERNMENT PRE-POST TEST

9. 1. List four types of government. Give a definition of each type of government in one sentence.

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

10. 2. Using information you have available, construct a bar, line, or pictograph comparing the populations of any two countries under different types of governments.

11. 3. Write a paragraph of fifty words or less telling why, in your opinion, there will be, or why there will not be, an international government in the future. (Write answer on the back of this sheet.)

Behavioral Objective Number

POVERTY PRE-POST TEST

(Give this test after students have completed behavioral objectives 12, 13, and 14)

12. 1. List in writing one example of poverty a) in the community, b) in the state, and c) in the nation.

a. Community _____

b. State _____

c. Nation _____

13. 2. List four jobs which deal with helping people overcome their poverty.

a. _____

b. _____

c. _____

d. _____

14. 3. Select one example of poverty from your display. Tell one method which would help solve that problem, and one person who could help in its solution.

Example: _____

Method: _____

_____

Person: _____

Behavioral Objective Number

POLLUTION PRE-POST TEST

15. 1. From your display on pollution, select and list one pollution problem, and give one possible solution.

Problem: _____

_____

Solution: _____

_____

16. 2. Write a letter to a politician (State Senator, State Representative, United States Representative, and United States Representative) or to a business leader (Manager of West County Shopping Center, Area Manager of Target) or to a newspaper (St. Louis Post-Dispatch) giving your views on the topic of pollution.

(Use another piece of paper so letter may be mailed if so desired)

17. & 5. 3. Write a paragraph of fifty words or less telling how you participated in the school's conservation project.

Behavioral Objective Number

WISE CITY PLANNING---ARCHITECTURE PRE-POST TEST

18. 1. Write a paragraph of fifty words or less describing building materials or new designs in architecture. Include pictures or drawings if you can.

Behavioral Objective Number

WISE CITY PLANNING---COMMUNICATION PRE-POST TEST

19. 1. List or draw at least six forms of communication you have observed in and around your school.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

Behavioral Objective Number

WISE CITY PLANNING---TRANSPORTATION PRE-POST TEST

20. 1. List two advantages and two disadvantages of a rapid transit system.

Advantages

a. _____

b. _____

Disadvantages

a. _____

b. _____

21. 2. Write a paragraph of twenty-five words or less giving two reasons why it may take a long time to accomplish rapid transit on a large scale.

Behavioral Objective Number	WISE CITY PLANNING---SHOPPING CENTERS PRE-POST TEST
22. 1.	Compose a letter to be sent to a shopping center or individual store which you have visited, listing any commendations and/or recommendations you may wish to make.

Behavioral Objective Number

WISE CITY PLANNING---SOCIAL SERVICES PRE-POST TEST

23. 1. Compose a paragraph of twenty-five words or less giving your definition of "social services".

24. 2. Select one social service center and describe the services if offers in a paragraph of at least twenty-five words.
In a second paragraph, list two advancements that will have to be made for that social service center to meet the needs of the future.

Behavioral Objective Number

FARMING-FOOD PRODUCTION PRE-POST TEST

25. 1. List four changes in farming methods that will be necessary in the future due to increased demands.

a. _____

b. _____

c. _____

d. _____

Behavioral Objective Number

EDUCATION PRE-POST TEST

26. 1. Summarize in writing what you earlier reported to the class regarding the "classroom of the future" as you see it influenced by scientific developments.

27. 2. Choose either a. or b.

a. List two advantages and two disadvantages of a twelve-month school year.

Advantages

1. _____

2. _____

Disadvantages

1. _____

2. _____

b. Give your opinion for and against all children receiving the same type or amount of education.

1. For _____

_____

2. Against _____

_____

28. 3. Summarize in writing what you earlier reported to the class concerning the subject(s), if any, you feel should be added to or omitted from the curriculum. Be sure to give reasons for your opinion. (Write answer on back of this paper.)

ANSWER SHEET FOR PRE-POST TESTS FOR GROUP ACTIVITIES ONLY
TEST QUESTIONS FOR CONCEPTS VII TO XII

Government

1. See Background Information #2, 3, 4, and 5, page 29.

2. Graphs--Use current figures from Junior Scholastic Atlas issue, World Almanac, or the statistics given in item #7, page 30.

3. See Background Information, page 30.

Poverty

1. See Background Information, page 31.

21 See Background Information, page 32.

3. Check students' poverty displays and see Background Information, pages 31-32.

Pollution

1. See Background Information and the displays which students have set up.

2. Accept any reasonable views expressed in the letters.

3. Accept any reasonable description of the project.

Wise City Planning

Architecture

1. Accept any reasonable answers.

Communication

1. Examples could include: voice (teacher to student, student to teacher, student to student); telephone; public address system; inter-office mail; incoming and outgoing mail; intercom system.

Transportation

1. See Background Information #2a and 2b, page 35.

2. See Enrichment Material, page 35.

Shopping Centers

1. Accept any reasonable views expressed in the letters.

Social Services

1. See Background Information, pages 37 and 38.
2. See Background Information, pages 37 and 38.

Farming-Food Production

1. See Background Information, pages 39-41.

Education

1. Accept any reasonable answers used in the students' oral presentations.
2. See Background Information 9a and 9b, pages 42 and 43.
3. Any reasonable well-supported answer may be considered correct.

INSTRUCTIONAL SEQUENCE

Concept	Objective	Background Information	Instructional Procedure
1. The future is that span of time that has not yet come.	1. 90% of the class will be able to write a definition of the "future" in a paragraph of not more than 25 words.	1. Def: Future - time that is to come, or existing or occuring at a later time. 2. This concept of future should include the idea that the future is a few minutes, days, months, years, centuries from now. 3. To stimulate discussion use: a. A bulletin board display with a question mark, crystal ball, etc. b. Headline some events yet to take place, such as: (1) First U.S. astronaut lands on Mars (2) First men live in a city under water (3) Medical science discovers cure for cancer (4) First vertical plane lands at St. Louis International Airport. c. Pictures of future events. d. Comic books with future themes. 4. Have several science fiction books available. (Most librarians, if notified in advance, will collect several for you.)	1. To begin a discussion aimed at arriving at a definition of the future select one of the suggested activities in the background information. 2. Ask the question, "What do the pictures (or events) have in common?" 3. Lead into what the meaning of the future is.

