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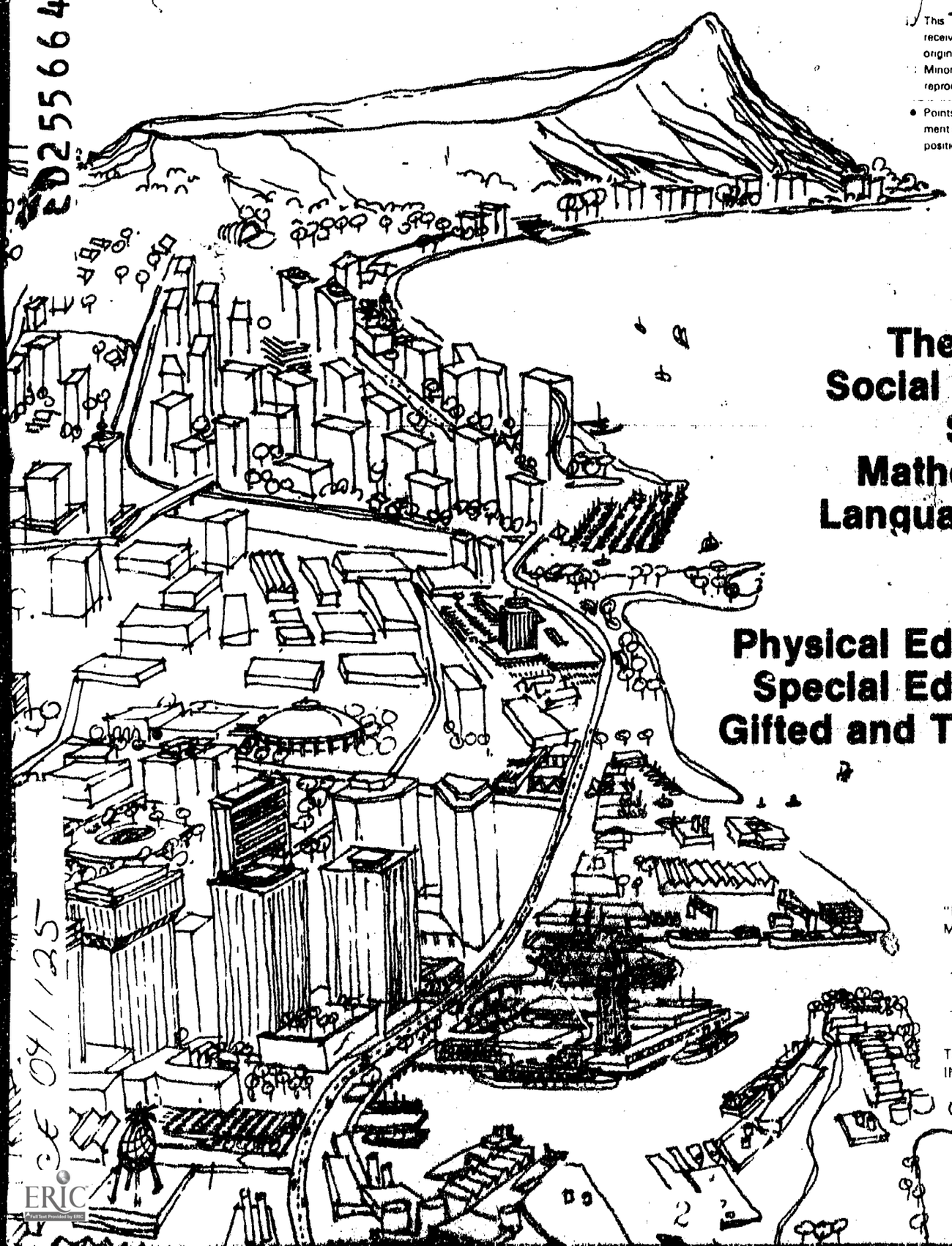
ABSTRACT

This guide is intended for teachers in Hawaii to use in conjunction with the videotape program AVENUES. AVENUES is a series designed to help students understand and appreciate the practical application of skills and knowledge gained through the regular curriculum as they enter the world of work and to motivate students to begin to plan career directions. The program consists of 10 sections that focus on these areas: the future, social studies, science, mathematics, language arts, art, music, physical education, disabled students, and gifted and talented students. Each section of the guide explains the purpose of the videotape appropriate to it, summarizes the videotape program, provides a glossary, gives suggestions for discussion before and after the videotape presentation, provides activity sheets with answers, suggests possible careers linked to the subject matter of the program, and lists community resources. (KC)

AVENUES

A Career Education Series

Office of Instructional Services/Multimedia Services Branch
Department of Education • State of Hawaii • HS 84-6100 • May 1984



The Future

Social Studies
Science
Mathematics
Language Arts
Art
Music
Physical Education
Special Education
Gifted and Talented

The Honorable George R. Ariyoshi
Governor, State of Hawaii

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FOREWORD

We are pleased to share the career education series, **AVENUES**, with social studies, science, mathematics, language arts, art, gifted and talented, special education, music and physical education teachers. The purpose of the series is to help students understand and appreciate the practical application of skills and knowledge acquired through these subjects as they enter the world of work and to motivate students to begin to plan career directions.

Rather than having the series shown in guidance classes, we hope that the different subject area teachers will use the series as part of their regular curriculum. Activities in the guide are intended to assist teachers in infusing career education into the curriculum to help students in their career development. When used with other activities such as those in the Hawaii Career Development Continuum, Grades 10-12 and Foundation Program: Career Education and Guidance, students will be encouraged to think about their career plans after high school and will hopefully be better prepared to enter the world as young adults.

Video tapes will be made available to the districts through the ETV Section of the Office of Instructional Services. Copies of the program(s) can be requested if blank videotape cassettes are provided. Contact your District Office for assistance.

Francis M. Hatanaka
Acting Superintendent

ACKNOWLEDGMENTS

The Department is grateful to the hundreds of students, teachers, businesses and other individuals throughout the state who participated in the taping of the series.

Special thanks are extended to the following Specialists for reviewing the script and guide and for providing support for the series:

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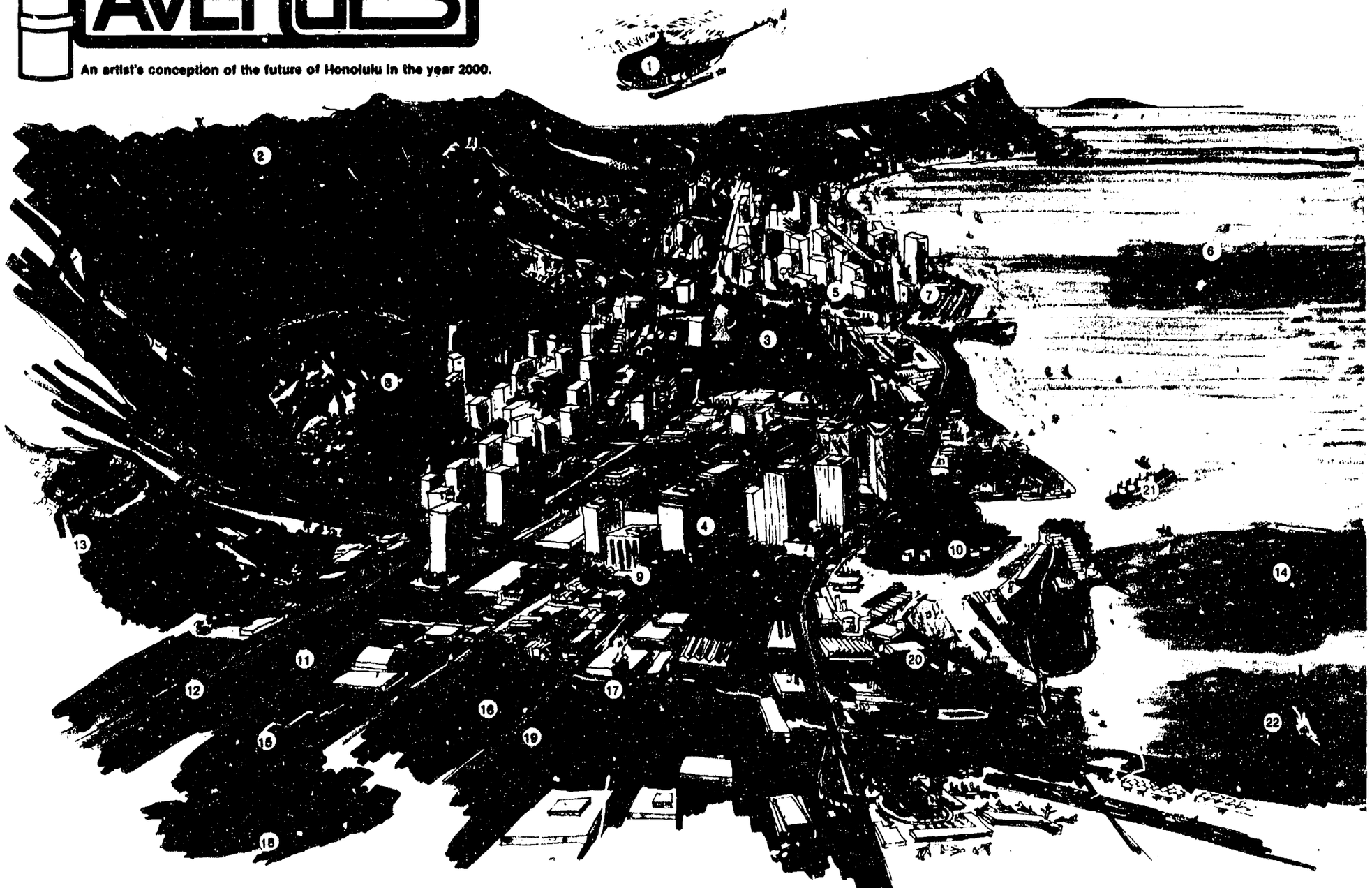
Special acknowledgments are extended to Sara Curlee, writer and producer of the programs, and her production crew. Special thanks for typing the guide go to Shirley Nishiyama.

YEAR	PROGRAM
1982-83	Social Studies I, II Science I, II Mathematics I, II Language Arts I, II
1983-84	Art Gifted and Talented Special Education
1984-85	Physical Education Music Futures

AVENUES

An artist's conception of the future of Honolulu in the year 2000.



1 Commuter helicopters
2 Wind generators
3 Mixed use of buildings - Community
4 Solar powered buildings
5 Shops and boats on Ala Wai Canal
6 Floating communities
7 Expanded marinas and waterfront uses
8 Preservation of natural resources with buildings respectful of surroundings
9 Chinatown Redevelopment Building Recycling
10 Waterfront development
11 Park and ride centers for commuters
12 Rapid transit system to suburbs
13 Solar powered and natural ventilated housing developments with tropical lanais
14 Wave electrical generation
15 Houses with self-sufficient power and gardens
16 Geothermal power plant
17 Solid waste conversion to energy
18 Moped and bike path system
19 Biomass bagasse conversion to energy
20 Recycle Center for energy and material reuse
21 Wind-powered ocean freighters
22 Ocean thermal conversion to energy

AN ARCHITECT'S CONCEPTION OF HONOLULU IN THE YEAR 2000

1. **Commuter helicopters**
   Possibly a commonplace means of travel in the future along with hydrofoil boat service among the shoreline communities and Molokai (not shown).

2. **Wind generators**
   Grouping of wind generators to produce electricity. Actual generators would be located away from visually prominent areas in places such as the Kahuku Point site (now in use with Hawaii's first machines) or other island tips.
   Integrated into landscape where possible.

3. **Mixed use of buildings—community (Kakaako)**

4. **Solar powered buildings**
   Our new respect for energy use will result in new building shapes integrating solar water heating and solar electric cells (photovoltaics) as well as natural ventilation through wind scoop and outdoor living areas.

5. **Shops and boats on Ala Wai Canal**

6. **Floating communities**
   As pressure for land increases we may see offshore "villages" on leeward coasts. With boat and helicopter access, these villages could provide their own solar, wind, wave or ocean thermal power sources. (A floating city has been built near Japan.)

7. **Expanded marinas and waterfront uses**

8. **Preservation of natural resources with buildings respectful of surroundings**
   As the need for more housing on less land increases, highrise and step-up hillside construction will become more commonplace. We will have small electric or diesel cars below and take tramways to garden apartments designed with respect for the land forms around.

9. **Chinatown Redevelopment Building Recycling**

10. **Aloha Tower Plaza**
    This and other future projects in our city will respect our historical background (like the Aloha Tower) and provide highrise office, residential, commercial, and hotel uses mixed with plazas and open spaces for lively people-oriented uses.

11. **Park and ride centers for commuters**

12. **Rapid transit system to suburbs**
    Some sort of fast, energy-efficient and convenient "people mover" will take us from our homes to work and shopping, leaving our cars in central areas outside of town near our homes.

13. **Solar powered and natural ventilated housing developments with tropical lanais**

14. **Wave electrical generation**
    Capturing the constant up and down action of waves to produce electricity.

15. **Houses with self-sufficient power and gardens**
In more rural areas, energy houses clustered around wind generators, fish ponds and gardens will provide a maximum degree of self-sufficiency. Bicycles will again become commonplace.

16. **Geothermal power plant**
Taps the underground steam beneath our volcanic land to generate electricity.

17. **Solid waste conversion to energy**
A plant to recycle our trash into usable electricity by burning.

18. **Moped and bike path system**

19. **Biomass bagasse conversion to energy**
Converting crops (or sugar wastes) into electricity.

20. **Recycling center for energy and material re-use**
Massive plants to recycle steel, aluminum, glass, paper, etc., for reuse or shipment to other areas for remanufacturing.

21. **Wind powered ships**
Already in use in energy-short Japan, wind power will partially replace fossil fuels for ocean-going cargo freighters.

22. **OTEC (Ocean Thermal Energy Conversion)**
Offshore stations to produce electricity from a chemical reaction due to difference in temperature between the cold deep water and warmer surface water. A base station is also required.

Jim Pearson

The drawing of Honolulu in the year 2000 was done by Jim Pearson, architect and Urban Design Branch Chief for the Department of Land Utilization, City and County of Honolulu. Pearson is a member of the Hawaii Society, American Institute of Architects and is the author of **Hawaii Home Energy Book**, a local guide to tropical residential design, energy conservation and alternate energy systems. He is the designer and resident of the Award Winning Hawaiian Energy House on the campus of the University of Hawaii. He was formerly Professor of Architecture at the University and principal in the architectural firm of Pearson and Terry.

TABLE OF CONTENTS

AVENUES FOR THE FUTURE

PURPOSE

- To motivate students in planning for their own futures.
- To examine possible futures and the effects of advanced technological devices upon life styles, law, and society in Hawaii and in the world.
- To promote a sense of planning and thinking in global terms as well as in individual terms.

PROGRAM SUMMARY

There are many possible futures awaiting us, all different from each other. The decisions that we are making now will affect career opportunities, the quality of our lives and of the earth in our common future. Some alternatives are discussed. Students don't have to decide now, but it's important to take some steps toward determining their own goal directions and their futures.

GLOSSARY

Avenues The main way of approach, means of attainment.

Computer/Information Age Our own--new--technological age, characterized by a fast flow of information that shortens the amount of time it takes to communicate.

Decisions Determinations arrived at after consideration; settlement, conclusion.

Futures Possibilities of what is to be; still to come; what is going to happen.

Generalist Someone who is competent or experienced in several different skills, fields, or avocations, as opposed to a specialist.

Global Interdependence The dependence of each country on other countries for exchanging goods and resources and assuring world peace.

Global Thinking Making decisions by taking into consideration the impact on other nations.

Global Village Marshall McCluhan postulate: Because the world is interconnected by a network of telecommunication devices it has become smaller.

Globalization Teaching people to have a "world view," thinking and making important decisions with a total global picture, promoting participation and responsibility.

Life-style A way or manner of living or behaving in a particular fashion. An individual's typical way of life.

Specialist A person who devotes or limits his interest to some special activity, business, art, or science.

Technology The means by which to provide objects necessary for human life and comfort.

Trade-offs To exchange one thing of value for another thing considered more important.

World Citizenship Each individual's perception of himself as part of humanity as a whole, and the realization that the choices of the individuals in one country affect the individuals in another.

BEFORE THE PROGRAM

1. Divide the class into groups. Duplicate Activity Sheet #1 on page 4 . Activity Sheet #1 is designed to stimulate discussion about rapid changes that have happened in new products, language, and food, within a student's own memory. After they've completed the sheet, ask students what things were responsible for those changes (e.g., style changes, new technology).

AFTER THE PROGRAM

1. Discuss as a group, the question "If society is changing so rapidly and technology is growing so complex, is there any point in preparing for the future? Why not just 'take it as it happens'?"

2. **This activity is designed to encourage students to start thinking about their interests as avenues to deciding and planning for the education they'll need and the occupations they want.** Ask students to create a timeline showing the events that have caused their lives to change in significant ways--the turning points--and the events they imagine will cause their lives to change in the future. Before students begin their timelines:

   A. Show them an example of a timeline and explain how to make one.

   B. Discuss the notion of change. How do you distinguish significant from insignificant change. Develop a point system for rating the importance of various changes.

   C. Discuss the idea of taking responsibility for your life. What is the difference between **letting** things happen to you and **making** things happen to you.

   D. Discuss the notion that taking responsibility means making decisions and planning for the future. This program is concerned with showing students the diversity of possible avenues to the future they want. Discuss with students how they can choose the roads that will enable them to reach these avenues to the future. Relate these choices to the turning points on their timelines.

3. Activity Sheet #2 (page 5) is designed to introduce the concept of world view or global perspective, the importance of developing interest and participation in world affairs, and also a sense of responsibility for the world's future. Make a copy of Activity Sheet #2 for each student. They may work on the activities alone or with partners.

4. Introduce the packet **Population and Hawaii: A Case Study.** This case study packet can provide an excellent background for thinking about global population problems and changes in population distribution. Sanitation, malnourishment, food distribution, overcrowding and other problems are issues that are worldwide, not just Hawaii's problems. The purpose of this case study is to enable the student to understand: how populations change; the consequences of population change for individuals, families, societies, and the environment; and the complexity of developing policies to deal with problems associated with population change.

Through the activities in this packet, the student will accomplish the following objectives:

- Acquire an understanding of demographics.
- Demonstrate an understanding of the components of population change in Hawaii and how these components are similar and dissimilar to other areas of the world.
- Describe the relevance of population change to one's future well-being.
- Identify one's own population-related behavior, in one's personal life and one's political life.
- Develop one's own universal statement about world population-related problems after learning about population study and interpreting data.

Acknowledgements

"Population and Hawaii: A Case Study" was written by Elaine M. Murphy and edited by Patricia Cancellier. It is based on information from an excellent paper by Arthur Hampson, entitled "Population Policy and Population Reality in Hawaii" (presented at the 1980 Annual Meeting of the Population Association of America) and on the Population Bulletin "Hawaii: Growing Pains in Paradise" (Population Reference Bureau, Vol. 29, No. 3, 1973) by Tadd Fisher. Special thanks go to Arthur Hampson, Jan Nishimura, and Barbara Abalos of the Commission on Population and the Hawaiian Future and to Judith Pool of the Hawaii State Department of Education for their valuable comments, and to the Hawaii State Department of Planning and Economic Development for their resources. The ideas and enthusiasm of PRB Interns, Victoria Hartke, William Penner, and Josiah C. Thomas, Jr., are much appreciated.

Name _____

Date _____

AVENUES FOR THE FUTURE

ACTIVITY SHEET #1

Technology and communications are changing our world so fast that most of you have already experienced in your life time everyday, familiar styles, ways of doing things, and technological devices becoming "old fashioned," outmoded, or inefficient. Each word or phrase from the following list can be matched with the "old fashioned" one below that it replaces.

Personal computer
Walkman
Video projector
Handheld calculator
"Let's bag"
Robots
Fast food
Gold chains
Photo-cell
BMX
Frozen yogurt
Foam containers
"Punk"
Holograph
Flight attendant
Ceramic engine
Small format video
"Hot"
Word processor
White-out
Balloons
Microwave oven
Portable touch phone
Diet coke
Automatic teller machine
Computer-controlled fuel injection
Extended wear contact lenses
Videogame
Disc camera
Blaster
House plants
Running shoes
"New waver"
Laser disc

Transistor radio & _____

Electric typewriter & _____

Dial phone & _____

Eyeglasses & _____

Toaster oven & _____

Photograph & _____

8mm film & _____

Home stereo center & _____

"Freak" & _____

"Surf" & _____

'Far-out" & _____

Home file cabinet & _____

10-speed & _____

Knick-knacks & _____

Paper plates & _____

LP record & _____

Carburetor & _____

"I'm gonna split" & _____

Black & white TV & _____

Pinball & _____

Love beads & _____

Sneakers & _____

Assembly line & _____

Stewardess & _____

Typewriter eraser & _____

Automat & _____

Flowers & _____

RC cola & _____

Imitation ice cream & _____

Instamatic & _____

Adding machine & _____

Drive-up teller & _____

Cast iron engine & _____

Flash & _____

Name _____

Date _____

AVENUES FOR THE FUTURE

ACTIVITY SHEET #2

The following activities are designed to introduce the concept of world view or global perspective, the importance of developing interest and participation in world affairs, and also a sense of responsibility for the world's future.

A. After discussing the following definitions with the rest of your class, develop a definition for **World Citizenship.**

Global Interdependence The dependence of each country on other countries for exchanging goods and resources and assuring world peace.

Global Thinking Making decisions by taking into consideration the impact on other nations.

Global Village Marshall McCluhan postulate: Because the world is interconnected by a network of telecommunication devices it has become smaller.

Globalization Teaching people to have a "world view," thinking and making important decisions with a total global picture, promoting participation and responsibility.

B. By yourself, or with a partner, design a travel brochure for the Planet Earth. Imagine that you live in a galaxy far, far away, and that you work for a travel agency specializing in the Milky Way (our own galaxy). The travel brochure should point out Earth's unique attractions and especially its own special charm: the "aloha spirit" of its major life form, Mankind. You can include written descriptions and pictures of the various attractions and types of tour packages available (e.g., "Arctic Adventure," "How to Meet Human Beings in a Natural Setting," "Earth Sports").

C. Humanity is facing a transitional period in which critical choices are being made regarding its common future. The problems and opportunities facing society represent new challenges that can only be resolved by the most effective application of human knowledge and creativity to meet current and future needs.

Spaceship Earth

"The most important fact about Spaceship Earth: an instruction book didn't come with it." -- Buckminster Fuller

Indeed, our Earth--which can be considered a spherical spaceship orbiting at 66,000 miles per hour around the Sun--did not come with an operating manual. The idea of Earth as a spaceship assists us in organizing our awareness that we are closely linked to the well-being and effective operation of this ship. Like astronauts, we are responsible for the maintenance of the craft which protects and supports our lives.

