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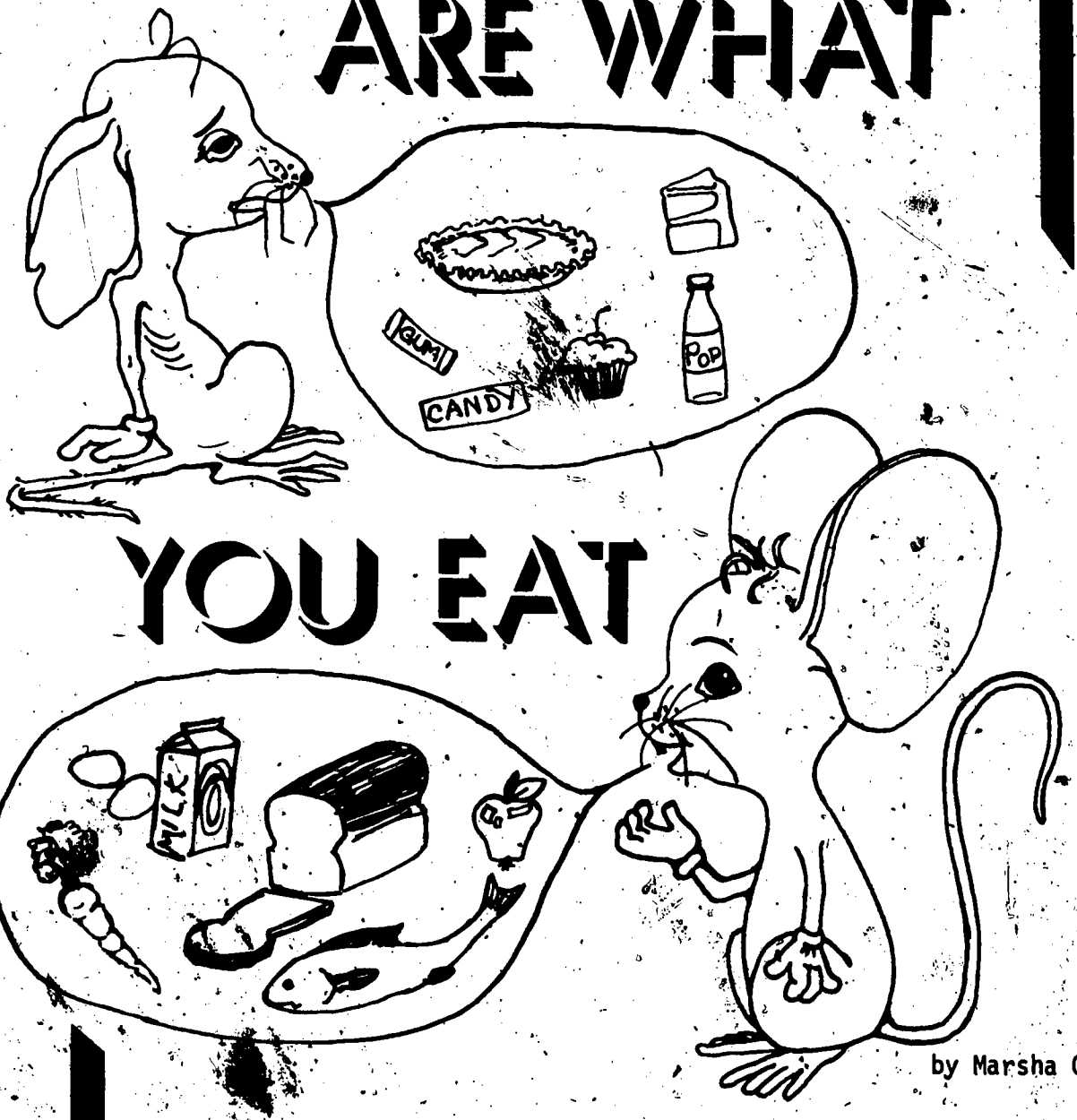
ABSTRACT

This is one of a series of units for environmental education developed by the Highline Public Schools. The unit for elementary students in intermediate grades is concerned with nutrition, basic food groups, food production careers, future trends in food production and population growth, and ecology. The unit of 18 lessons is to be used over a six week time span with lessons each day. The length of each lesson varies from 30 minutes to several hours. Each lesson includes the concept of the lesson, materials needed, notes to the teacher, procedure, evaluation activities, and suggested extra activities. The materials were tried and evaluated; evaluation data may be obtained from the Highline Public Schools. (RH)

CAMPBELL PAK

YOU ARE WHAT YOU EAT



by Marsha Campbell

An Environmental Learning Experience for elementary intermediate area. One of many "ELE PAKS" available for all areas.

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NATURE KNOWS BEST

PROJECT ECOLOGY TITLE III

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Frank D'Amico
Glen Derickson
Richard Dunn
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Gary Langrock
John Maurer
Aaron Parker
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The Author/Teacher Who Developed This Environmental Learning Experience (ELE)

Marsha Campbell, Gregory Heights Elementary
Highline Public Schools #401
Ralph Woods, Principal

Evaluation Results Regarding This ELE May Be Obtained by Including This Page and a Self Addressed Stamped Envelope To

Highline Public Schools, District 401
Instructional Division
Project ECOLogy ESEA Title III
Bill Guise, Director
15675 Ambaum Boulevard S. W.
Seattle, WA 98166

EVERYTHING IS CONNECTED TO EVERYTHING ELSE

EVERYTHING MUST GO SOME WHERE

THERE IS NO SUCH THING AS A FREE LUNCH

PROJECT ECOLOGY TITLE III

PAK TIME TABLE

* Lesson should be combined with activity cards.

1st Week	Introduction Diets Nutrition Experiment	M	Pre-Test
		T	Lesson 1 (Introducing Nutrition)
		W	Lesson 2 (Mixing Diets)
		Th	Lesson 3 (Many Reasons for Malnutrition)
		F	Talk about care of rats - Name them
2nd Week	Basic Food Groups	M	*Lesson 4 (Demonstration) - 1st weigh-in & observation
		T	Lesson 5 (4 Basic Food Groups - What Are They?)
		W	Lesson 6 (Relating Human & Rat Diets to 4 Food Groups)
		Th	*Lesson 4 (Demonstration) 2nd Weigh-in & Observation
		F	Lesson 7 (Comparative Costs of 4 Basic Food Groups)
			Lesson (Optional Cooking of Balanced Meal)
3rd Week	Careers in Food Production	M	*Lesson 4 (Demonstration) 3rd Weigh-in & Observation
		T	Lesson 8 (Researching Careers in Nutrition)
		W	Lesson 9 (Career Posters - Lesson 7 follow-up)
		Th	*Lesson 4 (Demonstration) 4th Weigh-in & Observation
		F	Lesson 10 (Nutrition Career Fair) (ALL DAY)
4th Week	Future Trends in Food Production and Population Growth	M	*Lesson 4 (Demonstration) 5th Weigh-in & Observation
		T	Lesson 11 Film "Food For a Modern World"
		W	Lesson 12 (Creative Writing Predicting Future Nutrition Trends)
		Th	*Lesson 4 (Demonstration) 6th Weigh-in & Observation
		F	Lesson 13 (Illustrating Future Nutrition Trends)
5th Week	Ecology Future Spheres Where Food Can be Produced	M	*Lesson 4 (Demonstration) 7th Weigh-in & Observation and Lesson #14 (Food or Famine)
		T	Lesson 2 (Measuring & Mixing Rat Diets)
		W	Lesson 15 (How We Can Produce More Food)
		Th	*Lesson 4 (Demonstration) 8th Weigh-in & Observation
		F	Lesson 16 (Hydroponic Gardens)
6th Week	Conclusions on Pak	M	Lesson 4 (Demonstration) Final Weigh-in
		T	Lesson 17 (Conclusions on Value of Good Nutrition)
		W	Lesson 18 (Make Game for Nutrition)
		Th	Lesson 18 (continued - Play Game)
		F	Post-Test

1 yd. clear contac paper
60 Kodak slide covers
2 cages
1-25.6 oz. box of Instant Nonfat Dry Milk
1-2 lb. bag of enriched flour
1-32 oz. box of whole wheat flour
2 lbs. regular rat diet
2-1 lb. 10 oz. boxes of plain salt
12 oz. bottle of vegetable oil
1-2 lb. box of C & H granulated sugar
2 bags of wood shavings (for cages)
2 water bottles for rats
1 bag of alfalfa
3 gram scales
6 containers for food storage in refrigerator
3 burners
6 mixing spoons
3 beakers to melt butter
3 measuring cups
3 sets measuring spoons
2 food dishes for rat's food
5 lbs. vermeculite
1 bottle of Simco chemicals for soilless plant growth
70 mung beans
5-1 lb. bags of soil
3-2½ oz. jars of dried beef

Washington Dairy Council Materials

4 - four to six week old rats from the same litter - all the same sex

Materials Teacher is Responsible For

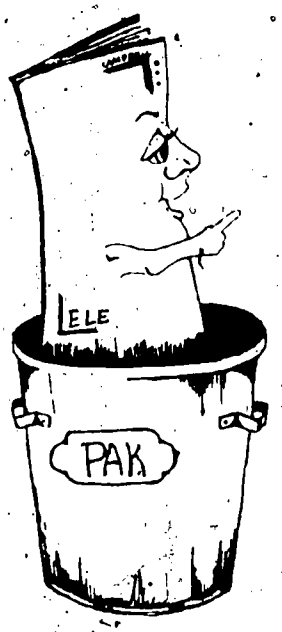
1 gallon empty milk carton (to put rats in when weighing)
1 folder per student to keep data in
Dittos for lessons where necessary - You will need to burn off a ditto master from the examples included in the book.
Carrots (any amount to be fed [illegible] to rats on good diet)
6 tablespoons butter
1 cup of sugar (the 2 lb. box included in the kit contains only 4½ cups = 1 cup short)
2 electric irons
magazines

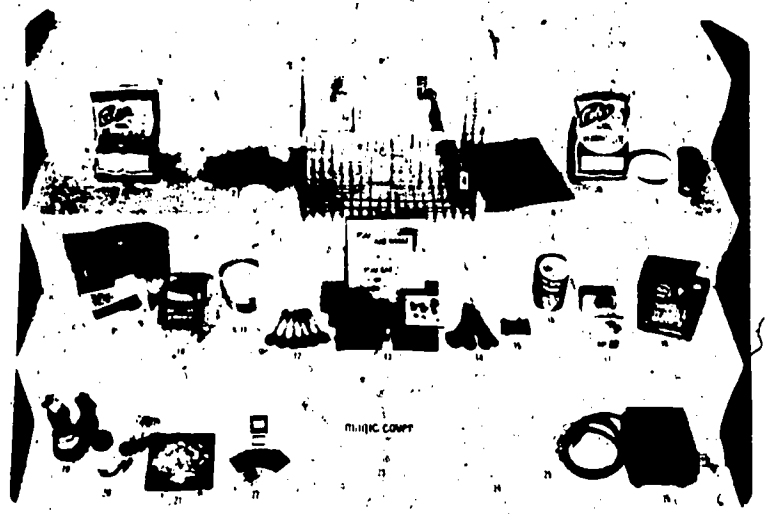
FILMS TO ORDER

Food For a Modern World - 21 min. - Traces developments in U. S. food technology and agriculture over past 50 years. Discusses current concerns about our present and future world food supply. Used 4th week.

Food for Life - 21 min. - Compares food practices and problems of 4 teenagers from diverse backgrounds - all of whom suffer from malnutrition, but for different reasons. Used 1st week.

Food or Famine - 29 min. - Presents impending threat of mass starvation, then covers what is being done to prevent it. Used 5th week.