Concept	Objective	Background Information	Instructional Procedure
II. The earth is an ecological system (ecosystem).	2. 60% of the students will be able to select the four characteristics of an ecosystem from a given list. 3. 60% of the students will be able to list in writing one abiotic and one biotic factor and explain what effect each would have on an ecosystem.	1. Def: Ecosystem - a community and its environment treated together as a functional system of (a) complementary relationships, and (b) transfer and circulation of energy and matter. 2. Four characteristics of any ecosystem: a. living factors (biotic) b. non-living factors (abiotic) c. interaction of living things d. interaction resulting from the influence of non-living factors on living factors. 3. These four characteristics include the two factors: a. biotic; e.g., trees - use carbon dioxide and provide oxygen, shade, etc. b. abiotic; e.g., rain - provides moisture for growth and water for human consumption, cleans the air, etc. 4. The purpose of instructional activity #5 is to develop an awareness that since the earth is an ecosystem, man must plan future life carefully so as not to violate an essential balance. State the title of this unit and discuss how it ties in with activities completed to this point. 5. A suggested method of record-keeping is to have the students keep a notebook with their objectives and activities. The students may be encouraged to decorate their books in line with the unit's title and topic.	1. Have each child fold one piece of paper in half vertically, and label one column "living" and the second column "non-living". 2. Take a walk outside the school (you may want to pick a spot in advance for the class to study). 3. Investigate different types of things which exist in the area and list them in the appropriate column. 4. Compile a master list of biotic and abiotic factors found in the area studied. a. Each child will illustrate how one living factor is influenced by a non-living factor. b. Each child will illustrate how two living things affect each other. 5. Discuss and define an ecosystem: a. Showing how items on the above list form an ecosystem. b. Discuss how a spaceship is an ecosystem. c. Discuss how earth is an ecosystem. 6. Be sure all children fully understand the title of the unit - "Planning for the Future on Spaceship Earth."

Concept	Objective	Background Information	Instructional Procedure
III. We can and must plan for the future to fulfill increasing needs for good and services.	4. 75% of the class will be able to list in writing one advantage and one disadvantage regarding the possibility and necessity of planning for the future, in terms of the increasing need for goods and services.	The following are several reasons why we can and must plan for the future as well as some reasons why we can not and must not. 1. Two reasons why we <u>can</u> plan for the future are: a. Because past and present technological advances help make future developments possible. b. Because past and present experiences help to determine courses of action for the future. 2. Two reasons why we <u>can not</u> plan for the future are: a. Because the future will be totally different in nature from the past and present. b. Because the future is uncertain. 3. Two reasons why we <u>must</u> plan for the future are: a. If we do not, natural resources will be depleted. b. If we do not, our earth will become overpopulated. 4. Two reasons why we <u>must not</u> plan for the future are: a. Because the possibility exists that the world will be destroyed by nuclear warfare. b. Because pollution is too widespread to ever recover ecological balance. 5. It is suggested that objectives 1, 2, 3, & 4 be given to the class at this time for purposes of review and evaluation.	1. Have the class count off by fours. a. Group I will develop as many reasons as possible why we <u>can</u> plan for the future. b. Group II will develop as many reasons as possible why we <u>can not</u> plan for the future. c. Group III will develop as many reasons as possible why we <u>must</u> plan for the future. d. Group IV will develop as many reasons as possible why we <u>must not</u> plan for the future. 2. A master list should be compiled from the reasons developed by the separate groups.

Concept	Objective	Background Information	Instructional Procedure
iv. It is necessary for each individual to practice conservation <u>today</u> in order to save for and improve the future.	6. Each child will be able to write, in a paragraph of 25 words or less, at least one reason why it is necessary for him to participate in an activity relating to conservation practices which will save and improve the future.	1. This concept is one of the most important in the unit. It will set the tone for the remaining concepts. 2. Def: Conservation - planned management of a natural resource to prevent exploitation, destruction, or neglect. 3. Suggested activities for conservation: a. Have the children find and bring in pictures of (1) unwise usage, e.g., burnt forests (2) results of conservation; e.g., beautiful forests (3) conservation techniques; e.g., selective cutting b. Have the children write original poems or find poetry related to one or all all of their pictures. Suggested poets: Emerson Holmes Bryant Longfellow Poe Dickinson Whitman	1. Discuss and define conservation after completing one or more of the activities in the Background Information #3. 2. Show the film, "All the Difference" (Contact Jack Woodhead Mo. Conservation Dept. St. Louis, Mo. 736-6800) or "Yours Is the Land" available from St. Louis County AV 3. Other films that may be obtained from St. Louis County Av are: a. "Air Pollution" b. "Cry of the Marsh" c. "The Litterbug" d. "Conservation Vistas"

Concept	Objective	Background and Information	Instruction Procedure
5. An understanding of past and present events and technological knowledge is necessary to plan for the future.	7. a. Each child will list an invention from each of these fields: transportation, communication, or industrial machinery. b. Having selected one invention each student will list in writing three characteristics of the invention in its early state, three of a later stage, and three possible characteristics of a future stage.	1. Def: Technological - resulting from improvement in a technical process that increases productivity of machines and eliminates manual operations needed by older machines. 2. Instructional procedures 1 and 2 refer to only part of concept V: knowledge of the past and present events is necessary to plan for the future. 3. The second part of this concept deals with the technological knowledge of the past and present and being able to communicate this knowledge. 4. The teacher could use the following example for activities 3 and 4. Field - transportation Invention - airplane a. Past (1) hand-started propeller motor (2) triplane - three levels of wings (3) open cockpit b. Present (1) turbojet (2) large passenger load (3) completely enclosed c. Future (1) vertical take off (2) wingless (3) nuclear-powered 5. It is suggested that objectives 6 and 7 be given to the class at this time as a means of review and evaluation.	1. Have the children relate to their own experiences by having them think of a personal incident where past knowledge made a difference in planning for the future; e.g., a camping trip with not enough food or a vacation without the proper clothing. 2. Have the children think of a past experience of our nation. Has it affected future planning? E.g., the Kent State incident made a difference in future training of the National Guard. 3. Children should do research on an invention, describing as many characteristics of the invention in its early stages, in its present stage and its possible future stage. This research could include both written and illustrated work. 4. Individual students may volunteer to report their findings orally. 5. Discuss with the class what the world would be like if all knowledge was destroyed or was stored in an unintelligible manner, such as a code. 6. Suggested films to be used: "Industries of the Future" "Auto, Great Love Affair" "Laser; Light of the Future" "Man in Flight" "Railroad Builders" (All are available from St. Louis County AV)

Concept	Objective	Background Information	Instructional Procedure
11. Basic needs of the present are closely related to the needs of the past and future.	8. Each student will show an awareness of similarity between needs of people living in the past, present, and future by selecting five basic human needs which are timeless from a given list.	1. Basic needs refer to necessities required to sustain life. 2. Through teacher direction attempt to bring out how the basic needs of early, present, and future man are similar. 3. Be sure each child has completed objective #8.	1. Define basic needs. 2. Ask the children to identify or list in a class discussion one or more early civilizations or man; e.g., Egypt, China, etc. For each civilization named, list the basic needs of the people, possibly in chart form. 3. Have each child select a specific destination in an uncivilized area for an imaginary expedition which he will conduct alone. In written form have each child select five needs which he knows will be necessary for him to survive in the course of his expedition. 4. Have the class imagine that man has established life on another planet whose environment is hostile to man. Ask what the basic needs will be. 5. Make a chart comparing the past (activity 2), present (activity 3), and future (activity 4) needs basic to man's survival.