The idea that we are responsible for our actions is basic to the World Citizen process. Since Spaceship Earth did not come with written instructions, our future depends on our ability and willingness to employ our knowledge and creativity in discovering and designing the best possible solutions to the problems which confront us. The World Citizen is aware of this responsibility and acts on it. Thinking globally and acting logically and personally becomes an appropriate strategy for solving problem situations.

What are the problems? We are presently faced with an accelerating frequency of crisis:

a. Our present ways of planning and acting are not working to solve global problems.

b. Nearly one-half of humanity still lives in poverty with minimum levels of life-support (food, water, adequate shelter).

c. Reserves of many of our critical natural resources are being consumed and the Earth cannot continue to safely absorb our wastes,

d. Crime, violence, and armed conflict threaten the well-being of societies everywhere.

e. Many individuals and groups still experience very little justice which prevents their having basic human rights, freedom of choice, and participation in societal affairs.

What are the solutions?

1. Rank in order of most importance--in terms of what you would begin to address first--the problems listed above.

2. Choose one of these problems and write a brief paper discussing a) the problem itself, and b) what opportunities are available for creating new ways to solve or address these problems (e.g., new technologies, inter-cultural communication).

AVENUES FOR THE FUTURE

ANSWER SHEET

Activity Sheet #1

Walkman
Word processor
Portable touch phone
Extended wear contact lens
Microwave
Hologram
Small Format Video
Blaster
"Punk"
"New waver"
"Hot"
Personal computer
BMX
House plants
Foam containers
Laser disc
Computer-controlled fuel injection
"Let's bag"
Video projector
Videogame
Gold chains
Running shoes
Robots
Flight attendant
White-out
Fast food
Balloons
Diet Coke
Frozen yogurt
Disc camera
Hand-held calculator
Automatic teller machine
Ceramic engine
Photocell

Activity Sheet #2

A. Any appropriate definition. Defined in the glossary as: Each individual's perception of himself as part of humanity as a whole, and the realization that the choices of the individuals in one country affect the individuals in another.

B. Will vary.

C. Will vary.

POPULATION AND HAWAII: A CASE STUDY

"There they lie, the divine islands, forever shining in the sun, forever smiling out on the sparkling sea, with its soft mottlings of drifting cloud shadows and vagrant cat's paws of wind; forever inviting you, never repulsing you . . . always present and always fresh . . ."

—*Mark Twain's Letters from Hawaii.* Edited by A. Grove Day, Appleton-Century

The islands of Hawaii may well lie forever shining in the sun. But if Mark Twain could return today, would he still find the islands "forever inviting you, never repulsing you"? There have been many changes.

Hawaii shares with the rest of the U.S. and with every country in the world a set of population phenomena. It has a population history. Its growth comes from the differences between births and deaths, in-migrants and out-migrants. Its people are distributed in patterns over its land surface. Its population is composed of various proportions of ages, genders, and ethnic groups. Its people vary in terms of income, occupation, education, and even family size. As the common features of eyes, nose, and mouth combine to produce a unique individual face; Hawaii's mix of demographic elements creates its own unique population profile.

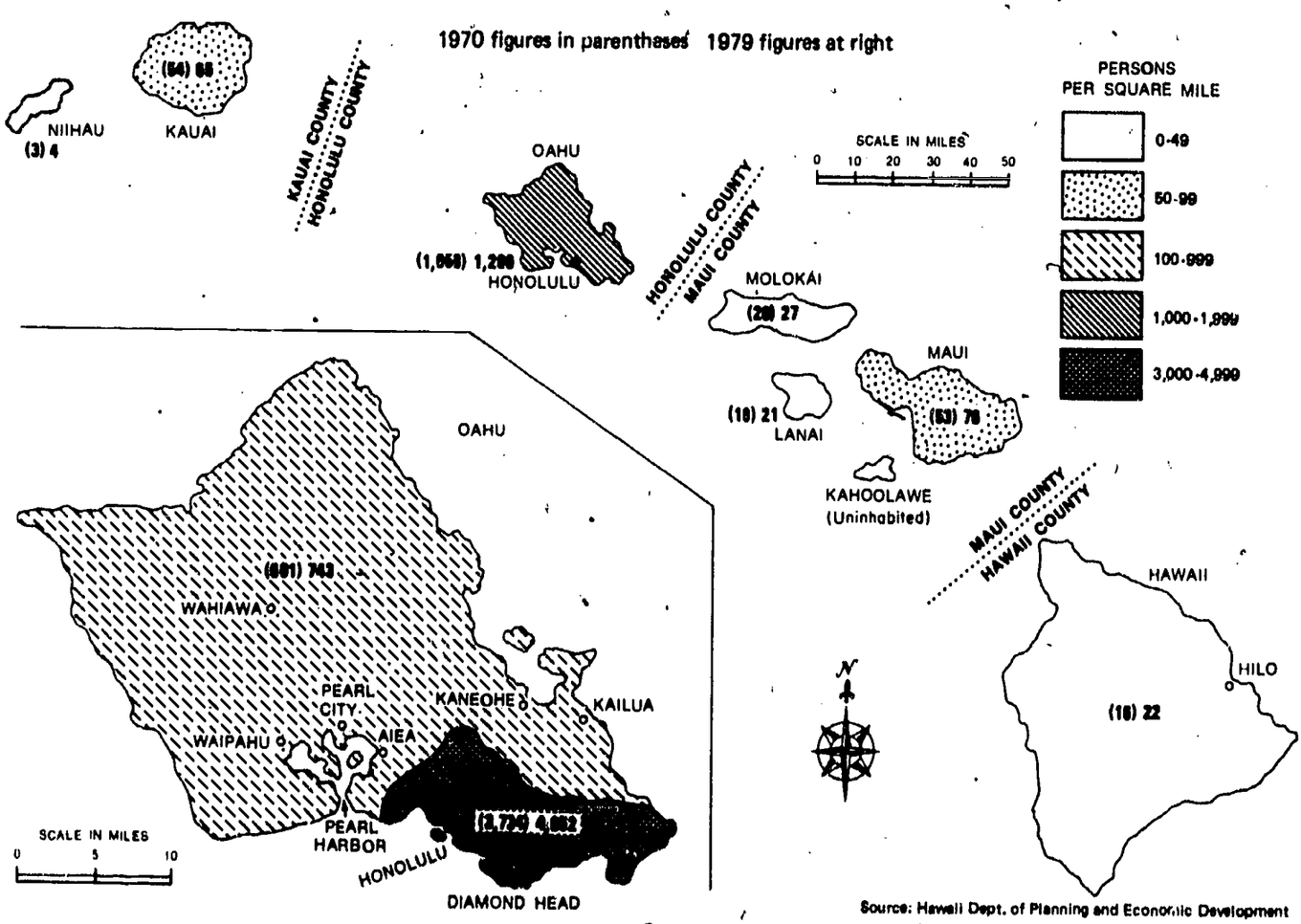
Problems

In many states, and in other parts of the world, population trends often present problems. According to a survey taken in 1977, the majority of Hawaii's residents believe that economic development and population growth are occurring too rapidly.[1] In particular, people are concerned about declining water reserves, the conversion of food-producing land to shopping centers and condominiums, and overuse of beaches, parks, and wilderness areas. En-

Note: Please see Glossary at end of essay for definition of terms.

Figure 1

POPULATION DENSITY BY ISLAND, HAWAII, 1970 AND 1979



Source: Hawaii Dept. of Planning and Economic Development

vironmentalists are worried about the loss of native plants and animals which, once gone, can never be replaced.

Other areas of concern associated with population growth in Hawaii include unemployment, the rising cost of living, dependency on the outside world for 80 percent of its goods, and social tensions. Most population growth (part of which is due to net migration) is occurring among the Caucasians, Filipinos, and part-Hawaiians. Moreover, additions to the population usually fall in the wealthy or poor categories, with little growth of the middle class. The results are a demand for housing by the wealthy, which drives prices up, and an increase in government assistance to the needy, which means higher taxes. Tensions among ethnic and economic groups are sometimes increased during political discussions of how to control population growth, as people wonder "who is controlling whom?"

The State of the State

Hawaii is not a large state in terms of actual numbers of people. In fact, it ranks 40th in population. Its 1979 population was estimated at 914,800. However, its rate of growth during the 1970s (1.8 percent per year) was twice as fast as for the nation as a whole. Even that fact hides the real population growth of Hawaii. It plays host to about four million tourists each year. On any given day the population is actually over 100,000 greater than the official number. If one includes the visitor population in calculating the growth rate, it would be 2.6 percent. At that rate, the population of the state would double in only 27 years.

It is on Oahu that population size and growth pose the most serious problems—at least for the time being. Oahu contains 9 percent of the state's land, but approximately 80 percent of its people. Recently the Neighbor Islands have experienced more rapid growth than Oahu, but because their populations were smaller to begin with, the actual numbers of people added to their populations have not been as large as on Oahu.

Population Doubling Times

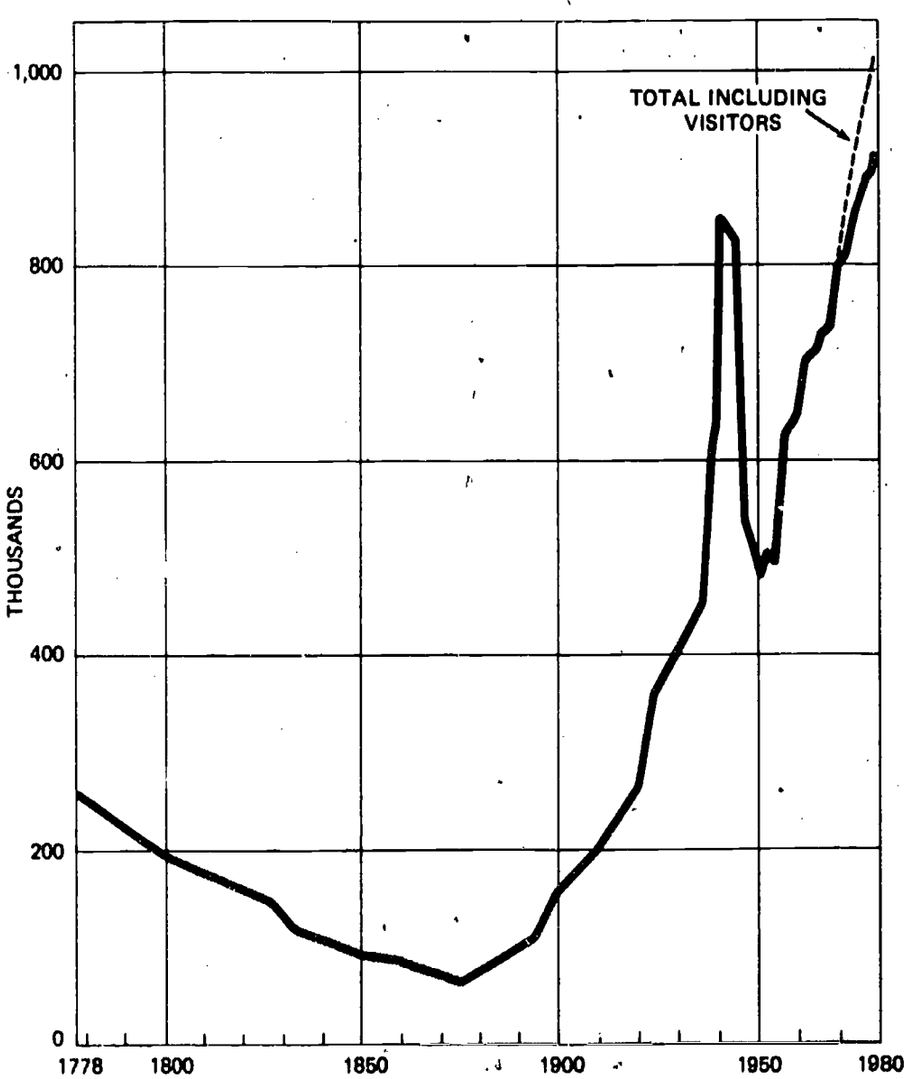
A quick way to figure out how long it will take a population to double is to divide 70 by the growth rate. Thus, a population that is growing 1% per year will double in 70 years (70 ÷ 1 = 70).

Rate of Growth Per Year*		Years to Double
World	1.8%	38 years
U.S.	.9	81
Hawaii	1.8	38
City & County of Honolulu	1.6	43
Hawaii Co.	2.9	24
Kauai Co.	1.9	37
Maui Co.	3.5	20

*At the 1970-1978 rate.

Figure 2

GROWTH OF THE POPULATION OF HAWAII 1788-1979



Source: *Report of the Temporary Commission on Population Stabilization* (Honolulu, January, 1972); *The State of Hawaii Data Book, 1979*, Dept. of Planning and Economic Development (DPED) and DPED published estimates

Population Dynamics

In Hawaii—or any other place in the world—population change occurs because of the differences between those entering the place through birth or in-migration and those leaving it through death or out-migration. For any given time period, one could calculate the change with the formula on the next page, entitled *Components of Population Change*.

In the last decade about three-fourths of Hawaii's growth was the result of natural increase and the rest a result of net migration. However, a large part of the state population (over 13 percent) consists of military personnel and their dependents. Since many of them are young and in the prime childbearing years, their children born in Hawaii inflate the birth rate considerably. After a short term of

residence, however, they leave with their children which then reduces the net migration rate. Both of these factors distort Hawaii's population statistics. If military-related personnel are excluded from the total population, the population figures are quite different: the annual growth rate becomes 2.1 percent—55 percent due to natural increase and 45 percent due to net migration.

The military presence also changes the proportion each ethnic group represents in the total population. Consider the differences shown in Table 1 when the military population is excluded. The Japanese then represent the largest single group in Hawaii as opposed to the Caucasians who are first when the military are included.

Immigration and fertility are not entirely separate categories. Since most immigrants are young, there are greater numbers of births among this group than deaths. Therefore, they cause an increase in the birth rate. This means that high net migration is directly responsible for almost half of all population growth in Hawaii and indirectly for some of the natural increase.

The size of the natural increase is itself more of a reflection of Hawaii's youthful age structure than of large families (see Figure 3). The estimated average number of children per family in 1978 was about 2.2.* This is higher than the U.S. average of 1.8, but very close to replacement level fertility of 2.1 children per family.

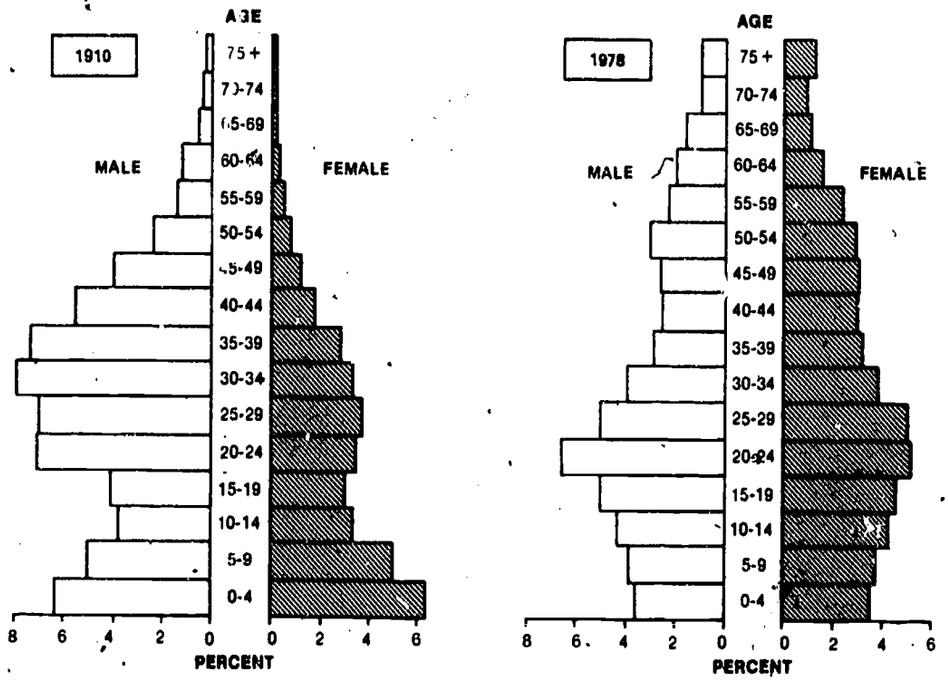
If fertility in Hawaii is relatively low, why then are there so many births? When a large proportion of people in a state or country is young, then there will be more people in the childbearing years than if there were more people in the older ages. Even if these young people have only one or two children, there are so many of them that they produce more births than there are deaths in the state, resulting in natural increase. This is sometimes called the momentum of population growth.

There is no reliable way of estimating what percent of net migration is due to people moving to Hawaii from other states and what percent is from foreign countries. However, in a public opinion survey in 1978, 24 percent of Hawaii's residents said they had been born elsewhere in the U.S. and 13 percent had been born in other countries. Both types of migration contribute substantially to population growth.

*See definition for total fertility rate in Glossary.

Figure 3

AGE-SEX PYRAMIDS, HAWAII, 1910 AND 1978



Source: Robert W. Gardner and Eleanor C. Nordyke, *The Demographic Situation in Hawaii* (Honolulu: East-West Population Institute, 1974) and the Hawaii Health Surveillance Survey, 1978, Hawaii State Dept. of Health

Components of Population Change

Births − Deaths + In-migrants − Out-migrants = Growth (or Decrease)

Natural Increase Net Migration

Population Policy

The citizens of Hawaii have recognized the need to solve their population problems. The Commission on Population and the Hawaiian Future was created in 1973. Its purpose is to develop effective, acceptable solutions to problems caused by rapid population growth and unbalanced population distribution in Hawaii. In 1978, the Commission issued the following recommendations:

- To achieve within ten years a state population growth rate that does not exceed the national growth rate;
- To attain within 15 years a zero net migration rate;
- To maintain the total fertility rate at or below replacement level;
- To encourage proportionate redistribution of the population to the Neighbor Islands (excluding Oahu).[2]

These goals, if achieved, will bring about zero population growth. Achieving them, however, is a different story. One can slow or halt population growth in Hawaii in only four ways: 1) raise the death rate; 2) reduce the birth rate; 3) reduce in-migration from the mainland; 4) reduce immigration from foreign countries. Clearly, raising the death rate is not desirable.

Fertility

The total fertility rate for Hawaii is already close to the replacement level; to bring it below that level would mean changing those values and behaviors that would lead eventually to a decrease in the resident population. Some people

Table 1. Ethnic Composition of Hawaii's Population, 1978

Ethnic Stock	Total Population		Population Excluding Armed Forces and Military Dependents	
	Number	Percent	Number	Percent
Caucasian	226,180	26.2	162,650	21.1
Japanese	216,964	25.2	214,063	27.8
Hawaiian/ part-Hawaiian	170,001	19.7	167,652	21.7
Filipino	83,862	9.7	79,073	10.3
Chinese	35,939	4.2	35,562	4.6
Korean	9,633	1.1	8,859	1.1
Black	9,078	1.1	2,530	0.3
Samoan	8,034	0.9	7,644	1.0
Puerto Rican	5,469	0.6	5,417	0.7
Mixed, Other, or Unknown	96,925	11.3	87,863	11.4
Total	862,085	100.0	771,313	100.0

Source: Hawaii, Department of Planning and Economic Development, *State of Hawaii Data Book, 1979; A Statistical Analysis* (Honolulu, 1979), p. 28.

feel uneasy about promoting fertility that is so low the average number of children in a family will not even replace the parents. However, fertility is an even more controversial issue in Hawaii because of the ethnic diversity and the differing fertility between ethnic groups in the state. Table 2 shows that fertility is very low among Caucasian, Japanese, and Chinese groups, but high among Filipinos and Hawaiians who make up one-fourth of the population.

Table 2. Ethnic Fertility in Hawaii, 1975

	Total Fertility Rate
Caucasian	2.0 births per woman
Japanese	1.4
Full/Part Hawaiian	2.9
Filipino	3.8
Chinese	1.9

Source: Eleanor Nordyke, "Ethnic Fertility in Hawaii," forthcoming publication.

In-migration

While there are no precise figures, migration flows to and from the mainland are known to be large—possibly as large as 45,000 per year. Hawaii adds a few thousand Mainlanders to its population each year, and the state government could balance that by encouraging a similar amount of out-migration. However, policies to encourage Hawaii's residents to leave are probably as unacceptable as raising the death rate as a means of slowing population growth.

Attempts to discourage in-migration have run into legal barriers, however. In 1977, the constitutionality of a state law requiring at least one year of residency before being eligible for public employment was challenged in court. The following year, the legislature changed the law so that an applicant for a state position only had to be a resident of Hawaii at the time he or she applied for the job. The current legal view is that any law specifically intended to discriminate against certain groups of people will be ruled unconstitutional. Another worry is that any policy to exclude mainlanders might be considered racist, because the majority of such in-migrants are whites.

Immigration

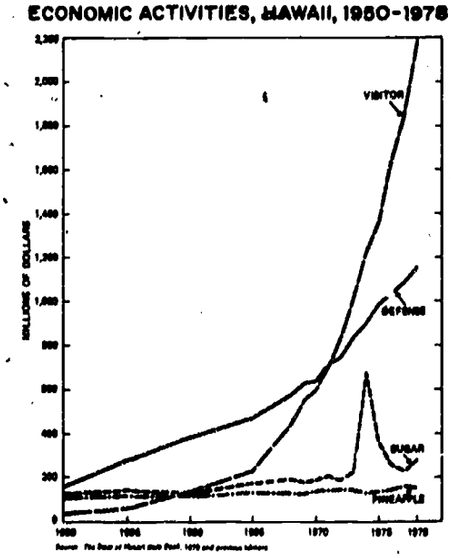
Similar legal obstacles exist in limiting immigration from other countries. Immigration policy is set at the national level; individual states have no control over the number or type of immigrants who settle within their boundaries. Recently a task force studying ways to manage growth in Hawaii recommended that the Immigration and Nationality Act be amended so that immigrants are distributed more evenly throughout the U.S. Each state would have an immigration quota in proportion to the total population of the state. Each year immigrants would be received openly in a state until that state's quota is reached. So far, this idea has not been acted upon.

Once immigrants are in the United States, they have the constitutional right to travel or migrate freely. While most immigrants settle in California, Texas, Illinois, and New York, each year roughly 6 to 8 thousand immigrants admitted to the U.S. identify Hawaii as their destination. This may not seem like much in relation to the annual U.S. total of 400,000 immigrants, but added to in-migration from the mainland, it puts pressure on a small island state. The pressures are particularly great in the Honolulu area where most migrants move and where housing and jobs are already in short supply.

The Indirect Approach

A study made by the Department of Planning and Economic Development in Hawaii suggests that economic growth in general and tourism growth in particular are the principal determinants of population growth in Hawaii.[3] Could both be controlled? One obstacle is the fact that economic growth generates additional tax revenues which help to provide government programs and services. In addition, private projects generate new employment opportunities and help to reduce the unemployment rate.