Food Futures

by Marsha Campbell

Photo Item #	Amt	Description	Source
1	5	Soil, 1# bag	N
2	1	Alfalfa hay, lunch bag full	KF
3	2	Cages	NA
4	2	Bottle, water - for rats	
5	1	Food, rat, 2# bag	KF
6	5	Vermeculite, 1# bag	N
7	2	Dish, food - for rats	CB
8	3	Beef, dried - 2½ oz. jar	L
9	1	Milk, instant dry - 25.6 oz. box	L
10	1	Sugar, granulated, 2# box	L
11	6	Containers for food storage	L
12	6	Spoons, mixing (tablespoon size)	L
13	3	Scale, gram	CS
14	3	Spoons, measuring	L
15	70	Seeds, mung bean	CB
16	2	Salt, plain, 1 lb. 10 oz. box	L

Photo Item #	Amt	Description	Source
17	2	Flour, enriched, 2 lb. bag	L
18	1	Flour, whole wheat, 2 lb. box	L
19	1	Oil, vegetable, 12 oz. bottle	L
20	1	Bottle, Simco Chemicals for Soilless Plant Growth	CS
21	2	Wood shavings, shopping bags full	KF
22	1	Slide covers, box (100 per box)	DC
23	1	Contact paper, clear, 1 yd.	E.
24	3	Beakers, 250 ml	SS
25	3	Measuring cups	L.
26	3	Burners, electric	CB

NOTES TO THE TEACHER

This Pak is designed so that students are to observe and record data on a nutrition demonstration twice each week. This will take about 20 to 30 minutes; leaving time to do activity cards or to spend more time on individual lessons from previous or future days.

This learning Pak is to be used over a 6 week period with lessons for every day. The length of each lesson varies from 30 minutes to several hours, depending on how much time the teacher wishes to spend on it. Several lessons will take care of 2 to 3 subject areas, such as science, art and language arts in one lesson, thus they will run longer than those emphasizing one subject area.

Each week has an emphasis where all lessons tie into one particular area. (See Pak Time Table)

BACKGROUND INFORMATION

What is nutrition? - How an animal uses food to grow or repair tissues.

What is malnutrition? - Is not giving your body enough of the right nutrients.

What is food? - Food is life - what we are and how we feel. Every reaction stems first from the way our bodies are nourished.

What are nutrients? - Nutrients are in all food. They are needed for growth and good health. All people need nutrients, throughout life, but in different amounts.

Why doesn't everyone eat balanced meals? - Some people don't know what a balanced meal is. They think if you are not hungry that you are eating good meals. Some people are too poor to eat nutritious meals.

What must be done to insure enough food for everyone? - We must look at trends in food production rates and find new areas to produce foods in and see how we can increase production in presently used areas.

ACKNOWLEDGEMENTS

Washington State Dairy Council

IMPORTANT PRE-PAK PREPARATION

1. Make arrangements with Washington Dairy Council for rats 2-3 weeks prior to start of Pak.

   Washington State Dairy Council
   2366 Eastlake East, Room 206
   Seattle, WA 98102
   EA 3-3350

2. Make arrangements for speakers for Career Fair (3rd week of Pak). Ask class if their parents, friends or relatives are involved with food production (waitress, cook, produce man, nutrition expert in hospital, doctor, nurse, baker, etc.) and could talk to the class about their job. (You will need 3-5 speakers)

3. Order rats from Washington Dairy Council 2-3 weeks ahead.

4. Order films on nutrition.

5. Discuss care of rats and set up a program of caring for them. (See section on Care of Rats below).

CARE OF RATS

Students, not the teacher, should care for the rats. Since there are 6 weeks that the class will be involved in the demonstration, divide the class into 6 groups. Each group will be responsible for care of the rats for 1 week.

Cages - Clean shavings in cages twice a week.

Water - Change water once a day.

Food - Fill the rat's food dishes each day. Allow them to eat as much as they want, as long as it is their diet food. You should increase the amount fed as the rats grow.

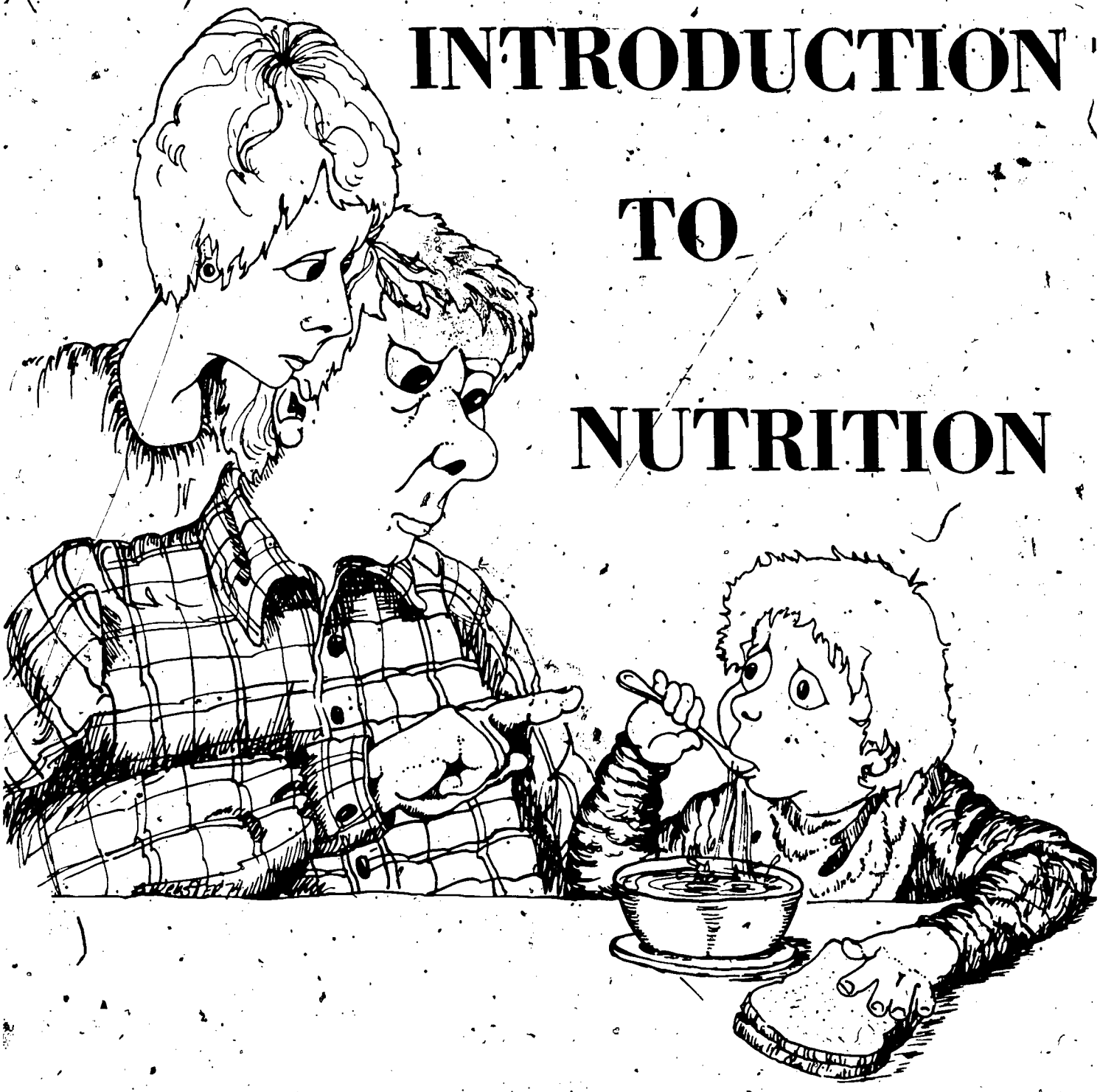
On weekends, place 2 days worth of food in the cages on Friday afternoon.

Handling - Students should be gentle and remember to support the animal's hind legs with one hand while holding the animal's front end with the other hand.

1st week - Before actual demonstration starts, feed all four rats regular rat diet (in kit).

1st WEEK

INTRODUCTION TO NUTRITION



LESSON 1

40 min.

CONCEPT: Introducing the word "Nutrition"

MATERIALS: Overhead projector

PROCEDURE: Tell students - *You are going to be participating in an experiment involving nutrition and how it effects physical growth.* Ask: *How could you tell if a rat was getting a balanced diet?* (possible answers might be that they are alert, strong, not sick, etc.). Make two columns on the overhead projector - one headed "good diet", the other "poor diet" - and list their responses for good diet. Now ask: *How can you tell if a rat is not getting a balanced diet?* (possible answers might be dull coat, slow, weak, skinny, etc.)

EVALUATIVE ACTIVITY: Have students make lists of their own - adding to what is on the board.

Discuss with the class how the lists they made concerning rats relates to good and poor nutrition in people.

Have them make another list showing traits of good and poor diet in humans.

EXTRA ACTIVITIES: Pass out magazines to each student. Tell them each to cut out pictures which show healthy animals or people. Glue the picture to a piece of construction paper then give the picture a caption. Do the same for illustrating unhealthy animals or people.

Put up for the class to see.

RATS		HUMANS	
Good Diet	Poor Diet	Good Diet	Poor Diet
glossy coat	dull coat		
alert	slow		
strong	weak		
plump	skinny		
no sores	sores		

LESSON 2

1 hour

CONCEPT: Using dry and liquid measures accurately.

MATERIALS: NOTE: Food amounts given below are for 6 week amounts, not 3 week. Store left over food in cool dry place until 2nd mixing during 5th week of Pak.

1. 7½ cups enriched white flour
2. 7½ cups whole wheat flour
3. 6 tablespoons butter
4. 3 cups salt
5. 1 cup vegetable oil
6. 5½ cups sugar
7. carrots (any amount)
8. 6 cups dried meat
9. 3 cups alfalfa
10. 7½ cups fortified nonfat dry milk
11. 3 gram scales
12. 6 containers for food storage
13. 3 burners (to melt butter)
14. 6 spoons for mixing
15. 3 pans to melt butter in
16. 3 sets measuring cups
17. 3 sets of measuring spoons

PROCEDURE: Divide class into 6 groups and set up 6 stations around the room for mixing the foods. Tell students - *You will be mixing the diets for the rats to be used for 3 weeks. At the end of this time you will have to again mix the diets to last for the remaining 3 weeks of the unit. Three groups will mix the poor diet using gram measures, while the other three groups will mix the good diet using dry measures. In three weeks when the mixing is done again, the groups will switch diets and methods of measuring, so that each of you is exposed to mixing both diets and to using gram and dry methods of measuring food.*

Store finished products in a refrigerator or cold, dry place in labeled containers.

Diet #1 - Good Diet - Food for 2 rats for 1 week

FOOD	WEIGHT IN GRAMS	MEASUREMENTS
Dry Milk (fortified with Vitamins A & D)	100	1¼ cups
Dried meat	25	¼ C (loosely packed)
Whole wheat flour	50	½ cup
Dried Alfalfa	5	1 tablespoon
Enriched white flour	50	½ cup
Sugar	10	1 tablespoon
Salt	5	½ tablespoon
Butter (melted)	15	1 tablespoon
Raw carrot	any amt.	

1. Measure accurately
2. Combine dry measurements then add melted butter.
3. Mix well

Diet #2 - Poor Diet - Food for 2 rats for 1 week.

FOOD	WEIGHT IN GRAMS	MEASUREMENTS
Dry Meat	25	¼ cup
Whole wheat flour	100	3/4 cup
Enriched white flour	100	3/4 cup
Dried alfalfa	10	2 tablespoons
Sugar	125	3/4 cup
Salt	10	1 tablespoon
Vegetable oil	100	½ cup
No carrots		

1. Measure accurately
2. Combine dry measures then add to the oil
3. Mix well

LESSON 3

60 minutes

CONCEPT: There are many reasons for a person to be suffering from malnutrition.