Concept	Objectives	Background Information	Instructional Procedure
VII. Some of the major forms of government are democracy, dictatorship, communism, and monarchy.	9. Government Each student will be able to list in writing four types of governments and be able to define each in one sentence. 10. Each child will be able to draw one bar, line, or pictograph comparing the populations of any two countries under different types of governments.	1. See Bibliography - government, for reference books. 2. Democracy - rule for the people and by the people. The government people create and the principles by which they live. People learn through mistakes and successes; this is what makes their society rich and meaningful. 3. Communism - a theory. The belief is that everything belongs to all of the people. In striving for a better future, all people work together for the good of everyone. The government controls all aspects of their way of life. 4. Monarchy - rule by or sovereignty of one person. Today monarchy has come to mean rule by a king or queen. Only seven countries now exist with a monarchy form of government, Britian being the most important. There are four types of monarchy: (a) absolute; (b) elective; (c) constitutional; and (d) hereditary. 5. Dictatorship - control by a ruler who seeks and gets absolute powers of government by political or military means. This can be done without regard to the wishes of the people. 6. According to Jules Archer in The Dictators, (1967) there are 3.2 billion people in the world. 40% live under a democracy similar to that of the U.S. 40% live under a totalitarian regime (dictatorship, communism). 20% live under a combination of democracy and dictatorship.	1. The students will research independently the four types of governments, including reports, charts, illustrations, countries under each type of government, population, statistics, etc. 2. Films available from St. Louis County AV are: a. "British Monarchy" b. "Communism" c. "Democracy" d. "Meet Your Federal Government" 3. Background information on bar and line graphs can be obtained from any fifth or sixth grade math book. The sixth grade S.R.A. book has good coverage of these skills and concepts. 4. Film available from St. Louis County AV: "Introducing Graphs"

Note:
Concepts VII-XIII will be developed as each child completes the particular culminating activity he has chosen.

Concept		Background Information	
VII. Continued		7. U.S. (democracy) - 204,000,000 people Britian (monarchy) - 55,534,000 people Cuba (dictatorship) - 8,250,000 people U.S.S.R. (communism) - 241,748,000 people China (communism) - 700,000,000 people India (democracy) - 480,000,000 people	
Concept	**Objective**	**Background Information**	**Instructional Procedure**
VIII. There are different points of view regarding the possibility and necessity of international government.	11. Each student will be able to write a paragraph of not more than 50 words telling why he thinks there will or will not be an international government in the future.	1. International government refers to a single set of common laws that is applicable to all nations. Some factors which make international government possible are: a. travel exposure b. culture exchange c. economic exchange d. gradual movement of nations toward the same problems and goals. e. need for international coastline rights f. exploration of the solar system g. air space over countries 2. When the group working on government has completed objectives #9, 10, and 11, the post test for government on page 11 should be administered.	1. Through a group discussion the children will decide the possibility or necessity of an international government. 2. Mock U.N. - role play. Each student will take the part of a country in the U.N. and discuss the possibility, both pro and con, of developing an international government. 3. Films available from St. Louis County AV are: a. "Pattern for Peace" b. "The Hat" 4. Suggest that the children, as a voluntary activity, interview people concerning their ideas on international government.

Concept	Objective	Background Information	Instructional Procedure
11. Poverty exists in our community, state, and nation as well as throughout the world.	12. Each student will be able to list in writing one example of poverty in his community, his state, and his nation.	1. Some possible causes of poverty are: a. depression or economic failure b. lack of educational training or job skills c. depletion or insufficiency of natural resources d. lack of medical treatment e. disease (which may be considered a cause) f. natural disaster g. war	1. A definition of poverty should be developed through class discussion. Included in the discussion should be various causes of poverty. 2. Have the children make a collage of poverty-striken areas and people. After studying the collage, have them write one paragraph on how poverty changes and limits peoples' lives (visual perception). 3. Using magazines and newspapers, the students will research poverty in their community, state, nation, and in the world.

Concept	Objectives	Background Information	Instructional Procedure
A. Concerned individuals, working through the many avenues of skills, interests, and prefessions, will help lessen the causes of poverty.	13. Each student will be able to list in writing 4 jobs which deal with helping people overcome their poverty. 14. Upon completion of this activity, the group will set up a display on poverty, illustrating and labeling the problems of the poor and the methods and personnel needed to lessen their condition of poverty.	1. Examples of careers and groups that can help by working in poverty areas are: a. Professions (1) doctors - general practioners vs. specialists (2) dentists, nurses (3) teachers (4) social workers (5) psychologists (6) clergymen (7) architects b. Skills (1) plumbers (2) painters (3) carpenters c. Agencies (1) Job Corps (2) Upward Bound (3) Peace Corps (4) HUD (5) VISTA d. Other means (1) community action to provide lower insurance rates so that living prices can be reduced. (2) money to back business enterprises (3) maintenance of poverty areas (4) tutoring services (not always teachers) 2. When this group has completed objectives #12, 13, and 14, the post test on poverty, on page 12 should be administered.	1. As a group, list professionals, skilled workers, programs, and individual and community helpers working to alleviate poverty. 2. The students will contact agencies by letter or phone to arrange for resource people who are willing to come as speakers. 3. Films available from St. Louis County AV are: a. "Hungry Angels" b. "Life Is Short"

Concept	Objectives	Background Information	Instruction Procedure
iv. It is necessary for each individual to practice conservation today in order to save and improve the future.	15. Upon completion of this activity, the group will set up a written and pictorial display on pollution problems and various possible solutions. 16. Each student will write a letter to one person of his choice (politician, business leader, school, local, or city newspaper editor, etc.) dealing with the topic of pollution. 17. The group that has studied pollution will plan and direct behavioral objective #5: All students will show an awareness of the need to personally practice conservation by becoming actively involved through self-motivation in one school conservation activity; e.g., collecting aluminum cans or newspapers for recycling.	1. The teacher will collect pictures of diverse environmental areas. 2. The children should select a polluted part of nature in their community or nation; e.g., Lake Michigan, the side of a road or highway, dead fish in a strean, the nesting place of a bird that has vanished, etc., and build a dialogue, skit, short story, or poem from the point of view of the part of nature selected. 3. Set up committees to promote a recycling campaign. a. Poster campaign to be displayed around the school. b. A committee to write a short skit or speech to be presented in individual classrooms or an intermediate assembly. c. A group to find the locations of centers where articles for recycling may be taken. 4. Possible campaign projects: a. collect coathangers b. take paper to Dierberg's Market (Rt. 141 and Olive St.) or Target (Manchester and Holloway Roads) c. return bottles and cans to Target (Manchester and Holloway Roads) d. purchase only returnable bottles e. purchase only white paper products f. survey local environment - take pictures of pollution control g. notice pollution or good antipollution control at local stores.	1. Show children pictures and have them create captions. Suggest that they find pictures and captions. 2. Have children become some part of nature in a play. 3. Recycling project - see background information. 4. See behavioral objective #5.