Figure 7
INCOME FROM MAJOR ECONOMIC ACTIVITIES, HAWAII, 1950-1978



What Can Be Done?

It seems clear that any one method to limit population growth is difficult to implement because of

legal, racial, or economic obstacles. Perhaps the only successful method would be a comprehensive policy which acts on all areas simultaneously. In this way no one racial or economic group will feel singled out.

Hawaii's residents have expressed a desire to preserve their environment and culture. The Hawaii State Plan which was adopted by the State Legislature in 1978 reflects some of their concerns. With this plan, Hawaii became the first state in the nation to set goals for the future and to decide upon ways of reaching these goals.

The State Plan includes policies to diversify Hawaii's economy, protect agricultural activities, manage population growth so that it does not threaten Hawaii's basic resources, and direct growth to existing urban areas. In addition, twelve plans which require legislative approval are being developed to address specific areas such as agriculture, tourism, transportation and housing. The State Plan with the continued provision of population and environmental education in the schools and family planning information and services for the public could help to preserve the fragile environment and culture of Hawaii. However, sufficient community and political support is needed to accomplish this.

The rest of the nation, and much of the world, will watch with interest as Hawaii tries to shape its preferred future.

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GLOSSARY

AGE STRUCTURE. The composition of a population as determined by the number or proportion of males and females in each category. The age structure of a population is the cumulative result of past trends in fertility, mortality, and migration.

BIRTH RATE (or crude birth rate). The number of births per 1,000 population in a given year. Not to be confused with *growth rate.*

COMPONENTS OF POPULATION CHANGE. Births, deaths, in-migration (or immigration) and out-migration (or emigration).

DEATH RATE (or crude death rate). The number of deaths per 1,000 population in a given year.

DEMOGRAPHY (Greek, *demos* [people] + *graphie* [study]). The scientific study of human populations, including their size, composition, distribution, density, growth, and other demographic and socioeconomic characteristics, and the causes and consequences of changes in these factors.

DOUBLING TIME. The number of years required for a population of an area to double its present size, given the current rate of population growth.

EMIGRATION. The process of leaving one country to take up residence in another.

FERTILITY. The actual reproductive performance of an individual, a couple, a group, or a population.

GROWTH RATE. The rate at which a population is increasing (or decreasing) in a given year due to natural increase and net migration, expressed as a percentage of the base population.

IMMIGRATION. The process of entering one country from another to take up permanent residence.

IN-MIGRATION. The process of entering one administrative subdivision of a country (e.g., county or state) from another subdivision to take up residence.

NATURAL INCREASE. The surplus (or deficit) of births over deaths in a population in a given time period.

NET MIGRATION. The net effect of immigration and emigration on an area's population in a given time period, expressed as increase or decrease.

OUT-MIGRATION. The process of leaving one subdivision of a country to take up residence in another.

POPULATION DENSITY. Population per unit of land area; for example persons per square mile, or per square kilometer of arable land.

POPULATION DISTRIBUTION. The patterns of settlement and dispersal of a population.

POPULATION MOMENTUM. The tendency for population growth to continue beyond the time that replacement level fertility had been achieved because of a relatively high concentration of people in the childbearing years.

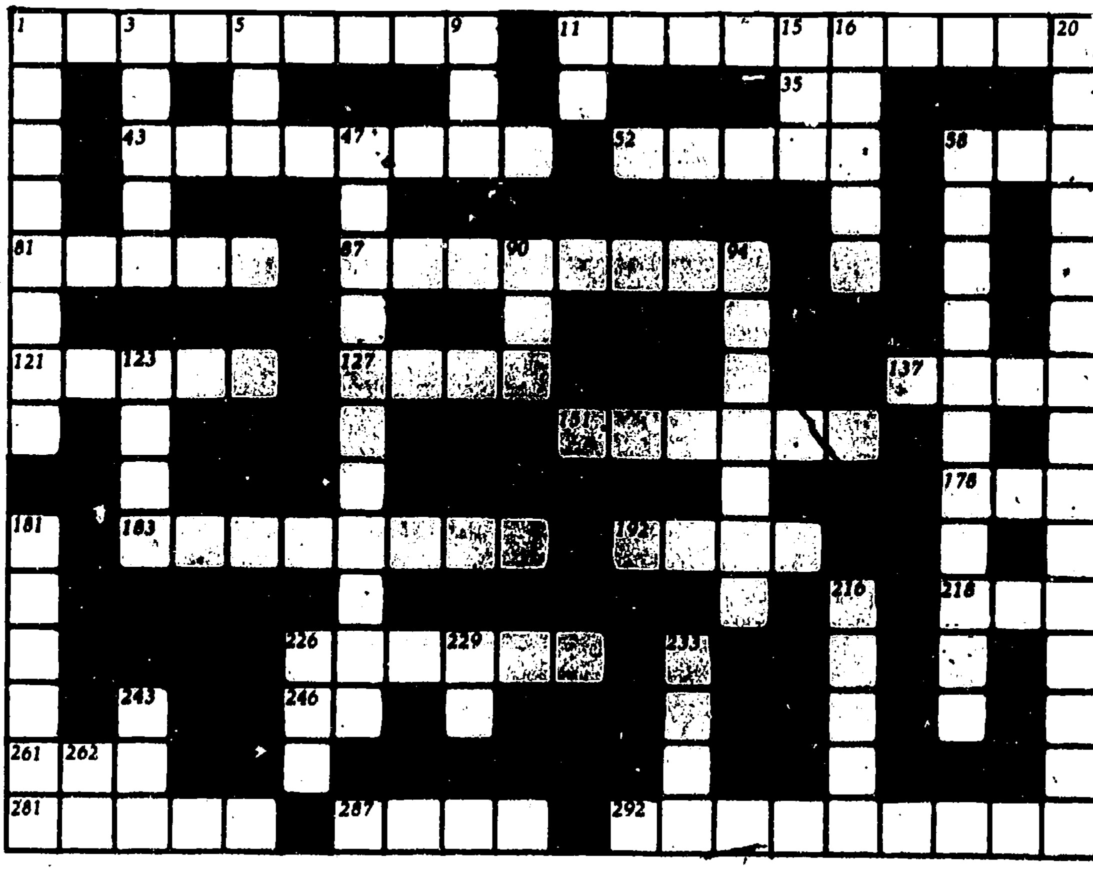
TOTAL FERTILITY RATE (TFR). The average number of children that would be born to a woman during her lifetime if she follows the fertility pattern of a given year. An estimate of average number of children per family in a population.

REPLACEMENT LEVEL FERTILITY. The level of fertility at which couples replace themselves, that is, a total fertility rate of 2.1 children per family (2 children to replace the parents and .1 to account for deaths).

ZERO POPULATION GROWTH. A population in equilibrium, with a growth rate of zero, achieved when births plus immigration equal deaths plus emigration.

Source: Arthur Haupt and Thomas T. Kane, *Population Handbook* (Population Reference Bureau, Inc., Washington, D.C. 1978).

POPULATION PUZZLE



ACROSS

1 People who are descendants of the original inhabitants of Hawaii.

11 The number of people in a city, state, or country.

35 Hello and Goodbye = — — oha!

43 The population of Hawaii is increased by approximately 100,000 on any day because of these people.

52 Abbreviation for what has become a popular type of housing in Hawaii.

58 People must — — — to survive.

81 People are — — — — — to Hawaii by its beauty and climate.

87 Part of Hawaii's population growth is due to people who migrate from the — — — — — — — — —.

121 Honolulu is the — — — — — — st city in Hawaii.

127 Most of the residents of Hawaii do not want the state to continue to — — — — rapidly.

137 When a student stands in front of his/her class and gives a report, he/she is giving an — — — — report.

151 The — — — - — — — composition of a population tells you about the proportion of people in various age categories and the ratio of males to females. It is usually displayed in pyramid form.

178 Some adults are parents and some are — — — parents (prefix).

183 This group of people in Hawaii affects the state's population size, birth and net migration rates, and economy.

192 A statistic that tells how frequently an event is occurring in a period of time (e.g. a birth — — — — describes how many births occur in a year's time per 1,000 people in the population).

218 Noise pollution is hard on the — — — s.

226 A population — — — — — — — is a law or other measure, instituted by a government, which is designed to influence population size, growth, distribution, or composition.

246 Some Hawaii residents say, "We can't go — — like this" when speaking of growth.

261 Listen to the waves, — — — ping at the shore.

281 One of Hawaii's major agricultural crops.

287 — — — —graphy is the study of human populations, including their size, composition, and growth.

292 What is used to measure mortality in a population (two words).

DOWN

1 The most populated city in the state of Hawaii.

3 Many of the recreational activities in Hawaii have to do with — — — — —.

5 When someone lends you money, you give him your — — —.

9 Abbreviation for Saturday.

11 Another name for father.

15 A boy.

16 People fear that Hawaii's residents are losing the — — — — — spirit.

20 Births minus deaths equals — — — — — — — — — — — — — — — — (two words).

47 — — — — — — — — — — — — — — from foreign countries is a major component of Hawaii's population growth.

58 Many people are concerned that continued population growth in Hawaii will ruin its fragile — — — — — — — — — — — —.

90 When you want something done immediately, you want it done — — —.

94 Population — — — — — — — — is a problem on Oahu, but not on the other Hawaiian islands, where the number of people per square mile is much less than the national average.

123 Some people fear that continued population growth will mean not enough — — — — for everyone.

181 Over the past twenty years, the coast line of Honolulu has changed because of the increase in the number of — — - — — — — that have been built.

216 There are almost four times as many — — — — —s as deaths in Hawaii.

226 Hawaiian food made from taro root.

229 Opposite of out-migration is — —-migration.

233 Because of the momentum of past population growth, it takes considerable — — — — to achieve a nongrowing state, even when a low birth rate is maintained.

243 Abbreviation for zero population growth—the balance between births plus immigration and deaths plus emigration.

262 The symbol for the chemical element gold.

Matching

Find the description in Column B which most closely matches the item in Column A.

A	B
1. _____ Hawaii State Plan	A. Births, deaths, in-migration/ immigration and out-migration/ emigration.
2. _____ Population policy	B. Law passed in 1978 setting goals and implementing actions for Hawaii.
3. _____ Population distribution	C. Total fertility rate of 2.1 children per family.
4. _____ Natural increase	D. Births plus in-migration/immigration equal deaths plus out-migration/ emigration.
5. _____ Net migration	E. The difference between in-migration/ immigration and out-migration/ emigration.
6. _____ Total fertility rate	F. Laws and programs which affect population size, distribution or rate of growth.
7. _____ Components of population change	G. The difference between births and deaths.
8. _____ Replacement level fertility	H. Movement of persons into an administrative subdivision from another subdivision within a country (e.g., Mainland to Hawaii) to take up residence.
9. _____ Zero population growth	I. The number of births per 1,000 population in a given year.
10. _____ In-migration	J. Population per unit of land area.

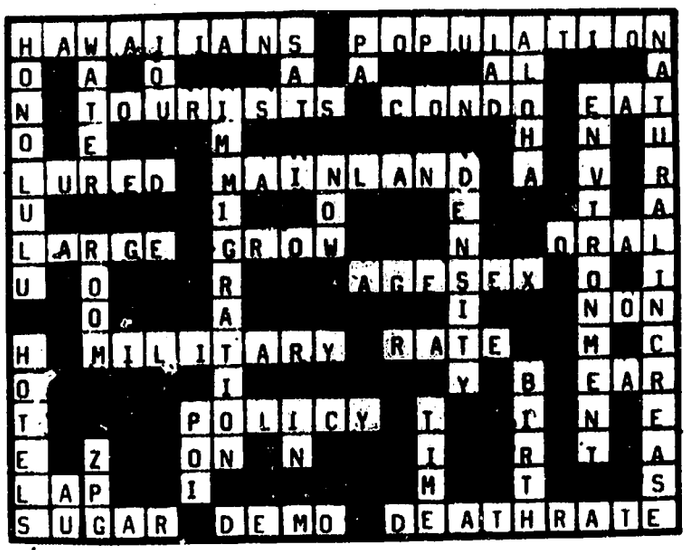
Research Ideas

Research one of the following topics as it applies to the situation in any nation.

- Population growth and pollution
- Population growth and national resources
- Population growth and wilderness and recreation areas
- Population growth and plant and wildlife habitat
- Population growth and agricultural lands
- Population growth and water supply
- Population growth and land use
- Population growth and housing
- Population growth and jobs
- Population growth and urbanization
- The demographic and economic situation in one of the foreign countries that is the original home of immigrants to Hawaii

Answer Sheet

Population Puzzle



Matching

1. B
2. F
3. J
4. G
5. E
6. I
7. A
8. C
9. D
10. H

WHAT'S YOUR OPINION?

The questions below come from a survey conducted in Hawaii in 1977. Pretend you are one of the people interviewed. How would you answer the following questions? Indicate whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with each of the following statements about population by circling the number in the appropriate column.

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1. The population in the State is growing too fast.	1	2	3	4
2. We already have enough people in the State right now.	1	2	3	4
3. Population growth in the State brings more jobs for Hawaii residents.	1	2	3	4
4. The State should take direct action to discourage and limit population [growth] in Hawaii.	1	2	3	4

Now turn to the next page and see how your answers compare with those of the respondents to the original survey.

SMALL GROUP ACTIVITIES

Divide into groups of about five people. Elect one person who will take notes on the discussion and one who will report the votes of the group to the entire class. Discuss the following questions and then decide on your answers. Spend about ten minutes on each question.

1. The only ways to slow and eventually stop population growth in Hawaii are to: 1) reduce the number of births; 2) limit in-migration from the mainland; and 3) limit immigration from foreign countries.
   a. Should the government of Hawaii have a goal of reducing births? How might it do this? What are the advantages and disadvantages of this approach?
   b. Should the state of Hawaii try to discourage mainland people from migrating to Hawaii? If so, how?
   c. Should steps be taken to discourage immigration to Hawaii from other countries? How?

2. What do you think are the five chief problems associated with continued population growth in Hawaii? Consider problems in many categories, such as environmental, recreational, economic, and ethnic problems.

   The five chief problems are:

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

   Briefly describe why those problems were chosen and what are some of the possible solutions to them.

Residents' Concern About Population Growth and Level
Results For Each County

Percent who agree strongly or somewhat with each statement:	Oahu	Maui	Kauai	Hawaii
1. The population of the State is growing too fast.	91%	90%	86%	71%
2. We already have enough people living in the State right now.	80	87	83	73
2. Population growth in the State brings more jobs for Hawaii residents.	18	47	24	34
4. The State should take direct action to limit population [growth] in Hawaii.	76	78	80	70

Source: *Population Growth, Policies and Strategies: A Public Opinion Survey* (Commission on Population and the Hawaiian Future, 1977).

FOR CLASS DISCUSSION

Discuss with your class the following questions.

1. Why is Hawaii a good case study for population issues? What does it have in common with other locations? How is it unique?

2. One hears a great deal about the "aloha spirit" in Hawaii, that gracious welcoming attitude of the islanders toward strangers and each other. Why is it in danger of being lost? Has this happened in other places? Give examples. What conditions do you think are favorable to a friendly atmosphere among people?

3. Petaluma, a city in California, won the right to control its growth through a Supreme Court decision. Now the city issues only a certain number of building permits per year. Would this strategy work in Hawaii? Who would favor it? Who would oppose it? What would be the benefits and drawbacks?

4. Have students read **India: A Case Study** on page 19 . Discuss with your class the following questions.
   a. Why is India a good case study for population issues? What does it have in common with other locations? How is it unique?
   b. What are the major ways India's population problems differ from Hawaii's? What are the similarities?
   c. Should Hawaii have a state-sponsored population control program aimed toward ethnic minorities with high fertility rates? What are the moral issues involved?
   d. When economic incentives are offered to the very poor to discourage them from having children, does this amount to a form of discrimination against poor people?

e. Parts of Honolulu, and all the major cities of India, rank among the most densely populated cities of the world. What are some of the negative effects of this high density? Give several examples. What are some of the positive aspects of high density?

5. What are the major issues of global population? What are some of the population trends for Hawaii, India, and for our world in the future?

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Department of Planning and Economic Development
State of Hawaii
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666 5th Avenue, New York, N.Y. 10103

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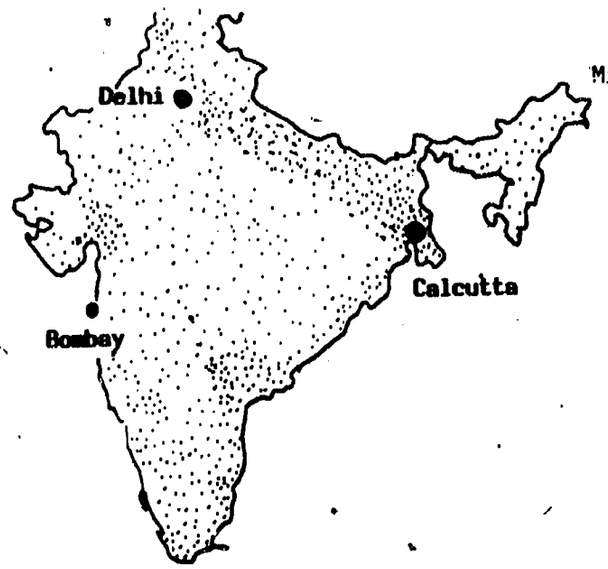
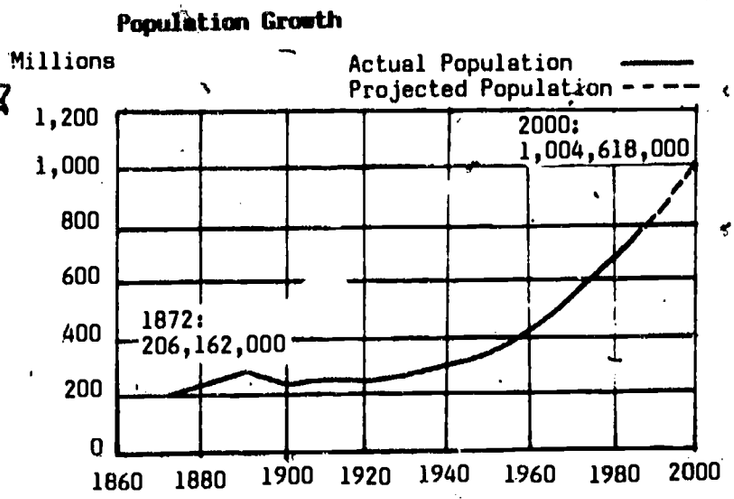
Population Reference Bureau, Inc.
1337 Connecticut Avenue N.W.
Washington, D.C. 20036

"The State of Hawaii Data Book"
Department of Planning and Economic Development
State of Hawaii



Each dot represents 300,000 people



Censuses of India:
Statistical Office of the United Nations

INDIA: A CASE STUDY

The official name of India is Bharat--the Union of India. India's population is the second largest in the world (only China's is larger). Every 7th person on earth lives in India. India has 693 million people, while the United States has only 230 million. But the most astonishing difference is in population density. India has an average population density of 546 persons per square mile compared to 65 persons per square mile in the United States. The highest population density is found in Calcutta--79,000 persons per square mile.

India has a great variety of land features and peoples. This diversity ranges from desert to thick jungle to one of the world's rainiest areas.

The people of India belong to many different ethnic and religious backgrounds. There are over 180 languages spoken. Religion plays a vital role in the Indian way of life. Religious laws govern people's clothing, food, and marriage patterns. Of the many religions Hindu, Moslem, Christian, and Sikh predominate.

Some Indians have great wealth, but the majority can spend only a few cents a day for the basic necessities of life. Although India has great natural resources, including ores and farmland, most of them have not been sufficiently developed. As a whole, the country has a low standard of living.

Living conditions are overcrowded throughout India. The overcrowding gets worse every year because of the increasing population. Although the rate of population growth has been steadily decreasing since the 1970's, the total population is still increasing and is expected to reach 1 billion before the year 2000.

Population Planning

In 1952; India became the first country in the world to have a state-sponsored population control program. The government emphasized sterilization because it was reliable, inexpensive, and efficient. Monetary incentives were used along with compulsion and coercion to spread acceptance of sterilization. This was partly responsible for the change in political power in India in March, 1977, and resulted in the discrediting of government sterilization programs (the acceptance of sterilization dropping from 8.3 million in 1976-77 to .96 million in 1977-78). Since 1977, the government has pushed an integrated health, nutrition, and family planning package. This, along with increased education and employment opportunities and an emphasis on an equitable status for women, has succeeded in increasing the acceptance of family planning and had an effect on lowering the fertility rate.

The Effect of the Status of Women on Population

In India, it has been the change in the status of women that has made the most significant difference in decreasing population growth. India has had a long tradition of universal and early marriage for women. All the major religions view motherhood as the primary role for women. And until recently, most of the population was occupied in rural agriculture, which meant that although women worked, they never left the environs of their homes.

Surveys have shown that women who've completed high school have significantly fewer children than those with less education. It has also been found that women who live in cities have considerably fewer children than those who live in rural areas. Through a series of marriage laws, the minimum age for marriage was raised from 14 for girls and 18 for boys in 1929, to 18 for girls and 21 for boys by 1978. The declining birth rate since the 1970's is correlated with the following factors:

- Rise in the age of marriage.
- Decline in the number of children after marriage.
- Rising level of education.
- More women working outside their homes in non-agricultural occupations.
- Success of the national family planning program.

Mortality Rate

The high growth rate of India's population (2.2% in the 1960's and 1970's) is a result of an accelerating decline in mortality and a very small decline in fertility since 1921. Before 1921, the mortality rate was very high (see Table 1 for examples) due to famine, plague, and other diseases. The change in death rate was due to improvements in public health facilities, the control of specific diseases (e.g., plague, cholera), and general social and economic progress. But the death rate is still higher in India than in all developed countries, and in many of the other developing countries. The urban mortality rate, in spite of urban overcrowding, is much lower than the rural (see Table 1), due to better medical facilities in the cities, more sanitary conditions, protected drinking water, and a better public attitude toward medical care and sanitation.

Table 1

Year	Mortality Rate (per 1000)	Life Expectancy	Urban Mortality Rate (per 1000)	Rural Mortality Rate (per 1000)
1890	41	25 years	---	---
1970	19	46 years	9	16

Emigration and Immigration

International migration (migration in and out of India from other countries) has always been, and continues to be, insignificant in India. Most international migration is from Pakistan and Bangladesh, and is a result of the political partition of India when she became independent in 1947. Within India's borders, the migration from countryside to the cities has slowed since the 1950's. Unfortunately, this is in part a result of the slowing of industrialization and economic development.

(Population figures are from Premi, Mahendra K. **The Demographic Situation in India.** Papers of the East West Population Institute, No. 80, February 1982.)