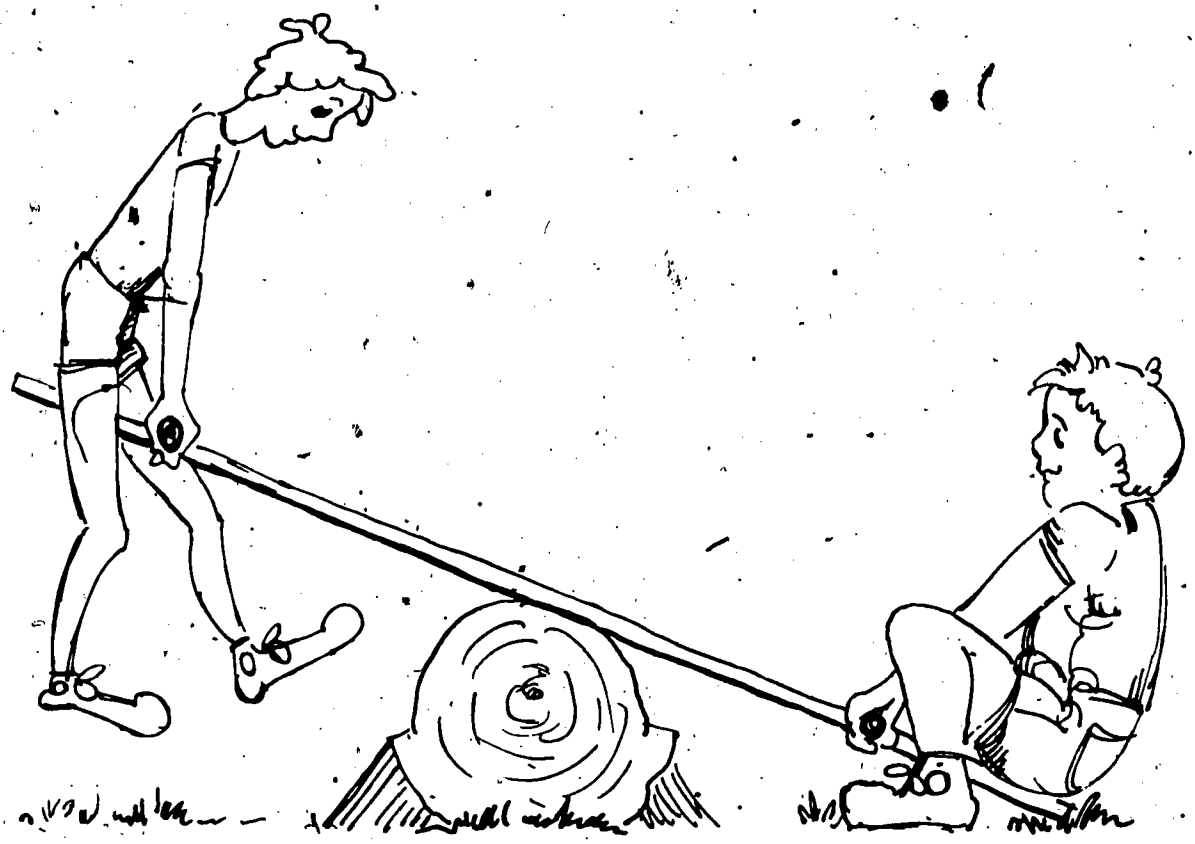
MATERIALS: Film: "Food for Life" (21 min.)

PROCEDURE: Ask class: *What causes malnutrition?* Most will agree not eating the right foods. Ask: *Why don't people eat the right foods for a balanced diet?* Many may feel only poor and starving people suffer from malnutrition. Explore the possibilities of what types of people are malnourished.

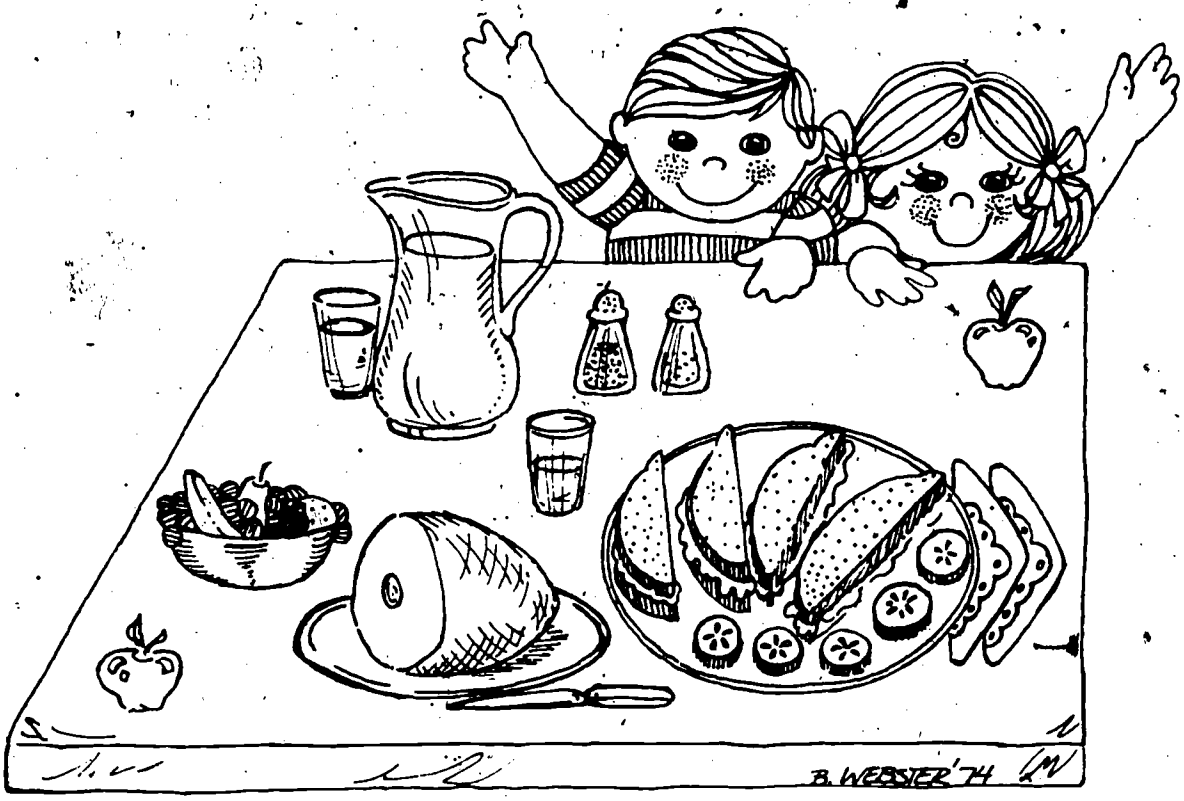
Tell the class - *You are going to see a film which shows several reasons for people being malnourished.*

EVALUATIVE ACTIVITY: After the film, ask class - *Have you changed your minds about what types of people are malnourished?* Have them explain why. Ask: *Would it be easy to become malnourished if you weren't careful?* Discuss the four teenagers in the film and their individual reasons for being mal-malnourished.

EXTRA ACTIVITY: Have class pretend that they are a malnourished teenager. Have them tell their story in creative writing of how they came to be that way and how they feel about their situation.



2nd WEEK



FOUR BASIC FOOD GROUPS

FOR BALANCED MEALS

LESSON 4

Weeks 2-6
20-30 minutes - 2 days a week.

CONCEPTS: Demonstrate the importance of good nutrition to the growth and development of humans through relating data on rats to people.

MATERIALS:
Rats (4)
gram scale
1 graph ditto per pupil
1 data sheet ditto per pupil
rat diet #1 (good diet)
rat diet #2 (poor diet)
1 gallon empty milk carton to place rats in while weighing
1 folder per pupil to keep data and graph sheet in

PROCEDURE: Tell class - *You are going to observe and record data on the two groups of rats to see if eating a balanced diet as opposed to eating a poor diet makes a difference in the rats.*

EVALUATIVE ACTIVITY: Pass out one folder and the two ditto record sheets to each child. Have them name each rat and fill in the names on the data sheets. With felt pen or food coloring mark the tails so that each rat can be distinguished.

With the help of the students who are assigned to care for the rats this week, weigh the milk carton that the rats are to be weighed in with the gram scale. Ask students: *Why is it important for you to know the weight of the container?* Make sure they understand that to get the correct weight of each rat they must subtract the weight of the container from the total weight.

Weigh each rat separately with the help of the students. Have the whole class subtract the weight of the 1 gallon milk carton and record the correct weight of each rat on their record sheets.

Put the rats back in their cages. Make sure the 2 rats on the good diet are not mixed with the 2 on the poor diet.

Now have students look at the graph ditto (in folders). Tell students - *Now add the weight of the 2 rats on the balanced diet and put a dot on the graph that stands for that number.* Have them do the same for the two rats on the poor diet, recording the data on their graph.

*Each Monday and Thursday have students record data on their charts and graphs, including comments on their general condition (hair loss, eye sight, nervousness, slow movements, sore on eyes, etc.)

EXTRA ACTIVITIES: See activity cards.

DATA SHEET FOR RATS ON BALANCED DIET

NAME _____

RAT NAME (or color) _____

Information	1st Week		2nd Week		3rd Week		4th Week		5th Week		6th Week	
	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs
Rat & Box Weight												
Box Weight												
Rat Weight												
Last Week's Weight												
Gain ⊕ or Loss ⊖												
General Condition												

P = Poor Condition
F = Fair Condition
G = Good Condition
E = Excellent Condition

RAT NAME (or color) _____

Information	1st Week		2nd Week		3rd Week		4th Week		5th Week		6th Week	
	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs
Rat & Box Weight												
Box Weight												
Rat Weight												
Last Week's Weight												
Gain ⊕ or Loss ⊖												
General Condition												

DATA SHEET FOR RATS ON POOR DIET

NAME _____

RAT NAME (or color) _____

Information	1st Week		2nd Week		3rd Week		4th Week		5th Week		6th Week	
	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs
Rat & Box Weight												
Box Weight												
Rat Weight												
Last Week's Weight												
Gain ⊕ or Loss ⊖												
General Condition												

P = Poor Condition
F = Fair Condition
G = Good Condition
E = Excellent Condition

RAT NAME (or color) _____

Information	1st Week		2nd Week		3rd Week		4th Week		5th Week		6th Week	
	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs	Mon	Thurs
Rat & Box Weight												
Box Weight												
Rat Weight												
Last Week's Weight												
Gain ⊕ or Loss ⊖												
General Condition												

COMBINED GROWTH RECORD

Blue = Balanced Diet
Red = Poor Diet

	Start Weight	1st Week		2nd Week		3rd Week		4th Week		5th Week		6th Week	
		M	Th	M	Th	M	Th	M	Th	M	Th	M	Final Weight
410													
390													
370													
350													
330													
310													
290													
270													
250													
230													
210													
190													
170													
150													
130													
110													
90													
70													
50													
30													
10													

LESSON 5.

2 hours

CONCEPT: Balanced meals involve including foods from each of the 4 food groups in a meal.

MATERIALS: Blackboard and chalk
Magazines - scissors - glue
Tagboard

PROCEDURE: Ask class - *What are your favorite foods?* Make a list on the board. When you have foods from each of the four food groups (meat, vegetable and fruit, milk, bread and cereal) listed, ask *Could you divide the items you listed into 4 groups?* Make another list of the groupings they could see - encouraging all answers, discussing each to see if it would fit.

EVALUATIVE ACTIVITY: When the class has decided on the 4 basic food groups, say *You are to make a collage from magazine pictures illustrating the 4 food groups. In your finished product I should be able to see the separate food groups illustrated in your collage.*

EXTRA ACTIVITIES: Art - Have class draw 1 food item representing something in one of the food groups - making it life sized. Using watercolors have them paint the item using shading techniques to make it look real. When students are finished have them cut out their item and cluster it on a bulletin board divided into the 4 headings of Meat, Bread and Cereals, Fruits and Vetetables and Milk, with those of the other students.