Concept	Objectives	Background Information	Instructional Procedure
Concept XI. Continued		Background Information 5. When this group has completed objectives #15, 16, 17, and 5, the post test on pollution, on page 13 should be given.	
Concept XI. Future city planning must consider many areas, among them, architecture, communication, transportation, shopping centers, social services, etc.	Objectives 18. Each student in this group will find, with teacher guidance, an article on building materials or new designs in architecture. After reading it, he will write a summary of not more than 50 words, including any relevant pictures or drawings.	Background Information 1. Contact an architectural firm or the district architect as a resource person to speak to the group. 2. Suggested film that may be shown to the class: "Monument to a Dream." 3. Contact the art consultant or art teacher to set up a project relating to building for the future; e.g., an airport terminal for future plans without wings. 4. Refer to GCMP math book (5-6) for lessons on scale drawing. 5. American Institute of Architects (AIA), 107 North 7th Street St. Louis, MO 63101 Mrs. Ann Walsh, 621-3484 6. A teacher can call or write to arrange for a speaker and/or a film on the topics of her choice. Pamphlets and displays are available. The children may be taken on a field trip through St. Louis if desired. 7. Children in a committee could also select topics and write for information and/or a speaker. 8. Steddman Room at the main branch of the St. Louis City Library is dedicated to architecture. *9. When this group has completed objective #18, the student should take the post test on architecture which is on page 14.	Instructional Procedure 1. See behavioral objective #18. 2. Construct building design for the future. 3. Make a scale drawing of the school building. 4. Films available from St. County AV: "At Home: 2001" "Monument to a Dream" 5. The following films are pertinent to the general topic of city planning and are also available from St. Louis County AV: a. "City - Cars or People" b. "City - One Day" c. "Cities and Utilities" d. "Challenge of Urban Renewal" e. "Changing City" f. "Portrait of a City" g. "St. Louis, Big City"

Concept	Objectives	Background Information	Instruction Procedures
X. Con't.	19. Each student in this group will survey the school site to determine forms of communication in and around the school, and record his findings in written and/or illustrated form, naming at least six forms of communication.	1. This survey could and should be used as a basis for projection of future developments in communication for a city. 2. How are a school's needs for and methods of communication similar to a city's? 3. Contact Bell Telephone for a speaker on the future development of communication. 4. When this group completes objective #19, the children should take the post test on communication on page 15.	1. Take a school site inventory including types of communication coming into and going out from the school. 2. Compare means of communication found in the students' survey with communication in a city. (Background #2) 3. After hearing a speaker, discuss the pros and cons of different types of communication in relation to the future. 4. Films available from St. Louis County AV: a. "Berfunkle" b. "Development of Communication"
XI. Con't.	20. <u>Transportation</u> Upon completion of this activity each student will list in writing 2 advantages and 2 disadvantages of a rapid transit system. 21. Each child will write a paragraph of not more than 25 words telling at least 2 reasons why development of rapid transit may be slow to achieve on a large scale basis.	1. Obtain a city map from a neighborhood gas station. 2. Some pros and cons of rapid transit are: a. Pros (1) traffic decreased (2) pollution reduced (3) non-commercial vehicles in city areas reduced (4) aesthetics b. Cons (1) political (2) social (3) economic (4) not enough people will use it 3. See enrichment material 4. Contact a civil engineer to speak on rapid transit. 5. When this group has completed objectives #20, and 21, the students should take the post test on transportation, page 16.	1. Ask how many students have ever been caught in a traffic jam. 2. How many have been in rush hour traffic? 3. What was it like? 4. How did you feel? 5. What do you think would be a solution? 6. See behavioral objectives 20 and 21. 7. Films available from St. Louis County AV: a. "ABC of Automobile Engines" b. "Building a Freeway" c. "Development of Transportation" 8. See also Technology section, concept V.

Concept	Objectives	Background Information	Instructional Procedure
21. Con't.	22. Shopping Center This group of students, working together, will be able to summarize its findings and write one letter to the individual stores or shopping centers the group has investigated, listing any recommendations and commendations.	1. Have the students choose three of the following items to observe and evaluate when they go on a field trip to a shopping center: a. traffic b. pollution c. communication d. services offered e. aesthetics f. history g. safety h. lighting 2. Compile a written list of problems. Compile a written list of recommendations for solving existing problems. Compile a written list of commendable points. 3. Observe and draw the lines and patterns caused by the shadows of buildings, etc. 4. Draw simple outlines of the buildings, including landscaping (if any) and shade in different structures with varied watercolor wash. This activity points out geometric shapes in building and nature. 5. Observe and draw types of signs used. 6. Check and record traffic flow during two separate hours. 7. Make a graph showing the number of cars using exits at each hour. 8. Consider, by discussion and/or in writing, why stores are situated in this location. 9. Consider, by discussion and/or in writing, the effects of shopping centers on the community. 10. When this group has completed objective #22, the post test on shopping centers should be given, found on page 17.	1. Introduce the purpose of taking a field trip to a shopping center. 2. Take a trip to a shopping center. 3. Activities 4, 5, 6, 7, 8, and 9 are additional projects that may be chosen by individuals or assigned to groups. 4. See behavioral objective #22. 5. See Data Sheets for Trip to Shopping Center included behind enrichment material.

Concept	Objectives	Background Information	Instructional Procedure
II. Con't.	23. Social Services - Each student in this group will be able to define "social services" in a paragraph of 25 words or less. 24. Each student will select one social service center and describe its services in a paragraph of at least 25 words. In a second paragraph he will list two advancements that will have to be made for this center to meet the needs of the future.	1. Social service, Def: conduct or performance concerned with the welfare of human beings as members of society. 2. Demand for social services will probably increase in the future for many and varied reasons: a. More and more wives tend to go back to work if they can place young children in day care centers. b. The women's liberation movement advocates more day care centers and certain private companies have established them for their employees. c. The average person in the U.S. is now 26 years of age. As modern medicine helps prolong life expectancy and as the birth rate declines, the number of older people will increase. As the ratio of older people to younger people increases, more services for the elderly will be needed. d. If the cost of living continues to increase, and the elderly are on fixed incomes insufficient to meet medical expenses, government help may be needed. e. Family guidance needs will probably increase in the areas of counseling families in the changing position of the family in society, the possible need for the breadwinner to change jobs in his lifetime, and general acceptance of need for mental health, care and treatment.	1. Introduce this activity by asking the following questions: a. How many of you have younger brothers or sisters who go to private nursery schools during the day? What are the names of the the schools and where are they located? b. How many have grandparents who live in a state operated or private nursing home or retirement center? What are the names of these homes and where are they located? c. How many have gone with family or friends to parks in St. Louis County" What are the names of the parks? What can you do there for recreation? d. Where can poor people go to receive legal advice, medical and dental care, or family assistance? e. What do all of the places we have discussed have in common? (Answer: they all serve the needs of the people.) f. Discuss what is meant by the term "social services." g. Why are social services needed? h. How might the demand for these services change in the future?

Concept	Objective	Background Information	Instructional Procedure
II. Con't.	Social Services, continued.	f. Increased social service facilities will be needed because of increased numbers of clientele. g. More social service employees needed. h. Greater specialization will become necessary. 3. Destination: Clayton House a. What services does this establishment offer to its clientele? b. What varied types of skills are needed by the employees to offer these services? c. Is this establishment private or public? d. Will the services now offered need to be changed in kind or amount for the future? e. Would you like to live at Clayton House? Why, or why not? f. If not, what would you prefer? 4. When this group has completed objectives #23 and 24, it should take the post test on Social Services found on page 18.	Find out what social service centers are located in your area (see district inventory) and visit one; e.g., Clayton House on Clayton Road. 2. The children and teacher after choosing a social service center to visit, should determine what they wish to observe when going there (see suggested questions under Background Information #3). 3. Do Behavioral Objectives 23 and 24. 4. Show film, "Bold New Approach" available from St. Louis County AV

Concept

XII. Farming methods of the future will undergo many changes of increased demands.

Objective

25. Farming
Each student in this group will list in writing 4 changes in farming methods that will be necessary due to increased demands.

Background Information

1. The following is basic information which gives a general concept of the economics of starting a farm today. Although the minimum economic unit is 400 acres all this land is not farmed, some being used for grazing and some being non-plantable; e.g., ravines, areas along each side of fencing, etc. In addition, the hillside, although plantable, has a lower yield than the valleys. The figures given below are quite rough, but are accurate enough to develop the economic concept. It should also be remembered that in starting a farm, additional money is needed to live on until the crops are harvested and sold. A rule of thumb is that it costs approximately $40 to plant, care, and harvest one acre.
   a. The minimum economic unit (smallest area of land which can be farmed profitably) is 400 acres.
   b. Several basic investments are:

(1) cost of the land	$160,000
(2) machinery	50,000
(3) livestock	50,000
(4) insecticides, pesticides, seed, fertilizer, etc.	6,000
Total	$266,000
(5) taxes (approx.)	4,600/yr.
(6) interest (6%/yr. on borrowed money)	

2. Some future developments which are projected to meet the food needs are:
   a. Use of atomic energy and synthesizing of foodstuffs. With the immense resources

Instructional Procedure

1. Introduce the unit by showing any of the following films, which can be obtained from the St. Louis County AV Department:
   a. "Cattle and Corn Belt"
   b. "Corn Farmer"
   c. "It Takes Everybody"
2. Discussion of any of these films should include:
   a. The varied operations of the farm; e.g., fertilizing, tilling, planting, spraying, harvesting, mending fences, caring for livestock, and maintaining machinery and buildings.
   b. Asking the children to hypothesize whether the number of farms is increasing. Do we need more farms because of the growing population here and abroad? If there are fewer farms and land is becoming more expensive, how are we going to meet the needs of the future?
3. Show the film "Atom and Agriculture," St. Louis County AV. Discussion of this film, which explains the use of atomic energy for agriculture, ties in which farming methods to meet the needs of the future.

Concept	Objective	Background Information	Instructional Procedure
I. Con't.	25. Farming con't.	2. Continued provided by extraction of coal or carbonates from limestone, or even of hydrogen from water as well as oxygen and nitrogen from the air and other mineral substances, it should be possible, by using industrial syntheses, to manufacture certain simple chemical compounds such as ethylene and ammonia and gradually form complex organic molecules which constitute our foodstuffs. Past success in synthesizing rubber and polymerized fibers such as nylon proves to be an encouraging example. However, the cost of these synthetic products for industrial use is much higher than that of oridnary foodstuffs such as sugar or starch obtained from agricultural products. b. Photosynthesis in Vitro: If one day a food industry of this type should materialize, it will resemble present-day agriculture in being widely dispersed. It would not increase the capacity of world agriculture more than rational irrigation of arid zones. c. Substitution of other types of plants, such as marine algae and unicellular algae. Chlorella has been cultivated successfully, but is more suitable as animal fodder than as food for man.	4. Show the film "Food and People" available from St. Louis County AV. Use the film to introduce and discuss the need for increased food production. 5. Giving several weeks notice arrange for a speaker who could help the children understand what is entailed in farming today, preferably someone actively engaged in running a working farm. a. Verlin Abbott - Parkway Science Coordinator b. Ron Alexander - Area Farm Management Specialist, University of Missouri Extension Center in Weldon Springs. 6. Arrange a visit to a diversified farm of the minimum economic unit. Both students and teacher should plan what they wish to observe before going. List specific questions they would like to have answered. 7. As a culminating activity, establish your own garden at school. (See Background Information #3). 8. Other films available from St. Louis County AV: a. "Great Plains - Land of Risk" b. "Irrigation Farming"

Concept	Objective	Background Information
II. Con't.	25. Farming con't	d. Other methods of solving problems of world hunger are: (1) Wider use of irrigation. (2) Obtaining fresh water for irrigation through transplanting of icebergs (Not really absurd but in pre-mature stage of possible development). (3) Hydroponic cultivation is a good possibility if a water-soluble fertilizer can be found. 3. In planting a garden the first step is to have the soil analyzed. a. Dig seven inches into the ground and vertically slice off 1/2 inch of this cut. b. Repeat this procedure 6 or 7 times over the area you are farming. c. Mix the soil samples thus obtained into a composite of approximately one pint of soil. d. Take the composite to the University of Missouri Agricultural Division Extension Center, 7900 Forsyth, (in the new County Government Building). For $1.50 they will analyze the soil and provide information about what minerals are needed per 1,000 square feet. The children can then scale this down to the size of their garden. e. If the garden is planted in fall, radishes and rye can be grown and harvested. If the garden is planted in spring, green beans, radishes, lettuce, and cucumbers are recommended. f. For further assistance in developing your plot, contact the same resource people suggested in Instructional Procedure #5 under this concept. 4. When this group has completed objective #25 the post test on Farming should be given, found on page 19.

Concept	Objectives	Background Information	Instructional Procedure
XIII. Educational changes will occur according to the needs of a changing society and scientific developments.	26. Education Each student will orally describe to the class what the "classroom of the future" will be like, based on scientific and technological developments. 27. Each student in this group will be able to list in writing two advantages and two disadvantages of a 12-month school year; or will be able to give two opinions pro and con on the issue of whether all children should receive the same amount or type of education. 28. Each student will report to the class what subject(s), if any, he feels should be added to or omitted from the curriculum, and support his opinion with valid reasons. He will then be able to summarize his report in writing.	1. There are many purposes of education, all valid, but the main reason which should be stressed is that education should prepare people to live fulfilled and productive years in society, both present and future. 2. One educational change might be greater utilization of computers in teaching. Because society is becoming increasingly computerized, the expense has lessened and the availability of computers has increased. 3. For information on scale drawing see GMCP math books 5 and 6. 4. The floor plan should be based on AV equipment in use today, future technological developments, problems of the future, and solutions for current problems. 5. Instructional Activity #6 - see enrichment material on education. 6. One method for a "12-month school year" which seems to be working well is that currently being used in the Becky David School in the St. Charles District, Missouri. 7. The total year is divided into four quarters, and the children attend three of the four quarters. Several weeks are alloted as vacation time between each quarter. 8. This attendance plan is not based on choice or chance, but rather on attendance areas. 9. Some examples of activity #7 are: a. Pros (1) More efficient use of school buildings. (2) Increasing enrollment, teaching methods, and	1. Discuss and list on the chalkboard the purposes of education. 2. Ask the children to name any changes in society which might cause education to change. 3. Ask the students to name audio-visual equipment now in use in their school. What might be developed in the future? 4. What problems face schools today? Will these problems exist in the future? Will different problems develop in the future? What might they be? 5. Have the children design a scale-drawing floor plan of a school of the future. 6. Discuss whether all children should be required to have the same amount and/or type of education. 7. Describe several examples of a 12-month school year. 8. Discuss the pros and cons of a 12-month school year. 9. Have students interview other teachers and the principal as to what they would like to see in a school of the future. 10. These students will formulate the questions for a student poll on schools of the future. 11. Record responses in graph form; publish in the school newspaper or pose in a prominent place. 12. Complete Behavioral Objectives #26, 27, and 28.

Concept	Objectives	Background Information	Instructional Procedure
XIII. Con't.	Education continued	more equipment requiring more space, but insufficient money to build new schools or additions to existing buildings. (3) Help lessen crime in the inner cities by keeping the children occupied and off the streets. b. Cons (1) Parents may not be able to arrange for vacation at the same time as that of their children. (2) Children will be with different classmates and will need to make new friends each year. (3) Teachers would not be able to use the summer months for their own education. 10. When this group has completed objectives #26, 27, and 28 the post test on Education should be administered, found on page 20.	13. Films available from St. St. Louis County AV are: a. "Computer Revolution" b. "Computer Based Instruction" c. "One Step at a Time"

ncept	Objective	Background Information	Instructional Procedure
XIV. Youth of the future will have to be aware of the changing career opportunities and of the many unknown challenges, that lie ahead.	29. Upon completion of this unit, each student will be able to list one vocation of the future and in a paragraph of not more than 25 words, tell why it will be necessary in the future.	1. Careers are mentioned throughout concepts VII-XIII. However, this concept is specifically directed to research and displays on future career opportunities, including required preparation, projected needs, and pay ranges. 2. As discussed in many articles, demand for careers now in existence is decreasing, while new career opportunities, just beginning, are projected to assume major portions of the job market. Some of the new programs are in the areas of computers, social services, medicine (the para-medic), and education (para-professionals). 3. Upon completion of objective #29, the entire class should take the pre-post test which includes concepts I, II, III, IV, V, VI, and XIV.	1. Directions should be given for each child to select one area for research on a specific career. His selection should be made from the culminating activity groups which are: government, poverty, pollution, architecture, communication, transportation, shopping centers, social services, farming, and education. 2. Discuss the sub-topics of each career to be researched. (See Background Information #1). 3. Researched material on one job should be prepared in written form, providing an opportunity to review outlining skills and report writing. The report should include information as to why that job will be necessary in the future 4. All children researching in one area, e.g., government, should work together to arrange for a guest speaker and/or set up a display on the varied careers of that area. Further investigation might disclose relevant films for each area, or for the concept in general.

At the end of instructional sequence, the Pre-Post Test should be administered again and using the sheet on page 49, results can be sent to the EEE Project.

ENRICHMENT MATERIAL

Education

Gradually, and beginning with the higher occupational levels, realization will develop that profound changes in education are necessary in the areas of instructional procedures, substance, and the spirit of the educative process. Changes will come slowly, but will be great.

It is projected that by the 1990's:

1. There will be a differentiation of teacher roles.

   a. Inquiry specialist: A "teacher" actually working with the children, skilled in directing computer-based learning systems (computer-assisted instruction). A skilled diagnostician aware of individual differences in students and differences in learning styles.

   b. Therapy specialist: A "teacher" skilled in working with children and teachers in the school environment to improve the social atmosphere of the school and to develop children's insight into their own behavior.

   c. Scholars and researchers: "Teachers" who guide independent and group study projects.

2. Packaging of school time into 45-50 minute instructional periods will become passe.

3. Students at many grade levels will work and play together.

4. Schools will increasingly develop a respect for human diversity and originality.

5. Much time will be spent on field trips.

6. Concepts of "egg-carton schools," that children learn best in classrooms of 25-30 pupils, in quiet libraries, and through books only will be abandoned.

7. The idea that education is something a teacher does "to" a student will be rejected.

8. Curriculum will change slowly, following much debate on the role of education.

9. A growing educational gap will develop between not only rich and poor, but between skilled professionals and unskilled workers.

10. A government survey projects three basic job categories which will determine the type of education a child receives:

a. Preprofessional: Students who are highly motivated will probably compete beginning in the late elementary school years, for places in the centers of higher education provide the best training. They will have to make a career choice in a broad, but specific, area (e.g., law vs. social science) earlier than those students not aspiring to a profession. The student who decides on a preprofessional goal may need to be a "grind" rather than a seeker of "personal experiences" in school. His time and activities will increasingly be channeled toward his goal.

b. Technician: A technician will probably be trained to hold a specialized job, but may need to change his specialty several times during his working life. He will be well paid, but will not have to be as time-bound as the professional. A technician can be more casual about when he selects a curriculum that emphasizes job training. He will not have to make a general career choice as early or as irrevocably as the preprofessional. His school hours will probably be fewer and he will have more time for recreational pursuits during his schooling.

c. Unskilled: A worker who is unskilled will be so because he is relatively poorly educated, poorly motivated, and poorly incorporated into the values and behavior of "the society of the intellect" toward which we are headed. A disproportionate number of non-whites, especially Negroes will fall into this category because a large portion will continue to receive education inadequate to hold more demanding jobs.

11. Good schools (those willing and able to use new methods) will become better; mediocre schools will improve somewhat depending upon social and economic limitations; and poor schools will become relatively poorer.

12. The government survey concludes that the situation of the poor schools will continue until the alienation and unemployment spawned by them produce a national crisis.

Transportation

It is projected that more cars will appear despite the growing congestion. It is likely, however, that non-commercial vehicles will be banned in downtown areas since most traffic congestion occurs in cities. It also seems that more mass transportation will develop gradually. Delays will be caused by political, social, and economic problems involved in the installation and operation of mass transit. It is foreseeable, that interurban, 200-m.p.h. trains, some of which will ride a fraction of an inch off their tracks or monorails on cushions of air, will evolve. There is also the possibility of a vertical take-off aircraft. Along with this is projected a high-speed water vehicle in the form of a hydrofoil craft.

In a survey conducted by McDonnel-Douglas Aircraft Corporation regarding advanced air transportation, published in Science News in 1970, the following were found to be the forecasts of the scientists polled:

1. Exotic materials such as boron filament and beryilium will be used in commercial aircraft by 1985 or 1990.

2. 75% of the scientists agreed in expecting a nuclear-powered air transport by 1995 or 2000.

3. A 1000-passenger aircraft will be in operation by 1990 or 1995.

4. Between 1982 and 1990, the first metropolitan airport intended for cargo handling will come into existence.

5. Air cargo revenues will equal passenger revenues in the next decade.

6. New markets for transport of commuters and inter-megalopolitan travel, probably by improved vertical short take off and landing aircraft, will develop.

7. By the year 2000, 25% of all commuters traveling distances of 15 miles or more will move by air.

Architecture

The American Institute of Architecture has a Human Resource Council. The HRC pledged, in 1969, to work actively for meaningful social change. It advocates:

1. National money-raising efforts.

2. Accreditation of three architecture schools for Negroes.

3. Achievements by local community development centers.

The 1970 edition of the Architect Record (pg. 109) contains excellent pictures of modern Japanese architecture.

Environment, Future of

An article in the May 31, 1971 edition of Time cited the pros and cons concerning the future or our environment as follows:

1. "The world won't end with a bang; it will expire with a strangled cough."

2. Keneth Watt, an ecologist, says that with auto exhausts increasing the nitrogen level in the air "it's only a matter or time before light will be filtered out of the atmosphere and none or our land will be usable."

3. Rene Dubos, a brilliant microbiologist and experimental pathologist, believes that nature has immense resiliency. "When man realizes that technology cannot solve all human problems, nature bounces back from abuses. The fundamental abberation of scientific technology during the past 100 years is embodied in the motto of the 1933 Chicago World's Fair: "Science Finds - Industry Applies - Man Conforms.'" Mr. Dubos says that is not true, because present-day man lives with the same genes as those of the Old Stone Age hunter and New Stone Age farmer. Technology must be made to serve man and not vice versa.

History, Important to the Future

According to an article in the January 4, 1971 issue of U.S. News and World Report, we too often disregard the lessons of the past as meaningless, because, as we rationalize it, they supposedly apply to a different set of circumstances than we observe today. Yet history repeats itself.

We are not lacking in knowledge of things to do to make a better world. What we lack is the will power to do them.

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63017

School_____

Teacher_____

Unit_____

Student post-test results will be grouped in the following manner:

Example:

Number of post-test questions given 15 .

Number of students	Number of questions answered correctly.
6	12
5	10
8	9

Number of post-test questions given._____

Number of Students	Number of Questions Answered Correctly

Number of post-test questions given._____

Number of Students	Number of Questions Answered Correctly

SUGGESTED INSTRUCTIONS FOR USE OF DATA SHEETS

The broad areas to be investigated when touring the West County Shopping Center are: history and services rendered; aesthetics and lighting; traffic and safety; pollution; and communication.

The first four data sheets are examples of questions that may be formulated by the students before going to the shopping center. The following eleven data sheets have taken the eight basic areas and further divided them. It is imperative that specific activities and questions are planned before going on the field trip.

Although these data sheets are complete and usable in the form suggested, it is recommended that the teacher discuss with her students what they want to learn and then guide the class in formulating their own data sheets.

Mr. Clinton Jostad is the current manager of the West County Shopping Center. He and his secretary have been most cooperative in giving interviews to the Parkway classes which have visited the center. Some classes combined the various groups researching this unit to decide what questions to ask Mr. Jostad, and then appointed a small group to do the interviewing. Other classes arranged to have Mr. Jostad talk to the entire group. Of course, it is necessary to make arrangements in advance to determine convenient times for such interviews.

A follow-up lesson activity is recommended in order to share the information gathered by individual students or groups with the whole class. One method is for each group to put the answers to the questions on their data sheets on a ditto. A booklet can then be compiled for each child containing all the questions and answers. The children enjoy making a cover illustration and smaller illustrations to be included in the booklet.

DATA SHEET #1

WEST COUNTY SHOPPING CENTER

NAME _____

DATE _____

HISTORY OF CENTER AND SERVICES RENDERED

COST OF LAND	
COST OF CONSTRUCTION	
OWNER	
CONSTRUCTION TIME	
MEANING OF "DOVE" SYMBOL	
LAND USE BEFORE BECOMING A SHOPPING CENTER	
FIRE - RECORD AND CONTROL DEVICES	
ROBBERIES - RECORD AND PREVENTION METHODS	
REASONS WHY NO FOOD STORES ARE IN CENTER	
REASONS FOR THE "DOME" AT FAMOUS BARR	
PROBLEMS ENCOUNTERED WHEN DESIGNING THE CENTER	
REASONS THE SHOPPING CENTER WAS BUILT	
OPENING DATE	

ON THE OTHER SIDE OF THIS PAPER LIST ANY ADDITIONAL INFORMATION

DATA SHEET #2

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

TRAFFIC SAFETY

LOCATION (SPECIFIC)	ACTIVITY	INFORMATION
TRAFFIC LIGHT, ENTRANCE OF MANCHESTER ROAD	# OF CARS ENTERING	___PER 15 MINUTES ___PER HOUR
NO TRAFFIC LIGHT AT MANCHESTER ROAD ENTRANCE	# OF CARS ENTERING	___PER 15 MINUTES ___PER HOUR
NAME OF SHOPPING CENTER ENTRANCE _____	# OF PEOPLE	___PER ___MINUTES ___PER HOUR
NAME OF SHOPPING CENTER ENTRANCE _____	# OF PEOPLE	___PER ___MINUTES ___PER HOUR
ESCALATOR STORE_____		
ESCALATOR STORE_____		
SPEED LIMIT AT SHOPPING CENTER		
NUMBER OF PARKING SPACES		
FLOW OF TRAFFIC AT INTERSECTION		
SIDEWALKS		
SLICK SURFACES		
MATS AT ENTRANCES		

DATA SHEET #3

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

TYPES OF STORES IN CENTER

1. What types of stores are in the shopping center?

2. What types of stores are not in the shopping center?

3. What types of security does the shopping center have?

Burglar alarms? Closed circuit T.V.?

Floor walkers? Mirrors?

DATA SHEET #4

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

AESTHETICS

1. How do the styles of the buildings blend together?

2. Does the Dove correspond with the building styles?

3. What is the symbolic meaning of the Dove?

4. How does the Mall affect you?

5. Why does Famous Barr have the Dome?

6. The Penney's store is new. How does the style of this building blend with the rest of the shopping center?

7. Why are shrubs used both inside and outside the shopping center?

8. What, if anything could be done to make the parking lot more attractive?

9. Why is the enclosed mall included?

10. How have the service entrances been screened from view?

DATA SHEET #5a

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

LIGHTING AND AESTHETICS page 1.

LIGHTING: EXTERIOR

1. Are the parking areas well lit?

2. How is the lighting achieved?

3. Is the lighting pleasing? Does it add to the overall attractiveness of the shopping center?

4. How are the lights controlled--manually or automatically? How do you know?

LIGHTING: INTERIOR

1. What different types of lighting are used?

2. Why do you think the lighting is different in different areas?

3. What effects might lighting have on sales?

4. Is the lighting for all stores wired as one system, or is it wired independently for each store?

5. Is natural lighting used anywhere? If so, where?

6. Is an electrical engineer hired on a full-time basis for the shopping center?

DATA SHEET #5b

NAME _____

DATE _____

LIGHTING AND AESTHETICS page 2.

AESTHETICS:

What examples can you find that demonstrate an effort has been made to make the interior and exterior of the shopping center attractive?

INTERIOR	EXTERIOR

DATA SHEET #6

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

POLLUTION AND COMMUNICATION

POLLUTION:

1. What kinds of pollution are there? Who or what is the source of this pollution?

2. What is being done to control the pollution?

COMMUNICATION:

1. How do the stores communicate with the customers?

2. How much is spent annually on communication? Is more spent at any one time of the year than another? Why?

3. Is there an organization to help stores communicate among themselves?

4. What does this organization do?

5. List here any other types of communication you can see.

DATA SHEET #7

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

TRASH

1. Where are the hauling trucks parked?

2. Where is trash placed? How and when is it picked up?

3. How many delivery trucks did you observe in the center? Time of day?

4. How long does garbage pick-up take?

5. What is trash put into until it is picked up? How many containers did you see in the stores you checked?

DATA SHEET #8

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

FLOW OF TRAFFIC ON PARKING LOT

1. How many parking spaces do you estimate there are?

2. What is the speed limit?

   Do cars seem to exceed the speed limit?

3. For how long do customers drive around to find the space closest to the store?

4. How many drivers go opposite the directions of the arrows?

5. How many drivers lock their cars?

6. Time of day:

DATA SHEET #9

WEST COUNTY SHOPPING CENTER
FIELD TRIP

NAME _____

DATE _____

TRAFFIC LIGHT AT MANCHESTER ROAD

1. How many traffic lights are at the Manchester Road entrance?

2.

	Time of Day	Number of Cars
10 minutes		
10 minutes		
10 minutes		

3. What is the speed limit on Manchester Road?

4. What is the speed limit in the shopping center?

5. How many cars use the left turn lane at the lights? _____

   How many use the right turn lane? _____

6. For how long does the red light remain red? _____

   For how long does the green light remain green? _____

   How many cars get through one green light? _____

DATA SHEET #10

WEST COUNTY SHOPPING CENTER
FIELD TRIP

NAME _____

DATE _____

TRAFFIC LIGHT AT BALLAS ROAD

1. How many traffic lights are at the Ballas entrance?

2.

	Time of Day	Number of Cars
10 minutes		
10 minutes		
10 minutes		

3. What is the speed limit on Ballas Road?

4. What is the speed limit in the shopping center?

5. How many cars use the left turn lane at the lights? _____

   How many use the right turn lane? _____

6. For how long does the red light remain red? _____

   For how long does the green light remain green? _____

   How many cars are able to get through one green light? _____

DATA SHEET #11

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

1. How many traffic lights are on the street's entrances?

   Name of street _____

2.

	Time of Day	Number of Cars
10 minutes		
10 minutes		
10 minutes		

3. What is the speed limit on the street?

4. What is the speed limit in the shopping center?

5. How many cars use the left turn lane at the lights? _____

   The right turn lane? _____

DATA SHEET #12

WEST COUNTY SHOPPING CENTER
FIELD TRIP

NAME _____

DATE _____

Comparison of two stores for maximum utilization
(Which store is shopped most?)

	Store _____	Store _____	Which is Shopped Most
Number of Men			
Number of Women			
Number of Children			
Time of Day Oberva-tion Made			

DATA SHEET #13

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

ESCALATORS AT PENNEY'S

Location of escalator _____

1. How many people use the escalator? (Take 10-minute counts at 3 different times.)

Time of Count	Number of Men	Number of Women	Number of Children	Total

2. What alternate ways are there to get to the different floors?

3. How many people use the elevators and stairs?

	Elevators (10 minute count)	Stairs (10 minute count)	Time of Day
Number of Men			
Number of Women			
Number of Children			

DATA SHEET #14

NAME _____

WEST COUNTY SHOPPING CENTER
FIELD TRIP

DATE _____

SAFETY DEVICES

1. What are the safety devices you investigated in four stores?

2. How many different types of safety devices did you see?

3. How and when are they put to use?

4. What hazards do they pre :?

5. Are there sidewalks?

6. Are there mats at the doors of the stores?

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