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P. O. Box 2359
Honolulu, HI 96804
Phone: 548-3036

United Kingdom Infrared Telescope
900 Leilani Street
Hilo, HI 96720
Phone: 1-961-3756

AVENUES THROUGH SOCIAL STUDIES

PURPOSE

- To demonstrate that concepts and skills taught in social studies curricula (e.g., locating and compiling information, synthesis of ideas) are useful tools in any possible career or hobby.
- To help students understand that recognition of acquired skills is one way they can help prepare themselves to cope with change, be flexible, and begin to make career decisions.
- To provide a listing of extracurricular programs and activities available locally that will help to foster social studies skills.
- To explore college courses and activities available in the social studies field offered through the University of Hawaii system.

PROGRAM SUMMARY

Part I

Social studies is defined as the study of human beings interacting in groups. The program discusses the major focus of each social studies discipline in respect to people: geography, anthropology, sociology, psychology, economics, history and political science. Creative and sometimes experimental solutions are needed to solve complicated human problems. Social studies provides us with the skills we need in any situation, hobby, or career that we may choose. Future social studies-related careers are yet to be identified. But by being aware of the skills we have already developed and use daily, we will be better able to cope with change and shape the quality of our lives.

Part II

After a quick review of the major disciplines of social studies, viewers are presented with a preview of Hawaii's possible future society. Change is inevitable and people must be flexible, adaptable, and able to conform to new circumstances. If students are interested in social studies careers, there are activities that they can participate in after school and in the summer that are related to social studies and can help provide them with career exploration opportunities.

GLOSSARY

Anthropology Studies how culture meets and determines people's physical, social and psychological needs.

Economics Examines production and consumption of goods and services, and choices that have to be made with unlimited material wants and limited human and natural resources.

Geography Looks at the impact of humanity's behavior upon the natural and cultural environment, as well as the spatial arrangements of the earth's physical and cultural features.

Global Village Marshall McCluhan postulated: Because the world is interconnected by a network of communication devices, it has become smaller.

History Records changes in people, institutions, nations and civilizations.

Intercultural Communication Cultures meeting together with a desire and common purpose of exchanging information, materials and ideas for the benefit of all.

Multicultural Relating to or designed for a combination of several distinct cultures.

Occupational Clusters The grouping of careers into related areas.

Political Science Analyzes the ways we organize ourselves to control the power needed to formulate public policies, laws, and consumer services.

Psychology Studies the behavior of individuals, and beliefs and feelings that influence a person's actions.

Sociology Looks at the structure of society and the interrelationships among groups and individuals.

BEFORE THE PROGRAM: Part I

1. Ask students to think of social studies ideas or topics they can remember learning in social studies classes from elementary school through the present. Write their answers on the chalkboard. After the videotape ask them to add to the list.

2. Ask students why they think there is a requirement of four credits of social studies for high school graduation. Why is social studies important enough to be a required course for all students?

3. Have students develop/look up definitions for glossary terms.

AFTER THE PROGRAM: Part I

1. In groups, complete Activity Sheet #1.

2. A. Ask students to add to the list of social studies ideas and topics they had stated before the videotape.
   B. Discuss the idea of social studies skills. What social studies skills did they learn from each of the topics they listed. How could these skills be useful to them now (and in the future) in activities (or careers) besides social studies?
   C. Duplicate Activity Sheet #2 for each student and ask them to complete the exercises in a group or with partners. Discuss.

3. Every society creates laws. Our laws are designed to promote the common good. Sometimes this is accomplished through laws specifically designed to protect individuals and special groups. For example, legislation protects the interests of handicapped children, insuring that they, too, are given equal educational opportunities. Both government agencies and special interest groups fulfill this function. Have students find out what and how individuals and special groups are protected by the following agencies:

   Ombudsman
   Neighborhood Boards
   Victim-Witness Kokua
   Citizens Against Noise
   Life of the Land
   Office of Hawaiian Affairs
   American Civil Liberties Union
   Consumer Product Safety Commission
   Federal Food and Drug Administration
   County Commissions (e.g., Commission on the Year 2000)

BEFORE THE PROGRAM: Part II

1. A. Review the disciplines of social studies. Write the name of a social studies discipline on the chalk board and call on students to describe the discipline. Refer to Activity Sheet #1 from Part I for descriptions of each of the disciplines.

   B. Ask students why people in those disciplines study the kinds of things they just described. Encourage students to relate this question to solving the problems of the future. For example:

   Anthropologists study other cultures so that our understanding of alternative ways of meeting basic human needs can be used to solve problems our own culture is facing today.

   Economists use what they have learned about how we produce and consume goods and services to solve the problems caused by reduced natural resources and by technological inventions such as robots.

   Geographers try to discover what impact the changes people have made on climate, topography, population distribution, and land use will have for life in the future.

   Historians study the past to understand how the ideas, events, and accomplishments of the past shaped the present, and relate that understanding to the events of the future.

   Political scientists use their study of how we formulate laws and public policy to meet the problems of more and more people trying to get along in less and less space--locally and globally.

   Psychologists study the beliefs and feelings that determine an individual's behavior to help them adapt to changing social conditions and to lead more rewarding lives.

   Sociologists study changes in the ways people relate to each other in groups to help predict and plan better ways of relating in the future.

2. Ask students to think of careers related to the social studies fields they've talked about. List their answers on the chalkboard and, after the videotape, ask them to add to the list.

AFTER THE PROGRAM: Part II

1. A. Divide the class into groups representing each discipline. Ask them to discuss the contributions their disciplines could make to solving a complex problem that may be even worse in the near future. For example:
   --New development in a rural area
   --Acute water/energy/food shortage
   --Crime in Waikiki
   --Overpopulation in Hawaii
   --Government deficit causing cutting of social programs
   --Cost of living so high, only the wealthy can live in Hawaii

   B. Ask them to select one member of their group to record their answers and another to share their conclusions with the rest of the class.

2. Ask students to select a social studies career (see list on page 30) in which they are particularly interested. Have students research the training needed to enter a particular occupation and where such training is offered. For example, a student interested in political science could interview a lawyer or politician.

3. Have students do a survey of social studies related career exploration activities available to them at their school and/or in their school district.

Name _____

Date _____

AVENUES THROUGH SOCIAL STUDIES

ACTIVITY SHEET #1

A. Below each name of a social studies discipline, write each word or phrase from the list below that could be associated with it. (Each word or phrase could be associated with more than one discipline.)

Archives	Demand	Government	International	Location	Power
Art	Density	Gross National Product	Investment	Market	Social Change
Attitude	Discovery	Groups	Land use	Natural Resources	Social Structure
Authority	Emotions	Human Resources	Law	Policy	Supply
Beliefs	Ethnic background	Income	Legislation	Population Distribution	Values
Culture	Genetic	Individual			

Anthropology **Economics** **Geography** **History**

Political Science **Psychology** **Sociology**

B. Fill in the blank with the name of one of the social studies disciplines from the previous exercise.

_____ is concerned with the spatial arrangements of the earth's physical and cultural features.

_____ studies the relationship of people and culture and how they adapt to their environment.

_____ looks at the interrelationships among groups and individuals in a society.

_____ studies human behavior and the genetic, social, and physical factors that contribute to it.

_____ records changes in people, institutions, nations and civilizations.

_____ studies power bases in the community.

_____ examines production and consumption of goods and services.

Name _____

Date _____

AVENUES THROUGH SOCIAL STUDIES

ACTIVITY SHEET #2

This is a list of some of the social studies skills you've been learning since elementary school:

A. Reading selectively
B. Participating productively in discussions
C. Interpreting maps
D. Organizing information
E. Practicing mutual respect in a group
F. Developing ideas through interaction with others
G. Developing ideas through research
H. Planning
I. Asking relevant questions
J. Analyzing and evaluating information

* * * * * * * * * * * *

After discussing each of the following situations, put the letter or letters of the skills that could help you to solve the problem.

_____ A developer has bought land in a rural, residential, and economically-depressed beach area. She wants to put up resort condos. To do this, a public hearing to change the zoning must take place. Some people want things to remain residential (the way things are now), others see the need to bring income and jobs into this economically-depressed area.

_____ A group of anthropologists discovered a cave filled with ancient Hawaiian artifacts. Scientists, historians, and anthropologists want the cave excavated and the artifacts made public. The people who live near the site want the items kept there and the cave left untouched.

_____ Rocky, Alika, and Chuckie are climbing Mt. Haleakala on an afternoon hike. They take the wrong turn back, and by nightfall are lost.

_____ The City and County has decided to build a solid waste conversion power plant on Oahu. The Council and the voters have all agreed that it is the best possible solution to energy shortage and waste disposal problems. But no community wants it to be located in their area.

_____ You and your friends are out sailing when a storm suddenly hits. Your mast is broken and you drift off course until the boat is finally beached on a deserted atoll. There seems to be no hope of rescue.

AVENUES THROUGH SOCIAL STUDIES

ANSWER SHEET

Activity Sheet #1

A. Answers may vary.

B. Geography
Anthropology
Sociology
Psychology
History
Political Science
Economics

Activity Sheet #2

Answers may vary.

POSSIBLE SOCIAL STUDIES RELATED CAREERS

Anthropologist
Archaeologist
Archivist
Business Administrator
City Planner
Civil Service Administrator
Clergy
Clinica Psychologist
Criminologist
Economist
Editor
Educational Psychologist
Ethnologist
Experimental Psychologist
Foreign Correspondent
Funeral Director
Futurist
Geographer
Historian
Industrial Psychologist
Lawyer
Librarian
Linguist
Market Researcher
Personnel Manager
Philosophy Teacher
Political Scientist
Public Relations Director
Reporter
Social Psychologist
Social Worker
Sociobiologist
Social Worker
Sociobiologist
Sociologist
Special Interest Lobbyist
Teacher
Writer

COMMUNITY RESOURCES

Alternate Energy Resources
E. Chipman Higgins (Administrative Director)
Hawaii Electric Company
P. O. Box 2750
Honolulu, HI 96840
Phone: 548-7721

American Cancer Society
200 North Vineyard
Honolulu, HI 96817
Phone: 531-1662

American Field Service
International/Intercultural Programs
313 East 43rd Street
New York, NY 10017
Phone: (Maui) 1-572-9414

Bishop Museum
Education Department
P. O. Box 19000-A
Honolulu, HI 96816
Phone: 847-3511, ext. 133

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843
Phone: 527-6126
Education: 527-6124
Environmental Section: 527-6221
Hydrology/ Geology Section: 527-5276

Career Information Center
Vocational Education
2327 Dole Street
Honolulu, HI 96822
Phone: 948-7461

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

Circuit Court
Office of the Clerk
777 Punchbowl Street
Honolulu, HI 96813
Phone: 548-7669
548-3986
548-3987

Commission on the Handicapped
Hawaii State Department of Health
335 Merchant Street, #215
Honolulu, HI 96813
Phone: 548-7606

Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, HI 96813
Phone: 523-4414

District Court
842 Bethel Street
Honolulu, HI 96813
Phone: 548-2449
548-5735

East West Center
1777 East West Road
Honolulu, HI 96848
Phone: 944-7111

Environmental Protection Agency
Prince Kuhio Federal Building
300 Ala Moana Blvd., Rm. 1302
P. O. Box 50003
Honolulu, HI 96850
Phone: 546-8910

Food and Drug Administration
U.S. Department of Health and Human Services
Prince Kuhio Federal Building
300 Ala Moana Blvd., Rm. 6320
P. O. Box 50061
Honolulu, HI 96850
Phone: 546-8379

Hawaii Crime Commission
Office of the Lt. Governor
State Capitol
Honolulu, HI 96813
Phone: 548-6714

Hawaii Housing Authority
Planning and Research
1002 North School Street
Honolulu, HI 96817
Phone: 848-3226

Hawaii Natural Energy Institute
Holmes Hall, Rm. 206, 246
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 948-8788
948-8890

Hawaii Newspaper Agency
605 Kapiolani Blvd.
Honolulu, HI 96813
Phone: 525-7660

Hawaii Special Olympics (State)
P. O. Box 3295
Honolulu, HI 96801
Phone: 395-8436

Hawaii State Archives
Iolani Palace Grounds
Honolulu, HI 96813
Phone: 548-3496

Hawaii State Commission on the Status of Women
250 South King Street, Rm. 500
Honolulu, HI 96813
Phone: 548-4199

Hawaii State Department of Planning and Economic Development
P. O. Box 2359
Honolulu, HI 96804
Phone: 548-4025

Hawaii State Legislature
House of Representatives
Senate
Phone: 548-7843
548-4675

Hawaii State Occupational Information Coordinating Committee
830 Punchbowl Street, #315
Honolulu, HI 96813
Phone: 548-3496

Japan-America Institute of Management Science (JAIMS)
6660 Hawaii Kai Drive
Honolulu, HI 96825
Phone: 395-2314

Life of the Land
Environmental Law Program
250 South Hotel Street, Rm. 251
Honolulu, HI 96813
Phone: 521-1300

Mission Houses Museum
553 South King Street
Honolulu, HI 96813
Phone: 531-0481

Ocean Thermal Energy Conversion (OTEC)
Alternate Energy Division
Hawaii State Department of Planning and Economic Development
335 Merchant Street, Rm. 110
Honolulu, HI 96813
Phone: (Energy Hotline) 548-4080

Office of Hawaiian Affairs (OHA)
Kawaiahao Plaza
567 South King Street, Suite 100
Honolulu, HI 96813
Phone: 548-8960

Peacesat Project
Pan Pacific Education and Communications Experiments
Old English Building, Quad #3
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 948-7794

Population Analysis
Hawaii State Department of Planning and Economic Development
250 South King Street, Rm. 602
Honolulu, HI 96813
Phone: 548-2328

Research and Economic Analysis Division
Hawaii State Department of Planning and Economic Development
Kamamalu Building
250 South King Street
Honolulu, HI 96813
P. O. Box 2359
Honolulu, HI 96804
Phone: 548-3036

AVENUES THROUGH SCIENCE

PURPOSE

- To show students how the basic processes of science (e.g., questioning, organizing, ordering information into what we know or don't know, forming hypotheses, gathering data, and testing and revising hypotheses) are essential problem solving skills everyone needs.
- To encourage students to be curious about the world around them and about the future, and to develop the habit of asking questions.
- To show how scientific discoveries and technological inventions are changing career opportunities.
- To explore a variety of science related extracurricular activities offered locally and discuss science and engineering programs offered by the University of Hawaii system.

PROGRAM SUMMARY

Part I

A series of vignettes is used to help students realize how science contributes to our daily lives. Almost everything in our society is related to science and technology. Skills learned in science classes such as questioning the way things seem to be, exploring, measuring, guessing, and concluding are invaluable tools for any career or hobby students may choose.

Part II

Science is a human experience and people in science related careers will help shape our future society. Science and technology can help alleviate human suffering resulting from illiteracy, disease, and poverty, as well as enrich our understanding of our world and universe. Extracurricular activities that can help students explore careers in science are described. Post-secondary institutions in the University of Hawaii system that offer training in science and related technology are described briefly.

GLOSSARY

Artificial Intelligence Computer intelligence; used to aid in problem-solving.

Biofeedback Machines Instruments measuring electrical impulses that are used to detect adverse bodily functions (e.g., muscle tension, high skin temperature). These machines aid doctors and technicians in diagnosing medical disorders.

Biology The science of life processes (structures and functions) of living organisms.

Chemistry The science of the composition, structure, properties and reactions of a substance.

Engineering The application of scientific principles to the design, construction, and operation of equipment and systems.

Euthanasia The act or practice of killing individuals--persons or animals--that are hopelessly sick or injured for reasons of mercy.

Extraterrestrial Not of the planet Earth.

Fiber Optic Scopes Small, flexible, snake-like tubes with their own cool light source; are used to view remote and inaccessible areas of the body without major surgery.

Geothermal Power Electric power generated by the heat of natural volcanic steam.

Hydroelectric Power Electric power generated by the rapid movement of water.

Physics The science that deals with matter and energy and their interactions in the field of mechanics, acoustics, optics, heat, electricity, magnetism, radiation, and atomic structure.

Science Life, life forms, matter, and how and why things work.

Technology The means by which to provide objects necessary for human life and comfort.

BEFORE THE PROGRAM: Part I

1. Before viewing the program, ask students to "brainstorm" ways in which science helps us in our daily lives. List their responses on the board. Discuss which of the ways science affects our daily lives is a result of "applied science," and which is a result of "pure science." (Parallel the relationship of engineering to technology with that of science to exploration.)

2. A. Ask students to think of science ideas or topics they can remember learning in science classes from elementary school through the present. List these on the chalkboard under the headings of biology, chemistry, physics, and earth sciences.
   B. Ask them why they think there is a requirement of 2 credits of science for high school graduation (3 credits is recommended for the college-bound). Why is science important enough to be a required course for all students?
   C. Ask students why they think only 2 credits of science is required in contrast to 4 credits of social studies being required for graduation. Do they think there should be more science credits required? Why or why not?

3. Have students develop/look up definitions for glossary terms.

AFTER THE PROGRAM: Part I

1. A. After viewing the program, ask students for other ideas and topics of science to add to the list they started before the videotape.
   B. Duplicate Activity Sheet #1 for each student. Ask them to complete the exercises with a partner or in a group. Discuss.

2. A. Discuss the idea of science skills. What were some of the science inquiry skills that they learned from each of the topics they listed (e.g., questioning the way things seem to be, exploring, measuring, gathering data/information, guessing, and concluding)? How could these skills be useful to them now (and in the future) in activities and careers other than science?
   B. In groups, complete Activity Sheet #2. Discuss.

BEFORE THE PROGRAM: Part II

1. A. Review the fields of study of science. Write the name of each field on the board and ask students to describe. Refer to Activity Sheet #1 from Part I for descriptions of each.

   B. Ask students why people in those fields study the kinds of things they do. Why is it important to us? Encourage students to relate this question to solving problems of the future. For example:

   Biologists study living things. Their understanding of life processes and the structures and functions of living organisms is the first step in developing ways of treating illness.

   Chemists study the chemical elements that everything is made of and how they interact and combine to make new substances. This gives them the knowledge to make new man-made materials that are stronger or taste better or stick better than materials found in nature.

   Earth scientists study the earth and its origin and development. Their understanding of weather patterns and seismic activity can help industry and government decide where to construct new buildings and what materials are necessary, and help people prepare for storms and earthquakes.

   Physicists study electricity, heat, light, magnetism, mechanics, and sound as well as the structure of the atom and its nucleus, linking all these subjects together by a single pattern of ideas. Applied physicists use this knowledge to develop new technologies that provide computers and telecommunications, space craft, nuclear power, and ultrasonic devices.

2. Ask students to think of careers related to the science fields they've talked about. List their answers on the chalkboard, and after the program, ask them to add to the list.

AFTER THE PROGRAM: Part II

1. A. Divide students into groups and have them discuss the consequences of advances in science and technology as they relate to the following issues:
   --Establishment of a nuclear fission plant on the west side of Molokai.

   --Environmental problems vs. our energy needs

   --Euthanasia

   --Use of animals in scientific experiments

   --Cloning

   --Use of diseases in biological warfare

   B. Ask them to select one member of the group to record their discussion and one member to share their conclusions with the rest of the class.

2. Ask students to select a science career (see list on page 39) in which they are particularly interested. Have students research the training needed to enter a particular occupation and where such training is offered. For example, a student interested in robotics could contact the School of Engineering at the University of Hawaii.

3. Have students do a survey of science related career exploration activities available to them at their school/district. Have them create a pamphlet for dissemination to students at the school, or create a bulletin board display publicizing career exploration opportunities.

4. Share a variety of science journals or assign students to find them in a college library. Have them investigate what fields of study are represented, how the research is done, how it is written up and organized, and who publishes it.

5. Have students discuss the kind of society they foresee for Hawaii in the year 2000. What kind of housing, transportation, and environment will we have? What kind of occupations will there be? How will our energy needs be met? After students have discussed their viewpoints, share with them Jim Pearson's conception of Honolulu in the year 2000. How do their projections compare with the Pearson drawing? (Pearson is the Urban Design Branch Chief for the City and County of Honolulu.)

6. **This activity is designed to encourage students to start thinking about their interests--in science or other subjects--as avenues to deciding and planning for the education they'll need and the occupations they want.** Ask students to create a timeline showing the events that have caused their lives to change in significant ways--the turning points--and the events they imagine will cause their lives to change in the future. Before students begin their timelines:

   A. Show them an example of a timeline and explain how to make one.

   B. Discuss the notion of change. How do you distinguish significant from insignificant change. Develop a point system for rating the importance of various changes.

   C. Discuss the idea of taking responsibility for your life. What is the difference between **letting** things happen to you and **making** things happen to you.

   D. Discuss the notion that taking responsibility means making decisions and planning for the future. This program concerns itself with showing students the diversity of possible avenues to the future they want. Discuss with students how they can choose the roads that will enable them to reach these avenues to the future. Relate these choices to the turning points on their timelines.

7. Ask students to pick a community resource from the list on page 40 that reflects their interests in science or in other subjects, and contact one of these organizations for information on what they do. Have them present their findings to the class in a brief report.

Name _____

Date _____

AVENUES THROUGH SCIENCE

ACTIVITY SHEET #1

A. Below each name of a science field, write each word or phrase from the list below that could be associated with it. (Each word or phrase could be associated with more than one field.)

Acceleration	Ecology	Meteorology
Aeronautical	Energy engineering	Nutrition
Agricultural	Gaseous matter	Oceanography
Astronomy	Genetics	Robotics
Biochemistry	Geology	Satellites
Bionic Electronics	Hazardous waste management	Space exploration
Biophysics	Impedance	Vectors
Botany	Laser technology	Voltage
Centrifugal force	Medicine	Vulcanology
Data		Zoology

Biology **Chemistry** **Earth Science** **Physics**

* * * * * * * * * * * *

B. Fill in the blank with the name of one of the science fields from the previous exercise.

_____ The study of what substances--chemical elements--are made of.

_____ The science of living things--plants and animals.

_____ The study of the earth and its origin and development.

_____ The science of basic ideas of energy, force, matter, and time.

Name _____

Date _____

AVENUES THROUGH SCIENCE

ACTIVITY SHEET #2

This is a list of science skills you've been learning since elementary school:

A. Following procedures and directions step by step

B. Gathering data and information by measurement and by deduction and inference.

C. Exploring, investigating, discovering.

D. Questioning the way things seem to be.

E. Guessing and concluding.

After discussing each of the following situations, put the letter or letters of the skills that could help you solve the problems. Also list which science fields could study these problems, using the list from the previous exercise.

_____ Two-thirds of the total energy used today in Hawaii comes from fossil fuels--coal, petroleum, and natural gas. We expect to run out of these non-renewable resources in 30 to 100 years.