LESSON 6

20 minutes

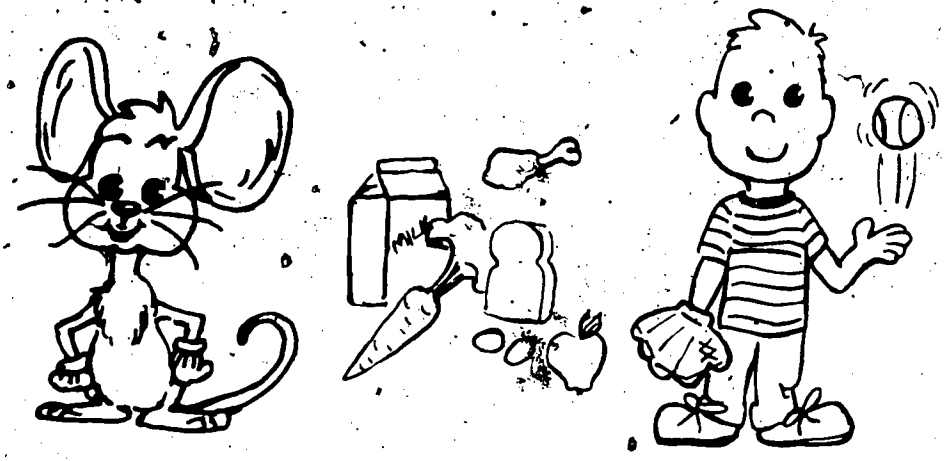
CONCEPT: To relate the four basic food groups to human and rat diets.

MATERIALS: Diet equivalents ditto
Good and Poor diet recipes of rats

PROCEDURE: Tell class - *Now that you have studied the 4 basic food groups you should be able to relate them to the rats' diets and to see what the equivalent diet would be for humans.*

EVALUATIVE ACTIVITY: Pass out diet equivalent ditto and good and poor diet recipes to the class. Have them quickly fill in rat diet column (5 min.). When they are done discuss the equivalent human diets. Ask - *What do you think would happen if you always ate the human comparative to the poor rat diet?* (slow - less stamina - tired - dull hair - poor nails - brittle bones, etc.)

EXTRA ACTIVITIES: Have groups of 5 make human menu equivalents for good and poor rat diets.



RECIPES

POOR DIET

FOOD	WEIGHT IN GRAMS	MEASUREMENT
Dry Meat	25	1/4 cup
Whole wheat flour	100	3/4 cup
Enriched white flour	100	3/4 cup
Dried alfalfa	10	2 tablespoons
Sugar	125	3/4 cup
Salt	10	1 tablespoon
Vegetable oil	100	1/2 cup

GOOD DIET

FOOD	WEIGHT IN GRAMS	MEASUREMENT
Dry milk	100	1 1/4 cups
Dried meat	25	1/4 cup
Whole wheat flour	50	1/2 cup
Dried alfalfa	5	1 tablespoon
Enriched white flour	50	1/2 cup
Sugar	10	1 tablespoon
Salt	5	1/2 tablespoon
Butter	15	1 tablespoon
Raw Carrot	Any amount	

DIET EQUIVALENTS

GOOD DIET

	Rat Diet	Human Diet
Milk Group		4 cups milk
Meat Group		1 serving meat
Veg. & Fruit Group		2 servings of veg. or fruit
Bread & Cereal		4 slices bread or cereal
Additional Foods		jam - dessert - salt - butter

POOR DIET

	Rat Diet	Human Diet
Milk		none
Meat		1 small serving meat
Veg. & Fruit		1 serving
Bread & Cereal		4 slices bread
Additional Foods		large dessert, candy, salt, sugar

LESSON 7

2 hours

CONCEPT: Some food groups are more expensive to buy than the others.

MATERIALS: Newspapers
Chalkboard - chalk

PROCEDURE: Ask class - *Which of the 4 food groups would be the most expensive to buy?* (Most will say Meat). List Meat as #1 on the blackboard. Ask - *Why do you feel that it would be?* Guide class into exploring costs of producing the meat. How long and how much does a farmer have to feed a cow - pig - lamb - chicken, etc. before it is ready for market. What other considerations of the animals are necessary? Are they costly?

Ask class - *Which group would be the next costly to buy?* (milk products) List Milk Products as #2 on the board. Ask - *Why would it be next costly?* Again guide class into exploring costs of feeding and caring for dairy animals.

Of the two remaining groups, which would be 3rd costly to purchase? (fruits and vegetables) Put Fruits and Vegetables as #3 on the board. Ask - *Why would they be more expensive than grains?* (Bread & Cereal Group) Discuss spoilage of fruits and vegetables as compared to that of grains and how it plays a role in raising prices.

EVALUATIVE ACTIVITY: Divide class into groups of five. Tell class - *You are going to plan breakfast, lunch and dinner for one day for a family of 4. You are to have $10.00 to spend and must plan balanced meals.* Pass out newspapers (can be several weeks old) to the groups. Tell them - *You must cut out ads in the paper to prove your prices are valid and glue them on the appropriate menu, adding up costs for each meal, then totaling the costs of the 3 meals.*

EXTRA ACTIVITIES: Optional lesson for this week.

OPTIONAL LESSON FOR LESSONS 5-7

2-3 hours

CONCEPT: Students are aware of food groups and why we need these foods. Now they can put knowledge to practical application in meal planning.

MATERIALS: luncheon foods (brought from home)
pots and pans
skillets ?

PROCEDURE: Divide class into groups of 5. Tell them - *You are to plan a simple lunch that is balanced.* Give groups about 10 minutes to plan their meal. Bring class back together and have each group tell the others their menu. Discuss each one, checking for foods representing each food group.

EVALUATIVE ACTIVITY: Tell the groups - *You are to prepare your menu for your group and to make a list of what you need. You are to do this in one week.* Meet with each group separately and decide who can bring what. Since this is a simple lunch, the materials should be no problem. (Salad - sandwiches - desert - milk - etc.) Where skillets, pans, etc. are needed, perhaps they could be brought from home. (Most schools have hot plates for cooking).

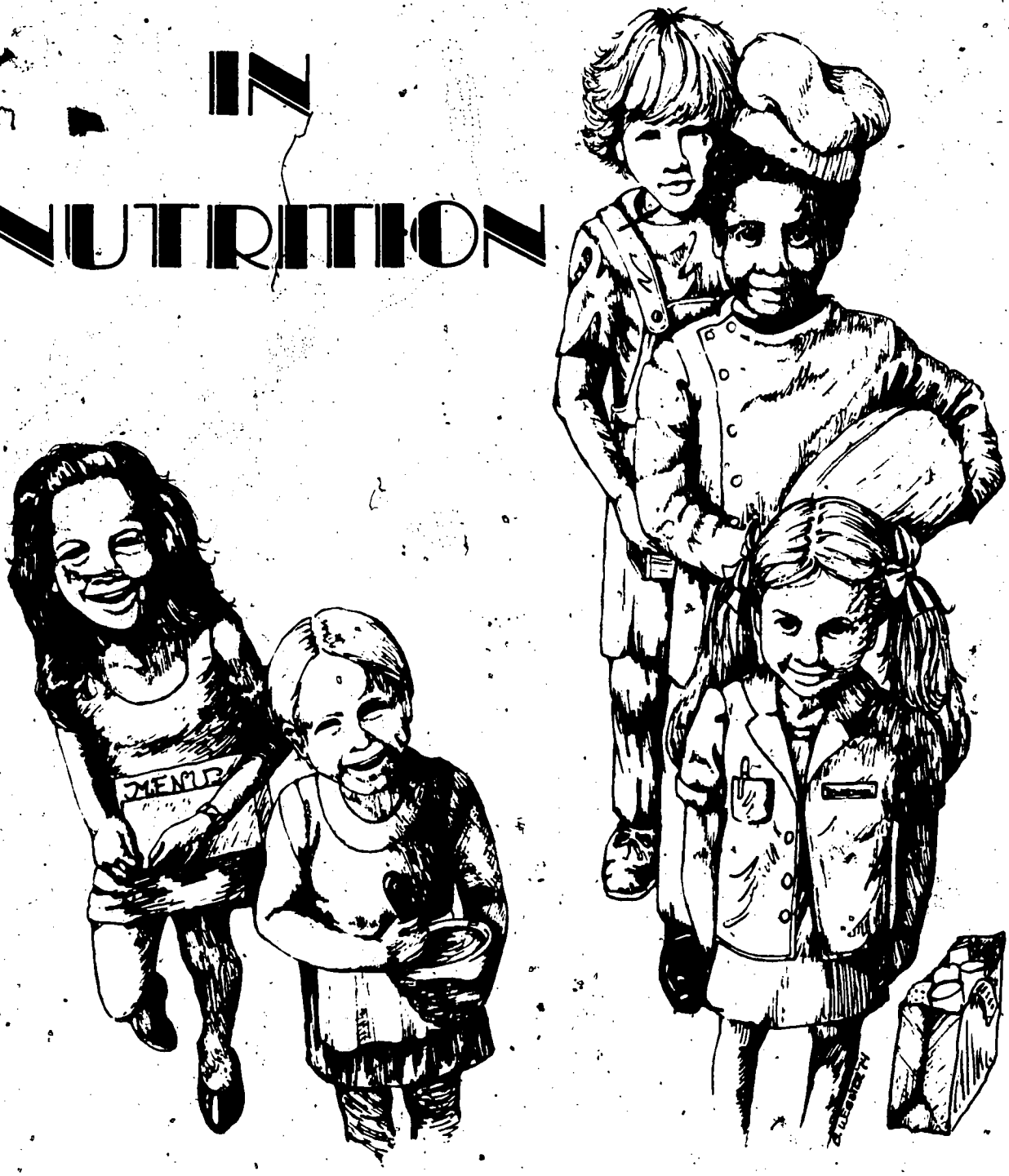
On the day of the luncheon, each group will participate in preparing lunch for the other members of their group and in cleaning up afterwards.

EXTRA ACTIVITIES:

1. Plan one simple lunch menu to serve to parents who could attend.
2. Ask school cooks if they would let your class plan menu for school lunches. Usually there are 2 to 4 surprise "class A" lunches per month in most buildings. See if the class could plan these staying within the guidelines set by the cooks.

3rd WEEK

CAREERS IN NUTRITION



1-1½ hours

CONCEPT: To make students aware of careers involving nutrition

MATERIALS: Blackboard - chalk
Reference books
Suggested reference books: (1) Popeye Career Comics (Bill Guise)
(2) Encyclopedia of Careers
Research ditto

PROCEDURE: Ask class - *What jobs deal with food production and nutrition?* As they give examples list them on the board. See how many the class can name. (Farming - middle men - stores - cooks - research, etc.)

EVALUATIVE ACTIVITY: Tell students - *Pick out one job from the list that you would be interested in researching. You should find out the following information: (1) What the job involves. (2) Training necessary. (3) History of job. (4) How job relates to other jobs. (5) What service it performs for us. (6) Pay and benefits.*

EXTRA ACTIVITIES: Have students write a story in which they have the job that they researched. Have them tell what a typical day would be like.

JOB RESEARCH DATA

_____
(Job)

WHAT JOB INVOLVES

TRAINING

HISTORY OF JOB

HOW JOB RELATES TO OTHER JOBS

SERVICE JOB PERFORMS FOR PEOPLE

PAY AND BENEFITS

LESSON 9

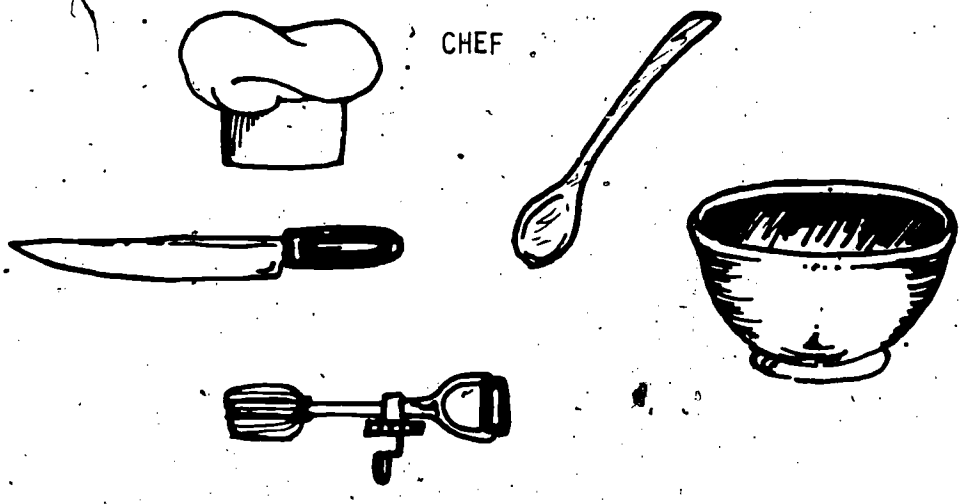
2 hours

CONCEPT: To make students aware of careers in food production field.

MATERIALS:
tagboard 18" x 24" (poster size)
watercolors
poster paints
brushes
water dishes
colored construction paper
glue
felt pens
scissors

PROCEDURE: Ask class - *What things come to mind when you think of a cook?* (Some possible responses are: pots and pans - chef's hat - rolling pin - spices - spoons - etc.) Now ask - *What do you think of when I mention nutrition expert?* (Some responses might be: laboratory - rats - test tubes - experimental kitchen - white laboratory robes - etc.)

EVALUATIVE ACTIVITY: Tell class - *Each job has its symbols. You are to make a poster of the job you researched yesterday and include symbols of that job. You can use paints or cut items out of construction paper using felt pens for accents. In cut out letters you are to label your poster with appropriate job name.*



EXTRA ACTIVITIES: GAME - Play "Who Am I?" using nutrition jobs as basis. One person decides on a career. He tells the teacher only. The class can ask the person questions that have only "yes" or "no" answers. The person who first guesses the profession gets to pick the next profession to do, etc.

LESSON 10

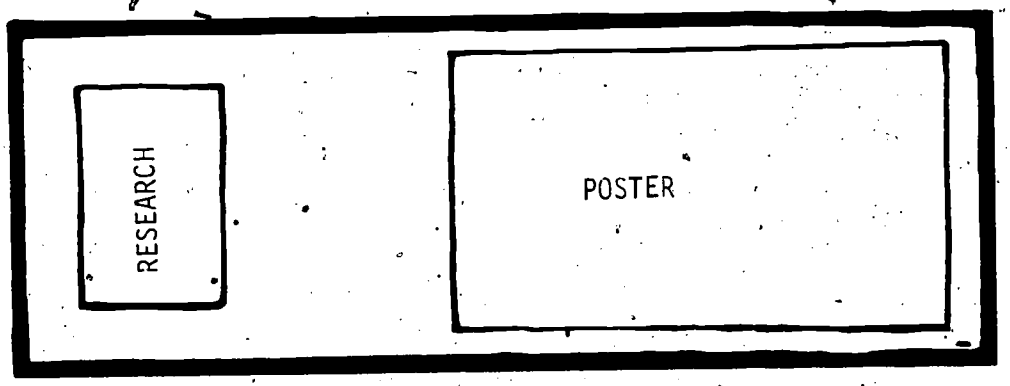
Most of 1 day

CONCEPT: Students involve other classes in being aware of careers in food production and nutrition.

MATERIALS:
Job research dittos (Lesson 7)
Job posters (Lesson 8)
Guests in nutrition field (waitress, cook, hospital nutritionist, produce man, butcher, truck farmer, etc.)
Large tagboard (for mounting)
tape
glue

PROCEDURE: Tell class - *In order to get the benefit of the research that other class members have done, and to share what you have learned, you are going to plan a Nutrition Career Fair.*

EVALUATIVE ACTIVITY: Tell class - *You are to mount your research paper and your poster on a large piece of tagboard to be displayed in the hall outside, (or maybe the lunchroom, office, hall, etc.)* Pass out glue or tape for the mounting and have each student put his work up in the hall. Set aside time for students to read and observe each other's research. Invite other classes to do the same.

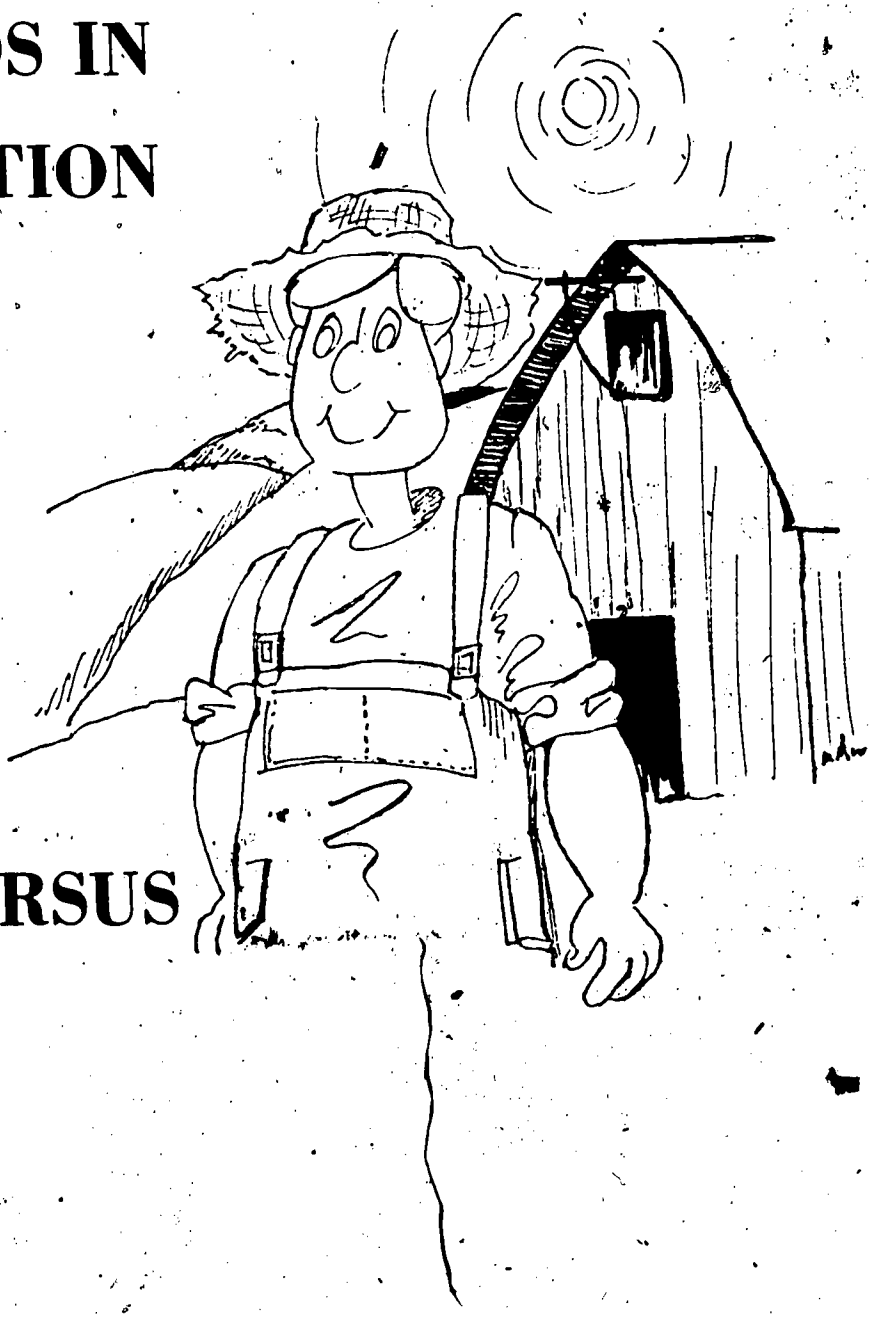


Tell class - *I have invited people dealing with food production or nutrition to talk to you about their jobs.*

Divide class into as many groups as there are speakers. Have groups rotate each 15-20 minutes so that they are exposed to all guests. Encourage guests to wear uniforms and bring any materials relating to their job that they can. Have them leave time for student questions. Stress student participation. (Waitress - give class sample order to fill out, etc.)

EXTRA ACTIVITIES: See Activity Cards.

FUTURE TRENDS IN FOOD PRODUCTION



VERSUS

POPULATION INCREASES

1 hour

CONCEPT: Students can see what is being done to increase future world food supplies.

MATERIAL: Film - "Food for a Modern World"
paper
pencils

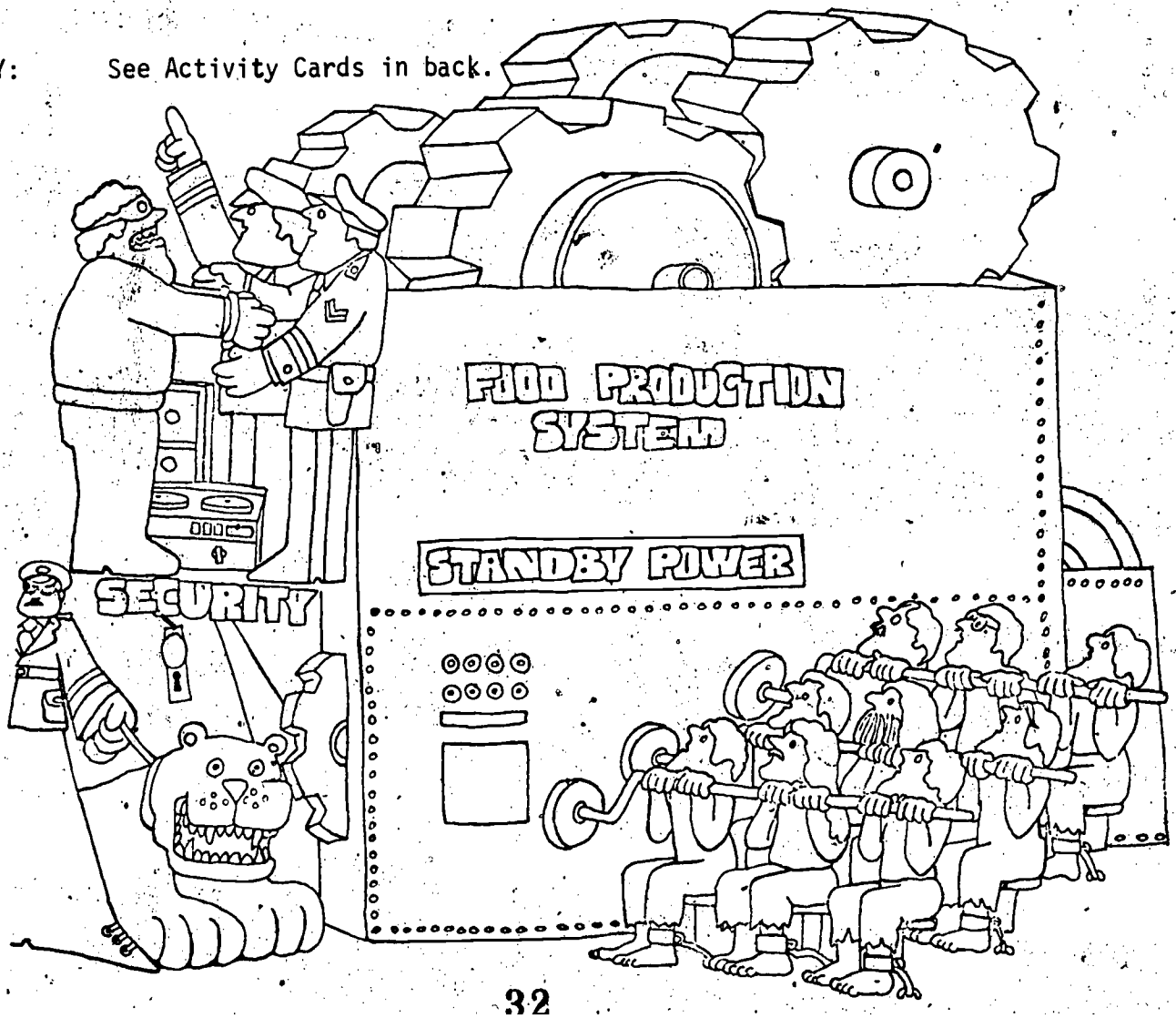
PROCEDURE: Ask - *What do you think is being done to increase our food supply?* After all have had a chance to answer say - *You gave many good suggestions and the film you are going to see will show these and others.*

Show film.