_____ Our world is becoming increasingly overcrowded. There are dangerous problems developing because of overpopulation. If our world population continues to grow at the present rate, how can each of the following problems be solved?

_____ Responsible care for the environment

_____ Use of pesticides

_____ Threat of world war

_____ World food shortage

_____ Euthanasia

_____ You're part of a survey team landed on a newly-discovered planet. Your job is to determine whether the planet is fit for colonization. What would you want to find out and how would you go about it?

AVENUES THROUGH SCIENCE

ANSWER SHEET

Activity Sheet #1

A. Answers may vary

B. Chemistry
Biology
Earth Science
Physics

Activity Sheet #2

Answers may vary.

POSSIBLE SCIENCE RELATED CAREERS

Physics

Aeronautical Engineer
Airline Pilot
Architect
Architectural Engineer
Astronomer
Atomic Physicist
Civil Engineer
Electrical Engineer
Electrician
Electronics Engineer
Electronics Technician
Energy Resources Engineer
Geophysicist
Industrial Laser Technician
Industrial Robotics Production Designer
Interplanetary Colonization Architect
Laser Holographics Technician
Mechanic
Meteorological Technician
Meteorologist
Navigator
Nuclear Engineer
Optic Fiber Maintenance Person
Opthalmologist
Optometrist
Physical Chemist
Plumber
Radio-TV Repair Person
Seismic Observer
Sheet Metal Worker
Ship Pilot
Teacher

Biology

Animal Husbandry Expert
Bacteriologist
Biochemist
Biofeedback Researcher
Biologist
Biomedical Engineer
Bionic Medical Electronics Engineer
Botanist
Curator
Dietician
Entomologist
Forest Ranger
Game Warden
Genetic Engineer
Geriatric Researcher
Herpetologist
Horticulturist
Immunologist
Marine Technician
Medical Secretary
Microbiologist
Nursery Worker
Paramedic
Pharmacist
Physician
Public Health Educator
Public Health Nurse
Registered Nurse
Surgeon
Teacher
Veterinarian
Zoologist

Chemistry

Assayer
Biochemist
Chemical Engineer
Chemical Industrialist
Chemical Literature Specialist
Chemical Salesperson
Chemical Technician
Consultant
Criminological Chemist
Exterminator
Food Resources Engineer
Laboratory Technician
Lithographer
Metallurgist
Mining Engineer
Oceanographer
Paint Chemist
Pharmacist
Photographer
Physician
Research Chemist
Research Nutritionist
Surgeon
Teacher
Welder

COMMUNITY RESOURCES

Alternate Energy Resources
E. Chipman Higgins (Administrative Director)
Hawaiian Electric Company
P. O. Box 2750
Honolulu, HI 96840
Phone: 548-7721

American Cancer Society
200 North Vineyard
Honolulu, HI 96817
Phone: 531-1662

Annual Science Fair
General Education Branch
Office of Instructional Services
189 Lunalilo Home Road, 2nd Floor
Honolulu, HI 96825
Phone: 395-8916

Architects Hawaii, Ltd.
Bishop Square
Pacific Tower
1001 Bishop Street, Suite 300
Honolulu, HI 96813
Phone: 523-9636

Bishop Museum
Education Department
P. O. Box 19000-A
Honolulu, HI 96816
Phone: 847-3511, ext. 133

Cardiovascular Research Laboratory
Pacific Health Research Institute
800 South King Street, Suite 200
Honolulu, HI 96813
Phone: 524-4411

Career Kokua
1830 Mott-Smith Drive, Rm. 4-116
Honolulu, HI 96822
Phone: 548-5330

Career Information Center
Vocational Education
2327 Dole Street
Honolulu, HI 96822
Phone: 948-7461

Commission on the Year 2000
Hawaii State Department of Planning and Economic Development
2424 Maile Way, Room 711
Honolulu, HI 96822
Phone: 948-7427

Engineering Open House
Holmes Hall
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 958-7727

Hawaii Natural Energy Institute
Holmes Hall, Room 206, 246
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 948-8788

Hawaii Newspaper Agency
605 Kapiolani Blvd.
Honolulu, HI 96813
Phone: 525-7660

Hawaii Science Foundation
Student Training Program
Dr. Suk Hwang
#8 Wentworth Hall
University of Hawaii, Hilo
Hilo, HI 96720
Phone: 1-961-9319
1-961-9383

Hawaii State Occupational Information Coordinating Committee
830 Punchbowl Street, #315
Honolulu, HI 96813
Phone: 548-3496

Hawaiian Electric Motor Building Contest
Residential Services Department
Hawaiian Electric Company
820 Ward Avenue
Honolulu, HI 96814
Phone: 548-3511

Honolulu Academy of Arts
900 South Beretania Street
Honolulu, HI 96814
Phone: 538-3693

Japan-America Institute of Management Science (JAIMS)
6660 Hawaii Kai Drive
Honolulu, HI 96825
Phone: 395-2314

Joint Institute for Marine and Atmospheric Research (JIMAR)
Environmental Research Laboratories
University of Hawaii, Manoa
1000 Pope Road
Honolulu, HI 96822
Phone: 948-8083

Kapiolani Community College
Food Service Education
620 Pensacola Street
Honolulu, HI 96814
Phone: 531-4654

Ocean Thermal Energy Conversion (OTEC)
Energy Division
Hawaii State Department of Planning and Economic Development
335 Merchant Street, Rm. 110
Honolulu, HI 96813
Phone: (Energy Hotline) 548-4080

Queen's Medical Center
Volunteer Services Office
(Candy Stripers)
1301 Punchbowl Street
Honolulu, HI 96813
Phone: 547-4302

Sea Life Park
Education Department
Makapuu Point
Waimanalo, HI 96795
Phone: 259-7933

State Student Activities
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-2841

United Kingdom Infrared Telescope
900 Leilani Street
Hilo, HI 96720
Phone: 1-961-3756

U.S. Consumer Product Safety Commission
Prince Kuhio Federal Building
300 Ala Moana Blvd., Rm. 3117
P. O. Box 50052
Honolulu, HI 96850
Phone: 546-7523

AVENUES THROUGH MATHEMATICS

PURPOSE

- To encourage students to continue to take higher mathematical courses of study in high school and beyond.
- To help students understand and appreciate the contributions to everyday life made by applied mathematics technology.
- To identify math related careers.
- To explore a variety of math related extracurricular activities offered in the community that are available to students.
- To familiarize students with math courses offered by the University of Hawaii system for post-secondary training.

PROGRAM SUMMARY

Part I

Mathematics provides the skills that enable people to create timeless works of art, to build bridges and skyscrapers, to walk on the moon, and even to explore the stars. Mathematics is a human activity in which people solve problems by selecting the necessary information, organizing it logically, and expressing it quantitatively. Examples are shown of the ways mathematics skills help us in work, play, and daily living. Logical reasoning and making measurements of length, weight, volume, and time are as important in science and industry as they are in everyday life. Skills learned in math are valuable tools for any career students may choose.

Part II

Mathematics is not an isolated subject. It relates to all phases of life in school as well as in the world of work. Many professions use math. Suggested career exploration activities for students interested in pursuing a math related career are presented. Post-secondary institutions in the University of Hawaii system that offer training in mathematics and math related fields are described briefly.

GLOSSARY

Algebra A mathematical system used to generalize certain arithmetical operations by permitting letters or other symbols to stand for numbers.

Analytical Geometry The branch of geometry which uses equations to describe curved lines.

Arithmetic The science of computing by positive, real numbers--adding, subtracting, multiplying, and dividing.

Artificial Intelligence Computer intelligence; used to aid in problem-solving.

Calculus A method of solving problems that have changing quantities. For example, differential calculus can find the rate at which the speed of a projectile changes; integral calculus can find the speed of the projectile when the rate of change is known.

Geometry The branch of mathematics that deals with points, lines, surfaces, and solids, and examines their properties, measurement, and mutual relations in space.

Logic The science of reasoning which studies the forms of arguments and the rules which distinguish correct arguments from incorrect ones (an argument is a set of statements consisting of premises and the conclusions that can be drawn from these premises). **Symbolic Logic** uses symbols instead of words to stand for the elements of an argument.

Mathematics The group of sciences dealing with the study of quantities and relations through the use of numbers and symbols.

Probability The mathematical study of the number of times something will probably occur over the range of possible occurrences, expressed as a ratio.

Statistics The science of assembling, classifying, tabulating, and analyzing facts and data so as to present significant information about a given subject.

Telecommunication Instruments and devices for communicating from a distance.

Trigonometry The branch of mathematics used to solve problems by making unknown measurements part of a triangle and writing the relations between the sides of the triangle as ratios.

Ultrasounding Devices Machines that send sound waves through tissue and bone to provide a view of organs.

BEFORE THE PROGRAM: Part I

1. Ask students to think of math ideas or topics they can remember learning in math classes from elementary school through the present. Write their answers on the chalkboard. After the videotape, ask them to add to the list.

2. Ask students why they think there is a requirement to take two credits of math for high school graduation. Why is math important enough to be a required course for all students.

3. The University of Hawaii recommends that college-bound students take three credits of math (2 years of algebra and 1 of geometry), one of them in their senior year so that they retain the idea of thinking in math. Is this necessary if you don't intend to major in math or science? Do you think there should be more or fewer math credits required?

4. Discuss briefly the definitions of each of the glossary words.

AFTER THE PROGRAM: Part I

1. In groups, have students complete Activity Sheet #1. Have the class review their answers together.

2. Divide the students into groups and ask them to discuss each of the following questions. (Refer to the math topics listed in Activity Sheet #1.) Have each group select someone to record their answers and someone to present their answers to the class.

   A. What are the basic ideas behind the math course you're taking now? (Why study . . . algebra, geometry, etc.)

   B. Think of some examples in which these math ideas are used in everyday life.

   C. Is what you're learning intended as preparation for advanced math and/or science courses?

   D. What careers use the specific math skills being taught in this course?

3. Mathematics is the basic tool of the natural sciences, and essential to the social sciences as well. Each of the sciences listed below uses many different kinds of math skills. Pick one math/skill concept for each of these sciences, and give an example of a problem it is used to solve in that science. (For example, in biology class you use probability and ratio to predict offspring when studying genetic inheritance.) Students may use the science classes and teachers in their own school as a resource.

Physics	**Earth Science**
Biology	**Psychology**
Sociology	**Chemistry**
Economics	

4. A surprising variety of basic math skills are called into use for making plans and finding solutions in job tasks or personal activities. Ask students to plan a trip for themselves (or a hypothetical client) to one of the neighbor islands. After selecting the island, have them figure out the following and plan a budget for their trip: total distance traveled, time for travel, airline fare, hotel expenses, food and incidental expenses.

5. Basic math skills can provide useful and interesting information from a collection of facts that isn't easily available from intuitive analysis. Show students how an analysis of test data requires the use of mathematics. Give them a list of scores from a test they've taken recently. Have them make a frequency distribution of the scores, finding the mean, median, mode, and standard deviation. Ask each student to evaluate his score in relation to the scores of his classmates. The school counselor can be invited to make a presentation on the use of mathematical statistics in working with students, both in group and individual testing.

BEFORE THE PROGRAM: Part II

1. Ask students to give answers to the following questions. Write their answers on the chalkboard, and after the video, ask them to add to the list.

   A. What choices would someone interested in math have when selecting a career?

   B. What occupations require the use of math skills?

2. A. In groups, complete Activity Sheet #2.

   B. For each situation on Activity Sheet #2, discuss the following:
   1. If you didn't have the necessary math skills, what problems might develop?
   2. Are there other ways to solve these problems?

AFTER THE PROGRAM: Part II

1. Students have been using math skills in all their classes (in addition to math and science)--most of the time without realizing it. Ask students to give a recent example from each of their courses of a math skill they've used (e.g., constructing props in drama class, counting the number of pages you've got to read in English class).

2. Refer to the list of possible careers for students interested in mathematics at the end of this lesson. Ask each student to research the math courses he would have to take in high school and/or college to be able to do any three of these careers.

3. Have students research career exploration activities that are available to them to further examine whether or not they want to pursue a math related career. Have them select one or more activities to do. Also, have them share the information by writing an article for the school newspaper or publicizing the information through a poster and/or bulletin board display.

4. **This activity is designed to encourage students to start thinking about their interests--in mathematics or in other subjects--as avenues to deciding and planning for the education they'll need and the occupations they want.** Ask students to create a timeline showing the events that have caused their lives to change in significant ways--the turning points--and the events they imagine will cause their lives to change in the future. Before students begin their timelines:

   A. Show them an example of a timeline and explain how to make one.

   B. Discuss the notion of change. How do you distinguish significant from insignificant change. Develop a point system for rating the importance of various changes.

   C. Discuss the idea of taking responsibility for your life. What is the difference between **letting** things happen to you and **making** things happen to you.

   D. Discuss the notion that taking responsibility means making decisions and planning for the future. This program concerns itself with showing students the diversity of possible avenues to the future they want. Discuss with students how they can choose the roads that will enable them to reach these avenues to the future. Relate these choices to the turning points on their timelines.

5. Ask students to pick a community resource from the list on page 49 that reflects their interests in mathematics or in other subjects, and contact one of these organizations for information on what they do or offer. Have them present their findings to the class in a brief report.

POSSIBLE MATHEMATICS RELATED CAREERS

Accountant
Account Clerk
Accounting Technician
Actuarial Clerk
Actuary
Airline Pilot
Architect
Banker
Bank Teller
Broadcasting Technician
Carpenter
Cashier
Commercial Drafter
Computer Programmer
Economist
Electrician
Electronics Technician
Engineer
Engineering Technician
Insurance Claims Adjuster
Insurance Sales Person
Machinist
Mathematical Statistician
Navigator
Optometrist
Surveyor
Systems Analyst
Teacher

Name _____

Date _____

AVENUES THROUGH MATHEMATICS

ACTIVITY SHEET #1

A. Match the name of one of the following branches of mathematics with the definitions listed below:

Algebra **Arithmetic** **Calculus** **Geometry** **Logic** **Probability** **Trigonometry** **Statistics**

_____ The science of reasoning which studies the forms of arguments and the rules which distinguish correct arguments from incorrect ones (an argument is a set of statements consisting of premises and the conclusions that can be drawn from these premises).

_____ A mathematical system used to generalize certain arithmetical operations by permitting letters or other symbols to stand for numbers.

_____ The branch of mathematics used to solve problems that have changing quantities. For example, finding the rate at which the speed of a projectile changes and finding the speed of the projectile when the rate of change is known.

_____ The science of computing by positive, real numbers--adding, subtracting, multiplying, and dividing.

_____ The branch of mathematics used to solve problems by making unknown measurements part of a triangle and writing the relations between the sides of the triangle as ratios.

_____ The mathematical study of the number of times something will probably occur over the range of possible occurrences, expressed as a ratio.

_____ The branch of mathematics that deals with points, lines, surfaces, and solids, and examines their properties, measurements, and mutual relations in space.

_____ The science of assembling, classifying, tabulating, and analyzing facts and data so as to present significant information about a given subject.

* * * * * * * * * * * *

B. Below the name of each branch of mathematics, write the words or phrases from the list below that are associated with it.

Measurement	Integers	Variable	Parabola	Tangent	Graphing	Equation	Problem Solving
Ratios	Metrics	Mathematical Constant	Polygon	Quantity	Logarithm	Perimeter	Angle
Fractions	Area		Function	Rate of change	Cosine	Limit	Derivative

Arithmetic **Algebra** **Geometry** **Trigonometry** **Calculus**

Name _____

Date _____

AVENUES THROUGH MATHEMATICS

ACTIVITY SHEET #2

Math is so much a part of our lives that we are hardly aware of how many math skills we know and use every day. List the math skills and/or concepts that you would probably use in each of the situations described below. (Many will need more than one skill and/or concept.)

1. Setting your alarm so you wake up 8 hours from when you go to sleep.

2. Deciding which brand of detergent is cheaper.

3. Figuring out how much tip to leave.

4. Figuring out how much money you'll take home after your taxes are deducted.

5. Playing a card game and needing to know how many cards of a certain kind are still in the deck.

6. Figuring out how much it would cost to carpet your parent's house.

7. Figuring out the vanishing point (the point where parallel lines receding from the observer come together) in a drawing of the Honolulu skyline.

8. Making change at the cash register.

9. Taking your temperature.

10. Figuring out what you'll win at the horse races in Los Angeles.

11. Figuring out how much plywood you'll need to build a table.

12. Deciding whether you want to get paid by commission or by salary.

13. Figuring your ship's course using celestial navigation.

14. Figuring out rafter lengths for the roof on your new garage.

15. Doubling a cake recipe.

16. Deciding what seeds (crack, baby, li hing mui, shredded mango, etc.) to sell for a fund raiser at your school's carnival.

17. Figuring out the price of gasoline in gallons from a pump that measures in liters.

18. Determining the angle at which to hit a pool ball to get it into a pocket.

AVENUES THROUGH MATHEMATICS

ANSWER SHEET

Activity Sheet #1

A. Logic
Algebra
Calculus
Arithmetic
Trigonometry
Probability
Geometry
Statistics

B. Accept all answers that can be justified.

Activity Sheet #2

1. Base 12, addition, subtraction, computing in hours.
2. Unit pricing, multiplication, division, solving equations having unknowns.
3. Percentage of money, fractions.
4. Subtraction, money, reading a table.
5. Probability, subtraction.
6. Geometry, area, multiplication, using measuring tools.
7. Proportion, ratio.
8. Subtraction, addition (when counting change back).
9. Using measuring tools, reading a thermometer, knowledge of what is "normal."
10. Probability, money, multiplication, knowledge of betting.
11. Geometry, area, length, using measuring tools, knowledge of construction materials.
12. Percentage, computing hourly wages, comparisons.
13. Geometry, using measuring tools, map, chart, and table reading, right triangle concepts, solving equations.
14. Geometry, trigonometry.
15. Computation with fractions, multiplying.
16. Customer survey techniques, packaging to sell a product.
17. Solving an equation for an unknown, converting from one measurement system to another, knowing metric units.
18. Understanding the right angle turn a ball makes when it hits the side, figuring out the combination of right angle turns for a ball to reach a pocket, mentally drawing the path of the ball, inductive (specific to broad) reasoning.

COMMUNITY RESOURCES

Architects Hawaii, Ltd.
Bishop Square
Pacific Tower
1001 Bishop Street, Suite 300
Honolulu, HI 96813
Phone: 523-9636

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843
Phone: 527-6126
Education: 527-6124
Environmental Section: 527-6221
Hydrology/Geology Section: 527-5276

Career Information Center
Vocational Education
2327 Dole Street
Honolulu, HI 96822
Phone: 948-7461

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

Distributive Education Clubs of America (DECA)
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-3109

Engineering Open House
Holmes Hall
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 958-7727

Hawaiian Electric Motor Building Contest
Residential Services Department
Hawaiian Electric Company
820 Ward Avenue
Honolulu, HI 96814
Phone: 548-3511

Hawaii Newspaper Agency
605 Kapiolani Blvd.
Honolulu, HI 96813
Phone: 525-7660

Hawaii State Occupational Information Coordinating Committee
830 Punchbowl Street, #315
Honolulu, HI 96813
Phone: 548-3496

Honolulu Academy of Arts
900 South Beretania Street
Honolulu, HI 96814
Phone: 538-3693

Japan-America Institute of Management Science (JAIMS)
6660 Hawaii Kai Drive
Honolulu, HI 96825
Phone: 395-2314

Joint Institute for Marine and Atmospheric Research (JIMAR)
Environmental Research Laboratories
University of Hawaii, Manoa
1000 Pope Road
Honolulu, HI 96822
Phone: 948-8083

Junior Achievement
4819 Kilauea Avenue
Honolulu, HI 96816
Phone: 734-2121

Oahu Math League
(St. Louis High School Math Tournament)
3140 Waialae Avenue
Honolulu, HI 96816
Phone: 735-4877

State Student Activities
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-2841

United Kingdom Infrared Telescope
900 Leilani Street
Hilo, HI 96720
Phone: 1-961-3756

AVENUES THROUGH LANGUAGE ARTS

PURPOSE

- To understand what it means to be skilled at listening and reading, and at expressing feelings and ideas in words.
- To help students appreciate the importance of being skilled in the language arts as they plan for the education they'll need and the occupations they'll want.
- To become familiar with a variety of career exploration activities and post-secondary training opportunities related to language arts that are offered by the University of Hawaii system.

PROGRAM SUMMARY

Part I

It is through language and the language arts that we solve problems, examine existing beliefs and values, generate new ideas, and contribute to social change. Language arts skills are invaluable tools for any situation, career, or hobby.

Part II

Whether we speak, write, listen or think, language is a part of every aspect of our lives. Language is a dynamic and creative tool. As our society changes, new words will be used to describe the changes and the new technology. People in all careers use language and need to learn language arts skills. In any career or hobby a person selects, the person must deal effectively with others and be adept in finding, interpreting, organizing, and communicating information. Several career exploration activities are suggested for students who may want to pursue a career related to language arts. Post-secondary institutions in the University of Hawaii system which offer training in language arts related careers are reviewed.

GLOSSARY

Docent A person who conducts groups through a museum or art gallery.

Euphemism The substitution of an agreeable or inoffensive expression for one that may offend or suggest something unpleasant.

Illiteracy Inability to read or write.

Intercultural Communication Cultures meeting together with the desire and common purpose of exchanging information, materials, and ideas for the benefit of all.

Linguistics The study of human speech, including the units, nature, structure, and modification of language.

Nonverbal Language The communication of eye movements, facial expression, gestures, body position and posture, and tone of voice.

BEFORE THE PROGRAM: Part I

1. Ask students to define "language arts." Why do they think the term "language arts" is used for this program instead of "English" or "language"?

2. Ask students to think of language arts ideas or topics they can remember learning in their different English courses in intermediate and high school. Write their answers on the chalkboard. After the video, ask them to add to the list.

3. Ask students why they think there is a requirement to take four credits of language arts for high school graduation. Why is language arts important enough to be required for all students?

4. Have students develop/look up definitions for glossary terms.

AFTER THE PROGRAM: Part I

1. Language does not require sound to be language. But what makes the language we speak different from non-verbal language? A parrot can learn to say complete sentences. A dog can learn to do tricks when his master says the correct words. But do parrots and dogs use language? What makes memorizing sounds and their associations different from using language? The following activities are intended to help students develop a definition for the word **language.**

   A. In pairs, have students attempt to communicate about what they're going to do after school today using gestures, facial expressions, and body movements . . . anything except sounds or written words.

   B. Next, have students take turns being blindfolded, carrying on a conversation, and then following a simple direction. Switch roles.

   C. Have students spend time talking without their voices. Suggest they exaggerate the enunciation of words to aid in lip reading.

   D. With entire class, discuss how effective each form of communication is. How are they different? Stress that students with a communication handicap can have difficulty communicating with others.

2. A. Distribute copies of Activity Sheet #1 and discuss the questions at the top of the page before students begin to read.

   B. In groups, have students answer each of the above questions. Have one student from each group record their answers and one student present their answers to the rest of the class.

3. Language arts uses many different modes for recording and communicating information. Suggest a topic to the class (such as "television"), and ask students to pick one mode from the following list and prepare a brief report on the topic. Students may read/present their assignments aloud to the rest of the class.

Poem	**Biography**
Song Lyrics	**Short Story**
One-Act Play	**Advertisement**
Critical Review	**Radio News Report**
Newspaper Article	**Public Relations Release**
Screenplay	**Speech**

4. Divide students into two groups to discuss the pros and cons of an artificial, universal language such as Esperanto, or the universal adoption of an already existing language such as English or Russian. Encourage students to discuss the relationship of language to culture and feelings of nationalism.

BEFORE THE PROGRAM: Part II

1. From the list of careers on page 56 , ask students to discuss how language arts skills are used in all of them.

2. From the following list of occupations not directly related to the language arts, ask students to discuss how language arts skills are used on the job.

Engineer	**Bass Guitar Player in a Band**
Accountant	**Mechanic**
Waitress	**City Planner**

AFTER THE PROGRAM: Part II

1. Divide students into two groups to discuss the following question: Why should we learn to read and write when television, film, and computer communication are taking the place of reading and writing in the future? Ask students to think of ways that computers and television could completely eliminate the need to read and write. If that were to become possible, what would be the value of reading and writing?

2. Investigate the language arts related career exploration activities available in the school or on the island. Write a booklet or pamphlet describing these opportunities and make copies for other classes and/or the school newspaper.

3. In groups, have students complete Activity Sheet #2. Discuss.

4. Discuss autobiographies and biographies with students. Have them select a famous person and do a research paper on his/her career. How did he/she decide to select a particular career? What kind of training was necessary? What personal traits contributed to success or failure in their career? How did the person become famous? What language arts skills seemed to be needed and used in the person's career?

5. **This activity is designed to encourage students to start thinking about their interests—in the language arts or in other subjects—as avenues to deciding and planning for the education they'll need and the occupations they want.**
Ask students to create a timeline showing the events that have caused their lives to change in significant ways--the turning points--and the events they imagine will cause their lives to change in the future. Before students begin their timelines:

A. Show them an example of a timeline and explain how to make one.

B. Discuss the notion of change. How do you distinguish significant from insignificant change. Develop a point system for rating the importance of various changes.

C. Discuss the idea of taking responsibility for your life. What is the difference between **letting** things happen to you and **making** things happen to you.

D. Discuss the notion that taking responsibility means making decisions and planning for the future. This program concerns itself with showing students the diversity of possible avenues to the future they want. Discuss with students how they can choose the roads that will enable them to reach these avenues to the future. Relate these choices to the turning points on their timelines.

6. Have students write their own autobiography based upon the preceding exercise.

7. In groups, have students pick community resources from the list on page 57 that reflect their interests in language arts or in other subjects, and contact one of these organizations for information about what they do. Have them present their findings to the class in a brief report.

Name _____

Date _____

AVENUES THROUGH LANGUAGE ARTS

ACTIVITY SHEET #1

Before reading this assignment, think about the following questions:

1. Are the chimpanzees learning language or merely memorizing an association of signs with rewards of food or affection?

2. What does it mean if chimpanzees use sign language among themselves with no humans around?

3. What does it mean if mother chimps teach their babies to use sign language?

4. If chimpanzees can learn to use language like human beings, why didn't they develop human-like language of their own in the wild?

5. In the wild, chimpanzees use gestures, grunts, and squeals to communicate. How do we know whether they are using what we call "language"?

Many people believe that language is unique to human beings and that the ability to communicate through language is the most important difference between humans and non-humans. But in recent years there have been research projects that have shown that apes can also learn words as long as they do not have to speak them. A chimpanzee named Washoe and a gorilla named Koko were each taught signs of American Sign Language. Another chimpanzee named Sarah learned to use plastic chips of different shapes and colors to request various foods, to name colors and to describe actions and spatial relationships such as in and out, on and under. With the help of a computer, a similar language called "Yerkish" was taught to a chimpanzee named Lana.

A psychologist named Herbert Terrace was skeptical that apes could combine the words they had learned to create sentences, a basic feature of all human languages. He decided to start his own research project to teach an infant chimpanzee to use American Sign Language, the language formed by hand movements and facial expressions that is used by hundreds of thousands of deaf people.

For this project, Dr. Terrace adopted a baby chimpanzee named Nim Chimpsky. He decided that if Nim were to learn to use language in human ways, he should be given the kind of love and care that a human infant experiences. In as many ways as possible, Nim's upbringing was similar to that of a human infant's. At the tender age of ten months, Nim began to go to nursery school five days a week in a specially designed classroom. Nim's teachers not only had the job of being substitute parents and reliable baby-sitters, they also had to know sign language and how to record everything Nim signed. In addition, they had to be able to capture and hold Nim's attention by thinking up interesting activities through which sign language could be taught. Even though he was not taught words in sequences, and he was not required to sign more than one sign at a time, Nim learned to combine words to create simple sentences.

Michel, Anna.
The Story of Nim the Chimp Who Learned Language.
New York: Alfred Knopf, 1980.

It seemed obvious to Dr. Terrace and his staff that Nim was creating his own sentences in much the same way that a human baby would. His goal for the project was to show scientifically that the vast majority of Nim's combinations obeyed grammatical rules and that he wasn't merely imitating the grammatical combinations his teachers made.

Once, when one of Nim's teachers was in a hurry and didn't want to be slowed down by him, she told him he must sit and watch while she prepared the meal. Nim hated being left out and threw himself on the floor, screaming. His teacher didn't pay any attention to him. Since having a tantrum didn't work, Nim tried another tactic. He waited until his teacher looked at him, then he deliberately knocked over the garbage can. Nim certainly succeeded in getting attention this time. "You're bad!" his teacher signed. "I'm angry with you." Nim hooted and pouted, signing, "Me sorry! Hug! Hug!" "No! You're bad! I don't love you!" Nim's teacher wanted him to know that she was really angry. She knew that Nim had learned that by pouting and signing "sorry" he was often forgiven too quickly and his behavior would be just as bad afterwards. She wanted to be sure Nim meant what he was saying. "Sorry, sorry," repeated Nim, becoming more and more upset. He kept running up to her making the "hug" sign, but she would walk away from him. Finally, he scurried over to the garbage can, picked up all the spilled garbage, and put it back into the can. His teacher was still not satisfied. She signed "clean" and pointed at the sponge. Nim grabbed it and wiped up the floor. By this time all was forgiven.

Nim also learned words like apple, in, [illegible], you, happy, dirty, goodbye, hello, please, harmonica, jump, sleep, wash, gimme, more, down, throw, music, walk, green, napkin, lie down, and hungry. By the time the project ended, he had a vocabulary of 125 different signs. Nim proved that a chimpanzee could not only be taught words in sign language, but could learn how to use language to communicate with human beings.

Name _____

Date _____

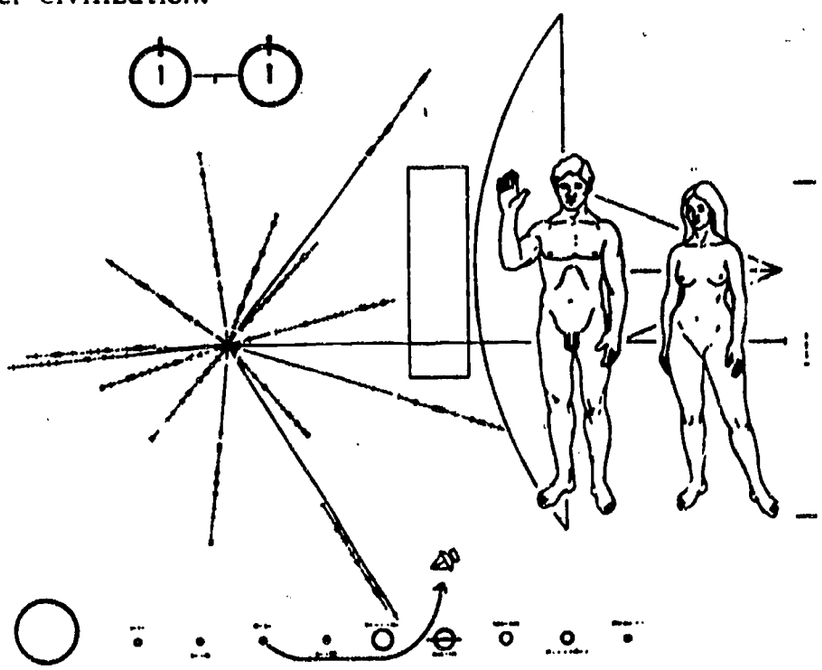
AVENUES THROUGH LANGUAGE ARTS

ACTIVITY SHEET #2

The Rosetta Stone is a chunk of black basalt inscribed with a commemoration of the crowning of Ptolemy V, King of Egypt from 203 to 181 BC, in three different languages. The stone had the identical text carved in ancient Egyptian hierglypics, Demotic (the popular Egyptian used at the time the stone was inscribed), and Greek. Until its discovery, archaeologists and historians had no way of translating the mysterious hieroglyphics found on the pyramid tombs of the ancient Egyptians. If the language of our own cultural ancestors from a mere 3,000 years in the past could be so incomprehensible, how will it be possible to communicate with intelligent beings from other planets? Carl and Linda Sagan may have found a way. They designed the "space postcard" sent aboard Pioneer 10, which uses the hydrogen atom as its extraterrestrial Rosetta Stone. It uses language symbols from physics, mathematics, and astronomy to convey information about our location in the solar system, and about who is communicating. With our space technology we have sent out probes, messages with laser beams, and radio signals to the stars in hopes of receiving signals from another civilization.

The key is the diagram identifying the hydrogen atom (top left), whose universally recognizable characteristics yield length and time measures to differentiate the sun from 14 stars around it (center). The bottom diagram plots the sun and planets--indicating the third one out as home to Pioneer and the creatures in front of its outline.

This is a copy of the original "post card" sent into space.



1. Why do you think symbols were used instead of written words?

2. A phonographic record of over 100 sounds found on earth (for example, a baby crying, people laughing, various animal sounds) was included with the message. What would these communicate to an extraterrestrial?

3. Why would we want to communicate with intelligent beings from other planets anyway?

POSSIBLE LANGUAGE ARTS RELATED CAREERS

Actor/Actress
Auctioneer
Author
Clergy
Counselor
Editor
Employment Manager
Flight Attendant
Hotel Manager
Interior Decorator
Judge
Lawyer
Legal Assistant
Librarian
Linguist
Personnel Manager
Poet
Political Scientist
Proofreader
Radio/TV Announcer
Reporter
Retail Manager
Sales Clerk
Salesperson
Script Reader
Secretary
Stenographer
Technical Writer

COMMUNITY RESOURCES

Alliance for Drama Education
45-305 Makalani Street
Kaneohe, HI 96744
Phone: 247-6766

Arts Council of Hawaii
Old Federal Building
300 Ala Moana Blvd., Rm. 6126
P. O. Box 50225
Honolulu, HI 96850
Phone: 524-7120

Attco Inc., Theatrical Supplies
2855 Koapaka Street
Honolulu, HI 96819
Phone: 836-1191

Bishop Museum
Docent Program
P. O. Box 19000-A
Honolulu, HI 96816
Phone: 847-3511, Ext. 149

Bryan Furer (Costume/Make-up)
Aleo Productions
1909 Aleo Place
Honolulu, HI 96822
Phone: 949-8291

Byodo-In Temple
47-200 Kahekili Highway
Kahaluu, HI 96744
Phone: 239-8811

Career Information Center
Vocational Education
2327 Dole Street
Honolulu, HI 96822
Phone: 948-7461

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

Costumes Unlimited
150 North King Street, Suite 200
Honolulu, HI 96817
Phone: 537-4468

East West Center
1777 East West Road
Honolulu, HI 96848
Phone: 944-7111

Hawaii Literary Arts Council
William Howes
P. O. Box 11213
Moiliili Station
Honolulu, HI 96828
Phone: 948-8188

Hawaii Newspaper Agency
605 Kapiolani Blvd.
Honolulu, HI 96813
Phone: 525-7660

Hawaii Public Television (KHET)
2350 Dole Street
Honolulu, HI 96822
Phone: 955-7878

Hawaii Regional Scholastic Art Exhibit
General Education Branch
Office of Instructional Services: Art
189 Lunalilo Home Road, 2nd Floor
Honolulu, HI 96825
Phone: 395-7814

Hawaii School for the Deaf and Blind
3440 Leahi Avenue
Honolulu, HI 96815
Phone: 734-0297

Hawaii Special Olympics (State)
P. O. Box 3295
Honolulu, HI 96801
Phone: 395-8436

Hawaii Special Olympics (Oahu)
P. O. Box 29971
Honolulu, HI 96820
Phone: 637-6561

Hawaii Speech League
Karen Miyakado
Radford High School
4361 Salt Lake Blvd.
Honolulu, HI 96818
Phone: 422-8220

Hawaii State Occupational Information Coordinating Committee
830 Punchbowl Street, #315
Honolulu, HI 96813
Phone: 548-3496

Hawaii State Thespian Society
Alliance for Drama Education
45-305 Makalani Street
Kaneohe, HI 96744
Phone: 247-6766

Honolulu Academy of Arts
900 South Beretania Street
Honolulu, HI 96814
Phone: 538-3693

Honolulu Police Department
1455 South Beretania Street
Honolulu, HI 96814
Phone: 955-8111

Honolulu Zoo
151 Kapahulu Avenue
Honolulu, HI 96815
Phone: 923-7723

Jim Buckley Advertising Photography
816 Queen Street
Honolulu, HI 96813
Phone: 538-6128

Mission Houses Museum
553 South King Street
Honolulu, HI 96813
Phone: 531-0481

Pacific Association for Communications and Technology
Media Center
Leeward Community College
96-054 Ala Ike
Pearl City, HI 96782
Phone: 455-0202

State Student Activities
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind luka Drive
Honolulu, HI 96821
Phone: 373-2841

AVENUES THROUGH ART

PURPOSE

- To demonstrate attitudes and values that reflect respect and appreciation for the contribution and impact that art makes in our lives and the world of work.
- To help students acquire an interest in and curiosity about the future and their role as citizens.
- To familiarize students with the variety of career exploration activities and training opportunities related to art that are offered by the University of Hawaii system.

PROGRAM SUMMARY

The art we create communicates our ideas, thoughts, and feelings in a unique and creative way. Art is a creative expression of people's thoughts and feelings. Each work comes into being because some inspired artist, using his imagination, interprets nature as he sees and feels it at a certain moment and in a certain mood.

The arts affect all our activities. They have an immediate, continuous effect on the quality of our lives. Examples are shown demonstrating ways that visual art influences our daily lives at work, play, daily living, and our history. Discussion follows about the quality of life in the future.

The world is offering many new career opportunities. Students need to start making career plans now. With our rapidly changing technological times, there will be many art related careers and jobs where art skills are a valuable asset. Various opportunities are presented where students can gain additional art experience and information to help them make good career choices.

GLOSSARY

Aesthetic A sense of or experience of beauty. Sensation of satisfaction a work of art can bring to an individual.

Anthropology The scientific study of man's physical character, historical and present geographical distribution, racial classification, group relationships, and cultural history.

Applied Arts Practical, utilitarian arts. Examples: carpentry, pottery, cooking, sewing, interior decorating.

Artifact An unusual object (tool or ornament) showing human workmanship.

Creative Expressive piece or action of an artist that results in something unique to that individual.

Decorative Arts Objects existing for their own sakes. Used to enhance ourselves and our environment. Examples: flower arrangements, jewelry, sculpture.

Design The plan, outline, pattern, or scheme by which a piece or work of art was constructed.

Dynamic The power, movement, or change a work of art presents that can elicit comment or feeling in its viewer.

Life Style An individual's typical way of life, his attitudes, and their expression in a self-consistent manner as developing from childhood.

Technological A state of living that results from improvement in technical processes, that increases productivity of machines and eliminates manual operation or work done by older machines.

Useful Arts Beauty and imaginative design brought to everyday objects. Practical objects or skills (e.g. sewing, cooking) made lovely or wrought with craftsmanship and skill.

Visual Arts Artistic expressions or objects done on a particular medium or made out of a medium.

BEFORE THE PROGRAM

1. Discuss ways in which art affects our lives. Make a list on the board dividing the arts into the visual/graphic arts, performing arts (music and drama), architecture, decorative arts, useful arts (utensils, furniture, culinary arts) for discussion.

2. Discuss the nature of archaeological digs. What sort of artifacts have been found? What can we tell from these objects (values, way of life). Show pictures of objects from the tomb of King Tutankhamun or other famous digs where utilitarian objects were beautifully designed or had decorative handles, etc.

3. Discuss the idea that researchers in the future will unearth our everyday non-biodegradable objects and art and then make judgments about what our time in history was like.

4. Have students look up/develop definitions for the glossary words.

AFTER THE PROGRAM

1. Divide students into groups. Give each student a list of ten everyday items (for example, microwave oven, tube of toothpaste, videotape, package of bubblegum, swiss army knife, beer can opener, toilet plunger, car tire, comic book, surfboard) and ask them to pretend that these are the only remaining artifacts of a long-extinct culture, and the only information an extraterrestrial archaeologist of the future has to understand what kind of culture existed on earth in the 1980's. What kind of conclusions do you think he/she/it would reach about our aesthetic values and life style? Would we be judged incapable of producing great art or objects of aesthetic merit?

2. Discuss the impact of technology on our future. What might be some differences in our life styles. Have students draw/paint their ideas on what might be examples of life in the future.

3. Have students show graphically examples of how the arts are used to enhance ourselves and our environment.

4. Have students select an art related career from the list on page 61 . Have them do research and submit a report, or photographs or illustrations (with explanations) giving a description of what each job entails. Display and report in class.

5. Invite artists from the community to come discuss their careers--how did they get started, classes they took in school, etc. Display their works. Have artists give advice to students thinking about pursuing a career in the arts.

6. Construct models or floor plans for a room or home to demonstrate how colors, art works, space arrangements, etc., can be used to enhance one's immediate environment.

7. Have students design clothing, transportation, living structures, etc., for the future. Have a fashion show.

SUPPLEMENTARY MATERIAL

Videotape: "Cutting A Mat" and "Mounting Mat Art Work" - (20 min. overview in two segments) by Tec Crans, Coordinator of Mayor's Culture and the Arts Office. Discusses how to prepare for an open jury show. Demonstrates how to cut a mat (straight and bevel) and how to mount and display finished work. To order, use ETV Request Form.

POSSIBLE ART RELATED CAREERS

Advertising Designers
Architects
Art Teachers
Automotive Engineers
Bakers
Cabinet Makers
Cartoonists
Ceramicists
Chefs
Civil Engineers
Clothing Designers and Pattern Makers
Commercial Artists
Compositors
Computer Artists
Computer Technologists
Cosmetologists
Draftspersons
Flower Arrangers
Hair Stylists
Illustrators
Interior Designers/Decorators
Jewelers
Landscape Architects
Make-up Artists
Muralists
Painters
Photographers
Printers/Trade Craftspersons
Robot Technologists
Sculptors
Sign Painters
Silk Screen Designers
Tailors
Urban and Regional Planners
Video/Film Directors, Producers
Videographers and Cinematographers

COMMUNITY RESOURCES

Architects Hawaii, Ltd.
Bishop Square
Pacific Tower
1001 Bishop Street, Suite 300
Honolulu, HI 96813
Phone: 523-9636

Attco Inc., Theatrical Supplies
2855 Koapaka Street
Honolulu, HI 96819
Phone: 836-1191

Arts Council of Hawaii
Old Federal Building
300 Ala Moana Blvd., Rm. 6139
P. O. Box 50225
Honolulu, HI 96850
Phone: 524-7120

Bishop Museum
Education Department
P. O. Box 19000-A
Honolulu, HI 96816
Phone: 847-3511, ext. 133

Bryan Furer (Costume/Make-up)
Aleo Productions
1909 Aleo Place
Honolulu, HI 96822
Phone: 949-8291

Byodo-In Temple
47-200 Kahekili Highway
Kahaluu, HI 96744
Phone: 239-8811

Career Information Center
Vocational Education
2327 Dole Street
Honolulu, HI 96822
Phone: 948-7461

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

Costumes Unlimited
130 North King Street, Suite 200
Honolulu, HI 96817
Phone: 537-4468

Hawaii Association of Intellectually Gifted Children (HAIGC)
P. O. Box 22878
Honolulu, HI 96822

Hawaii Film Board
P. O. Box 3391
Honolulu, HI 96801
Phone: 537-2356

Hawaii Newspaper Agency
605 Kapiolani Blvd.
Honolulu, HI 96813
Phone: 521-9111

Hawaii Regional Scholastic Art Exhibit
General Education Branch
Office of Instructional Services: Art
189 Lunalilo Home Road, 2nd Floor
Honolulu, HI 96825
Phone: 395-7814

Hawaii State Occupational Information Coordinating Committee
830 Punchbowl Street, #315
Honolulu, HI 96813
Phone: 548-3496

Honolulu Academy of Arts
900 South Beretania Street
Honolulu, HI 96814
Phone: 538-3693

"House of the Future"
11240 Beaver Trail Road
Phoenix, Arizona 85044
Phone: 1-602-893-1263

Industrial Arts Fair
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-3078

Jim Buckley Advertising Photography
816 Queen Street
Honolulu, HI 96813
Phone: 538-6128

Kapiolani Community College
Food Service Education
620 Pensacola Street
Honolulu, HI 96814
Phone: 521-4654

Kathe James
Costume and Apparel Designer
P. O. Box 8870
Honolulu, HI 96815

Martin/MacArthur
Cabinetry Shop
1815 Kahai Street
Honolulu, HI 96819
Phone: 845-6688

Mayor's Culture and Arts Office
Honolulu Hale, 4th Floor
Honolulu, Hawaii 96813
Phone 523-4674

Mission Houses Museum
553 South King Street
Honolulu, HI 96813
Phone: 531-0481

Pacific Association for Communication and Technology
Media Center
Leeward Community College
96-054 Ala Ike
Pearl City, HI 9678
Phone: 455-0202

State Student Activities
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-2841

AVENUES THROUGH MUSIC

PURPOSE

- To explain through examples the important role that music plays in our lives.
- To identify in-school and out-of-school experiences which will enhance students' musical skills and their understanding of career opportunities in music.
- To identify both music and non-music training and education needed to make a successful career in a music related profession.
- To identify post-secondary training opportunities related to music that are available to students.