EVALUATIVE ACTIVITY: After seeing the film ask - *Did you see any ways of producing food that you hadn't thought of? What were they? Which do you think would work best? Why do some methods lend themselves to specific geographic areas? Did you think of ways of increasing food production that were not shown in the film? What were they?*

Pick one of the following areas of our state - Eastern Washington, Kent Valley or the City of Seattle and discribe how you could increase food production there. You can make it in a list form or report form.

EXTRA ACTIVITY: See Activity Cards in back.



LESSON 12

40 min.

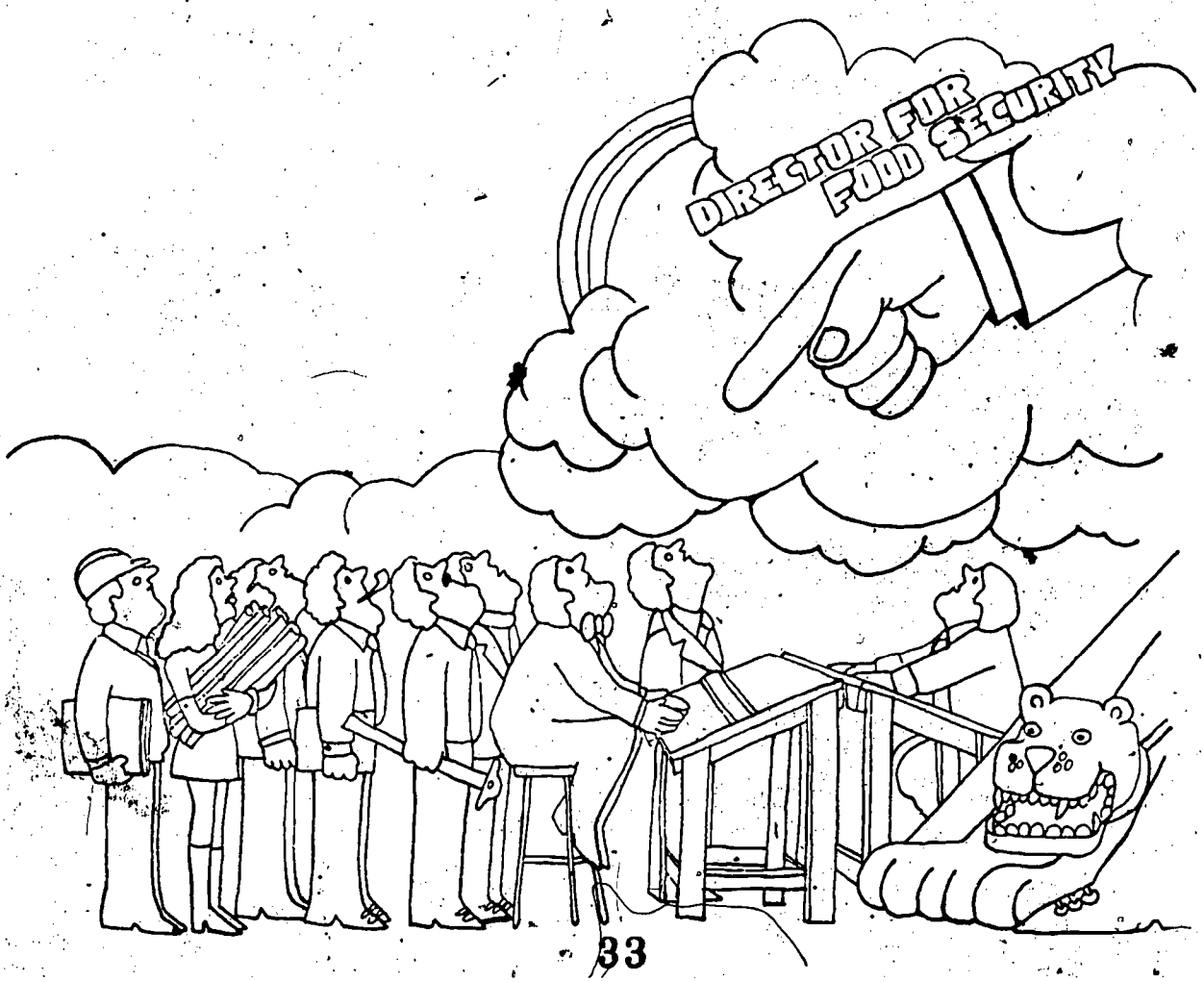
CONCEPT: Class can see future trends in nutrition.

MATERIALS: pencils and paper

PROCEDURE: Remind class of the film that they saw yesterday. (Food for a Modern World) Ask - *How do you think your lives would be affected if the trends in population growth and food production continued at the same rate until there was much less food per person to be consumed? Would only the rich eat and the poor starve? Would food be rationed equally? Would we have to take pills to make up the difference in what we couldn't eat? What would happen? Would we take precautions so that the situation would not get out of hand? What might they be?* Encourage all answers.

EVALUATIVE ACTIVITY: Tell class - *You have the gift to forsee the future. What will happen to the food-nutrition situation in the year 2000? You are to each write a story with your own predictions included, using any knowledge you have gained in previous lessons to substantiate your beliefs.*

EXTRA ACTIVITY: Write a puppet show which illustrates future trends in nutrition and present it for the class.



LESSON 13

1-1½ hours

CONCEPT: Students can illustrate future trends in nutrition based on knowledge gained in previous lesson.

MATERIALS:
blackboard
chalk
1 yard of clear contact paper
pile of old magazines
scissors (1 per pupil)
2 irons or more if you have them
5 cups filled with hot water
30-60 Kodak slide covers or 1-2 per student

PROCEDURE: Tell class: *You have written your description of the future trends in nutrition in the previous lesson. We could all better understand your predictions if we could see your description as well as hear about it.*

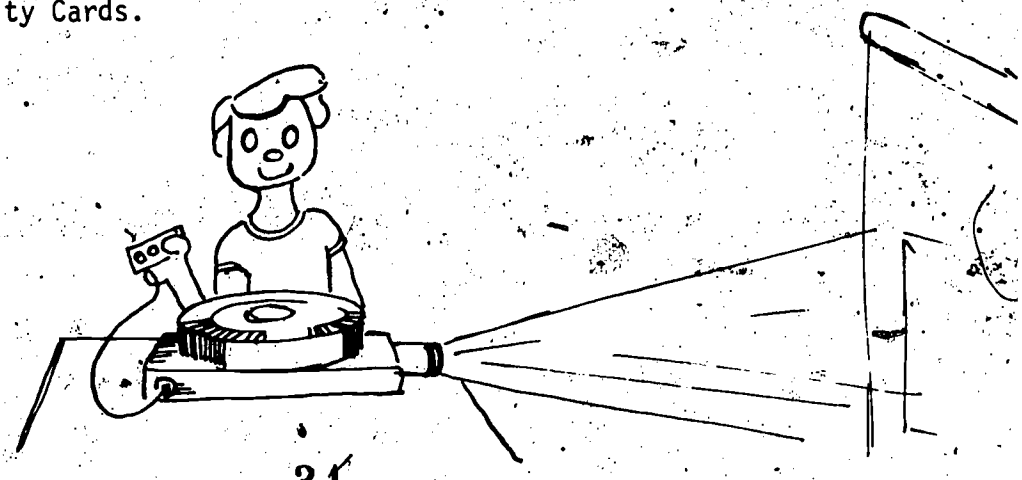
You will be making slides which will help illustrate your predictions. When you are finished you can read your predictions as you show the slides to illustrate them to the class.

Pass out magazines to the class as well as several Kodak slide covers. Set out the cups of hot water and the irons for them to use. Put these directions on the board:

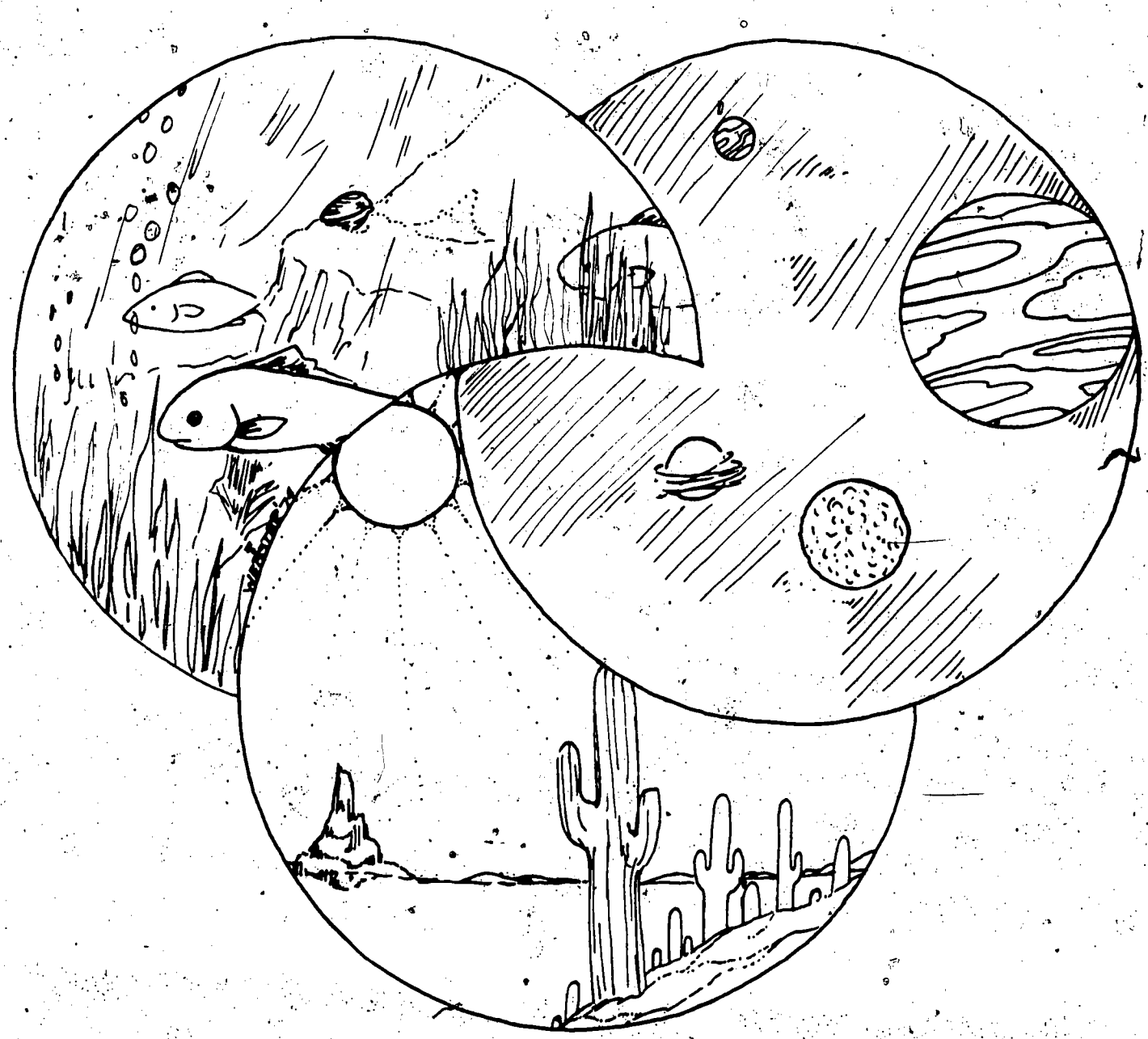
1. Find picture you want 1" x 1".
2. Stick 1" x 1" contact paper on it.
3. Cut picture out.
4. Soak in cup of hot water for 3 minutes or until back of picture soaks off.
5. Dry picture with paper towels.
6. Stick 1" x 1" square of contact paper to the sticky side of the 1st square of contact paper.
7. Place picture in slide cover and iron the edges to make permanent.

When the class is finished with their slides, have them read their predictions as they show their illustration for the class.

EXTRA ACTIVITY: See Activity Cards.



5th WEEK



FUTURE SPHERES OF FOOD PRODUCTION

LESSON 14

(to be used after weigh in #7 (Lesson #4) on Monday)

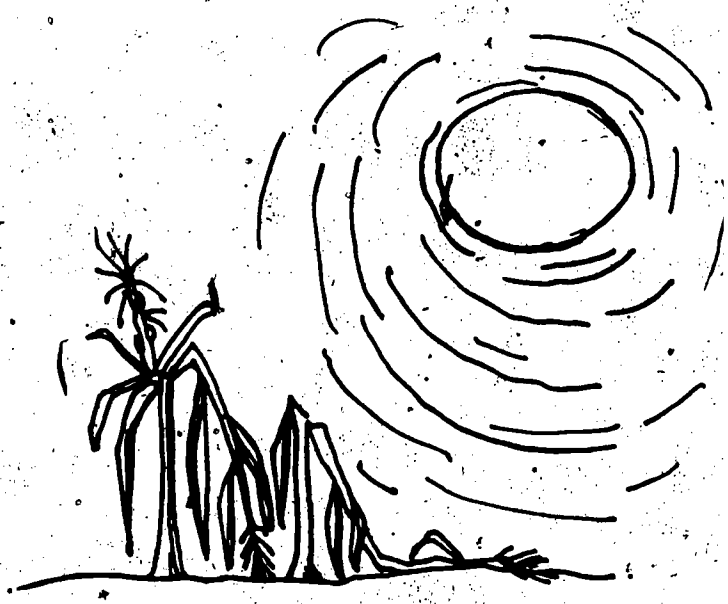
CONCEPT: Students see how critical the food shortage problem is world wide.

MATERIALS: Film: "Food or Famine" (29 min.)

PROCEDURE: Say - *We have studied future trends in food production. The film you are going to see shows what happens when we don't plan ahead (famine) and then gives us some additional ideas on how to use ecology methods to prevent mass starvation.* (Show film - 29 min.)

EVALUATIVE ACTIVITY: Ask - *What are some of the reasons for famine?* Encourage and discuss all answers. *What can be done to avoid famine?* Again, encourage and discuss all answers thoroughly. *What could you as one person in situations similar to those in the film do to avoid famine? What could a government do? Whose responsibility is food production? Why?* Encourage answers and discuss each thoroughly until you feel students see that everyone must share in the responsibility and do his part through being informed and being aware of current and future situations.

EXTRA ACTIVITY: See activity cards in back.



food **or** **famine**

½ hour

CONCEPT: How we can produce more food.

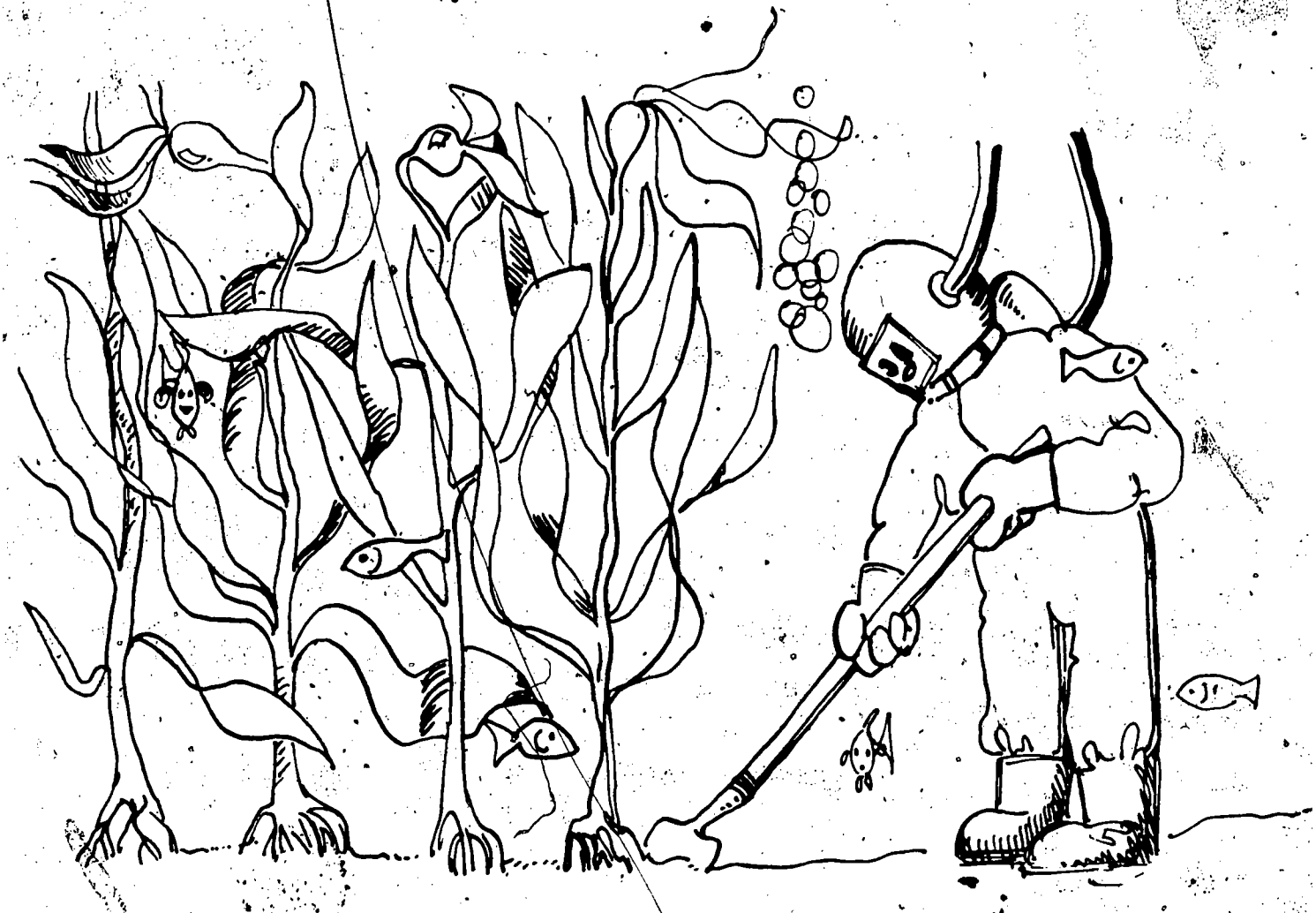
MATERIALS: paper
pencils
overhead projector

PROCEDURE: Divide class into 5 groups. Tell them: *You have seen several films which show what will happen if we don't solve our growing food shortage. You have also seen in the films ways that we can increase food production.*

EVALUATIVE ACTIVITY: *Your group is to make a list of as many solutions to the food crisis as they can in the next 15 minutes.* When the time is up have each group read their list. Write the items on the overhead, making a master list for everyone to see.

Discuss each item as it is volunteered. Perhaps students will think of solutions that they had not previously thought of.

EXTRA ACTIVITIES: See Activity Cards.



LESSON 16

1 hour

CONCEPT: See alternative way to produce food - through soilless plant growth (Hydroponics Gardens)

MATERIALS:
5 lbs. vermiculite
5-1 lb. packages plant soil
water
mung bean seeds (2 per pupil)
2 small milk cartons per pupil
Cenco Chemicals for soilless plant growth

PROCEDURE: Put the word Hydrophonic on the board. Ask - *Do you know how this word relates to how we can produce more food?* Break the word down. *What does hydro mean?* (water) *What does ponics mean?* (labor) *Putting the syllables together it means working in water -- or plants working in water, in this case.*

Explain - *There are places now where food plants are being grown without soil. This is an alternative to growing crops in soil. Any needed chemicals for growth can be put into the water for the plants to soak up.*

How could this help us produce more food? (grow in laboratories under controlled conditions - no bugs - or diseases - plants will produce more, etc.)

EVALUATIVE ACTIVITY: Tell the class - *Everyone will plant his own hydroponic garden in a milk carton. First saturate a carton full of vermiculite with as much water containing the Cenco Chemicals for soilless plant growth as it will absorb. Then, plant the bean seeds.* (Soak first overnight for faster germination.)

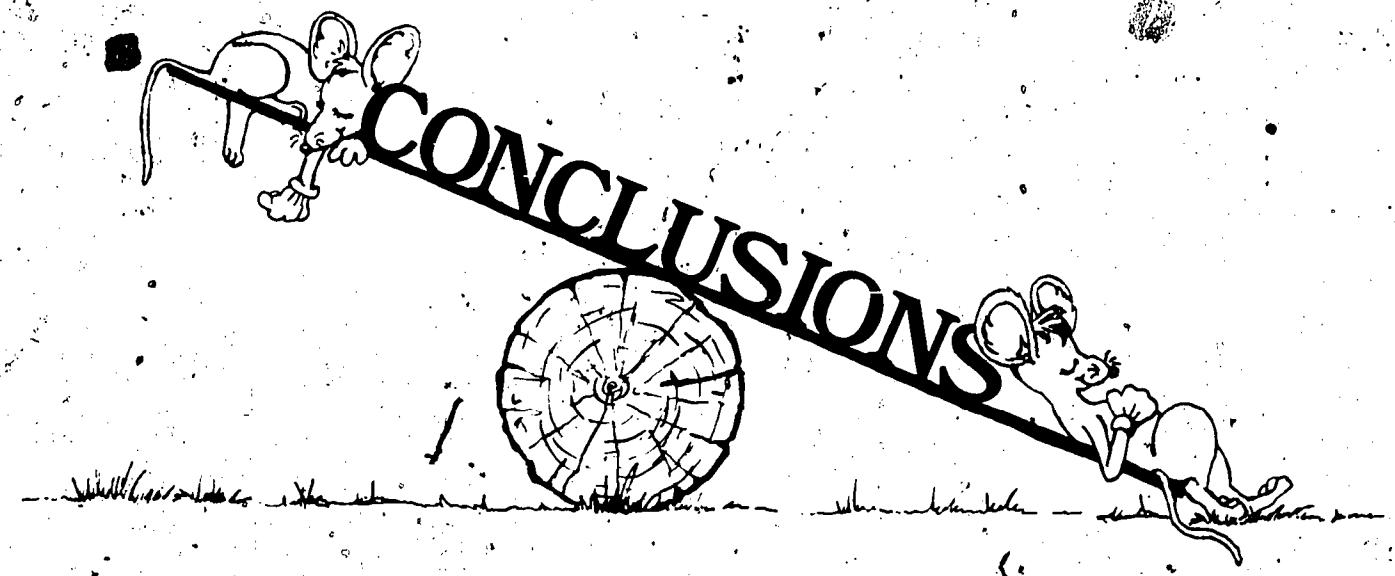
For the control group have each student plant another bean seed in regular plant soil in another carton. They can keep the 2 cartons on their desks to compare the growth.

There should be little difference, showing that plants of the future may not be grown in soil, but in water.

As the plants grow, you can discuss with the class only differences in the bean plants and possible reason for the differences. Do the same for similarities (there should be more similarities)

EXTRA ACTIVITIES: Keep data and charts on the plant's growth to be used later for comparisons in final week.

6th WEEK



LESSON 17

40-60 minutes

CONCEPT: Is good nutrition important? How can we meet rising food demands so we are able to eat nutritiously?