PROGRAM SUMMARY

Music is a creative art which communicates feelings and ideas through organized patterns of tone and rhythm. It is an international language, serving all cultures and ages. It affects all of us in one way or another throughout our daily activities, and provides us with a creative and emotional outlet, as well as an intellectual pursuit. Music also reflects the lives and values of people throughout history, and expresses what people in any era have deemed important to their lives.

There are many career opportunities in music. Knowledge of science, math, language and communication, the social sciences, and business all affect our ability to do well in music careers. Participation in school performance groups, courses in music theory and appreciation, and out-of-school musical activities provide essential music skills and understanding for future careers in music.

Music, particularly in the performance area, is a highly competitive field. Those students who are dedicated, persistent, have talent, enjoy creative expression, and like providing pleasure for others, will usually find working in the field of music to be highly rewarding and self-fulfilling. Advanced training is available at the University of Hawaii as well as professional schools of music on the mainland.

GLOSSARY

Acoustics The science of sound; the total effect of sound.

Aesthetic A sense of or experience of beauty.

Aural Training Education in the ability to listen and respond to musical tones.

Choreography The creation or arrangement of a dance.

Creative An expressive work that results in something unique to the creator.

Culture The totality of socially transmitted behavior patterns characteristic of a group of people.

Diagnostic Relating to identifying a problem by examination or analysis.

Disc Jockey A radio announcer who plays records for an audience.

Ethnomusicologist A person who studies the music of a group of people in its cultural context.

Halau Hula dance group. In ancient Hawaii, a halau was a long house where canoes were stored or hula instruction took place.

Koto A plucked, string instrument native to Japan.

Madrigal Chorus A vocal group specializing in music of the Renaissance period.

Marketing The selling of a product or idea.

Metabolism The process by which living things transform food into energy and living tissue.

Musicologist A person who studies the history of music.

Rhythm The movement of tones in time.

Social Psychologist Person who studies the relationship of humans to each other and to social groups and institutions.

Stagecraft The art of designing sets and scenery for the theatre.

Technological A state of living that results from improvement in technical processes that increase productivity of machines and eliminates manual operators or work done by older machines.

Therapeutic Having healing or curative power.

Tone A music sound having pitch, duration, intensity, and tone quality (timbre).

Tranquility Calmness, restfulness, peace.

BEFORE THE PROGRAM

1. Lead a discussion on the various ways music affects and enhances our lives. List these on the chalkboard.

2. Ask students to give examples of how people earn a living using music related activities. Find out which students have family members or neighbors engaged in such activities, and have the students (or their neighbors and family) describe the nature of their work.

3. Discuss the kinds of music courses offered in your school, and how they relate to success in a music career.

4. Discuss the relationship between music and areas such as science, math, language and communication, social studies, and business. List music careers which also rely on these content areas, and discuss how they relate. (See list on page 67.)

5. Have students browse through the telephone directory yellow pages and list types of jobs and services related to music.

6. Provide speakers on music careers, while requiring practice in note taking for career files.

7. Provide opportunities for students to visit community music work places.

8. Scan the help wanted ads in the newspaper to see what jobs are available in music related occupations.

9. Ask students to develop definitions for the words or terms listed in the glossary.

AFTER THE PROGRAM

1. Lead a discussion on the main points made in the videotape, including the value of music to life, types of careers available in music, necessary music skills, and post-secondary training opportunities.

2. Invite professors from the University of Hawaii Music Department to share their experiences in their chosen careers with your students.

3. Invite musicians and workers in music related fields to share their experiences in their chosen careers with your students.

4. Play career glossary games similar to "What's My Line?", using the various careers available in the music field listed on page 67.

5. Encourage students to utilize out-of-school opportunities to find out more about music related careers (e.g., visit radio/television stations, attend music theater or symphony rehearsals, get a behind-the-scenes look into a music store, attend music classes for children in a public or private school, observe a rehearsal or performance at a Waikiki Hotel, the Polynesian Cultural Center, or a nightclub).

6. Encourage students to organize classroom letter exchanges with local performers and community music workers.

7. Keep the class informed about articles, radio and T.V. programs, and events which will expose students to the music life in the community and nation.

8. Have students design music advertising and/or record jackets and programs for their favorite albums or pieces.

9. Develop a classroom project to compose, write scores, perform, record, and merchandise music.

10. Develop a music career bulletin board.

11. Develop a file of catalogs of different college-level music schools and colleges offering a variety of music courses.

12. Have each student select one music related career and do research, reading, reporting on what that career entails. Use the list of music related careers on page 67.

13. Provide an opportunity to write music criticism of community, recorded and media musical events.

14. Provide for recording experiences with professionals.

15. Arrange for music career workshops in the music work place.

16. Ask students to write a resume for a musical career they would like to pursue.

REFERENCES

INSTRUCTIONAL AIDS

Available from J. Weston Walch, Publisher, Box 658, Portland Maine 04104 Phone: (800) 341-6094

18 "Careers for Musical People" posters (11"x14"). 01-3105-Z1. $8.95

30 "Activities for Exploring Careers in Music" by Ruth Rice
30 spirit masters. 03-3309-Z1. $18.95
30 photocopy masters. 01-3309-Z1. $18.95

"Making a Living at Music: A Career Guide" by Roland Stycos. 113 pp. 01-3038-Z1. $5.10

Available from Music Educators National Conference, 1902 Association Drive, Reston, Virginia 22091.

"Careers in Music, 1982". A brochure on career opportunities, approximate earnings, personal qualifications, recommended training needed. 20 copies for $3.00

"A Career in Music Education." A brochure on aspects of teaching music. 50¢

"Your Future as a Teacher of Music in the Schools." A brochure describing the role of the teacher. 30¢

INSTRUCTIONAL AIDS

Available from Hartt College of Music, University of Hartford, 200 Bloomfield Avenue, West Hartford, Conn. 06117.

"College Music: Suggestions for High School Students Considering Music as Their Major Specialization in College." A brochure describing needed pre-college training and listing music careers.

BOOKS AND ARTICLES

Baskerville, David. **Music Business Handbook and Career Guide**, 3rd Ed. Denver: The Sherwood Co. 1982. Music-related careers are described.

Biegeleison, Jacob J. **Careers and Opportunities in Music**. New York: E.P. Dutton and Company, 1969.

Burt, Jesse and Bob Ferguson. **So You Want to Be in Music!** Nashville: Abingdon Press, 1970.

Careers and Music. The March 1977 (Vol. 63 No. 7) and October 1982 (Vol. 69 No. 2) issues of **Music Educators Journal** contain complete descriptions of career opportunities in music, and provide one of the best overviews of the field for both teachers and students. Both issues are available from the Music Educators National Conference, 1902 Association Drive, Reston, VA 22091.

Careers in Music. Chicago: American Music Conference, 1976.

Csida, Joseph. **The Music/Record Career Handbook**. New York: Watson-Guptill Publications, 1975.

How to Set Up a Course in the Music Business. Denver: Music Careers, P. O. Box 21645, Denver 80221. For $2.00, receive a packet of useful materials on music-related careers.

Lee, Patricia Taylor. **Preparing Your Piano Students for College Admission**. Chicago: National Piano Foundation, 230 No. Michigan Ave., Chicago, Illinois 60601. Obtain free copy describing music as a career, and guidelines for student preparation for college and conservatory auditions.

Marsh, Mary Val, et al. **Careers in Music**. New York: Macmillan Co., 1975.

Music in Careers. St. Paul Minnesota State Department of Education, Pupil Personnel Services Section Publications, 1976.

Music Librarianship. Ann Arbor, Michigan: Music Library Association, 1976.

Music Therapy as a Career. Lawrence, Kansas: National Association for Music Therapy, 1969.

Myrick, Barbara. **Music Careers Chart**. Salem: Oregon Department of Education, 1976

Newsom, Frances. **A Guide for Young Singers: How to Break into the Music Business**. New York: William Frederick Press, 1968.

Nonperforming Jobs in Music. New York: Alumnae Advisory Center, 1963

Performing Arts Occupations. Washington, D.C.: U.S. Government Printing Office, 1970

Rachlin, Harvey, **The Encyclopedia of the Music Business**. New York: Harper and Row, 1981. Many articles related to the music business.

Shemel, Sidney and M. William Krasilovsky. **The Business of Music**, 4th Ed. Lakewood, N.J.: Billboard Books, 1979. A reference book stressing information on copyright, publishing, and recording.

Spaeth, Sigmund. **Opportunities in Music Careers**. New York: Vocational Guidance Manuals, 1968.

Ward, John Owen. **Careers in Music**. New York: Walck Inc., 1968.

RESOURCE AGENCIES

American Music Conference, 150 East Huron Street, Chicago, Illinois 60601. Provides many free brochures on music life in America. Ask for publication list.

Music Educators National Conference, 1902 Association Drive, Reston, Va. 22091. Ask for listings of materials on career education in music.

Music Industry Educators Association, c/o Paul Kelly, MIEA Secretary, Department of Music, Elmhurst College, 190 Prospect Street, Elmhurst, Illinois 60126. Provides information on careers in the music industry.

National Association of Schools of Music, Suite 5, 11250 Roger Bacon Drive, Reston, Va. 22090. Provides information on college programs relating to the music business.

A comprehensive list of music and music-related organizations is found in **Music Educators Journal**, March 1977, available from the Music Educators National Conference or at the University of Hawaii Library. Some of these organizations provide career information to individuals pursuing particular careers. Many publish newsletters/periodicals which can give students clearer ideas on the nature of the career. Examples of such organizations include the American Federation of Television and Radio Artists, The Audio Engineering Societies, Country Music Association, Music Library Association, National Association of Band Instrument Manufacturers, Piano Technicians Guild, the Society for Ethnomusicology, and many others.

JOURNALS

A comprehensive list of magazines on music and related professions is also found in **Music Educators Journal**, March 1977. Most of the magazines are union and association journals, and commercial publications directed to specific professions. They all give the student insights into music careers. Examples include: **Billboard** (music record-tape industry, and for songwriters), **Broadcast Engineering, Diapason** (church music), **Journal of Music Therapy, Music Retailer, Notes** (for music librarians), **PTM Magazine** (music retailing), **Sing Out** (folk music), **Variety** (performing arts), and many others.

POSSIBLE MUSIC RELATED CAREERS

Performance

Actor/Singer in Musical Theater
Church Musician
Classical Musical Instrumentalist
Classical Musical Vocalist
Conductor
Dancer (Ballet, Modern, Ethnic)
Folk Musician
Performer of Hawaiian/Polynesian/ Ethnic Music
Pop/Rock/Jazz Instrumentalist
Studio Musician

Music Education

College/University Music Teacher
Elementary/Secondary School Music Teacher
Museum Music Instructor
Preschool Music Teacher
Studio/Private Music Teacher

Publishing and Journalism

Freelance Music Writer
Magazine/Book Editor
Music Critic
Music Editor
Music Publisher

Manufacturing

Instrument Craftsman
Instrument Designer
Instrument/Record Company Employee

Administration/Management

Community Arts Manager
Community Development Specialist
Music Supervisor/Administrator in Schools
Performing Arts Administrator
Recreation Arts Coordinator

Composing and Arranging

Arranger/Copyist
Choreographer
Classical Composer
Composer of Educational Music
Jingle Composer
Pop/Rock/Country Music Composer

Broadcasting/Recording/Film

Disc Jockey
Film Music Editor
Radio Producer
Recording Engineer
Record Producer
TV Music Director/Producer

Merchandising

Advertiser for Music/Record Companies
Instrument Sales Representative
Retail Music Store Manager/ Salesperson

Other Music Related Careers

Architectural Acoustics Consultant
Computer Programmer for Music Software
Electronic Music Synthesist
Ethnomusicologist
Instrument Repair Person
Music Autographer/Engraver
Music Business Attorney
Musicians'/Composers' Union Worker
Music Librarian
Musicologist
Music Theater Director
Music Therapist
Piano Tuner
Recreation Leader

COMMUNITY RESOURCES

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

College of Education
University of Hawaii, Manoa
1776 University Avenue
Honolulu, HI 96822
Phone: 948-7703 (Dean's Office)

Culture and Arts Section (Music and Dance)
Parks and Recreation Department
City and County of Honolulu
650 South King Street
Honolulu, HI 96813
Phone: 536-4862

Drama and Theatre Department
University of Hawaii, Manoa
Kennedy Theatre, Rm. 115
Honolulu, HI 96822
Phone: 948-7677, 948-7622

General Education Branch
Office of Instructional Services: Music
189 Lunalilo Home Road, 2nd Floor
Honolulu, HI 96825
Phone: 395-7301

Hawaii Association of Music Societies
c/o B. Furstenberg
College of Continuing Education
Sakamaki Hall
University of Hawaii, Manoa
Honolulu, HI 96822
Phone: 948-8244

Hawaii Music Educators Association
c/o R. Oshiro
43-677? Hui Kelu
Kaneohe, HI 96744
Phone: 239-6598

Honolulu Symphony Orchestra
1000 Bishop Street, No. 901
Honolulu, HI 96813
Phone: 537-6171

Honolulu Youth Symphony Association
182 South Hotel Street, Rm. 412
Honolulu, HI 96813
Phone: 533-2524

Music Department
University of Hawaii, Hilo
1400 Kapiolani Street
Hilo, HI 96720

Music Department
University of Hawaii, Manoa
Honolulu, HI 96822
Phone: 948-7756

Musicians Association of Hawaii
Local No. 677
American Federation of Musicians
949 Kapiolani Blvd.
Honolulu, HI 96814
Phone: 521-1881

Royal Hawaiian Band
2805 Monsarrat Avenue
Honolulu, HI 96815
Phone: 922-5331

State Foundation on Culture and the Arts
335 Merchant Street, Rm. 202
Honolulu, HI 96813
Phone: 548-4145

AVENUES THROUGH PHYSICAL EDUCATION

PURPOSE

- To help students understand the purpose of physical education classes: to teach life fitness skills.
- To demonstrate to students the importance of being physically fit.
- To provide a listing of local extracurricular and summer programs fostering physical fitness that students can participate in.
- To familiarize students with college courses and activities available in the physical education field offered through the University of Hawaii system.

PROGRAM SUMMARY

Physical education provides opportunities for people to improve agility, endurance, flexibility, and strength. Since earliest times, physical fitness has played an important role in our social development and survival.

Today, fitness is more important than ever to combat disease, old age, stress, and the demands of our rapid paced, technological society. Physical fitness careers are a newly emerging but essential field. Those who enter will be admired pioneers.

GLOSSARY

Agility Moving quickly and easily.

Attitude How you feel about a person or thing.

Avenues The main way of approach; means of attainment.

Endurance To experience with patience something difficult for a long time.

Exercise Bodily or mental exertion.

Flexibility To move easily.

Health Freedom from disease; a general bodily condition of good feeling.

Nutrition/Nutritious Food that supplies essential vitamins, fat, protein, and calories to live healthfully.

Physical Education Physical activity instruction to improve posture, physical development, and general fitness and health.

Physical Fitness Combination of qualities that enable a person to perform well in vigorous physical activities. These include agility, endurance, flexibility, and strength.

Recreation Leisure time activities and exercise that is enjoyable.

Sedentary Life A life style in which most activity (working and leisure) is spent sitting down, participating in little exercise.

Sports Training Athletic instruction and practice.

Strength Muscular bodily power; mental firmness and courage.

BEFORE THE PROGRAM

1. Discuss with students what we mean by "physical fitness," or what being physically fit means. Expand into what physical education means and why it is required for 1 year in high school.

2. Discuss the glossary words and what their definitions have to do with being physically fit.

AFTER THE PROGRAM

1. Ask students what the messages were in the videotape. (The two points are being fit and programs to get involved with. Stress the importance of these.)

2. Duplicate Activity Sheet #1. Discuss with students the different educational backgrounds and training required for each physical fitness career listed.

3. **This activity is designed to encourage students to start thinking about their interests--in physical education or in other subjects--as avenues to deciding and planning for the education they'll need and the occupations they want.** Ask students to create a timeline showing the events that have caused their lives to change in significant ways--the turning points--and the events they imagine will cause their lives to change in the future. Before students begin their timelines:

   A. Show them an example of a timeline and explain how to make one.

   B. Discuss the notion of change. How do you distinguish significant from insignificant change. Develop a point system for rating the importance of various changes.

   C. Discuss the idea of taking responsibility for your life. What is the difference between **letting** things happen to you and **making** things happen to you.

   D. Discuss the notion that taking responsibility means making decisions and planning for the future. This program concerns itself with showing students the diversity of possible avenues to the future they want. Discuss with students how they can choose the roads that will enable them to reach these avenues to the future. Relate these choices to the turning points on their timelines.

REFERENCES

Physical Education Program Guide K-12. Office of Instructional Services, General Education Branch, Department of Education, State of Hawaii, RS 79-7794.

Weaving Career Education into Physical Education and Sports: A Handbook. American Alliance for Health, Physical Education, Recreation and Dance, 1980. Order from AAHPERD Publications, P. O. Box 704, 44 Industrial Park Circle, Waldorf, MD 20601.

Name _____

Date _____

AVENUES THROUGH PHYSICAL EDUCATION

ACTIVITY SHEET #1

Career	Job Description	Courses of Study	Certificate or Degree Required	Entry Level Salary
Construction Worker/Carpenter	Builds and maintains structures ranging from rough scaffolds and concrete forms to buildings that require exact finish work.		To enter 4-year apprentice program--high school diploma, qualifying test, physically fit.	$7-$8 per hour as apprentice
Dietician	Provides nutritional counseling to individuals and groups; sets up and supervises food service systems for institutions; promotes sound eating habits through education and research.	Food and nutrition, institution management, chemistry, bacteriology, math, physiology, sociology, economics, data processing.	Bachelor's, Master's Certification.	$1,250-$1,600
Emergency Medical Technician	Gives immediate care to injured persons and may transport them to hospitals:	Basic first aid, math, English, P.E., science, psychology, health, oral communication.	Approved training program certification.	$1,000-$1,250
Firefighter	Responds to fire alarms and handles any emergency that arises.	General high school courses.	High school diploma, written test, medical exam, fitness test.	$13,100-$16,100
Food Service	Coordinates the work of serving food and maintaining clean food service areas and equipment.	Oral communication, math, management, science, travel industry, food service.	High school diploma, previous work experience.	$4-$7 per hour
Groundskeeper/ Gardener	Trims and waters lawns, plants; prunes trees, shrubs; rakes leaves, applies fertilizer and herbicides.	Community college training in gardening or horticulture helpful.	Elementary school	$4 $6 per hour
Health Administrator	Coordinates hospitals and other health care facilities and their staffs to assure satisfactory patient care.	Communication, health, business, writing, biology, accounting, psychology, statistics economics, sociology.	Bachelor's or Master's in business, public or personnel administration, hospital or health administration or public health.	$18,000-$34,000 with Master's
Licensed Practical Nurse (LPN)	Cares for injured, sick, and disabled persons.	Health, psychology, chemistry, nursing, math, biology, English, foreign language.	LPN license training, examination by Hawaii Board of Nursing.	$1,000-$1,150
Medical Assistant	Cares for patients by performing routine treatment and lab or clerical tasks.	Oral communication, medical assistance, science, health, math, typing.	Medical assistant programs, associate degree from community college.	$700-$950
Performing Artist	Entertains by singing, dancing, acting, or playing a musical instrument.	Oral communication, art, health, P.E., theatre, music, speech.		Wages vary
Physical Education Teacher	Teaches and provides opportunities for the development of physical skills for life fitness.	Intercollegiate and intramural sports, journalism, art, band, dramatics, student government, volunteer work as teacher aide or tutor.	5 years of college, Certification.	$1,200-$1,300

Career	Job Description	Courses of Study	Certificate or Degree Required	Entry Level Salary
Physical Therapist	Helps people overcome or adjust to physical disabilities caused by injury, illness, or birth defects.	Advanced math, health, P.E., advanced science, social studies, psychology, physical therapy, oral communication.	State license, college training, associate degree from community college.	$1,200-$1,400
Physician	Attempts to maintain and improve the health of their patients.	Advanced math and science, health, P.E., social studies, psychology, oral communication, biology, foreign language, pre-med.	License to practice medicine, 4 years college, 4 years medical school, 1 year internship.	$1,800-$2,000
Police Officer	Duties range from controlling traffic to preventing and investigating crimes.	Law enforcement, administration of justice, American history. English, business law, chemistry, public administration, physics, P.E., sports activities.	High school diploma, written test, fitness test, college suggested.	$1,100-$1,400
Respiratory Therapist	Operates equipment to treat patients with breathing problems.	Advanced sciences, math, health, oral communication, record keeping.	Certification	$1,100 $1,300
Security guard	Protects industrial and commercial property from fire, theft, robbery and illegal entry.	Health, P.E., basic first aid, oral communication, law enforcement.	Good health, at least 18 years old, high school diploma, license.	$3.35-$5.00 per hour
Special Education Teacher	Provides classroom instruction to students with physical, mental, learning, and emotional disabilities.	Special education, intercollegiate and extramural sports, art, journalism, dramatics, band, student government, volunteer work with the handicapped.	Bachelor's, 5th year certificate in special education, Master's desirable.	$1,200-$1,300

POSSIBLE PHYSICAL EDUCATION RELATED CAREERS

Athletics

Athlete
Athletic Director
Coach
Equipment Supervisor
Official
Scout
Sports Information Director, Promoter
Statistician
Team manager

Education/Instruction

Life Guard/WSI
Physical Education Teacher
Researcher (Physiology, etc.)
Sport Instructor

Sports Medicine

Athletic Trainer/Assistant
Cardiac Rehabilitation Specialist
Physical Therapist/Assistant/ Aide

Dance

Choreographer
Company/Artistic Director
Dance Critic
Dancer
Dance Therapist
Movement Notator
Teacher

Commercial

Amusement Center Operator
Athletic Facility Attendant
Bowling Machine Mechanic
Club Manager
Commercial Fitness (Health Spas)
Deep Sea Diver
Equipment Designer/Manufacturer
Fishing Boat Captain
Golf Caddy
Groundskeeper
Horse Trainer
Hunting Guide
Industrial Fitness Program Director
Ski Lift Operator
Sports Facility Designer
Sports Store Manager/Salesperson
Tour Guide/Director

Sports Journalism

Announcer/Commentator
Cartoonist
Photographer
Writer

Recreation

Camp Director/Counselor
Occupational Therapist/Aide
Park Manager/Ranger/Assistant
Recreation Leader
Therapeutic Recreation Technician/ Aide

COMMUNITY RESOURCES

American Red Cross
Hawaii State Chapter
4155 Diamond Head Road
P. O. Box 3948
Honolulu, HI 96812
Phone: 734-2101

Boy Scouts of America
Aloha Council
42 Puiwa Road
Honolulu, HI 96817
Phone: 595-6366

Fitness and Sports Section
Parks and Recreation Department
City and County of Honolulu
650 South King Street
Honolulu, HI 96813
Phone: 841-3700

Hawaii Special Olympics (State)
P. O. Box 3295
Honolulu, HI 96801
Phone: 395-8436

AVENUES FOR THE DISABLED STUDENT

PURPOSE

- To help students identify the differences among the terms disadvantage, handicap, and disability.
- To help students identify certain settings in which various people (including themselves) might be disabled, disadvantaged, or handicapped.
- To promote the understanding that most disabled workers are essentially far more able than disabled.
- To promote the understanding that disabled people have rights to equal educational and employment opportunities.
- To promote the understanding that disabled people may excel in a variety of ways when they can take advantage of opportunities provided them.

PROGRAM SUMMARY

A special education program for the handicapped student who is starting to make career decisions. It is also for able-bodied students and adults who need exposure to people with disabling conditions. Most disabled people are not handicapped by their disability.

The program shows models of disabled adults in various occupations, handling their jobs capably and professionally, despite their disability. Famous and local individuals are featured.

The program also discusses the need for all students to begin to assess their strengths and needs and their dreams for the future. What are their needs, temperaments and goals, and how do these relate to career planning.

The program then highlights the Occupational Skills Program and the Special Education Vocational Rehabilitation program and others where handicapped students can get help.

DISCUSSION QUESTIONS/ACTIVITIES: PROBLEMS RELATING TO PEOPLE WITH DISABLING CONDITIONS (When using with special education students, some additional preparation/discussion may be needed.)

1. With one student holding a piece of cardboard vertically between another student and a piece of paper with a name, sentence or paragraph on it, have the student try to write these by viewing them through a small mirror. This will give them some idea of what it is like to have a perceptual disorder. Set a short time limit. This will intensify the tracing student's frustration and more closely resemble common experiences of many learning disabled people. Have the students trade places and then participate in a group discussion on how they felt during this exercise.

2. Have one student lead a blindfolded student around the school campus to simulate the problems of the visually impaired. Have them use stairs, walk up or down an incline, or perhaps, eat their lunches while blindfolded. Have the group discuss their experiences.

3. Have the students recall to themselves a time when they were so upset that they could not think clearly. Ask them to imagine what it would be ike to feel that way most of the time. Have the group discuss the problems of the emotionally handicapped and ways to maintain good emotional health, e.g., discussing problems with others who will listen, eating the right foods, getting enough sleep, avoiding drugs and alcohol, getting plenty of exercise, etc.

4. Have the students spend some time talking with each other without their voices. How much of the conversations did they understand? Did it help to exaggerate the enunciation of words or did it make it harder to "lip read"? Remind the class that they are probably better lip readers than most deaf children because they already know all the words and what they should look like.

5. Have the class spend some time trying to communicate with one another without speaking or writing, but by using gestures and pantomime. Ask how they felt when they could not make one another understand what they were trying to communicate. Have them imagine how it might feel if what they were trying to communicate were urgent.

6. Have the students spend some part of the day taking notes on all the times they relied on their hearing to gain important nonverbal information, e.g., alarm clock, knocking at the door, the sound of an oncoming car, ring of the telephone, etc. Have students compare their notes with one another.

7. Have the students think of a disabled person that they know. Then have them divide a piece of paper into two columns, designating them "abilities" and "disabilities." By reflecting on their own daily activities, have them list the ones which the disabled person they have in mind would have no difficulty doing under the "ability" column, and those which would present a problem under the "disability" column. Discuss the results with the group.

8. Discuss the possibility that "each of us may be only a split second away from becoming disabled"--the greatest risk being due to car accidents. Stress the importance of safe defensive driving habits, and especially the wearing of seat belts to prevent head injuries. Explain that while broken arms and legs eventually heal, brain injuries are forever.

9. Give the students an opportunity to participate in the Special Friends Program at your school. If there is no such program at your school, ask a special education teacher to let your students help tutor some of the special education youngsters at your school. Arrange for them to receive some extra credit for helping others.

10. Conduct research and prepare reports on the history of services for the handicapped and disabled. Potential resources include materials from Commission on the Handicapped, Hawaii Association for Retarded Citizens and Developmental Disabilities Council (phone 737-2166), or the public library.

11. Ask the students to distinguish the difference between the words "sympathy" and "empathy." Which sentiment do they think is more productive and acceptable to disabled people?

DISCUSSION QUESTIONS/ACTIVITIES: CAREER EDUCATION (DIRECTED TO THE SPECIAL EDUCATION STUDENT)

1. Before viewing have class visit the career center, library and/or guidance center to look for resources available for finding career information. Have each student write a paragraph or create a picture which depicts the individual in a career five years from the present.

2. After viewing discuss the idea of what "work" is. Discuss "life styles" for particular job situations. Have students cut out examples from magazines. Build a bulletin board or display.

3. Distribute a "Want Ad" page to each student. Have class describe the type of work environment listed and indicated in a "Want Ad." Discuss:

   - What kinds of skills are needed for various jobs.
   - What does the idea of "skills needed on the job site" mean to disabled people looking for jobs?

4. After viewing, visit the career resources center, library, or guidance center to look up a career cluster area of particular interest to the student. Have them jot down notes about the job description, pay scale, skills needed, demands of the job site and training required.

Review these in a discussion. Point out differences between job areas.

COMMUNITY RESOURCES

Alternate Energy Resources
E. Chipman Higgins (Administrative Director)
Hawaiian Electric Company
P. O. Box 2750
Honolulu, HI 96840
Phone: 548-7721

American Cancer Society
200 North Vineyard
Honolulu, HI 96817
Phone: 531-1662

American Field Service
International/Intercultural Programs
313 East 43rd Street
New York, NY 10017
Phone: (Maui) 1-572-9414

American Legion
612 McCully Street
Honolulu, HI 96826
Phone: 946-6383

Bishop Museum
Education Department
P. O. Box 19000-A
Honolulu, HI 96816
Phone: 847-3511, ext. 133

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843
Phone: 527-6126
Education: 527-6124
Environmental Section: 527-5221
Hydrology/Geology Section: 527-5276

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

Circuit Court
Office of the Clerk
777 Punchbowl Street
Honolulu, HI 96813
Phone: 548-7669
548-3986
548-3987

City Hall
530 South King Street
Honolulu, HI 96813
Phone: 523-4318
City Clerk: 523-4291
City Council: 523-4000

Commission on the Handicapped
Hawaii State Department of Health
335 Merchant Street, #215
Honolulu, HI 96813
Phone: 548-7606

Distributive Education Clubs of America (DECA)
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-3109

Food and Drug Administration
U.S. Department of Health and Human Services
Prince Kuhio Federal Bldg.
300 Ala Moana Blvd., Rm. 6320
P. O. Box 50061
Honolulu, HI 96850
Phone: 546-8379

Hawaii Special Olympics (State)
P. O. Box 3295
Honolulu, HI 96801
Phone: 395-8436

Hawaii Science Foundation
Student Training Program
Dr. Suk Hwang
#8 Wentworth Hall
University of Hawaii, Hilo
Hilo, HI 96720
Phone: 1-961-9319
1-961-9383

Honolulu Academy of Arts
Education Section
900 South Beretania Street
Honolulu, HI 96814
Phone: 538-3693

Honolulu Police Department
1455 South Beretania Street
Honolulu, HI 96814
Phone: 955-8111

Industrial Arts Fair
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-3078

Occupational Skills Program
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-3109

Rehabilitation Hospital of the Pacific
226 North Kuakini Street
Honolulu, HI 96817
Phone: 531-3511

Special Education Vocational Rehabilitation Work Study Program (SEVR)
Special Needs Branch
Office of Instructional Services
3430 Leahi Avenue
Honolulu, HI 96815
Phone: 737-9575

U.S. Consumer Product Safety Commission
Prince Kuhio Federal Bldg.
300 Ala Moana Blvd., Rm. 3117
P. O. Box 50052
Honolulu, HI 96850
Phone: 546-7523

AVENUES FOR THE GIFTED AND TALENTED STUDENT

PURPOSE

- To understand the positive and negative aspects of being gifted and talented.
- To discuss the need for students to use their knowledge and abilities to do high-level thinking, creative problem-solving, and creative productions.
- To plan and use their time and resources wisely.

PROGRAM SUMMARY

The gifted and talented are children and youth whose superior performance or potential indicates possible giftedness in intellectual or creative abilities, leadership capability, psychomotor ability, or talent in the performing and visual arts. Research has shown that most of the gifted and talented adults have three basic traits: above average ability, high creativity, and high task commitment. To help our gifted and talented students prepare for whatever avenues toward excellence they may explore, we need to provide educational experiences commensurate with their abilities and interests: in-depth studies of broad and complex issues, problems and themes, using productive thinking skills, and creativity. This program encourages students to take charge of their lives by beginning to plan their education and life career goals.

GLOSSARY

Contribution To give or share something of worth.

Creativity The ability to produce an expressive work with imaginative skill.

Excellence Quality of being outstanding, possessing superior merit.

Gifted and Talented Those whose superior performance or potential indicates possible giftedness in intellectual, creative, or specific academic abilities, leadership capability, psychomotor ability, or talent in the performing and visual arts.

Giftedness Is the interaction of three basic traits: above average ability, high creative ability, and high task commitment which bear upon a specific performance area.

Intelligence The capacity to learn facts and propositions and to reason about them.

Mentor A trusted worker/professional who serves as counselor, guide, tutor, or coach.

Microcosm A little world, epitome of the universe.

Personality Organization of the individual's distinguishing character traits, attitudes, or habits.

Potential Capable of development into actuality; can be partially determined through analysis of test scores and performance.

Priorities Ranking actions or activities in terms of importance.

Productivity Quality of bringing about results, benefits, or profits.

Responsibility Ability to answer for one's conduct and obligations, to be reliable and trustworthy.

Status Position or rank in relation to others in a hierarchy of prestige.

Stress Physical or emotional factors that cause bodily or mental tension.

Task Commitment Energy brought to bear on a particular problem/task or specific performance area; synonymous to intrinsic motivation, driving absorption.

Technological A state of living that results from improvement in technical processes, that increases productivity of machines and eliminates manual operation or work done by older machines.

Temperament Characteristic or habitual inclination or mode of emotional response.

Thinking Action of using one's mind to produce thoughts.

BEFORE THE PROGRAM

1. Ask students to define gifted and talented and to discuss the contributions of famous adults to the world.

2. Ask students to discuss gifted and talented in school and attitudes toward peers.

3. Ask students to discuss whether gifted and talented have special problems and needs.

AFTER THE PROGRAM

1. **This activity is designed to encourage students to start thinking about their interests as avenues to deciding and planning for the education they'll need and the occupations they want.** Ask students to create a timeline showing the events that have caused their lives to change in significant ways--the turning points--and the events they imagine will cause their lives to change in the future. Before students begin their timelines:

   A. Show them an example of a timeline and explain how to make one.

   B. Discuss the notion of change. How do you distinguish significant from insignificant change. Develop a point system for rating the importance of various changes.

   C. Discuss the idea of taking responsibility for your life. What is the difference between **letting** things happen to you and **making** things happen to you.

   D. Discuss the notion that taking responsibility means making decisions and planning for the future. This program concerns itself with showing students the diversity of possible avenues to the future they want. Discuss with students how they can choose the roads that will enable them to reach these avenues to the future. Relate these choices to the turning points on their timelines.

2. Have students discuss the kind of society they foresee for Hawaii in the year 2000. What kind of housing, transportation, and environment will we have? What kind of occupations will there be? How will our energy needs be met? After students have discussed their viewpoints, share with them Jim Pearson's conception of Honolulu in the year 2000. How do their projections compare with the Pearson drawing? (Pearson is Urban Design Branch Chief for the City and County of Honolulu.)

3. Present the topic of Futuristics and ask students to select one of the topics listed below for a research project, using the product and processes suggested below. Students will apply and integrate their knowledge and skills in social sciences, science, math, and language arts to help in thinking productively and creatively solving some of the following issues, problems, or themes.

   Crime and Violence in a Civilized World
   The Economic Future of Hawaii
   Pollution: Its Causes, Effects and Solutions
   Work, Unemployment and Freeloaders

Leaders of Yesterday, Today and Tomorrow
Using More Than Our Five Senses
Democracy and International Policy
The Humaneness of People and Technology
New Ways for Communicating Ideas and Feelings
Role of Women Today and Future
The Value of Honesty
The Value of Love
Earth People: Who Are We?
Future Energies
Irreversability of Nuclear Weapons and War
Hawaii: A Prime Military Target?
Military in Hawaii: A Valuable Industry?
To Be More Human
The Purgatory of Life
Jobs in a Global World Market
The Inevitability of Wars
Spans of Time in a Planetary World
Destinies of Life
The Long and Silent Effects of Drugs
The Price of Money
Looking at the Future Through a Microscope
Letter to Einstein (or any famous person)
The Relative Measure of Happiness
The Search for Immortality
Who, Are the Wealthy?

Processes

1. Present to students examples of the various designs for research: experimental, correlational, historical, descriptive and case study.

2. For entry skills (week or two) give students practice in making observations, note-taking, interviewing, forming questionnaires and using card catalogs, microfiche, graphs, charts, maps and other references, especially raw data.

3. Simulate problems that were not selected from list or others (including mock trials).

4. Use selected lessons from the Institute of Creative Education (ICE) or Critical Analyses and Thinking Skills (CATS).

5. Do Parnes' creative problem solving on one of the topics with the entire class and then another topic in small groups of 3-5 students.

6. Arrange for a few resource speakers as a primary source to provide unavailable information and to answer students' questions (at Blooms' levels of analyses, synthesis evaluation).

7. For value development as needed, present Kohlberg's dilemmas and correlate to one or two of the topics.

Product

1. Encourage the development of products that challenge existing ideas and produce "new ideas."

2. Encourage students to make different types of presentations, e.g., debate, teaching a lesson, slide-tape, use of models, visuals, video tapes, films, panels, letters, skits, ballads, etc.

3. Present a contract system for students to use, e.g.:

Name _____ Date _____

Topic:
Type of Research:
Hypothesis/Objective:
Tasks, Strategies, Steps & Timeline:
Resources Needed:
Product to be Developed:
Audience(s) to Share:
Criteria for Evaluation:
Completion Date:

4. Help students to obtain and collect the resources and information needed.

5. Help students' thinking and direction by asking for validations and evidences for their statements, observations, and conclusions.

Some key questions to pose for gifted and talented students (to validate their statements, opinions, conclusions, generalizations).

What seem to be reasons why _____?
What makes that so?
Why is that so?
What led you to that conclusion?
Why do you think that is true?
What would happen if _____?
What might be the effects?
How did you arrive at that generalization?
Why do you predict _____?
What evidences support that?
What will need to occur before _____?
What does that depend on _____?
What other things will have to be considered?
What would lead you to conclude that _____?
What do you think would happen if _____?
How did you feel? How do you think _____ felt?
How could _____ have handled the situation differently?
What do you think would be some consequences?
Why do you think that would happen?

6. Establish criteria for evaluation of products, e.g.

Criteria for Evaluation of Products

	1 Poor	2 Fair	3 Good	4 Excellent
Originality				
Elaboration or detail (breadth or depth)				
Application/synthesis of ideas				
Organization				
Validation/References Used				
Presentation/Delivery				
Appropriateness for Intended Audience				
Time on Task				

Environment

Class is conducive for learning with openness, trust, scholarship and helpfulness of teacher and all students.

4. Ask students to pick a community resource from the list on page 85 that reflects their interests, and contact one of these organizations for information on what they do. Have them present their findings to the class in a brief report.

REFERENCES

Bloom, B.S. **Taxonomy of Educational Objectives: The Classification of Educational Goals Handbook: Cognitive Domain.** New York: Longhams, Green and Company, 1956.

Critical Analysis and Thinking Skills Program. 308 W. Milton Bennion Hall, University of Utah, Salt Lake City, Utah, 84112.

ICE - Institute for Creative Education, P. O. Box 209, Sewell N.J. 08080.

Kohl g, L. **Moral Education: Interdisciplinary Approaches.** New York: Newman Press, 1971.

Maker, June C. **Curriculum Development for the Gifted and Teaching Models in Education of the Gifted.** Aspen Systems Corp., 1982.

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Williams, F. E. **Classroom Ideas for Encouraging Thinking and Feeling.** Buffalo: DOK Publishers, 1970.

Zuckerman, D.W. and Horn, R. E. **The Guide to Simulations: Games for Education and Training.** New York: Research Media, 1973.

Tests

Differential Aptitude Tests by Bennett, Seashore and Wesman. Psychological Corp., New York, 1973.

John Holland's Self Directed Search. Consulting Psychologists Press, Palo Alto, CA, 1977.

Strong-Campbell Interest Inventory by E. K. Strong. Palo Alto, CA: Stanford University Press, 1974.

What Kind of Person Are You? by E. P. Torrance. Stoelting Co., Chicago, Illinois, 1976.

Work Values Inventory by E. E. Super. Boston, Houghton Mifflin Co., 1970.

POSSIBLE CAREERS FOR THE GIFTED AND TALENTED STUDENT

Aeronautical Engineers
Architects
Athletes
Authors
Bionic Medical Electronics
Business Persons
Composers
Designers
Diplomats/Interpreters/ Translators
Educators
Energy Engineering Specialists
Film/TV Producers
Food Resources Engineers
Futurists
Genetic Engineers
Geriatric Social Workers
Hazardous Waste Managers
Housing Rehabilitation Specialists
Interplanetary Colonization Architects
Industrial Laser Designers
Industrial Robot Production Designers
Inventors
Laser Holographic, Optic Fiber Maintenance
Lawyers/Judges
Manufacturers
Military Officers
Ministers
Oceanographers
Performing Artists
Philosophers
Public Administrators
Public Officer (President, Senator, Representative)
Public Relations Directors
Research Directors
Space and Sea Nutritionist
Space Designers
Surgeons
Transportation Engineers

COMMUNITY RESOURCES

Alliance for Drama Education
45-305 Makalani Street
Kaneohe, HI 96744
Phone: 247-6766

Alternate Energy Resources
E. Chipman Higgins (Administrative Director)
Hawaiian Electric Company
P. O. Box 2750
Honolulu, HI 96840
Phone: 548-7721

American Field Service
International/Intercultural Programs
313 East 43rd Street
New York, NY 10017
Phone: (Maui) 1-572-9414

Annual Science Fair
General Education Branch
Office of Instructional Services
189 Lunalilo Home Road, 2nd Floor
Honolulu, HI 96825
Phone: 395-8916

Attco Inc. Theatrical Supplies
2855 Koapuka Street
Honolulu, HI 96819
Phone: 836-1191

Bishop Museum
Education Department
P. O. Box 19000-A
Honolulu, HI 96816
Phone: 847-3511, ext. 133

Cardiovascular Research Laboratory
Pacific Health Research Institute
800 South King Street, Suite 200
Honolulu, HI 96813
Phone: 524-4411

Career Information Center
Vocational Education
2327 Dole Street
Honolulu, HI 96822
Phone: 948-7461

Career Kokua
1830 Mott-Smith Drive, Rm. A-116
Honolulu, HI 96822
Phone: 548-5330

Circuit Court
Office of the Clerk
777 Punchbowl Street
Honolulu, HI 96813
Phone: 548-7669
548-3986
548-3987

City Hall
530 South King Street
Honolulu, HI 96813
Phone: City Clerk 523-4291
City Council 523-4000

Distributive Education Clubs of America (DECA)
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-3109

Environmental Protection Agency
Prince Kuhio Federal Building
300 Ala Moana Blvd., Rm. 1302
P. O. Box 50003
Honolulu, HI 96850
Phone: 546-8910

Food and Drug Administration
U.S. Department of Health and Human Services
Prince Kuhio Federal Building
300 Ala Moana Blvd., Rm. 6320
P. O. Box 50061
Honolulu, HI 96850
Phone: 546-8379

Geothermal Power Project
University of Hawaii, Hilo
Phone: 1-961-9388
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 948-8788
Transmitter Site (Ewa Beach)
Phone: 668-1911

Hawaii Association of Intellectually Gifted Children (HAIGC)
P. O. Box 22878
Honolulu, HI 96822

Hawaii Film Board
P. O. Box 3391
Honolulu, HI 96801
Phone: 537-2356

Hawaii Newspaper Agency
606 Kapiolani Blvd.
Honolulu, HI 96813
Phone: 525-7660

Hawaii Regional Scholastic Art Exhibit
General Education Branch
Office of Instructional Services: Art
189 Lunalilo Home Road, 2nd Floor
Honolulu, HI 96825
Phone: 395-7814

Hawaii Speech League
Karen Miyakado
Radford High School
4361 Salt Lake Blvd.
Honolulu, HI 96818
Phone: 422-8220

Hawaii State Commission on the Status of Women
250 South King Street, Rm. 500
Honolulu, HI 96813
Phone: 548-4199

Hawaii State Legislature
House of Representatives
Senate
Phone: 548-7843
548-4675

Hawaii Electric Motor Building Contest
Residential Services Department
Hawaiian Electric Company
820 Ward Avenue
Honolulu, HI 96814
Phone: 548-3511

Japan-America Institute of Management Science (JAIMS)
6660 Hawaii Kai Drive
Honolulu, HI 96825
Phone: 395-2314

Joint Institute for Marine and Atmospheric Research (JIMAR)
Environmental Research Laboratories
University of Hawaii, Manoa
1000 Pope Road
Honolulu, HI 96822
Phone: 948-8083

Mayor's Culture and Arts Office
Honolulu Hale, 4th Floor
Honolulu, HI 96813
Phone: 523-4674

Oahu Math League
(St. Louis High School Math Tournament)
St. Louis High School
3140 Waialae Avenue
Honolulu, HI 96816
Phone: 735-4877

Ocean Thermal Energy Conversion (OTEC)
Alternate Energy Division
Hawaii State Department of Planning and Economic Development
250 Merchant Street, Rm. 110
Honolulu, HI 96813
Phone: (Energy Hotline) 548-4080

Office of Hawaiian Affairs (OHA)
Kawaiahao Plaza
567 South King Street, Suite 100
Honolulu, HI 96813
Phone: 548-8960

Pacific Association for Communication and Technology
Media Center
Leeward Community College
96-054 Ala Ike
Pearl City, HI 96782
Phone: 455-0202

Pacific and Asian Affairs Council (PAAC)
2004 University Avenue
Honolulu, HI 96822
Phone: 941-5355
941-6066

Peacesat Project
Pan Pacific Education and Communication Experiments
Old English Building, Quad #3
University of Hawaii, Manoa
2540 Dole Street
Honolulu, HI 96822
Phone: 948-7794

Population Analysis
Hawaii State Department of Planning and Economic Development
250 South King Street, Rm. 602
Honolulu, HI 96813
Phone: 548-2328

State Student Activities
Occupational Development and Student Services Branch
Office of Instructional Services
941 Hind Iuka Drive
Honolulu, HI 96821
Phone: 373-2841