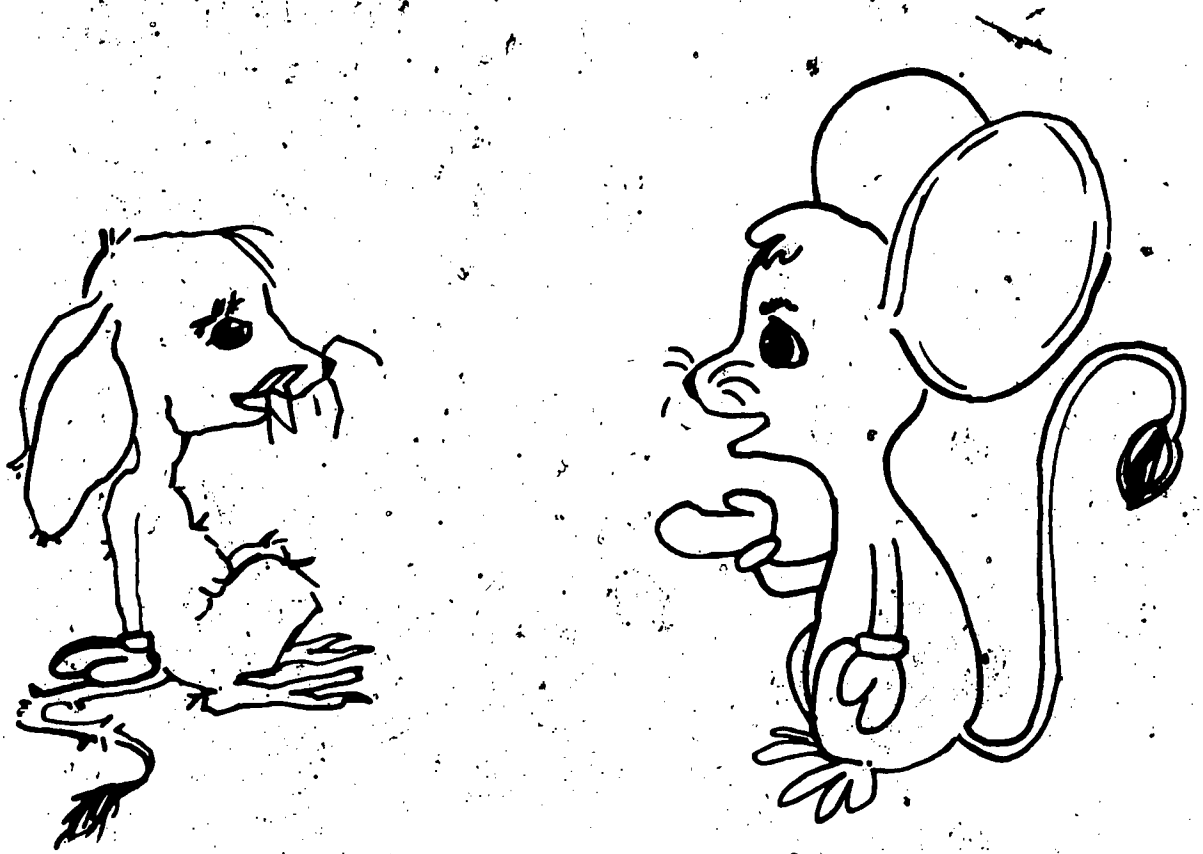
MATERIALS: Graphs and observation data kept on feed demonstration
Ditto "Final Conclusions"

PROCEDURE: Ask - *Could you see any differences between the rats on the good diet and the rats on the poor diet?* As they give suggestions list them on the board. (poor diet rats skinny - slow - irritable - dull coat - maybe have sores around eyes, etc.)

We all know we should eat good foods, but how will we all be able to afford them with population growth increasing faster than food production rates? Discuss alternatives brought up in last week's lessons (making present areas more productive - finding new sources of food - etc.)

EVALUATIVE ACTIVITY: Have students fill out the sheet "Final Conclusions".

EXTRA ACTIVITY: See activity cards.



NAME _____

FINAL CONCLUSIONS

	Characteristics of Rats on Poor Diet	Characteristics of Rats on Good Diet
Weight		
Energy		
Coat		
Sores?		
Nervous?		
Irritable		

1. Is it desirable to eat a nutritious diet? Why?

2. What would happen if the population growth and the food production rate continued at the same rate?

3. List 3 ways we can provide more food for the future.
   1.
   2.
   3.

4. What is malnutrition?

LESSON 18

40 min. 1st day
40 min. 2nd day

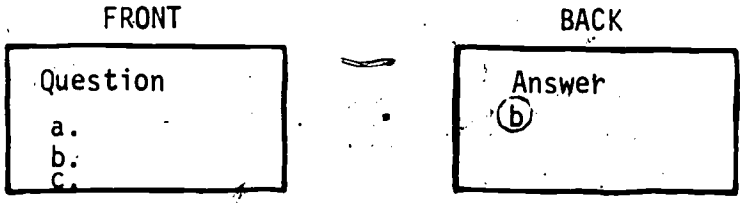
CONCEPT: Tying together all information learned in Pak.

MATERIALS: 3 - 3" x 5" cards per student
overhead projector

PROCEDURE: Explain - *You have learned a great deal about nutrition in the last 5 weeks.* List in four columns the following headings (1) Basic Food Groups (2) Careers in Nutrition (3) Future Trends and (4) Ecology of Nutrition. Ask - *What things did you learn in these four areas?* List them as they are given. See how many the class can list for each area. Reminding them of an activity may bring to mind another item they learned.

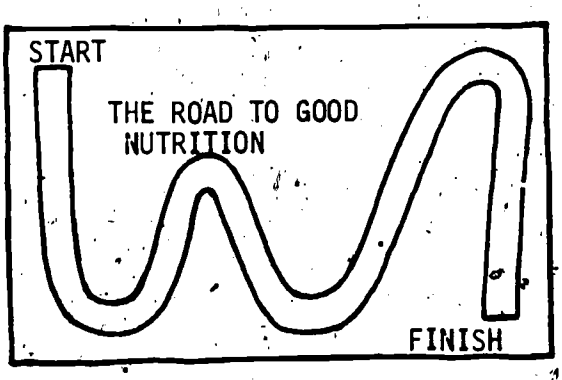
EVALUATIVE ACTIVITY: Pass out three 3" x 5" cards to each student. Say - *You are to make up 3 multiple choice questions on nutrition.* Explain that in multiple choice, a statement is left unfinished and they are to put down 3 possible answers that would make the statement true - but only 1 answer is really correct. Tell them to put correct answer on the back of the card.

Collect and read cards for errors.



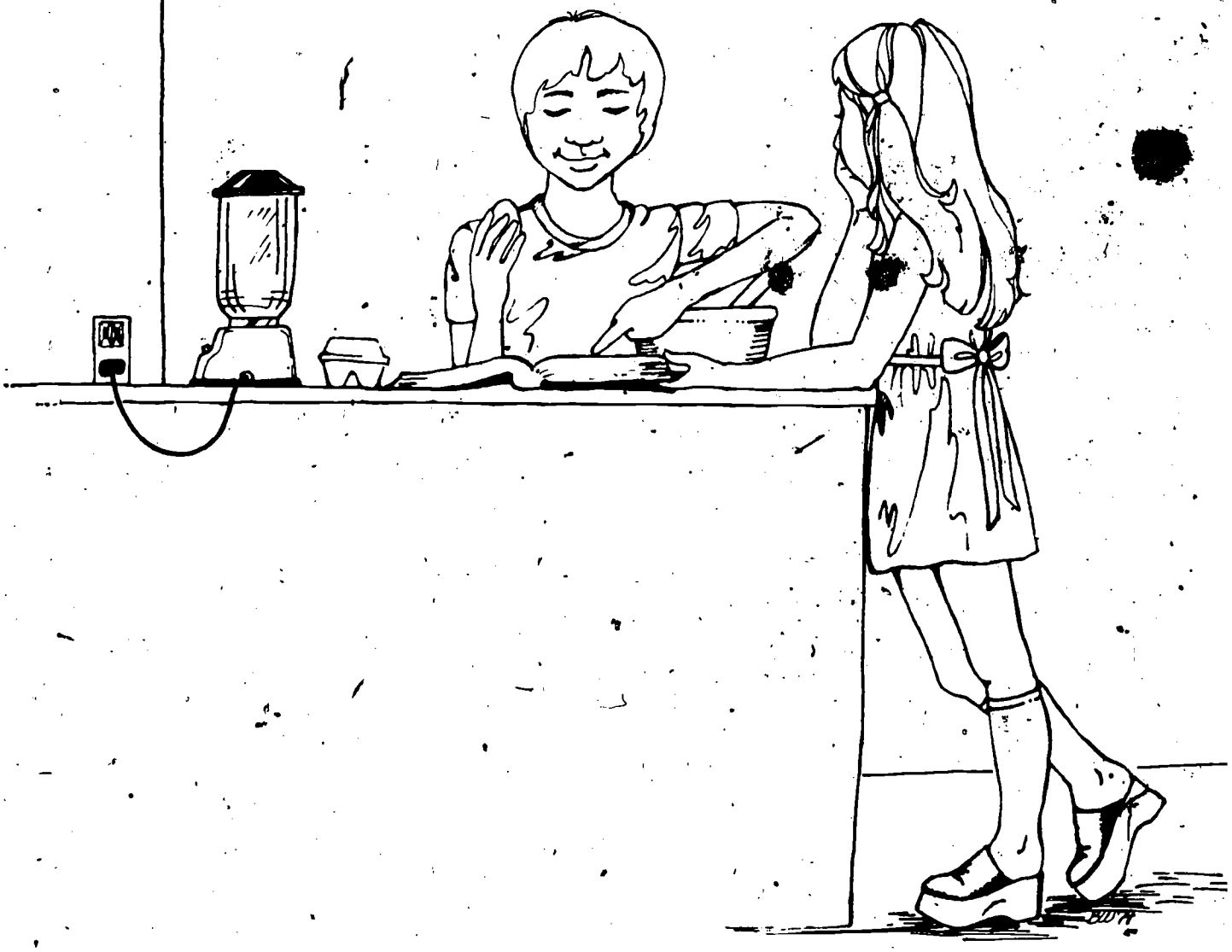
Day 2
Divide the class into two teams. Tell them they are going to play a game using the questions they made the previous day. The 1st team to get a score of 10 wins. They will receive 1 point for each correct answer and 1 point will be subtracted for each wrong answer.

Mark 2 columns on the board labeled Team #1 and Team #2. You give questions from their question cards and keep a tally of the scores on the board, or make a game board - see example.



EXTRA ACTIVITY: See activity cards.

Activity Cards



Write a story about how each rat feels about his diet.

Make posters illustrating good eating habits.

Make puppets and write a puppet show illustrating how the rats feel about their diets.

Write lyrics to a popular song - using a nutrition theme.

Make a notebook picture collection from magazine cut-outs showing effects of good or bad nutrition.

Include pictures which show tired, unhealthy people (or animals) and pictures with vivacious, healthy people enjoying life.

Make a notebook illustrating the basic food groups. Cut out pictures of foods and glue on page of appropriate food group.

Write report on the effects of malnutrition on people using documented sources.

Make a notebook of newspaper or magazine articles discussing nutrition.

Present a panel discussion where one group believes it doesn't matter what kind of foods you eat, while the other group believes in good nutrition.

List the possible jobs related to nutrition. Describe each and how the job relates to us.

Make nutrition buttons with a slogan to pass out to the class.

Re-write nursery rhyme to have a nutrition theme.

Design and build a maze for the rats.

Use at end of experiment to test reaction between rats on good and poor diets.

Design and build your own cages for the rats. (wire - tin snips, etc. available at Science Center)

Make a large Ladder Graph for growth of the rats for the class. This could be used on the classroom door to publicize the demonstration to other classes.

Example: