CONTRIBUTIONS OF MATHEMATICS TO A PROPOSAL FOR REORGANIZING GENERAL EDUCATION IN SECONDARY SCHOOLS ON THE BASIS OF A CORE PROGRAM

DISSertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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E. J. S.
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CHAPTER I
THE PROBLEM AND ITS SETTING

Introduction

One of the most significant problems facing the American secondary school is that of reorganizing general education to meet the needs of youth. In a culture characterized by rapid and fundamental change, it is no longer possible to assume that the conditions under which one generation lives can be passed on substantially unchanged to the next generation. Change is a major aspect of our age. Youth of today are confronted by problems not even contemplated by their parents. To provide a program of general education which will meet the needs of youth and help them live successfully in an ever-changing society is the challenge of the American high school. Faunce and Bossing describe the situation in this statement:

...life has become vastly more complicated. The insights, the skills, and the knowledge that might have enabled citizens to live successfully in 1900 are quite inadequate today. Our world has become a complex, technological maelstrom of rapid mobility, constant change, and interdependence, in which the citizen must acquire certain critical abilities in order to survive. ...Thus the high school of today...confronts a radically new challenge stemming from the needs of youth who live in a world like ours.¹

¹Roland Faunce and Nelson Bossing, Developing the Core Curriculum, p. 40.
There is little evidence, however, that the secondary school is meeting the challenge. It continues to be an institution dominated by a traditional concept of general education. In most schools, the program required of all on the grounds that it provides for the common needs, problems, and interests of youth, consists largely of logically organized subjects, such as the social studies, English, mathematics, and science. These courses frequently are the first in a series of highly specialized courses. One group of educators analyzes the situation as follows:

The impact of specialization has been felt not only in those phases of education which are necessarily and rightly specialist; it has affected the whole structure of higher and even secondary education. Teachers, themselves products of highly technical discipline, tend to reproduce their knowledge in class. The result is that each subject being taught by an expert, tends to be so presented as to attract potential experts. This complaint is perhaps more keenly felt in colleges and universities. Even an elementary course is devised as an introduction to a specialization within a department; it is significant only as the beginning of a series of courses of advancing complexity. In short, such introductory courses are planned for the specialist, not for the student seeking a general education.2

Such courses frequently defeat the very purposes they are striving to achieve. They are not designed to deal with the common needs, problems, and interests of youth. Each subject area is organized in terms of its own inner logic. Real problems are treated but incidentally as they serve to enrich the subject-matter field.

In such a framework, youth are likely to gain few insights into the problems they face as they go about the normal processes of living. For

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life is not composed of problems which can be channeled into subject-matter compartments. Generally speaking, life confronts the individual with problems whose solutions are not the exclusive property of a given subject-matter area, but which must come from the integration of knowledge from many fields. Solutions require the use of a wide variety of resources in men, materials, and techniques.

If the major problems of youth in our culture are to be dealt with realistically, the traditional subject-matter approach must give way to an approach based on broad units of work which know no subject boundaries. This calls for a drastic reorganization of the general education program.

To be effective, a program of general education must be based on the needs, problems, and interests of youth in our culture. Thus, any reorganization of general education calls for reflection on the ideals and values of democracy and analysis of the needs, problems, and interests of youth as they arise from the matrix of democracy.

Here, it is assumed that the basic ideals of democratic living discussed by the Committee on Science in General Education are commonly accepted. Briefly, these are: the optimal development of the individual; the use of cooperative means in developing significant personalities; and faith in the method of intelligence in opposition to reliance on external authority, as the better method for solving problems of living. Such a set of ideals and values implies some
personal characteristics which are essential to democratic living--social sensitivity, tolerance, cooperativeness, the ability to think reflectively, creativeness, and self-direction. These ideals and values, together with the implied personality traits, should serve to give direction to reorganization of general education.

Effective reorganization of general education necessitates agreement not only on the values basic to democracy but also on a concept of needs. It is the problem of defining needs which has been a center of controversy in efforts directed toward such reorganization.\(^4\)

Perhaps the most common interpretation of needs is that they are drives, tensions, biological urges in the individual that determine action. Such needs are referred to as psycho-biological needs. Schools which base their programs on the expressed wishes, wants, or desires of students lean heavily upon this interpretation.

In contrast to this psycho-biological concept, many people refer to needs of the adolescent as the lacks or deficiencies that must be eliminated if he is to become the sort of adult that is looked upon by adults as desirable. Needs of this sort are discovered by an analysis of society rather than the behavior of adolescents.

A third interpretation rejects both of the concepts briefly described above. Needs are held to be personal-social in character. That is, they are the product of interaction of the individual and his environment. Alberty describes this quite clearly:

\(^4\)This brief description of conflicting interpretations of needs is based on Harold Alberty, *Reorganizing the High School Curriculum*, pp. 204–211.
The adolescent's needs are discovered in the process of growing up in a social environment that has established certain patterns of behavior, certain modes of thinking, certain standards of moral and ethical conduct.

Thus needs, as the term is used in this discussion, have both a personal and social reference, and take on character only as they become incorporated in the behavior of the adolescent. ...The mature adult, with a thorough understanding of the developmental process and of the culture in which the process is going forward, ...is able to define the needs of the adolescent, help him discover and clarify his problems, and extend and enrich his interests.

In this study, it is assumed that an analysis of the needs, problems, and interests of youth, which grow out of their interaction with the culture, provides a sound basis for reorganizing general education.

A Program for Reorganization

The core program promises to be significant as we seek to reorganize general education in terms of the basic values of democratic living and a thorough analysis of the basic needs, problems, and interests of youth in our culture. As used here, core refers to that part of the curriculum which is basic for all students and which consists of learning activities that are organized without regard to conventional subject-matter lines. The core program is organized in terms of problem areas, broad pre-planned areas of living in which youth usually have problems rather than in terms of organized knowledge. From these problem areas, learning units are developed cooperatively in the classroom by teacher and students.

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The core organization makes available a large block of time (from one-third to one-half of the school day). This factor, in itself, has many possibilities for making guidance an integral part of the life of the school. It also makes possible a great variety of first-hand experiences such as field trips and community surveys which a single class period cannot deal with because of difficulties in scheduling. It provides for the development of democratic values as teachers and students work together on problems of common concern. And, it provides for an attack on problems in all their related aspects rather than in a piecemeal fashion.

It is the position taken in this study that the need for reorganizing general education has been sufficiently well-established and that a promising proposal for such reorganisation has been devised through vigorous thinking on the educational frontier. In short, it would appear that the secondary school is in a favorable position to move ahead in reorganizing general education. Yet, a recent study by the United States Office of Education indicates that not more than 3½ per cent of the American secondary schools have moved significantly in the direction of such a proposal.

One of the major blocks to the development of the core program in the secondary school is the confusion as to the role of the subject-matter fields in such development. When the well-established, logically organized subject-matter pattern of general education is replaced by

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the core program which deals with the common needs, problems, and interests of youth without regard to subject-matter lines, many teachers feel insecure concerning the particular contribution of their subject-matter area to this development and may oppose the program.

Problems dealt with in the core do cut across traditional subject-matter lines, and the subject-matter fields have much to offer to the study of the common problems of youth in our society. It is the view of the writer that all subject-matter areas can make a significant contribution to the core, but it is only as the problem is thoughtfully studied by all concerned that the value of the subject-matter areas in this framework will be fully realized. This problem must be explored before any widespread reorganization of general education on the basis of a core program can be expected.

Previous Studies

Examination of the literature dealing with current practices in general education and in mathematics reveals a very insignificant contribution in core program development from the field of mathematics. For the most part, studies dealing with the role of mathematics in general education have been based on an analysis of the mathematical needs of people as they go about the business of day-to-day living. In recent years, studies concerned with the mathematics needed by members of the armed forces have had great influence on the thinking of many persons concerned with this problem. Perhaps the most
well-known of these studies is that of the Commission on Post-War Plans.\(^7\)

A study of the needs of adolescents in a democracy was basic to the work of the Committee on the Function of Mathematics in General Education.\(^8\) A more commonly used approach in developing a program of mathematics needed by all is that of defining the contributions of mathematics to the purposes of education in a democracy. This approach is exemplified in the program recommended by the Joint Commission of the Mathematical Association of America and the National Council of Teachers of Mathematics.\(^9\) These three studies dealing with mathematics essential for general education are reviewed in Chapter V.

The studies cited fail to go beyond a subject matter approach to a program of general education based on the common needs, problems, and interests of youth in our society. There is every indication that neither mathematics educators nor those primarily concerned with general education at the secondary level have evidenced any real concern for the contributions of mathematics to general education based on the core program. It is the possible contributions of mathematics to a proposal for reorganizing general education on the basis of a core

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program which is the subject of this study.

**Purpose of the Study**

The purpose of this study is to clarify the role of mathematics in general education by determining the possible contributions of mathematics to selected problem areas that provide the basic curricular structure of the core program.

**Basic Assumptions**

The assumptions basic to this study are:

1. General education should be provided for all youth of secondary age.

2. The core program, built upon an analysis of the basic needs, problems, and interests of youth in the major aspects of living is a significant trend in the re-organization of general education.

3. Every subject-matter area has a contribution to make to the core program.

4. Mathematics can make a significant contribution to the core program at the secondary level.

**Hypothesis**

The role of mathematics in general education can be clarified by suggesting the possible contributions that mathematics may make to the core activities which are appropriate to the broad problem areas that provide the basic curricular structure of the core program.
Plan of the Study

Chapter II describes the procedures used in suggesting the possible contributions of mathematics to the core program. The procedures described are: (1) cooperation with two other investigators in certain aspects of the study; (2) acceptance and modification of the Lurry\textsuperscript{10} list of problem areas; (3) development of criteria for constructing core activities; (4) suggestions as to possible activities which are appropriate to each problem area; (5) submission of possible activities to teachers at The Ohio State University School for criticisms and suggestions; and, (6) formulation of the possible contributions of mathematics to the core activities.

In Chapter III the possible contributions of mathematics to the core program are presented. The contributions are defined as the mathematical concepts essential to carrying out the activities appropriate to problem areas that provide the basic curricular structure of the core. The contributions cited here are made in the light of the best judgment of the writer. The over-all findings of the study are summarized in Chapter IV.

The problem of determining the mathematics adequate for general education is discussed in Chapter V. In this chapter, the writer attempts to compare the findings of this study with the proposals set forth by the Joint Commission of the Mathematical Association of America

and the National Council of Teachers of Mathematics, the Committee on the Function of Mathematics in General Education, and the Commission on Post-War Plans. A brief consideration of the problem of logical sequence is also contained within this chapter.

Chapter VI presents a brief summary of the study. Also included in this chapter are the recommendations made in the light of the conclusions reached.

The Appendix includes tables showing the results of the analysis of each of the sixteen problem areas accepted as a basis for this study.

Limitations of the Study

The following limitations have been imposed by the procedures used in making the study:

1. The persons participating in the construction of the core activities are not representative of a school staff in that only three subject-matter areas are represented.

2. No validation of the core activities has been included in the study.

3. The element of subjective judgment in determining the mathematical concepts essential to carrying out the core activities may have colored the conclusions reached.

In addition to recognizing these possible limitations, it should be noted that the hypothesis upon which the study is based has not been fully explored.
CHAPTER II

PROCEDURES USED IN DETERMINING THE POSSIBLE CONTRIBUTIONS OF MATHEMATICS TO THE CORE PROGRAM

Introduction

This chapter deals with the development of (1) a series of activities considered appropriate to the broad problem areas that provide the basic curricular structure of the core program at the secondary level; and (2) the possible contributions of mathematics to these activities. In this context, a problem area is defined as a broad pre-planned area of living in which students usually have common problems. Such areas are set up by the faculty of a school in terms of the psycho-biological and societal needs, problems, and interests of students.

An analysis of the possible activities appropriate to the problem areas does not prescribe the exact content or procedures, but serves to define the scope of the program and to give security to the teacher by providing a storehouse of suggestions. The development of core activities is useful in the pre-planning which must preface teacher-student planning in the classroom. It is this pre-planning which gives direction to the experiences planned to help students meet their common needs, problems and interests in all areas of living. This study is based on the assumption that a learning unit is developed cooperatively in the classroom by teacher and students in terms of the particular needs, problems, and interests of the group.
The core activities to be presented in Chapter III represent merely one attempt to suggest activities appropriate to the broad problem areas basic to the core program. Obviously, an analysis of problem areas cannot include all possible activities, since many of them will grow out of teacher-student planning. Such an analysis provides a storehouse of suggestions as to the variety of activities in which students might engage as they deal with the problems in a particular problem area. This analysis is done in order to have some basis for determining the contributions of mathematics to the core program.

The Cooperative Nature of Certain Aspects of the Study

In order to attack the problem of determining the contributions of mathematics to the core program, it was necessary to set up a series of problem areas appropriate for use in the core program or to accept some list already worked out. The carefully documented list of problem areas developed by Lucile Lurry was accepted as a basis for this study.

The original plan of the writer was to attempt to develop the contributions of mathematics to each of the problem areas defined in terms of purposes and a rather broad statement of scope. After several unsatisfactory attempts, it was decided that the technique reported in Utilizing Subject Fields in High-School Core-Program

Development probably held the greatest promise for determining the contributions of mathematics to the core program. Briefly, this technique necessitates the formulation of an extensive list of activities in which students might engage as they make a study of the problems involved in a given problem area. It seemed an impossible task for one person to use this technique on sixteen problem areas.

About this time, the writer became aware of the fact that two other persons were investigating problems concerned with the contributions of subject-matter to the core program. All three investigators had accepted the Lurry list of problem areas and were willing to assume that some sort of listing of activities appropriate to these broad problem areas was necessary. It was decided that it would be to the mutual advantage of all three to cooperate in this aspect which is basic to each of the three studies.

One of the three, Mikhail, had already experimented with an activity analysis of the problem area concerned with conservation and had devised a rather unique method of grouping activities. The group examined this method and agreed that it was the most satisfactory. The activities that he proposed as appropriate for the problem area on conservation were then critically examined and some modifications were suggested. The over-all technique for developing activities appropriate

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2 Harold Alberty, et al. Utilizing Subject Fields in High-School Core-Program Development.

3 William Jennings and Monir Mikhail were investigating the contributions of Business Education and Science to the core program, respectively.
to the broad problem areas emerged from the group's experience in working with this one problem area.

Accepting the Lurry list of problem areas tentatively as suitable for a core program at the secondary level, the group agreed upon the following technique: (1) survey of literature bearing upon a given problem area; (2) definition of scope and objectives; (3) construction of possible activities on the basis of a set of criteria; (4) submission of possible activities to teachers at The Ohio State University School for criticisms and suggestions.

Problem Areas Appropriate for a Core Program

The problem areas developed by Lucile Lurry were accepted tentatively by the group as a basis for the three related studies. These problem areas were developed in relationship to a set of criteria, a review of the literature over a period of ten years (1938-48), and the judgment of thirty people in the field of core program development. In the light of a critical examination of these problem areas, it was decided that modifications of the problem areas would be limited to changing titles in cases where they did not convey the major emphasis of the problem areas as developed by the group.

In developing the problem areas, Lurry set up the following definitions and criteria:

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4 Lurry, loc. cit.
CORE: Core is that part of the curriculum to be required of all students on the ground that it provides for the values, understandings, and skills needed by all citizens. The core consists of broad pre-planned problem areas, from which are selected learning experiences in terms of the psycho-biological and societal needs, problems, and interests of students.

PROBLEM AREA: A problem area is a broad pre-planned area of living in which students usually have problems. These areas represent the basic curricular structure of the school. Problem areas are set up by the faculty of a school in terms of a study of psycho-biological and societal needs, problems, and interests of students.

CRITERIA:

A problem area should:

1. Represent persistent problems of a personal-social nature common to adolescents in our culture.

2. Be adapted to the maturity level of the group.

3. Provide experiences for growth in terms of such values as tolerance, social sensitivity, cooperativeness, civic competence, aesthetic appreciations, self-direction, critical thinking.

4. Encourage the use of the problem-solving technique to attack problems in all areas of living.

5. Provide opportunity for cooperative planning in the group, i.e., teacher-pupil, teacher-teacher, pupil-pupil planning.

6. Provide opportunity for generalization beyond the experience of adolescents and their own daily lives.

7. Provide opportunity for meaningful direct experiences and enriching vicarious experiences through a wide variety of resources in men, materials and techniques.

8. Provide for the integration of knowledge through the use of subject matter as it bears upon the problem at hand.

9. Provide experiences which develop continuity in the emotional, intellectual and physical aspects of the learning process.
10. Provide opportunity for the guidance functions of teaching, both individual and group, to become an integral part of the curriculum.

11. Extend the interests of individuals into the various special-interest areas.

12. Lead to other meaningful learning experiences—suggest new problem areas.

THE REVISED\(^5\) LIST OF PROBLEM AREAS

1. PROBLEMS OF ORIENTATION TO SCHOOL LIVING: How can adolescents get most out of their school experiences? Include such problems as:
   (a) Making friends with the people in their class and others in the school, e.g., other students, administrators, teachers, custodians, clerical workers; (b) Understanding the contributions of each of these people to school life; (c) Getting acquainted with the physical aspects of the school; (d) Understanding the opportunities offered by the school and how these can best be used by students; (e) Experiencing the values of cooperative planning-teacher-pupil, pupil-pupil and small and large group planning; (f) Developing self-direction through self-government; (g) Developing desirable home-school relationships; (h) Evaluating, serving, improving the school together; (i) Developing a relationship with the school which will continue after graduation; (j) Helping to formulate, execute and evaluate objectives of the school.

2. PROBLEMS OF SELF-UNDERSTANDING: How can we know more about ourselves? Include such problems as: (a) Understanding my body; (b) Improving my personal appearance; (c) Realizing my strengths and weaknesses; (d) Gaining insight into my own behavior, e.g., understanding the longings, urges, desires which drive me to action; (e) Achieving increasingly mature relationships with the opposite sex; (f) Getting along with Dad, Mother, siblings and age-mates; (g) Overcoming inferiority and adjusting to decrease aggression or self-protectiveness; (h) Changing environment and its effect in my life; (i) Doing the right thing at the right time; (j) Making and carrying out plans for improving my personality; (k) Knowing where I can go to get help with my problems; (l) Experiencing the use of the problem-solving method in dealing with individual and group problems; (m) Gaining some insight into the problems of fear and insecurity.

\(^5\) The titles which are starred were modified slightly.

\(^6\) Original title: PROBLEMS OF SCHOOL LIVING.
3. PROBLEMS OF DEVELOPING VALUES AND BELIEFS: What means most to us in life and why? Include such problems as: (a) Considering what I value most and why; (b) Exploring the various sources of our values; (c) Studying the great religions; (d) Understanding the basic tenets of the major conflicting ideologies; (e) Achieving values we cherish in a democracy; (f) Developing skill in using intelligence to arrive at values in all areas of living; (g) Understanding the relation of values to action in all areas of living; (h) Changing world conditions and how these affect values; (i) Understanding the problems of living with others whose values may be different from ours; (j) Experiencing many situations in which choices must be made; (k) Intellectualizing the process of making choices as a way of life; (l) Becoming aware of the conflicting values in American life evident in the immediate and wider community.

4. PROBLEMS OF FORMING SOCIAL RELATIONSHIPS IN A DEMOCRACY: What is our responsibility (individual and group) in facing and helping to solve the social problems of our community, state and nation? Include such problems as: (a) Social Security; (b) Medical Care; (c) Housing; (d) Juvenile Delinquency; (e) Legal aspects of family life, e.g., divorce and marriage laws; (f) Civil Liberties; (g) Community Recreation; (h) Government regulation of public utilities, e.g., T.V.A.; (i) Family and Child Welfare Agencies; (j) Labor-Management Relations; (k) Cooperatives; (l) City and Regional Planning; (m) Understanding the conflict between democratic cooperation and so-called "free" enterprise; (n) Consideration of the trend toward economic-social interdependence and the need of a philosophy of democratic cooperation here.

5. PROBLEMS OF EMPLOYMENT AND VOCATION: What are our opportunities for employment in the community now? What factors should we consider in choosing a career? Include such problems as: (a) Exploring opportunities for work experiences in the community for us now; (b) Having meaningful work experiences and evaluating these in terms of economic skills developed, interests widened and social insights gained; (c) Getting and keeping a job, e.g., selecting my job, getting a job, getting along with others on the job, making the most of my job; (d) Exploring vocations in the immediate and wider community; (e) Realizing my vocational aptitudes; (f) Giving attention to the preparation needed for various vocations; (g) Considering the importance of various vocations in terms of group welfare; (h) Homemaking as a vocation for all; (i) Relating the choice of a vocation to the changing American and world scene; (j) Understanding the social, political,
and economic implications of a vocational choice; (k) Gaining some insight into labor-management relationships; (l) Considering the problems of shifting population in relationship to employment; (m) Understanding the importance and the problems inherent of maintaining high employment; (n) Becoming aware of the fact that some high school students must look forward to unskilled labor.

6. PROBLEMS OF CONSERVING NATURAL RESOURCES

How can our natural resources be best developed and used? Include such problems as:

(a) Exploring the natural resources of our own community and considering their development and use in terms of the common welfare;
(b) Meeting our basic needs for food, shelter, clothing, recreation through wise use of resources;
(c) Meeting the issue of conservation of natural resources in a democracy through education for self-control;
(d) Realizing the importance of producing, building, growing without destroying, the bases of the future existence of democracy;
(e) Joint democratic planning for resource use by the citizen and his government;
(f) Considering the world-wide social, economic and political implications involved in the need of all people for vital sources of energy;
(g) Relating wise use of natural resources to conservation of human resources.

7. PROBLEMS OF EDUCATION IN AMERICAN DEMOCRACY

Why is education an important factor in our lives as citizens of a democracy? Include such problems as:

(a) Exploring the educational opportunities in the immediate community;
(b) Studying the historical development of education in America;
(c) Perpetuating, yet re-creating democratic ideals through education;
(d) Realizing educational inequalities prevalent in the immediate and wider community;
(e) Using an education to help raise the standard of living in the group;
(f) Understanding the impact of education on such social institutions as the home, church, government, etc.;
(g) Becoming a more intelligent participant in the democratic process through education;
(h) Making use of various educational services in the community for members of the family;
(i) Differentiating the practical implications of the more important theories of education that affect current school practices;
(j) Considering how and why schools should make provisions for individual differences;
(k) Understanding the various pressure groups that operate on education;
(l) Contrasting values and beliefs and resulting implications for living stressed by American schools and those stressed by Russian schools.

Original title: PROBLEMS OF USING AND CONSERVING NATURAL RESOURCES.
8. **PROBLEMS OF CONSTRUCTIVE USE OF LEISURE**: How can we become more interesting and better adjusted people through extending individual and group interests? Include such problems as: (a) Extending aesthetic appreciations, e.g., music, painting, literature, nature, science through participating in experiences in these areas; (b) Having experiences in the special interest areas of the school, e.g., industrial arts, home arts, fine arts, dramatics, physical education; (c) Recreation in the home; (d) Hobbies; (e) Developing, extending, maintaining adequate community recreational facilities for all citizens; (f) Developing a concept of creative experience as it is related to well-balanced living; (g) Experiencing individual and group activities as constructive use of leisure; (h) Developing a basis for choice in acquiring recreational interests; (i) Developing a fair degree of skill in several types of recreational activity (individual and group); (j) Having experiences in which individuals and groups engage in thoroughly creative activity.

9. **PROBLEMS OF FAMILY LIVING**: How can family living make for happier individuals? Include such problems as: (a) Defining the characteristics of the democratic home; (b) Interpreting these characteristics in terms of behaviors of the individual in the home; (c) Sharing in the maintenance aspects of family living; (d) Solving family conflicts through the family council; (e) Making a house a home; (f) Developing a consistent set of values to guide life through family living; (g) Having and rearing children; (h) Understanding myself and others as members of a closely knit group; (i) Creating our own home, i.e., problems of eugenics, courtship, marriage; (j) Considering the family as a unit in a democratic society and its relationship to other social institutions; (k) Planning in family living as to the use of resources such as time, money, energy; (l) Studying the effect of technological development on home life in our society; (m) Developing an understanding among family members of the problems of old-age; (n) Reconciling conflicts between home standards and community standards; (o) Participating as a family unit in developing community standards; (p) Considering similarities and differences concerning family life, in general, in a democracy and in other societies.

10. **PROBLEMS OF COMMUNICATION**: How can we express our ideas more clearly to others, and how can we understand better the ideas of other people? Might include such problems as: (a) Exploring the various media which we have used to communicate our ideas and emotions, e.g., music, painting, dancing, dramatization, arts and crafts, group discussion, writing, drawing, modeling; (b) Developing a pleasing voice as regards pitch, tone, articulation; (c) Learning to listen, read and observe with understanding; (d) Recognizing advantages that skill in communicating will give individuals in group situations; (e) Recognizing benefits and dangers of mass communication in light of democratic values; (f) Learning to compute
and to calculate speedily; (g) Utilizing many devices for communicating, such as radio, movies, film strips, slides, pictures, graphs, maps, printed materials, prints, dramatics.

11. PROBLEMS OF DEMOCRATIC GOVERNMENT: How do we share in government in a democracy? Include such problems as: (a) Learning the rights and obligations of citizens by sharing in solution of school and community problems pertinent at this level; (b) Seeing citizenship in a wider perspective by being concerned with current local, national and international issues; (c) Gaining insight into problems of carrying on city, state, national government through selected representatives; (d) Seeking understanding of the process of interaction in a group; (e) Studying how group conclusions are formed; (f) Developing a concept of personal responsibility for democratic government through sharing in school government; (g) Experiencing ways to improve school and community through democratic government; (h) Seeing the relationships between school-community problems and problems faced by adults outside the school; (i) Studying conditions under which individuals actually develop attitudes of responsibility, i.e., in sharing situations or relations.

12. PROBLEMS OF PERSONAL AND COMMUNITY HEALTH: How can we achieve and maintain healthful living for ourselves and all others in the community? Include such problems as: (a) Ascertaining my present health status; (b) Understanding the problems and the importance of personal and community nutrition; (c) Understanding the facts about sexual development; (d) Cooperating with various community agencies in maintaining healthful living conditions; (e) Improving personal attractiveness and physical fitness by practicing healthful living; (f) Studying causes of accidents and removing these causes in homes and community, if possible; (g) Considering the social and economic aspects of personal and community health implied in health insurance, hospitalization, "socialized" medicine; (i) Providing and maintaining family health; (j) Understanding the problems of world health—the wider community; (k) Considering the present day causes of widespread mental health; (l) Understanding the importance of community and home life in development of mental health; (m) Considering the significance of recent findings in the field of psychosomatic medicine.

13. PROBLEMS OF ECONOMIC RELATIONSHIPS IN A DEMOCRACY: How can we become more intelligent consumers? How does the pattern of our economic life relate to the ideal of democratic economic participation of all? Include such problems as: (a) How can I know that I am getting my money's worth? (b) Government protection of the
consumer; (c) Problems of banking, investment, etc.; (d) Duties and responsibilities of labor and management in production and management; (e) Various economics systems and implications of each for producing and distributing goods in a democracy; (f) The Marshall Plan and its implications for world security; (g) The place of credit in the economic system; (h) Recognizing cause and effect relationships in spending, saving, and employment; (i) Changing pattern of family spending in the American economy; (j) Recognizing the family's stake in the general economic policy; (k) Understanding the changing pattern of government spending in American economy and its effect on group and individual welfare; (l) Understanding the whys and hows of the American system of taxation; (m) Recognizing the relationship between the economic and social status; (n) Having experiences in choosing and buying goods and being responsible for funds and their use; (o) Recognizing the trend toward economic interdependence; (p) Noting the trend toward concentration of wealth and monopoly controls and effects on individual and group welfare.

14. PROBLEMS OF CRITICAL THINKING: How can we develop skill in forming conclusions? What are the sources of information? What is a sound basis for forming conclusions in a democracy? Might include such problems as: (a) Developing the ability to recognize and define problems; (b) Studying the complete act of thought in relationship to achieving democratic processes; (c) Exploring the sources of information, e.g., press, movies, radio, speeches, television; (d) Developing skill in recognizing propaganda techniques; (e) Recognizing common fallacies in thinking, e.g., reasoning by analogy, generalizing upon basis of inadequate data, inconsistency between assumptions and conclusions; (f) Recognizing fallacies arising from psychological maladjustments, e.g., rationalization, projection, identification; (g) Developing an ability to live in a tentative mood; (h) Developing consistent attitudes toward the problem of applying critical thinking to human concern in all areas of living; (i) Accepting responsibility for action on the basis of sound conclusions; (j) Reorganizing and reconstructing experience as a guide to future behavior.

15. PROBLEMS OF ACHIEVING WORLD PEACE IN THE ATOMIC AGE: What are the contributions we can make toward world peace? How does atomic energy affect our living today? Include such problems as: (a) Exploring the causes of cultural conflict, e.g., economic, political, social; (b) Widening the areas of mutual concern and interests in the immediate and wider group; (c) Understanding the bases of world peace; (d) Basing emotionalized attitudes on sound intellectual grounds; (e) Sharing effectively in a world organization such as United Nations; (f) Studying how education of the individual as a unique, dynamic, flexibly-experiencing person might be a solution; (g) Exploring present and probable future uses of atomic energy; (h) Considering how the benefits of atomic energy might be made
available to all our people; (i) Considering problems produced by
the liberation of atomic energy, e.g., philosophical, psychological,
technological; (j) Studying the structure and function of organiza-
tions dealing with problems created or accentuated by atomic
energy, e.g., United States Atomic Energy Commission, United Nations,
and proposals for control of atomic energy for world security—dif-
f erences between United States and Russia at this point; (k) Widen-
ing horizons to include "One World" by gaining functional knowledge
of how people live in other geographical areas, e.g., emphasizing
both cultural differences and similarities—arts and crafts, religion,
family life, means of livelihood, food, their life values.

16. PROBLEMS OF INTERCULTURAL RELATIONS: What are the factors in
living democratically with many diverse social groups? What is our
individual and group responsibility in becoming aware of and helping
to decrease intercultural tensions? Include such problems as:
(a) Understanding the relationship of various groups in the environ-
ment to development of intercultural attitudes, e.g., various types
of homes, churches, schools, other community groups; (b) Under-
standing the effects in the immediate and wider community of bias,
prejudice, discrimination against minority groups; (c) Building an
increasingly mature understanding of what democracy means, histori-
cally and ethically; (d) Learning increasingly to use the method
of conferring—the method of basing group action on group discus-
sion and decision; (e) Coming to understand the international
aspect of inter-group prejudices and discriminations; (f) Under-
standing and appreciating composite character of American popula-
tion and its consequent advantage to our civilization; (g) Acting
on the basis of thinking rather than on habit or pure impulse;
(h) Studying various historic causes and supporting rationalisations
of group prejudices; (i) Building the habit of acting on the best
that we have found, of living up to the highest insight that we
can gain through searching; (j) Studying out the problems of race
and the evidences against racism; (k) Developing an awareness of
intercultural tensions arising to the immediate community, e.g.,
race, religion, nationality; (l) Developing a feeling of personal
responsibility for solution of these problems through individual
concern and by cooperating with community agencies; (m) Contribut-
ing toward individual growth by continual widening of areas of
mutual concern among various groups; (n) Understanding the bases of
world conflict; (o) Noting the conflicts in the school-community
situation; (p) Breaking down these conflicts through studying the
"facts" in each situation, and by cooperative dealing with common
problems and interests.
Criteria for Constructing Core Activities

The following criteria developed by the group served to give direction to the construction of the core activities presented in this study:

Core activities should:

1. Have potentialities for developing and promoting values basic to democratic living.

Activities should promote personal characteristics essential to democratic living, such as social sensitivity, tolerance, cooperativeness, the disposition and ability to use reflective thinking in the solution of problems, creativeness, self-direction, and aesthetic appreciation. Activities that require group work should be emphasized, since it is through group process that students learn the meaning of the shared role of leadership, the responsibility inherent in freedom, the necessity for critical thinking in the solution of problems, and the need for continuous evaluation both of the products of group action and of the processes employed.

2. Deal with significant problems and issues that have a bearing on a problem area without regard to subject-matter boundaries.

Activities should be directed toward solving students' problems, meeting their needs and extending their interests in a given problem area without regard to the organization or content of any one subject-matter field. Activities that serve merely as "busy work" or as "lesson-learning assignments" are fruitless.

3. Be sufficiently diversified to provide for individual differences among students.

To provide for the fulfillment of the highest potentialities of each student, activities should include a wide variety of learning experiences, such as experimenting, dramatizing, visiting, displaying, reporting, seeing movies, drawing, discussing, reading, and writing. The number of activities should be large enough to enable the teacher and students to make better choice of materials that will more readily meet the needs and interests of students.
4. **Suggest sufficient direction for action.**

   To be of maximum value to the teacher, activities should be so stated as to imply a possible plan for carrying them out. For example, proposing a field trip to a museum is of little value, unless accompanied by suggestions as to what students might observe during their visit and what they might do as a follow-up. However, activities should not be so detailed that they eliminate or stifle teacher-student planning or student creative planning.

5. **Provide the kind of experiences that are likely to contribute to the students' all-round development.**

   Since the physical, mental, social, and emotional aspects of behavior are inseparable and function as a unit, activities should include all phases of development. For example, an adequate study of sex would include its biological, psychological, and social aspects.

6. **Be organised in such a way that they can most effectively be used.**

   One way to organise activities is to classify them under appropriate categories. For example, activities related to CONSERVING NATURAL RESOURCES can readily be grouped under four levels: Community; State; National; and World-wide. These categories are not mutually exclusive, for complex human activities do not lend themselves to neat compartmentalization. However, they serve as centers for organizing the learning experiences. Such organization also insures the spreading of activities over a wide scope.

7. **Be comprehensive rather than fragmentary in character.**

   Since learning takes place most effectively in terms of wholes rather than fragments, emphasis should be placed upon significant comprehensive activities rather than upon piecemeal activities which the students must somehow fit together. By comprehensive is meant that a number of related activities are grouped under an appropriate topic. For example, activities that belong to the Community level in the problem area CONSERVING NATURAL RESOURCES may be grouped under such topics as Soil; Water; Minerals; Wildlife; Recreational Resources; Forests.
Development of the Core Activities

A search of the literature revealed that there have been few formulations of activities appropriate to problem areas, i.e., problem areas as defined in the context of this study. Notable exceptions were the resource units developed by the teachers in Garrett County, Maryland and those developed some years ago at the Progressive Education Association's Rocky Mountain Workshop. While these did not give any particular direction to the procedures and findings included in this study, an examination of the suggestions included in these units proved to be a stimulating experience and one that served to bring about greater unity in the thinking of the group.

As a preliminary step in constructing activities appropriate to a given problem area, the group made an exhaustive study of the literature bearing on the problem area. Next, an attempt was made to arrive at some statement of scope and objectives that would be acceptable to each member of the group. Then, the activities were developed in terms of the criteria developed and in relationship to the scope and objectives.

As might be expected, the task of developing the activities appropriate to the various problem areas was a time-consuming one. In order to expedite matters, each member of the group assumed the responsibility for developing the activities appropriate to a portion of the scope of the problem area under consideration. After each person had completed his work, the activities were analyzed critically by the group. Thus, while there was division of responsibilities, the
development of the activities was essentially a group undertaking.

Finally, the tentative formulations were submitted to teachers at the Ohio State University School for criticisms and suggestions. Very few modifications were suggested, but the comments and suggestions of these teachers were a source of great encouragement to the group. The few modifications suggested have been incorporated in the formulation of possible activities that appears in this report.

At this point, the writer would emphasize that the activities to be presented are suggestive in character. They represent merely one attempt to arrive at a formulation of activities appropriate to the sixteen problem areas. The activities as developed by the group will be found in Chapter III.

**Development of the Contributions of Mathematics to the Core Activities**

In this study, the contributions of mathematics to the core activities were defined in terms of the mathematical concepts essential to carrying them out. This necessitated a careful analysis of each activity in each of the problem areas. It should be made clear, however, that the term essential is not used in an absolute sense. The concepts which define the contributions of mathematics to the core activities represent the judgment of one person and should be interpreted in that light.

A preliminary analysis of the activities yielded forty concepts basic to carrying them out. This number increased to fifty-three as the activities were re-examined and the concepts refined. The fifty-three
concepts which define the contributions of mathematics to the core program are presented in Chapter III.
CHAPTER III
POSSIBLE CONTRIBUTIONS OF MATHEMATICS TO THE CORE PROGRAM

Introduction

As stated previously, in this study the contributions of mathematics to the core program are defined as the mathematical concepts essential to carrying out the activities considered appropriate to the problem areas that provide the basic curricular structure of the core. Analysis of the core activities disclosed that fifty-three mathematical concepts are essential to carrying them out. There is no reason to assume that another investigator would necessarily arrive at an identical list of concepts. It is hoped that the formulation of concepts presented in this report may give some clue as to the role of mathematics in a program of general education based on the broad pre-planned areas of living in which all youth have problems.

Mathematical Concepts Essential to Carrying out the Core Activities

The mathematical concepts essential to carrying out the core activities constructed in this study have been categorized under six major concepts:¹

¹ Number; Measurement; Relationship; Proof; Operation; and Symbolism. This categorization was proposed by H. P. Fawcett in "A Mathematics Program with an Emphasis on General Education," School Science and Mathematics, (January, 1942), pp. 25-31.
NUMBER

(1) Whole number
(2) Number system
(3) Fraction
(4) Decimal
(5) Directed number
(6) Exact number
(7) Approximate number
(8) Denominate number

MEASUREMENT

(9) Direct measurement
(10) Indirect measurement
(11) Standard unit
(12) Approximation
(13) Estimating
(14) Possible error
(15) Relative error
(16) Accuracy
(17) Precision
(18) Significant figures
(19) Scale drawing

RELATIONSHIP

(20) Variable
(21) Constant
(22) Approximate relationship
(23) Functional relationship
(24) Dependent variable
(25) Independent variable
(26) Tabulation of data
(27) Mean
(28) Median
(29) Mode
(30) Normal frequency distribution
(31) Formula
(32) Graphical representation
(33) Extrapolation
(34) Interpolation
(35) Correlation
(36) Trend

PROOF
(37) Deduction
(38) Induction
(39) Assumption
(40) Hypothesis
(41) Definition
(42) Undefined term
(43) Relevance
(44) Reliability
(45) Representativeness
OPERATION

(46) Counting
(47) Addition
(48) Subtraction
(49) Multiplication
(50) Division
(51) Rounding off
(52) Comparison

SYMBOLISM

(53) Mathematical symbolism

The concepts are defined in the discussion which follows:

NUMBER

Whole number: Numbers used to count the objects in a group are commonly referred to as whole numbers.

Number system: The number system in use today (the Hindu-Arabic system) is a positional system based on 10. That is, every whole number can be expressed by using only the ten digits 0, 1, 2, ..., 9, with repetitions if necessary.

Fraction: Fractions were invented to make division always possible. A fraction may represent a part of a whole, a part of a group, or the ratio of one amount to another.

Decimal: The term decimal is used as an abbreviation for decimal fraction, a fraction which has 10 or some power of 10 in the denominator.
Director numbers: Numbers which represent both magnitude and direction are referred to as directed numbers (or signed numbers). They may be regarded as lying along a linear scale, any convenient point of which is taken as the zero point. All values to the right of the zero point are arbitrarily considered as positive, and those to the left, considered as negative. A signed number thus represents a directed segment.

Exact number: Numbers which result from counting the objects in a group are exact numbers.

Approximate number: Any number determined by measurement is approximate. Approximate numbers may also result from operational techniques.

Denominate number: An expression of quantity in terms of a standardized unit of measure is referred to as a denominate number.

MEASUREMENT

Direct Measurement: Measurements which are made by the direct application of a unit of measure to a physical object are called direct measurements.

Indirect measurement: When measurements cannot be made directly, they are calculated from other related measurements and are referred to as indirect measurements.

Standard unit: A unit of measure is a standard unit if it is exactly defined and generally accepted.

Approximation: There is no such thing as a perfect measurement. Every measurement is an approximation because it involves an estimate.
Estimating: The process of estimating arises in any measurement. There is always a difference between the actual measurement and the corresponding number point on the number scale. In general, the last number in a measured result represents an estimate.

Possible error: The possible error of any measurement is one-half the smallest unit used.

Relative error: The ratio of the possible error to the measurement itself is referred to as the relative error.

Accuracy: The accuracy of a measurement is judged in terms of its relative error, that having the least relative error being the most accurate.

Precision: The degree of precision of a measurement is defined by the magnitude of the unit chosen.

Significant figures: In numbers that have been rounded off, all non-zero digits used are significant, as are all zeros between significant figures. Final zeros may be significant.

Scale drawings: Drawings that keep the exact shape of the original object are called scale drawings. Maps of all kinds and plans for buildings are examples of such drawings.

RELATIONSHIP

Variable: A quantity that may have various values in a discussion is called a variable.

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2 The concept of rounding off is included under the major concept of Operation.
Constants: A quantity whose value is fixed throughout a discussion is called a constant.

Approximate relationship: If two variables are so related that a change in one tends to be accompanied by a change in a definite direction in the other, there is an approximate relationship between the variables.

Functional relationship: If two variables are so related that for each value of the first, a corresponding value of the second is determined, there is a functional relationship between the variables, and the second variable is called a function of the first.

Dependent variable: A variable whose value depends on that of another is called a dependent variable.

Independent variable: A variable whose value may be changed at will is called an independent variable. It is the variable upon whose value the value of the dependent variable depends.

Tabulation of data: A table is simply an orderly arrangement of data. Tabulation of data serves two functions: It enables the investigator to discover relationships which may not be evident in a set of unclassified data; and it facilitates the presentation of facts.

Mean: The mean is what is commonly referred to as the average. It is found by dividing the sum of a set of numbers by the total number of numbers.

Median: The median is the middle number of a set of numbers arranged in order of magnitude.
Mode: The number which occurs most frequently in a set of numbers is called the mode.

Normal frequency distribution: A normal frequency distribution is an orderly arrangement of data which has the following characteristics: There is one mode; items differing from the mode by the same amount occur the same number of times; the farther an item is from the mode, the smaller number of times it occurs; and the mode, the median, and the mean are equal.

Formula: A formula is a generalization of a relationship expressed in algebraic symbols.

Graphical representation: A graph is a generalization of a relationship, a pictorial representation of the relationship.

Extrapolation: Extrapolation is the process of predicting a value outside the range of known data.

Interpolation: Interpolation is the process of predicting values within the range of known data.

Correlation: Correspondence between two sets of data is referred to as correlation. When the correspondence is such that an increase in one of the variables is accompanied by a decrease in the other, the correlation is negative; if their values rise and fall together, the correlation is positive.

Trend: When one variable changes in approximately regular or systematic fashion in relation to the variable time, the data are said to exhibit a trend.
PROOF

Deduction: Deduction is the process of reasoning which establishes a necessary connection between a set of assumptions and the conclusions to which they lead.

Induction: Induction is the process of reasoning by which conclusions are derived from the inspection of a series of particular instances.

Assumption: An assumption is a statement accepted without proof.

Hypothesis: A hypothesis is a general principle, derived inductively, offered tentatively as holding true universally.

Definition: Clarity of definition is a necessity in matters where precise thinking is to be done. In a discussion, for example, there is a possibility that the people involved do not all entertain the same definitions with respect to the items entering the discussion. If such is the case, lack of agreement is quite likely to prevail.

Undefined term: There must always be some undefined terms. For, in order to be defined, a term must be defined in terms of some other term or terms whose meaning is already clear. These latter terms must be defined in terms of simpler terms, and so on. Carrying this process to its logical conclusion leads to a set of undefined terms.

Relevance: Data which are significant in the study of a problem are said to be relevant.

Reliability: Reliable data are trustworthy and free from bias.

Representativeness: Sample collections of data are said to be representative if they are selected so that each factor that is likely
to influence the result is represented and in approximately the same proportion as it would be in a complete set of data.

**OPERATION**

**Counting:** Counting is the operation of putting the whole numbers into one-to-one correspondence with a set of objects.

**Addition:** Addition is a short method of counting.

**Subtraction:** Subtraction is the inverse process of addition.

**Multiplication:** Multiplication is a short method of finding the sum of a group of numbers all of which are the same.

**Division:** Division is the inverse process of multiplication. It is a short method of performing repeated subtractions.

**Rounding off:** When numbers are given with greater accuracy than can be used, they may be rounded off by dropping one or more digits at the right. When the digit dropped is more than 5, the preceding digit is increased by one; when it is less than 5, the preceding digit is left unchanged. When 5 is dropped, the usual procedure is to increase the preceding digit by one if it is an odd number; and leave it unchanged if it is an even number. The errors due to rounding off, if this process is followed consistently, will, in the long run, tend to cancel each other out.

**Comparison:** There are two basic methods of comparing numbers—the difference method and the ratio method. Suppose, for example, that we wish to compare the expense per pupil in average daily attendance in Georgia with that of New York. If the expense per pupil in Georgia is $80.79 and that in New York is $250.75, it is possible to
say that New York spends $169.96 per pupil more than Georgia. It is also possible to say that Georgia spends about one-third as much per pupil as New York. Which of these two methods of comparing numbers is used, is chiefly a matter of preference. However, if the difference between the numbers is large in comparison to one of them, the ratio is generally used. In some cases, it may be convenient to express the ratio as a per cent.

SYMBOLISM

Mathematical symbolism: The use of symbols facilitates the manipulation of ideas and is essential for the communication of ideas to others. Mathematical symbols describe physical things precisely in terms of size, order, and number. For example, the production in barrels, the depth in feet, the grade, the value in dollars of the oil in a particular well may all be expressed in mathematical symbols. The symbolism of mathematics serves to free the intellect for reflection on important ideas.

Possible Contributions of Mathematics to the Core Activities

The following sample analysis is presented as illustrative of the technique used in determining what mathematical concepts are essential to carrying out the activities.

Activity

Find out in how many families in the community both parents are working. What is the effect upon the family life?
Analysis

(1) Devise some plan for obtaining a representative sample, for example, checking with the occupants of every fifth house.

Sample collections of data are said to be representative if they are selected so that each factor that is likely to influence the result is represented and in approximately the same proportion as it would be in a complete set of data.

(2) Have each student assume the responsibility for gathering data from a certain number of families.

Numbers which result from counting the objects in a group are called exact numbers.

(3) Tabulate data gathered by everyone participating in the survey.

(4) Present findings in a clear, concise form.

A per cent is a decimal fraction expressed in hundredths.

An understanding of the concepts of whole number and number system is basic to the quantitative aspects of any activity.

In order to carry out this activity, twelve different mathematical concepts are essential. In cases where a particular concept is used more than once, it is tabulated only once as being essential to carrying out the given activity. Thus, in the sample, the concepts of comparison, fraction, and symbolism are each tabulated only once.
In the analysis of the problem areas which follows, the activities to which mathematics makes a contribution are starred and keyed according to the numbers of the various mathematical concepts which are basic to carrying them out. For example, the sample activity is keyed as follows:

*Find out in how many families in the community both parents are working. What is the effect upon the family life?

(1), (2), (3), (4), (6), (18), (26), (45), (46), (47), (52), (53).
PROBLEMS OF ORIENTATION TO SCHOOL LIVING
PROBLEMS OF ORIENTATION TO SCHOOL LIVING

The organisation of our educational system, divided as it is into its separate units creates one of the greatest problems in education--lack of articulation. These separate units cause breaks in the student's education, when he goes from one kind of school to another. Difficulty in making new adjustments during the process of transition from one level to another results in frustration, insecurity, maladjusted social behavior, lack of confidence on the part of students, and an increase in the number of drop-outs.

Proper orientation does help to bridge the gaps among the various units. Orientation is most effective when it is regarded as a continuing responsibility, appropriate to every part of the school year. Students are in constant need of professional guidance.

This unit is designed to help students--especially the new--in making successful adjustments to school environment and in understanding, interpreting, and improving school living.

The natural place of this unit is the early part of the school year for all grades. However, time devoted to its study might well be reduced with increasing maturity level of students.
Objectives

To help students:

1. Become familiar with school buildings, grounds, and equipment.
2. Become acquainted with the school personnel and their contributions to the life of the school.
3. Understand and make best use of the opportunities offered by the curriculum of the school.
4. Experience the values of democratic group processes.
5. Participate in activities that have potentialities for developing desirable personal characteristics.
6. Develop an awareness of their abilities, interests, needs, assets, and liabilities as a basis for a wise choice of activities.
7. Assume the responsibilities of school citizenship.
8. Become acquainted with school rules, regulations, and traditions.
9. Establish effective study habits.

Scope

Orienting students to:

I. Physical aspects of the school
II. School personnel
III. Curricular offerings and activities
IV. School rules, regulations, and traditions
V. Effective study
I. **Orienting Students to Physical Aspects of the School**

A. **Buildings and Grounds**

1. **Make a tour of the school buildings and grounds.** Locate classrooms, laboratories, shops, library, lunch rooms, gymnasium, offices, bicycle racks, football and baseball fields, and tennis courts.

2. **Draw a map of the school buildings and grounds.** Make copies available to new students.

3. **Ask the librarian to show the class how to make the most effective use of the library.**

   2. **See the film:**

   **Know Your Library**

   Coronet Instructional Films

   10 min sd

   New York, New York

   $45 color $90

   Gives instructions on proper use of the library.

3. **See the filmstrip:**

   **Use Your Library**

   American Library Association

   77 frames silent with text

   Chicago, Illinois

   Shows how to find books, magazine articles, and pamphlets.

B. **Library**

1. **Ask the librarian to show the class how to make the most effective use of the library.**

   2. **See the film:**

   **Know Your Library**

   Coronet Instructional Films

   10 min sd

   New York, New York

   $45 color $90

   Gives instructions on proper use of the library.

3. **See the filmstrip:**

   **Use Your Library**

   American Library Association

   77 frames silent with text

   Chicago, Illinois

   Shows how to find books, magazine articles, and pamphlets.

C. **Classroom**

1. **Find out what constitutes adequate lighting in a classroom.** By using a light meter, measure the illumination
in different parts of the classroom. If the lighting is inadequate, plan to improve the situation.

(1), (2), (3), (4), (7), (8), (10), (11), (12), (13), (14), (15), (16), (17), (18), (26), (48), (50), (51), (52), (53)

2. Make a study of conditions producing glare in the classroom, and find out how to overcome such conditions.

3. Determine the adequacy of the heating and ventilation of the classroom. What can be done to improve the situation?

4. Set up criteria for evaluating the classroom furniture and suggest possible improvements.

5. Improve the appearance of the classroom by: refinishing furniture; making drapes; painting murals; planting flowers; building bookcases; and setting an aquarium.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (19), (20), (21), (22), (23), (24), (25), (31), (47), (48), (50), (51), (52), (53)

D. Lunchroom

1. Evaluate the lunchroom in terms of such criteria as: Is it clean? well lighted? adequately ventilated? attractive? accessible to facilities for washing hands? cheerful? large enough to accommodate comfortably the group it serves? Submit suggestions for improvement to the student council.

2. Make posters and cartoons for the lunchroom illustrating the need for proper disposal of waste; noise reduction;
good eating habits.

1. Visit the health service room. Ask the school physician or nurse to explain the types of services offered to students and how to profit from them.

2. Investigate the first aid equipment in the school as to its location, adequacy, and use.

3. See the film:

   **First Aid**
   
   Encyclopedia Britannica Films, Inc.
   
   11 min sd
   
   Wilmette, Illinois
   
   $45 rent $2.50 1941

   Gives basic fundamentals of first aid treatment.

F. School Store

1. Visit the store and find out what supplies are available and their cost.

II. Orienting Students to School Personnel

A. Student-Student Relations

1. Have a get-acquainted session in which each student introduces himself by telling his name, where he lives, the school from which he came, and any other facts about
himself that he might wish to add.

2. Plan a reception for new students in order to make them feel that they are welcome in the school.

3. Set up role-playing situations which illustrate the characteristics of a good group member.

4. Develop a set of criteria for evaluating the quality of group discussion. Record a class discussion and play it back, evaluating it in the light of the criteria.

5. See the films:

   Shy Guy
   Coronet Instructional Films
   12 min sd
   New York, New York
   $56 color $112
   1948

   Helps adjust the shy adolescent as he witnesses the screen "shy guy's" start to improved social relations through those principles of friendly association demonstrated by his better-adjusted fellow students.

6. See the filmstrips:

   Boy Meets Girl
   Church Screen Productions
   38 fr si with text
   Nashville, Tennessee
   1947

   Discusses problems in boy-girl friendship. When and how to get acquainted, proper introductions, and being popular.

   Boy Dates Girl
   Church Screen Productions
   38 fr si with text
   Nashville, Tennessee
   1947

   Discusses problems of when to date, how to ask for a date, where to go on dates, what to do, and what to talk about.

B. Student-Staff Relations

1. Make a "Who's Who" booklet of members of the staff, and distribute to new students.
2. Make charts showing the duties and responsibilities of each staff member.

3. Plan a social event for acquainting students with staff members.

III. Orienting Students to Curricular Offerings and Activities

A. Core Program

1. See the filmstrip:

   A Core Curriculum
   Class in Action
   Wayne University
   Detroit, Michigan
   1960

   Follows a typical ninth grade core class from its first class meeting through various teacher-pupil-planned activities and the final evaluation of the work done. Answers such questions as: How does an organized class operate on a core plan? What are the objectives and how are they set? How is pupil-teacher planning accomplished?

2. Discuss problems basic to effective work in the core periods: On what basis should a learning unit be chosen? How can committee work be most effective? What are possible sources of information that might contribute to the collection of data for solving a problem? What is the relation of the special interest areas to the core program? What are some criteria for a good committee report? How can progress be evaluated?

B. Electives

1. Invite teachers from the various special interest areas to discuss the general nature of these areas and their possible contributions to both vocational and avocational pursuits.
2. Visit a typing class, a science laboratory, the home economics suite, or the industrial arts shop.

C. Student Organizations

1. Make a directory of school organizations listing purposes, activities, membership requirements, and names of the presidents and faculty sponsors.

2. Invite representatives from various organizations to describe briefly the nature of their activities.

3. Ask the president of the student council to lead a discussion on the objectives, organization, and scope of the council's activities and responsibilities. How may each student contribute to the success of the council?

4. Attend several meetings of the student council, and evaluate its work on the basis of previously defined criteria.

5. Survey the types of activities in which students like to participate. To what extent does the school provide for these activities? Make recommendations for introducing any new activities and submit to the student council.

   (1), (2), (3), (6), (26), (45), (46), (47), (50), (52), (53)

6. Make a survey of what students do during their lunch period, and plan some organized activities in terms of their expressed interests.
D. School Events

1. Make a calendar of events, including assemblies, musical programs, dramatic productions, dances, and athletic events. Post on the bulletin board.

2. Invite the coach to talk to the class about sportsmanship, both with regard to the spectator and the participant.

IV. Orienting Students to School Rules, Regulations, and Traditions

A. Regulations

1. Prepare a handbook of school regulations. Include such items as: attendance and punctuality; permission to leave early; illness; use of the library; schedule irregularities; fire and security drills.

2. Have a roundtable discussion on the why and wherefore of various school regulations, their relation to good school citizenship, and how they might be improved.


4. Investigate and discuss the grading system used in the school.

5. Place a variety of office blanks and school forms in a basket. Select some at random, and give complete information regarding their use.

6. Prepare a bulletin board display of printed forms used for school reports, record cards, absence slips, and
tardy slips.

7. Write a sample excuse for absence. Discuss the essentials of a satisfactory excuse.


B. Traditions

1. Interview upper classmen for information about the school traditions and discuss them critically.

2. Learn the school songs, yells, and colors.

3. Conduct a panel discussion on the topic "Should every school have traditions?"

C. Safety

1. Make posters, charts, and cartoons showing the need for safety practices in the school.

2. Develop a code of safety ethics for both the school buildings and grounds. Make plans for putting it into action.

3. Compare the number of students injured in the school each month with that of another school of similar size. Discuss the results in the light of each school's safety regulations and their enforcement.
4. See the films:

**Safe Living at School**
Coronet Instructional Films
10 min sd
$45 color $90
New York, New York
1948

We go on a safety tour to see the safety features of a school and to learn what students can do at school to live safely.

**Playground Safety**
Coronet Instructional Films
10 min sd
$45 color $90
New York, New York
1948

Implants the basic safety rules of the playground by vividly contrasting the fun of the safe play space with the painful consequences of the unsafe.

5. Investigate the local traffic and equipment regulations for bicycles. Check the bicycles around the building to find out the extent to which the equipment conforms to the regulations.

6. Interview the school engineer to find out how the school is designed and equipped for fire safety. What inspections are made? What are the fire safety laws and regulations for schools?

7. Invite a representative from the local fire department to give a demonstration on fire fighting. Examine the different types of fire extinguishers and learn how they are operated.

8. Practice fire drills and security drills.

V. Orienting Students to Effective Study

A. Study Habits

*1. On a time chart record how several members of the class
spend their time from the close of school until bedtime. Criticise the records and suggest how they might be improved.

(1), (2), (3), (7), (8), (53)

2. Evaluate the study habits of various members of the class. Prepare a leaflet on "How to Study."

3. See the films

<table>
<thead>
<tr>
<th>How to Study</th>
<th>Coronet Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 min sd</td>
<td>Chicago, Illinois</td>
</tr>
<tr>
<td>$50 color $100</td>
<td>1946</td>
</tr>
</tbody>
</table>

Designed to motivate better study habits and give practical hints on study techniques. Shows how study is made more pleasant and profitable through cultivation of proper techniques.

B. Reading

1. Ask the English teacher to give advice on how to read for different purposes.

2. See the films:

<table>
<thead>
<tr>
<th>How to Read a Book</th>
<th>Coronet Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 min sd</td>
<td>Chicago, Illinois</td>
</tr>
<tr>
<td>$50 color $100</td>
<td>1947</td>
</tr>
</tbody>
</table>

Concerned with the selection of a book. Emphasizes such questions as: What information do we need? What questions do we want to answer? What does the book offer that will contribute to our knowledge and understanding?

<table>
<thead>
<tr>
<th>Improve Your Reading</th>
<th>Coronet Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 min sd</td>
<td>Chicago, Illinois</td>
</tr>
<tr>
<td>$50 color $100</td>
<td>1947</td>
</tr>
</tbody>
</table>

Offers many suggestions for improving rate of reading and comprehension. Careful attention is given to those students with problems such as narrow eye perception span and reading too rapidly for comprehension.
C. Writing

1. Invite the English teacher to talk on common errors in writing and how they may be avoided.

2. See the filmstrip:

How to Write: The Four Uses of Words Society for Visual Education, Inc.
42 fr si with text Chicago, Illinois 1950
$5

Points out how the four uses of words— to inform, to systematise, to incite, and to evaluate— can be used most effectively in writing.
SELECTED BIBLIOGRAPHY


PROBLEMS OF SELF-UNDERSTANDING
PROBLEMS OF SELF-UNDERSTANDING

Adolescents often have little understanding of the emotions, feelings, and attitudes which have developed during childhood. Nevertheless, these emotions, feelings, and attitudes govern and control their ideas and actions. Adolescents are subject to many stresses and strains; they feel themselves impelled by new factors of internal development and are confronted, for the first time, by conflicting external demands. Many of them grow into adulthood troubled and unhappy because of unresolved conflicts and unsolved problems.

The school has a responsibility for helping students develop the competencies required for successful living and preparing them for those situations in which they have the greatest potentialities.

This unit is designed to help students learn to understand themselves and develop a sensitivity toward their competencies and limitations.
Objectives

To help students:

1. Study their physical, mental, social, and emotional development.
2. Realize the relationship of physical and mental health.
3. Discover personal abilities, interests, aptitudes, and understand how to make the best use of them.
4. Gain an insight into their assets and liabilities and what can be done about them.
5. Develop an understanding of the forces which shape individuals including the influence of friends, family, and others.
6. Develop tolerance of the wide variation in people.
7. Find out the relationship between their abilities and achievements.
8. Appraise their goals, ideals, and values.
9. Evaluate their achievement in various fields of knowledge.
10. Understand the essentials to living successfully with others.
11. Formulate constructive plans for improving their personalities in the light of what has been learned about themselves.

Scope

Understanding ourselves through:

I. Studying our growth and development
II. Discovering our abilities, interests, aptitudes, and personality traits
III. Studying our behavior
IV. Appraising our value-system
V. Evaluating our achievement
A. Prenatal Life and Heredity

1. See the film:

Reproduction among Mammals
Encyclopaedia Britannica Films, Inc. Wilmette, Illinois
11 min sd
$45 rent $2.50 1937

Presents the story of mammalian reproduction. Describes the development of sperms and eggs in the domestic pig, the fertilisation process, the stages of embryological development, nourishment of the embryo, and the process by which birth is accomplished. Offers a comparison between the development of human and pig embryos.

2. Visit a health museum and study the various stages in the development of the human embryo. As a follow up write a biography of an unborn child. Describe the changes that occur in the embryo month by month. Illustrate with diagrams.

3. Examine critically the following beliefs:

a. Birthmarks and deformities are caused by shocks suffered by the child's mother.
b. Tuberculosis can be inherited.
c. Boys resemble their mothers more than their fathers, while girls resemble their fathers more than their mothers.
d. Children of criminals tend to be criminals.
e. Bright people usually have dull children.
f. If cousins marry, their children will be feeble-minded.

(1), (2), (3), (4), (5), (7), (18), (20), (21), (22),
4. Discuss such questions as: What is meant by heredity? Why are people different from one another? Can mental ability be inherited? Musical ability? Can one pass to his child any of the accomplishments or improvements he has made in his life? Is sterilization of the feeble-minded advisable? Which is more important, heredity or environment?

5. See the film:

Heredity
11 min sd
$45 rent $2.50

Encyclopaedia Britannica Films, Inc. Wilmette, Illinois
1939

Shows the process of mitosis and meiosis in relation to the genes. The concept of chance combination of sperms and eggs is illustrated in a simple way. Genotypes and phenotypes are shown in all cases and their relationship is explained. Three kinds of one-unit characters are taken up, forms in cattle, coat color in guinea pigs and rough fur in guinea pigs.

6. Demonstrate blood typing and blood inheritance using students and parents as subjects for demonstration.

B. Infancy and Early Childhood

1. Visit a baby ward, nursery, or clinic to observe and study infants at various stages of growth and development.
2. Ask your parents about your problems during infancy; for example, problems of feeding, sleeping, health, and dress. Compare them with those reported by other members of the class. Discuss how such problems were handled. How should they be handled?

3. Invite the school physician or a psychiatrist to talk to the class on the topic "How to understand children."

4. Illustrate graphically:
   a. Average amount of sleep per day needed at various age levels.
   b. Average height of boys and girls from birth to maturity.
   c. Average weight of boys and girls from birth to maturity.

(1), (2), (3), (4), (7), (8), (20), (21), (22), (24),
(25), (27), (32), (33), (34), (47), (50), (51), (53)

5. See the films:

**Know Your Baby**
10 min sd color $2.50
National Film Board of Canada New York, New York 1947

Illustrates approved methods of care of the new baby. A home situation is shown where other children are present. The consideration and understanding necessary until the family adjusts itself to the demands of the newcomer are noted.

**How I Am Two**
30 min sd $42 rent $1.50
University of Wisconsin Bureau of Visual Instruction Madison, Wisconsin 1939

Deals with the average day of a normal two year old. Shows proper eating, sleeping, washing, and play habits.
Large Muscle Motor Skills

University of California Dept.
of Four Year-Olds

15 min s1
rent $1.50

1944

Berkeley, California

Individual sequences showing running, balancing, jumping, pedaling, pumping, kicking, throwing, catching and bouncing, hitting and punching, pushing and pulling, climbing, suspending own weight, tumbling, guiding a wagon, indicate the type and levels of large muscle skills that are characteristic of children of this age.

C. Childhood

1. Make a case study of your childhood and discuss it with the teacher or counselor. Following are some suggestive items: friends; relationships with parents, age mates, teachers and other adults; opportunities for making choices; significant questions; fears; interests; ambitions; ideals, heroes, prejudices; values; physical handicaps; and health.

2. Make a study of the role of the child's home in molding his attitudes toward life. How do the following factors affect children: divorce; separation; unemployment; death in the home; socio-economic standards; maternal over-protection or rejection; relations between brothers and sisters?

3. Collect some children's drawings and paintings. Try to understand them with the help of the art teacher.

4. Make drawings to illustrate some milestone along the way to growing up.

5. Invite a psychiatrist to talk on such topics as "Children's
Fears” or “Children’s Questions.”

6. See the films:

Helping the Child to Face the Don’ts
Encyclopaedia Britannica Films, Inc.
11 min sd Wilmette, Illinois
$45 rent $2.50 1948

Reveals how a young child meets a world of don’ts and how he reacts by conforming in his own distinctive ways—thus forming his own individual personality.

Helping the Child to Accept the Do’s
Encyclopaedia Britannica Films, Inc.
11 min sd Wilmette, Illinois
$45 rent $2.50 1948

Portrays the child learning to live in a world defined by the "do's" and explains how his personality is influenced by the extent to which they are accepted.

D. Adolescence

1. Prepare a checklist of problems of health and physical development that concern adolescents. Ask each member of the class to check those items that disturb him. The following list is suggestive: being underweight, being overweight, lack of muscular strength, lack of exercise, tiring quickly, frequent illnesses, frequent headaches, weak eyes, lack of appetite, improper diet, poor physique, poor complexion, frequent colds, poor teeth, too short, too tall, not enough sleep, speech handicaps, poor hearing. Discuss what should be done in each case.

2. Discuss physical changes and their concomitants in adolescent boys and girls.

3. Discuss sex problems such as the following: What causes
the seminal emission? What are the effects of masturbation? What about petting? How far should one go? What happens to bring about menstruation? What things should one know concerning this problem? How can one be cautious concerning sexual diseases?

4. See the film:

<table>
<thead>
<tr>
<th>Story of Menstruation</th>
<th>International Cellucotton</th>
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<tbody>
<tr>
<td>10 min sd color</td>
<td>Products Company,</td>
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<tr>
<td>loan</td>
<td>Chicago, Illinois</td>
</tr>
<tr>
<td></td>
<td>1947</td>
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</tbody>
</table>

Animated drawings and diagrams tell in a pleasant, direct, and scientific fashion the frank story of this natural phenomenon.

5. Invite a psychiatrist to speak to the class on "Problems of the Adolescent in the Family."

6. Prepare an opinionnaire on adolescent problems. What problems should adolescents be allowed to settle for themselves? Which should their families answer for them? Which should be a matter of agreement between adolescents and parents? The following items are suggestive: hour for being home at night; use of the family car; appropriate clothes; choice of friends; smoking; drinking; amount of spending money; choice of a vocation. Discuss responses of class members.

(1), (2), (6), (26), (46), (53)

7. See the film:

<table>
<thead>
<tr>
<th>You and Your Family</th>
<th>Association Films, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 min sd</td>
<td>New York, New York</td>
</tr>
<tr>
<td>$32.50 rent $2</td>
<td>1946</td>
</tr>
</tbody>
</table>
Presents typical family problems. What should a girl do when her family refuses to let her go out on a date? What happens when family members shirk their responsibilities at home?

8. As a group, work out a personality rating chart. The following items may be included: intelligence, cleanliness, health, dependability, cheerfulness, consideration of others, conversation, high moral standards. Members of the class can then evaluate themselves and plan a program of self-improvement based on their evaluations.

9. Ask each member of the class to make a list of habits which he likes in members of the opposite sex.

10. Determine to what extent you have social poise by answering such questions as the following:
   a. Do you feel at ease in introducing people?
   b. In general, is it difficult for you to carry on a conversation with persons of the opposite sex?
   c. Are you afraid lest you make a mistake at a social affair?
   d. Are there some members of your class whose competency and fearlessness in social affairs make you feel inferior and inadequate?
   e. To boys: Do you feel at ease in asking a girl to attend some social affair with you?
   f. To girls? Have you ever wanted to ask a boy to take you to a dance, but didn't?
11. Make a chart with a list of the endocrines down the left margin, and fill in columns headed position, secretion, normal function, results of excessive activity, results of insufficient activity.

12. Discuss the basic requirements of good personal hygiene. To what extent do you adhere to these principles in your daily life?

13. Ask each member of the class to describe two or three occasions in which he was frustrated. What fundamental drive was he expressing? What blocked him? What reaction did he make to the blocking? Were the blocks removed? How?

14. Ask each member of the class to list the situations that have caused him to become angry during the past week. What was his reaction? Was his reaction justifiable?

15. Discuss the extent to which emotions are necessary or useful in one's daily life.

16. Rate yourself as very strong, strong, average, weak, very weak in each of the following drives:3

<table>
<thead>
<tr>
<th>Social Drives</th>
<th>Emotional Drives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to make friends</td>
<td>Desire to overcome difficulties</td>
</tr>
<tr>
<td>&quot; follow a leader</td>
<td>&quot; defend oneself against blame</td>
</tr>
<tr>
<td>&quot; influence and control others</td>
<td>&quot; enjoy sensuous pleasures</td>
</tr>
<tr>
<td>&quot; protect the helpless</td>
<td>&quot; relax tension</td>
</tr>
<tr>
<td>&quot; seek protection</td>
<td>&quot; avoid shame and humiliation</td>
</tr>
<tr>
<td>&quot; seek praise</td>
<td></td>
</tr>
</tbody>
</table>

3 Luella Cole, Psychology of Adolescence, p. 117.
Social Drives (cont.)

Desire to attract and entertain others
Desire to seek thrills
Desire to surrender oneself
Desire to resist coercion
Desire to maintain privacy
Desire to oppose others
Desire to avoid danger
Desire to ignore inferiors

Desire to retain possession
Desire to seek sex objects
Desire to accumulate possessions

Emotional Drives (cont.)

Social Drives (cont.)

Desire to attract and entertain others
Desire to seek thrills
Desire to surrender oneself
Desire to resist coercion
Desire to maintain privacy
Desire to oppose others
Desire to avoid danger
Desire to ignore inferiors

Desire to retain possession
Desire to seek sex objects
Desire to accumulate possessions

Emotional Drives (cont.)

Intellectual Drives

Desire to acquire facts
Desire to think out explanations
Desire to organize and build
Desire to put things in order
Desire to work toward a goal
Desire to relate and interpret facts

Discuss: Should a bright student be kept back with students his own age or be allowed to go faster? Should a dull child be promoted every semester, regardless of his academic progress?

Prepare a list of problems of concern to adolescents. Check those which concern you, and discuss them with your teachers. The following items are suggestive: fear of school examinations; fear of automobile accidents and disease; worry over inadequate funds; concern over lack of ability; concern over getting a job; concern over loss of work by parents; fear of being sinful; fear of being led astray by bad companions.

Identify some of your problems by responding to a problem check list:

Consists of 330 troublesome problems which often face students in high school—problems of health, money, social life, relations with people, religion, studying, selecting courses, and the like.

II. Understanding Ourselves through Discovering Our Abilities, Interests, Aptitudes, and Personality Traits

A. Ability

1. List and discuss kinds of abilities; such as,
   a. Physical—muscular, strength, endurance, and coordination.
   b. Mental—memory, reasoning, imagination, and judgment.
   c. Social—getting along with people, leadership.
   d. Emotional—control of anger, fear, and jealousy.

Why do some students get better grades in school than others? Why do some learn a new game more quickly than others? Why are some elected to a class office almost every term while others never are?

2. Give the class a simple timed test in addition. Construct two graphs illustrating the results, one to show the time required and the second to show the score. Discuss the graphs in relation to the normal curve.

(1), (2), (6), (8), (20), (21), (22), (24), (25), (26), (27), (28), (29), (30), (32), (46), (47), (48), (53)

3. Discuss conditions which favor the development of abilities. Include some limitations or blocks to the development of potential abilities. How does environment promote or retard the development of abilities?
4. Give an oral report on the particular abilities of such well-known persons as: Franklin D. Roosevelt, Ludwig van Beethoven, Karl Marx, Helen Keller, Mohandas Gandhi, Woodrow Wilson, and Abraham Lincoln.

5. Ask three people who are employed whether they were interested in the kind of work they do before they got the job or whether interest and ability developed as a result of their work. Tabulate each pupil's findings and draw conclusions.

(1), (2), (3), (6), (7), (26), (45), (46), (47), (48), (50), (52), (53)

B. Interests

1. Discover your interests by taking tests such as:

   Strong Vocational Interest Blank. Stanford University, California, 1933-47.

   Provides scores for forty-seven specific occupations, including artist, psychologist, architect, physician, engineer, chemist, farmer, carpenter, accountant, musician, and others.


   Shows the student's standing in nine general areas of interest: mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical.


   Provides score of academic, technical, and commercial course preferences.
2. Make a survey of the interests of the class members in the following areas: games and sports; radio programs; reading; comics; movies; etc. To what extent does the school provide for the development of these interests? (1), (2), (6), (26), (46), (53)

3. Discuss such problems as the following: What is the value of interest to a person? What are some ways to develop an interest? What is the relation between interest and ability? Is interest a sufficient guide for choosing an occupation?

D. Aptitudes

1. Discover your aptitudes by taking tests such as:


Consists of seven parts: verbal reasoning; numerical ability; abstract reasoning; space relations; mechanical reasoning; clerical speed and accuracy; language usage. Stress abilities rather than ability as the basis for prediction and guidance.

**Minnesota Clerical Test.** The Psychological Corporation, New York, 1946.

Tests speed and accuracy in two types of performance—number checking and name checking.

**Test of Mechanical Comprehension.** The Psychological Corporation, New York, 1940-47.

Designed to measure understanding of a variety of mechanical and physical relationships. Physical principles are illustrated, usually by two drawings.
2. List experiences you have had which illustrate the importance of adjusting to and understanding other people. What bearing does understanding other people have on one's personal success? What can one do to increase his understanding of other people? Why is it sometimes difficult to understand other people?

3. Give a series of sociodramas portraying the adjustment of the individual in various group situations. Why are some individuals able to adjust so easily? Why are some individuals "blocked" in a group situation?

4. List names of successful people who found their life's work through hobbies or some form of recreation.

5. Make a list of things to be done in preparing for various fields of work. How does physical education, English, mathematics, or any high school course prepare one for a field of work? How should those who are undecided as to a field of work proceed in their career planning? When should a person choose a definite field of work?

6. Consider the difference in aptitude among members of the class, friends, and acquaintances. How can these differences be accounted for? Does environment affect one's aptitude? Are people merely victims of circumstances?

D. Personality Traits

1. Discuss factors affecting the development of personality; such as, environmental, cultural, physiological, physical,
intellectual, and psychological factors.

2. Analyze and appraise student accounts of:
   a. "My Most Embarrassing Moment"
   b. "My Finest Hour"
   c. "The Best Fun I Ever Had"

3. Invite a person of authority to lead a discussion on "Why People Lose Their Jobs."

4. Prepare a family history starting with great grandparents. Describe each one by listing personality characteristics. Determine what characteristics are predominant in the family. Make an inventory of your personal characteristics and trace their origin.

5. Invite a psychologist to discuss personality traits. How are desirable traits acquired? Is it possible for a person to realize and recognize his own personality defects? Is it desirable that students point out one another's faults and good points?

6. Discuss the importance of individual social needs; such as, social approval, sympathy, recognition, successful achievement, and the need to be needed. Why are these important for a well-balanced personality? What happens to a personality when one is isolated from society?

7. Write papers on: "What I Like about Myself"; "What I Like about Others"; "What I Dislike about Myself"; "What I Dislike about Others."

8. Take a social-adjustment inventory:
Washburne Social-Adjustment Inventory. World Book Company, Yonkers-on-Hudson, New York, 1940.

Purpose is to determine the degree of social and emotional adjustment of the individual. The score is designed to give a separate measure in each of six traits: happiness, alienation, sympathy, purpose, impulse-judgment, control.

III. Understanding Ourselves through Studying Our Behavior

A. Types of Behavior

1. List daily activities that are performed because of habit. Why were these habits formed? How were they formed? Discuss the following quotation: "Habits in their totality, make up the character of the individual; that is, they are the individual, as he appears to other people."

2. Formulate a list of desirable habits which the majority of students should have. Invite a psychologist to discuss the following questions: How can one form most efficiently, desirable habits? How can one break or destroy a "bad" habit which has become firmly fixed?

3. Discuss the behavior of a person who has difficulty in adjusting to the group, such as: a timid person; an irritable person; an over-sympathetic or "soft" individual as contrasted to the "hard-boiled" individual; a neurotic person, prone to self-pity; a meek, repentant person; a person with an inferiority complex; a person with a superiority complex; the self-satisfied emotional egotist.
4. List various fears of people; such as, darkness, lightning, and superstitions handed down from another generation. What is the influence of fear on one's behavior? What is meant by "freedom from fear?"

5. Give reports on the behavior of persons with abnormal intelligence; such as, idiots, imbeciles, morons, and geniuses.

6. Have a round table discussion of the effect of abnormal social and moral behavior on society. Does any abnormal behavior cause a person to become a social problem? Are all delinquents and criminals mentally deficient, emotionally unstable, degenerate, diseased, or psychotic? What are the major causes of crime and delinquency?

B. Standards of Behavior

1. List some of the basic human urges, and give a report to the class on the activities and behavior that man engages in to gain satisfaction.

2. Set up some criteria for evaluating behavior. How do you measure up to these standards?

3. Write a paper on one of the following subjects, showing how continual change in behavior standards are or are not being influenced: advertising, fashions, racial and religious intolerance, social work, militarism, religion, labor problems.
C. Controlling Our Behavior

1. **Analyze your habits of study.** Consider the motives and the incentives which initiate the learning process. Do you have fundamental motives for learning; such as, a desire for better living, protection, comfort, and approbation? Discuss the reasons for coming to school, carrying certain subjects in school, and studying these subjects.

2. **Formulate a set of guides to students for developing better self-control and more effective study habits.**

3. **Discuss problems of individual adjustment in the home and community.** Why do some high school students suddenly feel that their parents are "frightfully crude" and "quaint?" Why is it necessary that courtesy and good manners be integrated into habitual patterns of behavior? What form should one's behavior take if he is in doubt as to the proper social conduct? In what ways should self-control be exercised?

4. **List and briefly describe requisites and hindrances to friendship.** Include such points as mental control and self-discipline.

5. **Report to the class on reading that has affected your behavior.** This might include books, editorials, newspapers, and magazines. What articles do you buy because of advertising? In political campaigns, which do you
think has the greatest influence on the voter: the candidate, the party platform or the record and traditions of the party itself? Do you think the press should be censored in war time?

6. Examine critically the following maxims which express different aspects of the principle of reciprocal behavior:
   a. The only way to have a friend is to be one.
   b. If you can't say good about people, say nothing.
   c. Live and let live.
   d. To err is human; to forgive is divine.
   e. Judge not that ye be not judged.
   f. A good deed is never lost. He who sows courtesy reaps friendship, and he who plants kindness gathers love.

V. Understanding Ourselves through Appraising Our Value System

A. Friendship and Family Relations

1. Define specific problems in this area. Suggest possible courses of action and reasons to support them. The following is illustrative:

Alice has been invited to a party of school friends. Her parents have told her that if she goes to the party she must be home at ten o'clock. Alice thinks this is too

early. Check the course of action you think should be taken in this situation. Also check the reasons to support the course of action you have selected.

Courses of action:

a. Alice should go to the party and return when the party is over.
b. Alice should go to the party and return at ten o'clock.
c. Alice and her parents should talk the situation over and together they should determine the time she should return.
d. Alice should stay at home rather than break up the party.

Reasons:

a. Alice should not argue the question but meet the situation the next day after the party is over and take the consequences.
b. Alice should be obedient to her parents.
c. Alice should respect and learn to rely upon her parents' judgment.
d. Alice should not cause a dispute at home or be made to meet conditions she does not want to accept.
e. Both Alice and her parents should "give in" a little and come to an understanding about the time Alice is to be in.
f. Parents and children together should discuss situations which arise in the family and try to work them out in a way which is satisfactory to all.

2. See the films:

**Alice Adams**
excerpt (money sequence)  
Teaching Film Custodian  
New York, New York  
15 min sd  
apply

Family problems grow out of father's lack of financial success. His daughter's sensitiveness to appearance leads her into exaggeration and fantasy in her relationship with a young man. The mother blames her husband for the fact that the daughter is handicapped socially.

**Families First**  
New York State Department of Commerce Film Library  
17 min sd  
rent $3  
Available on loan in New York State.

By a sequence of everyday episodes in the lives of two contrasting families this film demonstrates the causes of tensions, frustrations, and anti-social attitudes, likewise with opposite end result of affection, achievement and harmonious personality adjustment.

B. Social Issues

1. Take the following tests:

**Test on Beliefs on Social Issues.** (Form 4.21-4.31). Evaluation in the Eight Year Study, American Education Fellowship, Chicago, 1939.

Consists of 200 statements, classified under the following areas of issues: democracy, economic relations, labor and unemployment, race, nationalism, and militarism.

**Beliefs about School Life.** (Form 4.6). Evaluation in the Eight Year Study, American Education Fellowship, Chicago, 1939.

Consists of 118 statements, classified under the following areas of issues: school government, curriculum, grades and awards, school spirit, pupil-teacher relations, and group life.
2. Summarize and discuss the reactions of the class to the following issues:
   a. No matter what a teacher does, he should always be obeyed.
   b. It is a good idea for pupils to make their own rules.
   c. Pupils should be encouraged to advance and discuss opinions differing from those of the teacher.
   d. A good citizen should not criticize his government but support it whether it is right or wrong.
   e. People who have ideas about changing our government should have freedom to say so.

3. Have a panel discussion on "Resolving Conflicts Created by Differences in the Patterns of Youth and the Mores of the Past Generation." Invite parents and community members to participate.

4. Debate: Resolved, that everyone should contribute to some charitable organization.

Understanding Ourselves through Evaluating Our Achievements

A. General Culture

1. Take the following tests:


   Measures achievement in six areas: current social problems, history and social studies, literature, science, fine arts, mathematics.

Consists of nine subtests. The first four subtests deal with principles and relationships in the social studies, the natural sciences, the mechanics of writing and problem solving. The next three subtests are reading tests, designed to measure interpretative ability for social studies, scientific, and literary content. The eighth subtest is a general vocabulary test. The last subtest is designed to measure functional familiarity with a number of common reference and source materials.

B. Current Affairs

1. Have a news-quiz program based on questions submitted by members of the class.

2. Take the Time quiz on current affairs.

3. Construct tests that will determine the factual knowledge of the students in the class relative to current affairs.

4. Take the following test:


Consists of 116 multiple-choice items on social, economic, political, military, scientific, technical, and medical developments. Not a test of current events but rather of more fundamental developments and trends.

C. Skills

1. Take the following tests:


   Intended to measure certain of the skills involved in reading, work-study, language, and arithmetic.

   Psychological Corporation General Clerical Test. Psychological Corporation, New York, 1944.
Consists of nine parts involving identification of errors in a copy of original material, identification of errors in an arithmetical table, alphabetizing, arithmetic computation, arithmetic reasoning, spelling, reading, vocabulary and grammar.
SELECTED BIBLIOGRAPHY


PROBLEMS OF DEVELOPING VALUES AND BELIEFS
Problem Area 3

PROBLEMS OF DEVELOPING VALUES AND BELIEFS

In a world of conflicting ideals, beliefs and practices, situations frequently occur in which choice must be made among alternative courses of action. The problem of making choices is influenced by values which motivate human action, affect decisions, and result in the doing of one thing rather than another.

The clarification of values presents little difficulty to the educator in the totalitarian country, since ideals and standards of conduct are absolute. But in a democracy where every individual decides his own way of action it is important that no problems, no creed, and no system of belief be walled off and kept isolated from thorough study, analysis, and evaluation. Within limits of their maturity, students should be encouraged to formulate their own outlook on life, scrutinize it, and reconstruct it as new evidence accumulates.

It is the role of the school to help students in their process of finding, developing, and refining their values rather than to determine their beliefs and patterns of conduct. The school should stress methods and techniques of resolving differences of opinion and arrange for the widest possible participation of the persons involved. In this way the school contributes effectively to the integration of American life.
Objectives

To help students:

1. Explore the various sources of values.

2. Become aware of the way they have acquired their beliefs, prejudices, superstitions, and other ideas.

3. Learn how to judge the relative value of alternative courses of action that are proposed to solve the problems arising within their day-by-day life.

4. Use the method of intelligence as a guide for selecting values and establishing beliefs.

5. Understand the impact of culture on values.

6. Become aware of the conflicting values in American culture.

7. Develop an open-minded attitude toward those who hold different values from one's own, or from those of the group with which one is identified.

8. Work toward developing a satisfactory world picture and a workable philosophy of life.

Scope

Studying problems of developing values and beliefs in the area of:

1. Personal living

II. Personal-social relationships

II. Social-civic-economic relationships
I. Studying Problems of Developing Values and Beliefs in the Area of Personal Living

A. Religion

1. Invite representatives from different churches in the community as well as natives of other countries to talk to the class about their religious beliefs and customs.

2. Plan a panel discussion on one or more of the following problems:

   a. Do people need religious guardianship in order to become moral?
   b. Does human subservience to mystical, superhuman authority retard the progress of civilization?
   c. What should one do about the so-called conflict between science and religion?

3. Make a case study of your religious beliefs noting their source, changes that have occurred in them, and the effect they have upon behavior.

4. Arrange displays of:

   a. Pictures of places of worship of various religions.
   b. Posters showing percentages of world population adhering to leading religions.
(1), (2), (3), (4), (7), (8), (9), (11), (12), (13),
(14), (15), (16), (17), (18), (26), (50), (51), (52),
(53)

c. Biographies of great men of various religious
beliefs.

5. See the films:

One God
Associated Films
37 min sd
New York, New York
rent $10
1949

Presents objectively the forms of worship of the three
major religious faiths in our country—Jewish, Roman
Catholic, and Protestant.

God of the Atom
Moody Bible Institute
50 min sd
Chicago, Illinois
color $200 loan
1947

Presents the Christian approach to atomic bomb problems,
with simple, scientific explanations of atomic energy.

B. Morality and Ethics

1. Make a list of moral values that would serve as a guide
to behavior in a democratic society.

2. Invite a lawyer to talk to the class on the relation of
law and personal ethics. Discuss standards for ethical
conduct and regard for the rights and property of others.

3. Choose a vocation in which you are interested and report
to the class on ethical codes relative to the individuals
working in that field.

4. Make a list of common practices which have to do with
standards of right and wrong. Analyze each one as to its
real basis. Is it a custom? Is it a part of our culture?
Is it reasonable?

5. Discuss such problems as:
   a. Is it immoral to make mentally or physically unfit humans sterile?
   b. Is it immoral to dance, drink, or smoke?
   c. Is it right to forbid the giving of information on how to prevent conception?
   d. Are moral codes absolute?

6. See the films:

   **Honesty Is the Best Policy**
   Religious Film Association, Inc. New York, New York
   10 min sd rent $1.50 1940

   Presents a life situation in which, through a coincidence, the integrity of an individual becomes a matter of question. It is a dramatic story of a young man who finds a wallet.

   **Behind the Criminal**
   Teaching Film Custodians Inc. New York, New York
   21 min sd apply

   A district attorney convicts an unscrupulous lawyer for his protection of a guilty criminal.

C. Scientific Method as Basis for Belief

1. Collect superstitions and make plans for testing some of them. For example, to test the belief that a person will have bad luck if he breaks a mirror, each member of the class might keep a record of his good and bad luck a week before and a week after breaking a mirror and compare both.

   (26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

2. Prepare a bulletin board display contrasting some superstitions and unfounded beliefs with scientific beliefs.
The following plan is suggestive:

**SUPERSTITIONS SAY** but **SCIENCE SAYS**

Diseases are caused by evil spirits. ———— Diseases are caused by certain micro-organisms.

——— ———— ———— ———— ————

——— ———— ———— ———— ————

——— ———— ———— ———— ————

**#5.** Discuss the nature of the scientific method of solving problems. What skills and attitudes are necessary for being scientific?

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

**#4.** Examine critically the following beliefs. Which of them are based on misconception? Superstition? Tradition? Fact? External authority?

a. Milk and fruit juice taken together will upset the stomach.

b. All life has evolved from simpler forms.

c. Walking under a ladder brings bad luck.

d. The most proper occupation for a woman is that of housewife and mother.

e. It is not knowledge but faith that we need to solve our most serious problems.

Follow up by analyzing the steps used in solving each problem.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)
5. Collect a number of advertisements from newspapers and magazines about some particular product such as a medicine for curing colds. Suggest several ways by which the claims made for the medicine can be tested. For example: asking a doctor, the school nurse, the druggist, members of the class who have used it; writing to the American Medical Association; consulting the several non-profit consumer advisory organizations; writing to the company for evidence; testimonials; medical opinion; and other published material. Decide which of these approaches are feasible and which are likely to provide reliable information. Volunteer groups can collect the various kinds of data, evaluate their validity, compare them with other confirmatory and conflicting evidence, and draw valid conclusions.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

6. Set up a series of exercises that are designed to evaluate scientific attitude and ask members of the class to react to them. The following is illustrative: Some people believe that if a bird happens to fly into the house through an open door or window that a death is certain to occur in the family unless something is done to thwart the superstition's influence. Which of the following statements do you think would most nearly repre-
sent the reactions of a person who thinks scientifically?

a. There is probably no foundation for the belief.
b. For some people the belief is probably well founded.
c. The belief is silly.
d. There can be little doubt that the belief is well founded.
e. While I do not believe in this, yet I am disturbed when a bird flies into the house.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

7. Science has always been and is still a challenge to all forms of authoritarianism. Support this statement by various illustrations. Refer to the following examples:

a. The world was created **versus** the world was evolved.
b. The earth does not move **versus** the earth moves.
c. The earth is flat **versus** the earth is spherical.
d. The earth is the center of the universe **versus** the earth is only one of several planets which revolves about the sun.

8. Plan a panel discussion on the problem, "Is Scientific Method Applicable to the Field of Morality and Values?"

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)
II. Studying Problems of Developing Values and Beliefs in the Area of Personal-Social Relationships

A. Friendship and Family Relationships

1. Define specific problems in this area. Suggest possible courses of action and reasons to support them. The following is illustrative:

Alice has been invited to a party of school friends. Her parents have told her that if she goes to the party she must be home at ten o'clock. Alice thinks this is too early. Courses of action:

a. Alice should go to the party and return when the party is over.

b. Alice should go to the party and return at ten o'clock.

c. Alice and her parents should talk the situation over and together they should determine the time she should return.

d. Alice should stay at home rather than break up the party.

Reasons:

a. Alice should not argue the question but meet the situation the next day after the party is over and take the consequences.

b. Alice should be obedient to her parents.

c. Alice should respect and learn to rely upon her parents' judgment.

d. Alice should not cause a dispute at home or be made to meet conditions she does not want to accept.

e. Both Alice and her parents should "give in" a little and come to an understanding about the time Alice is to be in.

f. Parents and children together should discuss situations which arise in the family and try to work them out in a way which is satisfactory to all.

2. See the films:

Alice Adams excerpt Teaching Film Custodian
15 min sd New York, New York
apply

Family problems grow out of father's lack of financial success. His daughter's sensitiveness to appearance leads her into exaggeration and fantasy in her relationship with a young man. The mother blames her husband for the fact that the daughter is handicapped socially.

Family First rent $3 loan in New York State
New York State Department of Commerce, Film Library
17 min sd

By a sequence of everyday episodes in the lives of two contrasting families this film demonstrates the causes of tensions, frustrations, and anti-social attitudes, likewise the opposite and results of affection, achievement, and harmonious personality adjustment.

You and Your Friends Association Films, Inc.
7 min sd New York, New York
$40 rent $3 1946
Scenes from a teen-age party contrast friendly cooperation with self-centered bad manners. Emphasizes those qualities people need if they wish to be, and to have, friends—loyalty, dependability, courtesy.

3. Identify some of the viewpoints of adolescent boys and girls which may be in conflict with those of their parents. What are some of the reasons underlying these differences? How may such conflicts be resolved?

4. Write your personal belief, your parents' belief, and the community's belief on the question: Is it proper for a high school student to smoke? Is there any conflict between beliefs? How may such conflicts be resolved?

5. Interview your parents and report their opinions on questions such as the following: What are the chief mistakes of young people today? What ideals would you recommend for modern youth? Compile results for the class and determine which criticisms were mentioned most frequently. Discuss whether the criticisms are justifiable and make recommendations as to what should be done about them.

(1), (2), (3), (4), (6), (18), (26), (29), (46), (47), (48), (50), (51), (52), (53)

B. Sex, Courtship, and Marriage

1. Invite various authorities such as a physician, psychiatrist, priest, minister, or parents to discuss problems presented by the class on sex, courtship, and marriage.
2. Compile some of the widespread beliefs among students and indicate whether you agree, disagree, or are uncertain.

For example: Monogomy is the only moral marriage arrange­ment. It is not proper for a woman to take the initiative in matters of courtship. Women should follow higher moral standards than men.

3. Collect evidence to prove or disprove the following beliefs:
   a. Women are the "inferior sex."
   b. Children issuing from cousin marriages are likely to be defective.
   c. It is possible for a woman to birthmark her child.

4. Set up hypothetical problem situations that involve choice between alternative values and ask members of the class to react to them. Following is an illustration:

Helen is engaged to marry a fine young man. When she learns that his aunt has been committed to a mental insti­tution, she hesitates to marry him lest her children be feeble-minded. What advice would you give her?

5. See the film:

*Men in White*  
15 min sd  
Teaching Film Custodians, Inc.  
New York, New York

The problems here emphasized are: the choice between marriage and professional training; whether or not a wife should aid in her husband's support while he studies; and whether or not people of widely differing backgrounds should marry.
III. Studying Problems of Developing Values and Beliefs in Area of Social-Civic-Economic Relationships

A. America’s Value-System

1. Discuss the major ideals of American democracy. Compare them with those of other social philosophies. To what extent are public schools effective in teaching these ideals?

2. Compile a list of contradictory values and beliefs about economic, political, educational, and social questions. Get a number of persons to respond to your list by indicating the statements with which they disagree. Study their responses to ascertain the extent to which the respondents accept contradictory values. Following are some examples:

   a. Democracy, as discovered and perfected by the American people, is the ultimate form of living together. All men are created free and equal and the United States has made this fact a living reality.

      But: You would never get anywhere, of course, if you constantly left things to popular vote. No business could be run that way, and of course, no businessman would tolerate it.

   b. Honesty is the best policy.

      But: Business is business, and a businessman would
be a failure if he did not cover his hand.

c. Women are the finest of God's creation.
   But: Women are not very practical and are usually inferior to men in reasoning power and general ability.

d. Patriotism and public service are fine things.
   But: Of course, a man has to look out for himself.

e. No man deserves to have what he hasn't worked for.
   It demoralizes him to do so.
   But: You can't let people starve.

3. See the films:

Respect the Law
20 min sd
Teaching Film Custodians Inc.
New York, New York
apply

A case is dramatized in which failure to respect the law places the burden of one man's selfishness and shoulders of an entire community.

Fury
14 min sd
Teaching Film Custodians Inc.
New York, New York
apply

Deals with wholesale perjury by members of a community in an attempt to protect twenty-two of its members indicted for murder and lynching.

4. Get the reaction of members of the class on controversial beliefs, such as answering the following statements with Agree, Disagree, or Do not know.

   a. No matter what a teacher does, he should always be obeyed.

   b. It is a good idea for pupils to make their own rules.

   c. Pupils should be encouraged to advance and discuss
opinions differing from those of the teacher.

d. A good citizen should not criticize his government but support it whether it is right or wrong.
e. People who have ideas about changing our government should have the freedom to say so.

(1), (2), (3), (4), (6), (18), (26), (46), (48), (50), (51), (52), (53)

5. Discuss the effects of confusions in the value-system in America upon personality, social structure, and national unity.

6. Discuss the sociological factors disturbing the value system in America. Consider such factors as: decline of community life, impact of communication, transportation, and social mobility.

B. Social Class

1. Discuss beliefs such as the following:

   a. The lower classes have innate defects or they would have made good.

   b. The children of the upper classes should be given a liberal education.

2. What evidence is there to support the belief that in America there is a class system? What are the effects of social stratification upon the personality of individuals? Upon social unity? Are there differences in the values held by different social classes?
C. Nationalism and Patriotism

1. Examine critically the following beliefs:
   a. Our particular pattern of institutions (i.e., Christian religion, parliamentary democracy, capitalistic economy, monogamy) is the best pattern ever devised, and would be good for every other nation if they would only try it.
   b. The flag is sacred.
   c. Our Constitution is sacred, and any attack upon it can properly be regarded as treason.
   d. The American people have more initiative, ambition, and energy than the people of other countries.
   e. Americans are more moral in respect to sex than most other people of the world.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

2. Debate: Resolved, that the best way to preserve the peace is for the United States to remain the strongest military nation in the world.

D. Race and Minority Group Relations

1. Collect evidence to prove or disprove the following beliefs:
   a. The essential difference between races resides in differences in the quality of the blood.
   b. The Anglo-Saxon stock is superior to all other racial groups.
c. Certain racial or cultural groups have distinctive personality characteristics which are transmitted through inheritance.

d. If a white and a Negro marry, the children will be Negro.

e. Negroes are naturally gifted in music and dancing. (26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

2. Plan a panel to discuss the problem "What should be our attitude toward racial and minority groups?"

3. See the film:

   **Boundary Lines**
   International Film Foundation, Inc., New York, New York
   10 min sd color $90 1947

   A plea to eliminate the arbitrary boundary lines which divide people from each other as individuals and as nations, invisible boundary lines of color, origin, wealth, and religion

E. Economics

1. Discuss: What kind of an economic system is best suited to our democratic culture?

2. Examine critically the following beliefs:

   a. As time goes on, our economic system will inevitably become more socialistic no matter which political party is in power.

   b. Free competition ensures maximum efficiency in industry.

   c. New inventions ensure maximum efficiency in industry.
d. High tariffs generally result in higher profits, higher wages, and a higher level of employment.

e. Business tends to be more efficient when placed on a cooperative instead of a competitive basis.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)
SELECTED BIBLIOGRAPHY


"Values and Ideals," Educational Leadership, VIII (May, 1951), 458-520.

PROBLEMS OF SOCIAL RELATIONSHIPS IN A DEMOCRACY
Problem Area 4

PROBLEMS OF SOCIAL RELATIONSHIPS
IN A DEMOCRACY

We are living in a time of rapid change and bewildering social problems. These problems arise from the rapid march of new inventions, scientific discoveries, and improved techniques which outdistance the slow changes in social institutions and popular attitudes.

An enlightened citizenry with an understanding of the implications of social problems which confront individuals, families, communities, nations, and the processes through which intelligent action may enhance the common welfare, is of first importance in a democracy.

This unit is designed to help students broaden their view of social problems and help them participate in the American democratic society.
Objectives

To help students:

1. Study the social effects of scientific and technological advances on society.
2. Recognize conflicts of value which underlie social decisions.
3. Realize the importance of scientific planning for social change.
4. Become sensitive to areas in which social change is desirable.
5. Understand the role of pressure groups in social conflicts.
6. Participate effectively in activities of social significance in the community.
7. Broaden their concepts of the structure and importance of social institutions.
8. Understand how social problems may be solved through the use of the method of intelligence.

Scope

Studying problems of social relationships in a democracy at the:

I. Community level

II. National level
1. **Studying Problems of Social Relationships in a Democracy at the Community Level**

A. Juvenile Delinquency and Crime

1. **Make a study of juvenile delinquency in the community.**

   - What age group includes the most frequent offenders?
   - What types of delinquency are most prevalent? What does the trend of juvenile delinquency indicate as to its probable causes? Make recommendations for a preventive program.

   (1), (2), (3), (7), (18), (20), (21), (22), (24), (25), (26), (29), (36), (46), (48), (50), (51), (52), (53)

2. **Have a panel discussion on "Delinquency--a community problem."**

3. **See the films:**

   - **Boy in Court**
     - 12 min sd
     - $25 rent $2
     - National Probation and Parole Assoc., New York, New York
     - 1940

   Shows in detail the workings of a juvenile court when a boy is brought before it.

   - **Children in Trouble**
     - 10 min sd
     - $25 rent $2
     - New York State Dept. of Commerce, Film Library, Albany, New York
     - 1947

   Opens with a graphic account of the seriousness and cost of juvenile delinquency and crime. Continues with a vivid portrayal of the causes of crime and concludes with a unique presentation of effective methods of prevention.

4. **Invite a juvenile court judge to talk to the class on the legal and social differences between juvenile delinquency and adult criminality.**
5. See the films:

**Challenge to Crime**

Association Films, Inc.
11 min sd
rent $1.50

Describes a common-sense way to help rid any community of juvenile delinquency which has flourished under wartime social conditions.

6. Make a graph showing the frequency of crime in the community during the last twenty years. What types of crime are increasing? decreasing? What reasons can you suggest for the increase or decrease?

(1), (2), (3), (6), (7), (18), (20), (21), (22), (24), (25), (26), (33), (34), (36), (48), (50), (51), (52), (53)

7. Invite a judge from the criminal court to lead a discussion on the causes of crime and factors which have contributed to the rise of organized crime in the community.

8. Make a study of the criminal population—ages, races and nationalities, social classes, etc.—in the community. Compare these data with those for the nation.

(1), (2), (3), (4), (7), (8), (20), (21), (23), (24), (25), (26), (27), (47), (48), (50), (52), (53)

9. Invite a member of the police department to talk about the chief functions of the police department, major problems of police administration, and the recruiting and training of policemen.

10. See the films:
American Cop
March of Time Forum Films
18 min sd
New York, New York
$55
1947

New York city's police force is shown in training, on patrol, and coping with various emergencies. Dramatic climax to the film is the tracking down of a murderer, using actual police methods and details taken from a real case.

They're Always Caught
Teaching Film Custodians Inc.
21 min sd
New York, New York

Illustrates a case in which a crime is solved by crime laboratory techniques.

11. Visit a reformatory or prison. Obtain data on the number of inmates, their offenses, provisions for their education and recreation, personnel, and facilities. As a follow up, discuss the effectiveness of present-day correction methods. What changes would you suggest?
(1), (2), (6), (26), (46), (53)

12. Work out a crime prevention program for your community. This might include law changes, changes in police administration and practices, improvement of housing conditions, creation of desirable recreational facilities.

B. Broken Families

1. Analyze reports of family welfare and counseling societies for data on the sources of broken homes. What are the most frequent sources of these breakdowns? Compare these data with those of ten years ago; twenty years ago. Are any trends apparent?
(1), (2), (3), (6), (7), (18), (20), (21), (22), (24),
2. Invite a case worker from a social agency in the community to describe several cases involving broken homes. What were the outstanding problems underlying the disorganization of these families? How were these problems dealt with?

3. Make a graph showing the present marital status (single, married, widowed, divorced, unknown) of persons in the United States fifteen years of age and over. Compare these statistics with those of 1890 and 1920. Approximately how many families in the United States are broken? Is the number increasing or decreasing? What reasons can you suggest for this?

4. Interview a judge of the Court of Domestic Relations to secure information concerning marriage and divorce laws in this state. What is the procedure for obtaining a marriage license? On what grounds are divorces granted? How many divorces were granted last year? How does this compare with the number granted during the last ten year period? Are the present marriage and divorce laws adequate? Discuss your findings with the class.
(1), (2), (3), (7), (20), (21), (22), (24), (25), (26), (48), (50), (52), (53)

5. Write to government agencies in neighboring states for information concerning marriage and divorce laws. Compare these and draw conclusions as to their relative merits.

6. Debate the question: Resolved, that a national marriage and divorce law should be passed.

7. See the films:

Marriage and Divorce
15 min sd
$55
March of Time Forum Films
New York, New York
1949

Courtship to Courthouse
15 min sd
apply
RKO Radio Pictures, Inc.
New York, New York
1948

Surveys the problems of broken homes and offers the opinions of many experts as to what should be done.

Shows the ease with which some states grant divorces and how impulsiveness and present day environment and living conditions are some of the contributing factors which lead to divorce. Further shows that our divorce problem is really a marriage problem and to solve one there must be an understanding of the other.

8. Invite a sociologist to discuss the effects of divorce upon the couple, their children, and society.

9. Make a survey of community services which contribute to problems of broken families. This may include such services as the family clinic, premarital and preparenthood courses in the community, and social and welfare agencies; their facilities, staff, and financial resources.
Compare findings with available information on conditions elsewhere.

10. Write a paper on the topic: "The Decline of the Family as a Social Institution."

C. Housing

1. Arrange for a tour through various districts in the community. Evaluate the houses in these districts in terms of previously defined minimum standards of housing. Discuss the effects of inadequate housing on the individual, the family, and society.

2. Conduct a survey in the community to find out the number of persons per room and the number of families per living unit. How many living units are vacant? Where are they located? Make recommendations to improve the situation.

3. Secure from the office of the city building inspector statistics on the following: number of houses recommended for condemnation, their location; number of houses without electricity, running water, indoor toilet, adequate heating. Compare these statistics with those of another city of similar size.

4. On a map of the city show areas restricted to industries, stores, apartments, and single residences. What are the
zoning restrictions in the community? What is their purpose?

5. On maps of the community show the areas of greatest crime, juvenile delinquency, infant mortality, disease, and family disorganization.

(1), (2), (3), (6), (7), (18), (26), (32), (46), (48), (50), (51), (52), (53)

6. Discuss the question: "Does the slum make the slum-dweller, or does the slum-dweller make the slum?"

7. See the films:

<table>
<thead>
<tr>
<th>Title</th>
<th>Duration</th>
<th>Distributor</th>
<th>Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenge of Housing</td>
<td>10 min sd</td>
<td>Brandon Films Inc.</td>
<td>$25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New York, New York</td>
<td>rent $1.25</td>
</tr>
</tbody>
</table>

A brief survey of the causes and effects of present housing conditions and an indication of attempts being made to provide adequate homes. Emphasizes need for a planned attack on the housing shortage.

<table>
<thead>
<tr>
<th>Title</th>
<th>Duration</th>
<th>Distributor</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Place Like Home</td>
<td>16 min sd</td>
<td>RKO Radio Pictures Inc.</td>
<td>1948</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New York, New York</td>
<td></td>
</tr>
</tbody>
</table>

Presents one of the most serious problems facing America today, the housing shortage. Shows the operation of the black market, the bribes, the frantic search to find a permanent house when there are not enough houses to go around.

8. Invite a member of the local planning commission to talk about plans for attacking the housing shortage in the community.

9. Plan a model community. Make a display of the drawings or models constructed by the various members of the class.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14),
10. See the films:

**The City**

30 min sd

Museum of Modern Art Film Library, New York, New York

$65 rent $4.50

A survey of the problem of planning community living in America, embodying the views of the American Institute of planners. The turmoil of the planless city and the color and spaciousness of the small planned community are contrasted.

11. Debate: Resolved, that the government should act to meet the housing needs of the lower income group.

12. Visit a government housing project in the community and report to the class.

D. Employment and Unemployment

1. Make a list of the hazardous occupations in the community. Arrange for members of the class to interview workers in these fields. Find out what risks each is exposed to. What is the accident or disease rate in these occupations? Which occupations are the most hazardous? What efforts are being made to control these occupational hazards?

(1), (2), (3), (4), (6), (7), (18), (20), (21), (23), (24), (25), (26), (46), (48), (50), (51), (52), (53)

2. Invite an industrial hygienist to lead a discussion on the principal industrial causes of disease. How do they differ from personal causes? How do they contribute to absence, inefficiency and labor turnover? What steps are being taken to eliminate the causes of these diseases?
3. Visit an industrial plant in the community. Ask the safety engineer to point out how plant conditions, condition of equipment, inspection, and guards on machines affect the accident rate. What is the accident rate in the plant?

(1), (2), (3), (6), (7), (18), (20), (21), (22), (23), (24), (25), (46), (48), (50), (51), (52), (53)

4. Trace the growth of workmen's compensation laws, discussing extent, coverage, and administration.

5. Make a graph showing the rate of unemployment in the United States from 1920 to 1950 at five year intervals. Compare with the rate in the community during the same period. Discuss the major causes of unemployment.

(1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (23), (24), (25), (26), (32), (33), (34), (46), (48), (50), (51), (52), (53)

6. See the film:

**Man and His Job**
Brandon Films Inc.
18 min sd
$50 rent $3
New York, New York
1943

Traces the problem of unemployment from the depression years of the twenties to the present time. It shows the rise and functioning of Unemployment Insurance.

7. Invite a case worker from a welfare agency to discuss the characteristics of the unemployed family. These might include: size of family; number of dependent children; family income.
8. Invite a sociologist to discuss unemployment from the standpoint of personal and family security.

9. Write a paper on how an individual can protect himself against economic insecurity.

10. Debate: Resolved, that the employment of women is adding to the unemployment of men.

Resolved, that recent technological changes in industry are creating new jobs faster than they are eliminating the old.

11. Make charts showing the major provisions of the following laws: Social Security; Fair Labor Standards Act; Minimum Wage Law for Women and Minors; Child Labor Laws.

12. See the films:

<table>
<thead>
<tr>
<th>Machine: Master or Slave</th>
<th>New York University Film Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 min sd</td>
<td>New York, New York</td>
</tr>
<tr>
<td>$75 rent $4</td>
<td>1941</td>
</tr>
</tbody>
</table>

Considers the problems that management faces in its approach to the human and financial factors involved in technological progress. To what extent can unemployment be relieved by seeking larger markets, by adjustment of prices, wages, and dividends? How can management coordinate its long-term self interest with the needs of the makers and the consumer?
E. Health

1. Make a survey of community health services. This might include: health department—organization and functions; medical and dental clinics, hospitals, district nurses, and various other agencies for promoting the health of citizens of the community; provisions for the regulation and control of community services such as milk and water supply, garbage and sewage disposal, food and restaurant inspection. Are community health needs being met? Compare findings with available information on conditions in other communities. Make recommendations for improvement.

2. See the films:

Your Health Department in Action
20 min sd
$50 rent $4

Samuel P. Orleans and Assoc., Inc. Knoxville, Tennessee

A discussion of the health protection needs of a community and how they are met. A complete statement of a well-rounded public health program with treatment given such subjects as the following—sources of sanitation problems; public baby clinics; laboratory analysis of milk; health inspection techniques at restaurants; soda fountains, and dairies; operation of public water works; community mobile trailer X-ray laboratory in action in the fight against tuberculosis; the campaign against venereal diseases.

Your Health Department
20 min sd
$70 rent $2.50

National Motion Picture Co. Mooresville, Indiana

1941

Shows the functioning of a modern health department and how it affects the lives of all.
3. Visit a local industrial plant and obtain data on absenteeism. What is the average loss of time per year per person because of illness? What is the direct cost of this illness?
(1), (2), (3), (4), (6), (7), (8), (26), (27), (47), (48), (49), (53)

4. Invite an industrial hygienist to discuss provisions for the protection of workers against health hazards. What is the role of government in industrial hygiene and safety?

5. Write a paper on illness as a cause and an effect of unemployment.

6. Make a chart showing the leading causes of death in the community. How do these compare with the leading causes of ten years ago? twenty years ago? How do you account for any changes that may have taken place?
(1), (2), (3), (6), (7), (26), (32), (46), (48), (50), (52), (53)

7. Invite a representative from the health department to talk to the class on the major health problems of the community. What progress has been made? How are health problems and goals changing?

8. Discuss the implications of these statements: "Nothing is safer than a chronic disease, if it be well cared for."
"An ignorant person is potentially a sick one; an informed person is always potentially a well one."
9. Invite a doctor to talk on the venereal diseases as a social problem. He might include problems such as:

- How prevalent are these diseases?
- What should be done to control these diseases?
- What agencies in the community are concerned with the problems of social hygiene?
- What are some of the damaging results to personal and family welfare which are products of these diseases?

10. See the film:

<table>
<thead>
<tr>
<th>Title</th>
<th>Duration</th>
<th>Production Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Drinkers</td>
<td>19 min</td>
<td>New York, New York</td>
</tr>
<tr>
<td>March of Time Forum Films</td>
<td>sd</td>
<td>1947</td>
</tr>
</tbody>
</table>

Depicts a man's downfall from "moderate" drinking to uncontrolled excess and how through Alcoholics Anonymous he regains his position in the world. It also shows the community's responsibility in treating an illness of this sort and it brings up the various other worthwhile efforts being made to remedy the disease.

11. Accompany a public health nurse as she makes visits in the community and report to the class on her contribution to safeguarding the health of the community.

12. Invite the director of adult education in the community to describe the program of health education. Is it adequate? How can health education be promoted?

13. Analyze community health regulations and practices with reference to the control of communicable diseases. Compare them with those of other communities. Suggest changes or additions that might increase their effectiveness.
II. Studying Problems of Social Relationships in a Democracy at the National Level

A. Crime

1. Make a graph showing the frequency of the various major crimes in the United States. How do these data compare with those for ten years ago? twenty years ago? How would you interpret these data?

(1), (2), (3), (6), (7), (18), (20), (21), (22), (24), (25), (26), (52), (33), (34), (36), (46), (48), (50), (51), (52), (53)

2. Make a bulletin board display of newspaper and magazine reports which describe who criminals are. Captions might include "Official Crime"; "Big Business"; "Military Crime"; "Racketeers"; "In the Name of Charity."

3. Compare the direct per capita cost of crime with the costs of such public agencies as education, public health, public recreation, and poor relief.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (27), (47), (48), (50), (51), (52), (53)

4. Have a round table discussion on the topic "Is our culture and its moral standards conducive to high crime rates?"

5. Make a study of the criminal population of the United States. Include such points as age, sex, intelligence, nativity, education, economic and social status. Draw conclusions concerning the characteristics of the criminal
population in general.
(1), (2), (3), (4), (7), (8), (18), (26), (27), (28),
(29), (47), (50), (51), (53)

6. See the films:

**Criminal Is Born**
Teaching Films Custodians, Inc.
20 min sd
New York, New York
rent $10

The film starts by explaining that most crimes in the
United States are committed by youth under 21 years of
age. A dramatization follows of the case of four boys
who turn to crime because their parents neglect them.
They are caught while making a hold-up and sentenced to
prison but the judge severely reproves the parents for
not adequately supervising their children.

**Dead End**
(Children sequence)
New York University Film Library
13 min
New York, New York
rent $1.50

Deals with boys' gangs and the social conditions that
lead to crime among young boys.

7. Make a map showing the geographical distribution of crime
in the United States. Include such crimes as criminal
homicide, kidnapping, assault, sex offenses, robbery,
gambling, drunkenness, and traffic violations. How do
you account for regional differences?
(1), (2), (3), (6), (7), (18), (26), (32), (46), (47),
(48), (50), (51), (52), (53)

8. Dramatize the ordinary procedure of a case from arrest to
final disposition.

9. Make a map showing the location, name, and type of federal
penal institutions in the United States.
10. Invite a lawyer to lead a discussion on the jury system. What are some of the defects in the conduct of jury trials? What are some of the suggested reforms in legal procedure? Attend a trial and report on this experience to the class.

11. See the films:

*Inside the FBI*  
Federal Bureau of Investigation  
10 min sd  
U. S. Department of Justice  
loan  
Washington, D. C.

Describes the workings of the FBI at its Washington headquarters; the work of the various departments, such as finger-printing, ballistics, and espionage.

*You Can't Get Away With It*  
Federal Bureau of Investigation  
26 min sd  
U. S. Department of Justice  
loan  
Washington, D. C.

The work of the FBI and its part in crime prevention and crime detection.

12. Report to the class on such topics as:

"Organized Crime in the United States"

"Scandals in College Athletics"

"Scientific Methods of Crime Prevention and Detection"

"The Social Costs of Criminality"

13. Discuss such questions as the following: Should newspapers give all the details of a crime? Should capital punishment be abolished?

14. Formulate a plan for attacking the problem of criminality. Include both the aspects of treatment and prevention.
B. Old Age

1. Make a chart showing the percentage of persons 65 years of age and over in the population at 10 year intervals since 1890. What trend is discernible? What are some of the major contributing factors?

(1), (2), (3), (4), (7), (8), (18), (20), (21), (22), (24), (25), (26), (32), (33), (36), (48), (50), (51), (52), (53)

2. Have a panel discussion on the major problems of old age. Include such problems as inadequate homes, physical or mental illness, unsatisfactory family relations, and employment.

3. Compare the social status of the aged in modern society with that under the patriarchal family organization.

4. Invite a sociologist to lead a discussion on the chief physical, mental, and social attributes of old age.

5. Write brief biographies of several individuals who have made outstanding contributions in their fields after reaching old age. For example: Mommsen, Oliver Wendell Holmes, Grandma Moses, John Dewey, and Washington Irving.

6. Compile a list of value conflicts concerning the aged person. The following are illustrative:

   a. He is considered young enough for some adult activities.

   But: He is considered too old for others.
b. He is expected to manage his own social affairs.  

**But:** He is often treated like a child by his own children and other associates.

c. He is expected to participate financially and personally in community and organizational affairs.  

**But:** He is criticized for accepting positions of leadership and others not giving young people a chance.

7. Investigate the occupational displacement of the aged.  

What is the hiring age of various firms in the community? What are some of the factors that contribute to the problem of occupational old age?  

(1), (2), (6), (7), (8), (26), (53)

8. Have a round table discussion on "The problems of the aged is a public responsibility."

9. Make a chart summarizing the provisions for old age benefits under the Social Security Act. What are the main objections to the current program for the security of the aged?

10. Propose social legislation which would contribute constructively to making a useful place for old people in modern society.

C. Population

1. Secure information pertaining to your family, such as number in family; number in family of father, mother, and
grandparents; birthplace of father, mother, and grandparents. Tabulate the results for the class. What do these data reveal concerning immigration and internal migration? What is the trend in family size?

1. (1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (24), (25), (26), (27), (28), (29), (33), (34), (36), (46), (47), (50), (51), (53)

2. Visit the local health department to inquire about the system of reporting vital statistics in the local community. What is the birthrate? the mortality rate? the chief cause of death? Compare these rates with those in other communities, the nation. Discuss the reasons responsible for whatever differences may be found.

1), (2), (3), (6), (7), (18), (20), (21), (23), (24), (25), (26), (46), (48), (50), (51), (52), (53)

3. On a map of the United States indicate population density in 1950 in each state or group of states. Where are the most densely populated areas? Where are the least densely populated areas? Compare with maps for 1890 and 1930. How do you account for any changes that may have occurred?

1), (2), (3), (6), (7), (18), (26), (32), (46), (48), (50), (51), (52), (53)
4. Make a graph comparing the birthrate in 1950 with that of 1940; 1930; 1920; 1890. What trend is discernible? What is the effect of this? What factors have contributed to this state of affairs?

(1), (2), (3), (6), (7), (18), (20), (21), (22), (23), (24), (25), (26), (32), (33), (34), (36), (46), (48), (50), (51), (52), (53)

5. Form committees to study various types of population movements— from farms to cities, from cities to farms and from cities to suburbs. Investigate the causes for the migration and its effect upon the migrants themselves, the communities they leave, and the communities to which they go.

6. Write to the Bureau of the Census, Department of Commerce, Washington, D. C. for information about its history and organization, the kinds of data it collects, and the uses made of census data. Examine several volumes of the reports on Population for the 1950 census.

7. Ask the superintendent of schools to tell the class how the school system takes account of population trends.

(1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (24), (25), (26), (33), (36), (46), (61), (53)

8. Trace the legislative restrictions upon immigration to the United States giving arguments for and against these restrictions. Upon what bases should such restrictions be set up?
9. On a map of the world show the unrestricted areas, the quota countries, and the barred zones as defined by United States immigration laws.

10. See the films:

- **Immigration**
  - Encyclopaedia Britannica Films, Inc., Wilmette, Ill.
  - 11 min sd
  - $45 rent $2.50
  - 1947

  Shows by photographs and animated maps how the United States became populated and why Europeans left the Old World for the New. Induction into full American citizenship is included.

- **The Camelton Story**
  - 20 min sd
  - $45 rent $2.50
  - San Francisco, California

  Show various attitudes of Americans in a New England town toward a group of European refugees who come there to live. Makes a plea against intolerance toward immigrants.

D. Poverty

*1. Make a graph showing the distribution of American families within various income groups. What is the total volume of poverty in our society? Compare this with twenty years ago; thirty years ago. Is a trend discernible? (1), (2), (3), (7), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36), (48), (50), (51), (52), (53)

2. Invite a representative from a poor-relief organization or social agency to talk to the class on the major causes of poverty.

*3. Make a study of the relation between poverty and ill health; poverty and birth and mortality rates; poverty
and crime.

(1), (2), (3), (4), (6), (7), (18), (20), (21), (23),
(24), (25), (26), (46), (51), (53)

4. See the film:

And So They Live
25 min sd
$95 rent $6
New York University Film Library
New York, New York
1940

Shows the tragic poverty of a southern community. Lack of proper diet, housing, and sanitation are shown.

5. Make a chart showing the major provisions of the Social Security Act.

6. See the film:

Social Security
10 min sd
Teaching Film Custodians, Inc.
New York, New York
apply

Interprets the operation of the Social Security Act from the time of its passage through its various steps to the final payment of checks to the beneficiaries.

7. Discuss the statement: "The greatest cause of poverty is poverty."

E. Health

1. Discuss the social significance of health. How can ill health and its results be both a social problem and a cause of social problems.

2. Secure data on the health of draftees as evidenced by pre-induction examinations. To what extent do these data give a picture of the health status of the nation?

(1), (2), (3), (4), (6), (7), (18), (20), (21), (22),
(24), (25), (26), (43), (45), (46), (50), (51), (52), (53)
3. Compare the chief killers of today with those of twenty years ago; fifty years ago. How do you account for any changes?

(1), (2), (3), (6), (7), (18), (26), (46), (48), (50), (51), (52), (53)

4. Illustrate graphically the average length of life in the United States at ten year intervals during the last fifty years. What trend is apparent? What social problems has this change in life expectancy created?

(1), (2), (3), (4), (7), (8), (18), (20), (21), (22), (24), (25), (26), (27), (32), (33), (34), (36), (47), (48), (50), (51), (52), (53)

5. Report on the work of organizations and institutions which promote public health; for example, the American Red Cross, The National Tuberculosis Association, The American Cancer Society, The American Public Health Association, National Committee for Mental Hygiene.

6. See the films:

**Health for Defense**
9 min sd
Teaching Film Custodians Inc.
New York, New York

After establishing certain facts concerning time lost through illness, as revealed through a Gallup poll, this film describes the programs of the National Health Institute and the U. S. Public Health Service.

**Capital Story**
20 min sd
Castle Films Div.,
United World Films Inc.
San Francisco, California

apply
An account of a single U. S. Public Health Service activity, namely, the work of industrial hygienists and analytical chemists in locating the cause of pulmonary anemia among welders.

7. Invite a narcotics agent to discuss the relation of the use of narcotics to crime and other social problems. How widespread is the use of drugs? What legislation controls the distribution of these drugs?

8. Have a panel discussion on alcoholism as a social problem.

9. Write to the Federal Trade Commission and the Food and Drug Administration for copies of the Wheeler-Lea Act and the most recent Federal Food, Drug, and Cosmetic Act. How are these regulations enforced? What changes or additions would you suggest?

10. Have a panel discussion on: "The major health problems of the United States."

11. Compare various plans for meeting the health needs of the nation. Make a chart showing the major provisions of each plan.

12. Debate: Resolved, that a program of socialized medicine should be adopted in the United States.
SELECTED BIBLIOGRAPHY


PROBLEMS OF EMPLOYMENT AND VOCATION
One of the most important decisions that one is called upon to make is the choice of a vocation. Choosing a career consists of more than determining a skill to be mastered as a means of earning a living; it involves selecting a way of life, the conditions under which one can be happy. Young people are entitled to know just what is implied in choosing a given type of work.

In the world of work there is always a demand for intelligent, educated, trained men and women who have good character, high standards of workmanship, lofty ideals of service, wholesome attitudes, harmonious industrial relations, and an understanding of economic problems.

This unit is designed to help young people develop an appreciation of the social significance of all work, and to understand that successful and satisfying careers are attained through wise planning, adequate preparation, and sustained effort.
Objectives

To help students:

1. Discover their interests, aptitudes, abilities, personality traits and understand how these are related to occupational adjustment.

2. Acquire some basic information about occupations in general, and about the job fields in which they are interested in particular.

3. Develop appropriate techniques for exploring opportunities in any job field.

4. Realize the importance of a wise selection of work in terms of life satisfaction and happiness.

5. Understand the social, political, and economic implications of vocational choice.

6. Develop an understanding of the problems of workers, employers, and their interrelationships.

7. Develop an understanding of interrelationships among occupations and the contribution of all forms of work to the welfare of society.

8. Understand and appreciate the dignity, satisfaction, and independence that employment brings.

9. Become aware of the vocational opportunities in the immediate and wider community.

Scope

Studying problems of employment and vocations through:

I. Exploring the world of work

II. Planning for job choice
I. Studying Problems of Employment and Vocations through Exploring the World of Work

A. Occupational Trends

1. Contrast employment practices and vocations of today with those of the period preceding the Industrial Revolution. What changes have occurred? How may such changes be accounted for?

2. List the occupations of the grandparents of all the members of the class; make another listing of the occupations of the parents. What changes have taken place? What changes might one predict for this generation?

3. Consult the United States Census Report or the Dictionary of Occupational Titles in order to find out the number and variety of occupations in the United States. Compare the number of occupations today with the number forty years ago. How many persons are employed in the major classes of occupations? How many were employed in the same occupations ten years ago? Twenty years ago?

(1), (2), (3), (6), (7), (18), (26), (46), (47), (48), (50), (51), (52), (53)

4. Survey the various occupations in your community grouping them under the following headings: agriculture, mining, industry, transportation, trade, public service, professional service, domestic and personal service, and
clerical work. Check the increase or decrease of the number of employees in each of the above occupations during the last twenty years. How do you account for the increase or decrease?

(1), (2), (3), (6), (7), (18), (20), (21), (22), (24), (25), (26), (36), (46), (48), (50), (51), (52), (53)

*5. Choose an occupation in which you are interested and report to the class on its past, present, and probable future. Include such points as salary, qualifications for employment, advantages and disadvantages.

(1), (2), (3), (4), (18), (20), (21), (22), (24), (25), (26), (27), (28), (29), (33), (36), (47), (48), (50), (51), (52), (53)

*6. List the occupations in your community which are predominately held by men and those which are held by women. Give possible reasons for the preferences. Are the number of jobs for women increasing or decreasing? Give reasons for this trend.

(1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (24), (25), (26), (36), (46), (48), (50), (51), (52), (53)

7. Interview persons representing a variety of occupations in the community. Ask them to contrast their work today with that of ten or twenty-five years ago. What trends can be noted in each of these occupations? What is the outlook for the future?
8. Make a display of new products whose manufacture has created occupations. How many persons are employed in each of the occupations represented?

9. Poll the class to find out the occupations in which there is greatest interest. Consider the following questions: What is likely to determine development, growth, and trends in each field? How would growth in each of these fields affect living and working conditions in your community? Discuss the implications which may result in future job possibilities in newer and widening vocations.

10. Report on the development, present status, and forms of labor unions in your community.

11. Survey the paid newspaper advertisement of employers in your area. Tabulate, compile, and chart into a job thermometer the weekly and monthly summaries. What occupational trends do these statistics reveal?

12. Invite a lawyer to trace legislative measures concerning employment from their beginnings to the present time.
He might include Social Security, old-age insurance, unemployment compensation, wage and hours laws, and Fair Labor Standards Act.

3. Job Opportunities

*1. Ask your father or a neighbor concerning job opportunities at his place of work. Include the number of new employees hired each year, the type of employees needed, salary offered, and the type of work to be done. (1), (2), (3), (4), (7), (8), (53)

*2. Analyze the want ads in one or more issues of the daily newspaper. List the types of jobs that seem to be available. Which are mentioned most often? least often? Which are not mentioned at all? How do you account for this? (1), (2), (3), (4), (6), (7), (18), (26), (46), (48), (50), (51), (52), (53)

3. Invite the managers of stores, factories, and small businesses in the community to serve on a panel to discuss the requirements and opportunities in their specific fields of work.

4. Write to various firms for pamphlets or other printed material containing information concerning employment opportunities. What opportunities are there for part-time employment?
5. See the films:

Your Life Work Vocational Guidance Films, Inc.
(Series) Des Moines, Iowa
400 ft 16 mm sd
$45 (each)

A series of films showing what a worker does in his occupation, what training is required, where it may be secured, and what are the possible rewards. Series includes films on agriculture, baking, church vocations, electrician, engineering, journalism, nursing, pharmacist, photography, plumbing, poultry raising, radio and television, welding, ...

6. See the filmstrips:

(Filmstrips on Occupations)
$2.50 (each) Vocational Guidance Films, Inc. Des Moines, Iowa

This group of filmstrips deals with single fields of work or industries. Each picture shows a worker performing typical tasks in his field. Vocational subjects available are: aircraft manufacturing occupations, aircraft operation occupations, cement manufacturing occupations, hotel occupations, optometry, osteopathy, printing industry occupations, railroad occupations, steel industry occupations, tree surgery.

7. Visit the local employment agency. What types of jobs are generally available? How many persons are placed each week?

(1), (2), (6), (46), (53)

8. List occupations that you think will call for the greatest number of employees during the next five years. Give reasons for your listings.

9. Study educational opportunities available to employed men and women. Include in-service training programs, night schools, vocational courses, workshops, trade schools,
correspondence courses, technical courses, and summer schools.

10. Interview a representative of the United States Employment Service to find out the opportunities available to the handicapped—the crippled, the blind, the deaf. How do employers in the community react to employing the handicapped?

11. See the films:

Employing Disabled Workers in Industry  Castle Films Division, United World Films Inc.
20 min sd  San Francisco, California
$32.16

Demonstrates by actual cases that disabled persons can handle many skilled industrial jobs. Specific examples are taken from machine shop, carpentry, welding, watchmaking, jewelry, sewing, and office work.

12. Mention a number of vocations that are related to any job about which you are thinking seriously. Show how the job in which you are interested depends on certain ones. Show how other workers depend on it. How does the status of these related vocations affect opportunities in the field of your choice?

13. List new careers that have been made possible through recent technological advances.

14. Discuss whether or not prejudice against manual labor is acceptable in a democracy and what can be done to bring about a better appreciation of socially useful work.

15. Make a follow-up study of former students, recording both the occupations selected by students while in school and
the actual occupations they entered upon completing high school.

(1), (2), (3), (4), (6), (7), (18), (26), (46), (50), (51), (52), (53)

16. List the occupational groups of the United States Census under a bulletin board caption "Your Future; What Shall It Be?" Arrange to have a weekly display of books, pictures, clippings, and leaflets on one of the occupations.

17. Conduct a "Professor Quiz" program based on the Dictionary of Occupational Titles.

18. Examine the statistics for the occupations in the latest Census and prepare graphs showing the ten occupations in which: Most persons are engaged in your district; most women are engaged; most men are engaged; the fewest women are engaged; the fewest men are engaged.

(1), (2), (3), (6), (7), (18), (20), (21), (22), (24), (25), (26), (32), (46), (48), (50), (51), (52), (53)

19. Visit a business or industry in the community. Ask the guide to help you answer such questions as: What are the workers doing? Does the work offer any chance for advancement? What training is required for it? Is the work steady or seasonal? What is the rate of pay for beginning work? Is the field crowded or are there opportunities for employment?
II. Studying Problems of Employment and Vocations through Planning for Job Choice

A. Interests

1. Discover your interests by taking tests such as:

   Strong Vocational Interest Blank. Stanford University, California, 1933-47.

   Provides scores for forty-seven specific occupations, including artist, psychologist, architect, physician, engineer, chemist, farmer, carpenter, accountant, musician, and others.


   Shows the student's standing in nine general areas of interest: mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical.


   Provides score of academic, technical, and commercial course preferences.

2. Discuss such problems as the following: What is the value of interest to a person? What are some ways to develop an interest? What is the relation between interest and ability? Is interest a sufficient guide for choosing a vocation?

3. List names of successful people who found their life's work through hobbies or some form of recreation.

4. Make a list of the leisure time activities of the members of the class, and discuss the vocational significance of these interests. Consult Part IV of the Dictionary of
**Occupational Titles** for a listing of hobbies and leisure time activities in which vocational skills and interests may be developed.

5. See the films:

- **Careers for Girls**
  - 16 min sd
  - New York, New York
  - $55

  Pointing out the relationships between a girl's everyday interests and the type of work she might like best, it encourages early career planning and self-inventory. Useful also to call attention to the variety of fields of work now open to women.

B. Aptitudes

1. Discover your aptitudes by taking tests such as:

     
     Consists of seven parts: verbal reasoning; numerical ability; abstract reasoning; space relations; mechanical reasoning; clerical speed and accuracy; language usage. Stress abilities rather than ability as the basis for prediction and guidance.

   - **Minnesota Clerical Test.** The Psychological Corporation, New York, 1946.
     
     Tests speed and accuracy in two types of performance—number checking and name checking.

   - **Test of Mechanical Comprehension.** The Psychological Corporation, New York, 1946-47.
     
     Designed to measure understanding of a variety of mechanical and physical relationships. Physical principles are illustrated, usually by two drawings.

2. List experiences you have had which illustrate the importance of adjusting to and understanding other people. What bearing does understanding other people have on one's personal success in his chosen vocation?
3. See the films:

**Aptitudes and Occupations**
Coronet Instructional Films
16 min sd
Chicago, Illinois
$67.50
1951

Discusses six of the fundamental human abilities—mechanical, clerical, social, musical, artistic, and scholastic and indicates how a student may, with the aid of the school counselor, determine how much of each of these abilities he has. It also indicates broad fields in which certain combinations of abilities are required.

**I Want to Be a Secretary**
Coronet Instructional Films
15 min sd
Chicago, Illinois
$67.50
1943

Deals with clerical aptitudes. Gives aspirants important clues as to their own chances of success in this particular field.

C. Abilities

1. Discover your abilities by taking tests such as:


**Gamma Tests for grades 9-16.** Revision of the Otis Self-Administering Test. Items of vocabulary, opposites, analogies, mixed sentences, reasoning, and proverbs occur at different levels of difficulty.

**Terman-McNemar Test of Mental Ability.** World Book Company, Yonkers-on-Hudson, New York, 1942.

Revision of the Terman Group Test of Mental Ability. Contains ten subtests: general information, best answers, word meaning, logical selection, arithmetic, sentence meaning, analogies, mixed sentences, classification, and number series.


Composed of four parts involving English completion, arithmetic reasoning, analogies, and opposites.
2. See the filmstrip:

*You and Your Mental Abilities*  
Society for Visual Education Inc., Chicago, Illinois  
57 fr si with text 1949 $5

Designed to show the relation between mental ability, mental pattern, personality, interests, aptitudes, and the occupation selected.

5. List occupations whose principal activities or duties require: skill with the hands; strength and endurance; cooperation with others; supervision of others; influencing of others; clear expression of ideas; indoor work; outdoor work; the use of abstract ideas. Which of these would you enjoy? Give reasons for your choice.


5. Ask five persons who are employed whether they were interested in the kind of work they do or whether interest and ability developed as a result of their work. Tabulate each student's findings and draw conclusions.

(1), (2), (3), (4), (6), (18), (26), (46), (47), (48), (50), (51), (52), (53)

D. Personality Traits

1. Discover your personality traits by taking tests such as:

*Bernreuter Personality Inventory.* Stanford University Press, Stanford, California, 1931-38.

125 questions regarding an individual's customary behavior designed to measure the degree of these personality traits:
extroversion, nervous stability, self-sufficiency, social dominance, self-confidence, and sociability.

California Test of Personality. California Test Bureau, Los Angeles, California, 1939-43.

Measures a number of components of personal and social adjustment. Self adjustment consists of six subtests called self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, withdrawing tendencies, and nervous symptoms. The score in Social Adjustment is based on six parts designated social standards, social skills, antisocial tendencies, family relations, school relations, and community relations.

2. Invite the guidance counselor to lead a discussion on "Why people lose their jobs."

3. Dramatize some incidents which illustrate problems encountered in employer-employee relations. Discuss what you consider the advisable solution to each problem.

4. See the film:

Placing the Right Man on the Job
Castle Films Division
13 min sd
United World Films Inc.
San Francisco, California
$32.50 1944

Several workers who are misfits on the jobs they are doing are reassigned to different jobs resulting in happier workers and increased production. The necessity for taking into account individual differences is clearly indicated.

E. Vocational Preparation

1. Interview a number of men and women to find out how each chose his occupation. Would he make the same choice again? What advice would he give a high school boy or girl concerning preparation for employment?

(1), (2), (3), (4), (6), (7), (18), (26), (46), (47), (48), (50), (51), (52), (53)
2. Interview a number of adults who have achieved some degree of success on the job to find out which high school experiences contributed most to their success. Compare your findings with those of the other members of the class.

3. Invite some recent graduates of your school who are employed to discuss what they think young people should know about vocations before choosing their lifework. Ask them to describe the pleasant and unpleasant features of their work, the duties, possibilities of advancement, and the qualifications that they have found to be most essential.

4. Interview several workers who lost their jobs. What reasons do they give for their failure?

5. See the film:

You and Your Work
10 min sd
$45 color $90

Coronet Instructional Films
Chicago, Illinois
1949

The story of Judd Taylor, his failure in a good job, and of his ultimate rehabilitation and success.

6. List all the sources of help and information available in the school and community concerning the choosing of a vocation.

7. Check the legal requirements regarding general and special education for professions, such as certified public accountant, dentist, doctor, lawyer, pharmacist, surgeon,
and teacher. Suggest reasons for the various requirements.

8. Prepare charts or lists showing the vocational possibilities of different school subjects. For example, develop charts titled "Vocational Opportunities in Stenography"; "Opportunities in Industrial Arts"; "Vocational Outlets of Foreign Languages." Invite the cooperation of the teachers of the various subjects.

9. Report on colleges and schools giving further training. Each student might select a different type of school, consult books on colleges and professional and trade schools, examine the catalogs, interview someone who has attended that institution, and serve as an "expert" to give information one should have and consider in choosing an institution offering further training.

10. Invite employers or personnel managers to talk on such topics as: "The Kind of Employees That Receive Promotions in Our Firm"; "How We Select Our Employees"; "The Kind of Workers We Need."

11. Report to the class on the services you may receive from your nearest office of the State Employment Service.

12. Present for display on the bulletin board thumbnail sketches of graduates who are climbing the occupational ladder. Include a picture, name, and class of the graduate. Brief biographies might include school scholarship,
service, and extra curricular achievements; business experience; and some personal data on ambitions, interests, and hobbies.

13. Label each rung of a ladder with the name of an occupation which would be a step toward the goal of private secretary. Beside each step write the duties and qualifications necessary to a firm footing on that step and a start toward the next rung in the ladder. Entitle the poster: "If You Want to Be a Secretary."

14. Describe the steps you might take ten years from now if you find that the occupation you have chosen is not suitable and you wish to make a change or readjustment.

15. Prepare a kit which you might use in applying for a job. Draft an experience record and qualification sheet which describes you and your abilities. Compose a letter of application and the letters you would send to those whose names you give as reference asking for recommendations. Include a follow-up letter of application.

16. Dramatize interviews which demonstrate desirable attitudes, suitable dress, and good and poor approaches.

17. See the films:

**Finding the Right Job**
11 min sd
$45 color $90

Coronet Instructional Films
Chicago, Illinois
1949

A vocational guidance film that gets down to actual facts in the problem of finding a job.
Opening sequence on "Knowing yourself" considers the various aptitude tests and the individual's educational record, his character, interests, accomplishments, social assets, and financial ability to sustain himself until established. Next sequence offers suggestions for obtaining information about many of the occupations available. The value of various school subjects is outlined.

18. Interview workers in three or four occupations that interest you. Following are some suggestive questions:

What is your job? How did you prepare for it? What high school subjects are helpful? What personal qualifications are desirable? Is the field crowded? What is the average yearly salary of beginning workers? What are the opportunities for advancement? What are the advantages and disadvantages? How would I go about getting a job like yours? What advice would you give to those considering this kind of work? Put together all of these done by class members into a career book.

(1), (2), (3), (4), (7), (8), (18), (27), (47), (50), (51), (53)
SELECTED BIBLIOGRAPHY


PROBLEMS OF CONSERVING NATURAL RESOURCES
PROBLEMS OF CONSERVING NATURAL RESOURCES

Conservation of natural resources is a problem of vital concern to all peoples and a responsibility which must be accepted by each person. Unless we use more prudently the natural resources on which civilization depends, we shall soon find ourselves on the road to lower living standards and to eventual decline. The problem is aggravated by the increasing population, the upsetting of nature's balance by technology, the prevalence of world-wide tensions and wars, and the rapid decline of land productivity.

Since public opinion is a strategic factor in the ultimate success of any conservation program, it is imperative that education should enlighten the public on the problem and develop desirable attitudes toward wise use of resources.

This unit seeks to provide all students with basic understandings related to the problem of resource use and the effects of resource impairment on human welfare.
Objectives

To help students:

1. Develop a popular understanding of natural resources.
2. Study the effect of natural resources on human welfare.
3. Understand the interrelations and interdependences among men, animals, plants, and the earth that supports them all.
4. Realize that many resources are exhaustible and that there is much evidence of resource waste.
5. Develop a social philosophy of rights and clarify the rights of society as they conflict with the desire of the individual, or limited group, to exploit resources.
6. Study the relation of science to conservation.
7. Become acquainted with the conservation work that is now being done.
8. Develop a sound philosophy of conservation.

Scope

Conserving Natural Resources at the:

I. Community level
II. State level
III. National level
IV. World-wide level

Soil, Water, Minerals, Wildlife, Forests, Recreational and Scenic resources.
I. Conserving Natural Resources at the Community Level

A. Soil

1. Take a field trip to places where the effects of erosion can be observed. Notice the difference between sheet erosion, gully ing, and wind erosion. Observe the difference between man-induced erosion and natural erosion, also the effects of erosion on natural vegetation growing on the land.

2. See the film:

Erosion
6 min sd
$7.81
United World Films, Inc.
Gov't. Films Department
New York, New York
1948

Shows the story of man-made soil erosion and what it has done to our productive land. Distinguishes between natural erosion and man-made erosion. Depicts sheet and gully erosion by water and sheet erosion by wind and explains the destructive effects of each. Ends by showing that destructive erosion is not necessary if conservation farming methods are used.

3. Visit an erosion-control project. Secure information about erosion control activities in the county from the county agent. Prepare reports on the various methods of preventing or controlling erosion.

4. See the films:

Your Soil--Your Future
8 min sd color
$40
Institute of Inter-American Affairs, Washington, D.C.

Directs attention to conservation practices which farmers should follow in order to prevent, halt, or correct the effects of soil erosion.
Colored action drawings and photographs show how strip cropping is used to prevent erosion by wind and water.

5. Take a field trip to a farm where a complete conservation farming program has been installed for studying the more common conservation practices. Notice the relation of soil conservation to wildlife conservation. Ask the farmer or conservation specialist to explain the conservation program of the farm.

6. Make a number of soil profiles in different fields and compare the depths of the top soil layers. This comparison will show which fields have lost the most soil by erosion. What is the relation between erosion in any region and its soil, slope, and cover?

7. Collect samples of soil of different origins: topsoil, subsoil, virgin soil, eroded soil, garden soil, field soil, forest soil. Make a comparative study of their properties such as structure, texture, water holding capacities, adhesion, mineral content, and acidity or alkalinity.

8. Have a round-table discussion on the topic "How soil conservation affects human welfare."

9. See the films:
Shows the tragic effects of poor soil on diet, housing, sanitation, and other aspects of rural life. Reveals the need for a school program geared to community needs.

**Food and Soil**
- New York University
- New York, New York
- 1940

Shows how man depends upon the soil. Gives quickly the main facts in soil conservation in the United States.

10. Compare counties where there is little or no erosion with the counties where the land is severely eroded. Using graphs, maps, and other statistics obtained from the State Planning Board, State Chamber of Commerce, Bureau of Census, State Department of Agriculture, Conservation Commission, and other organizations, compare the farm income, value of land per acre, estimated gross cash income from the sale of agricultural products per farm, loss of population since 1940, etc. What conclusions can be drawn as regards to: relation of income to the kind of land; the value of eroded land; relation of population to poor soils; the attitude of State towards eroded areas.

(1), (2), (3), (4), (6), (7), (8), (13), (18), (20), (21), (22), (24), (25), (26), (33), (34), (48), (50), (51), (52), (53)
11. Carefully pull up the grass from a four-inch-square area on a lawn or pasture. Shake the dirt off the grass roots into a container. Then collect about one-half pound of dirt in another container from a bare field or playground. Weigh out a half pound of each sample and heat each to drive out the water. Then weigh the two samples again. Which one contained more water? Explain the results.

B. Water

1. Visit the city or community water supply and filtration plant to observe the different processes of water purification. Collect data about: the source of the domestic water supply; problems confronting the community in securing safe water; how water is distributed to places where it is used; average amount of water consumed by city daily (so that you might compare it with that of other cities); costs involved in purifying and maintaining safe water.

2. Collect samples of water of different origin and examine their physical properties such as taste, odor, color, turbidity; and test these samples for: alkalinity, total hardness, dissolved solids, chlorides, iron, lead, copper, zinc, and bacteria. In the light of such tests decide on
the suitability of the different samples for domestic use. For checking results, samples of water might be sent to the experiment station of the State University for testing.

3. Take a trip to a modern water power plant to see how water is used to develop electricity.

4. Make a list of the important water falls in the United States and find out the kind of industries in which their power is utilized.

5. Study the success of reservoirs designed to be used for power and for irrigation as compared with single purpose reservoirs.

6. Discuss the problem of competition of water power with power developed from other sources.

7. Take a trip to mud-filled lakes, poorly drained farm-lands, or swamps, see how such places become breeding places for mosquitoes and other harmful pests. Consider how pollution and silting of streams and reservoirs might become a threat to city water supplies. Are there evidences of killed fish or birds, factory waste, garbage and trash? What is the effect of such waste on life in the stream? As a follow-up students might plan a campaign to keep people from throwing waste in streams.

8. Make a field trip to the scene of a recent flood. Look for evidences of flood level, force of flood waters, signs of erosion and siltation, damage to properties, animal life and human beings.
9. See the films:

**The River**

Soil Conservation Service
Washington, D. C.
1939

Tells the story of the Mississippi and how man has abused it. Shows how we must change farming and lumbering practices if we are to curb future floods and reduce soil losses. Depicts the need for conservation practices impressively.

10. Prepare a bulletin board display of pictures to illustrate floods and flood controls. Take a field trip to observe a dam. Is it built to furnish water power? Or primarily to aid in flood control? Find out how rapidly silt is filling up the reservoir back of the dam. Find out as many ways as possible to prevent the silting of water in reservoirs.

11. Discuss related problems such as: How is wildlife affected by an efficient program of water conservation? How does a series of dams in a river help to control floods? To what extent is water conservation being practiced in the local community?

12. See the films:

**Rain for the Earth**

Y.M.C.A. Motion Picture Bureau
New York, New York

Story of man's struggle with drought in Great Plains; building of dams and reservoirs to conserve soil.

13. Study and report on the water problems in the local vicinity including: competitive demands for water in any given region and possible remedies; provision of addi-
tional supplies of water for the increasing needs of the future; elimination of water pollution; use of water for recreation; fishing and hunting, boating, skating, hiking, swimming; drainage facilities; water and erosion; floods and low water periods; use of water in industry.

C. Minerals

1. Find out what industries in your city or county are dependent on minerals as the raw product? What do these industries make? Have any industries had to close because of lack of raw materials?

2. Make a map showing the location of minerals and of manufacturing towns and cities that use these minerals.

3. See the film:

   Power Unlimited  RKO Radio Pictures
   17 min sd       New York, New York
   lease $80       1948

   Presents the value of coal to the people of America. It is the story of the transformation of coal into products that have brought an enriched life to everyone. The men who produce the coal; transportation to the mills, factories and foundries; the conversion into coke for iron and steel; the part coal and coal miners played in the winning of the war, and the various by-products such as drugs, dyes, cosmetics, perfumes, plastics, and nylon are all pictured.

4. Have a panel discussion on the topic: "Can Scientific Discoveries Compensate for the Exhaustion of Our Mineral Resources?"

(1), (2), (3), (4), (7), (18), (26), (48), (50), (61), (52), (53)
5. Make a trip to an oil field. Interview the resident manager and collect data on field, when discovered, how owned or leased, depth of wells, annual production, conservation methods practiced, probable life of field, oil wastes—if any, and attempts to overcome them.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (15), (14), (15), (16), (17), (18), (26), (48), (50), (51), (52), (53)

6. See the film:

Birth of an Oil Field  Shell Oil Company
30 min sd Public Relations Department
color (loan) New York, New York
1948

Shows how an oil well is drilled and how crude oil is brought up from the ground and started on its way to the refinery. Describes the operation of the ponderous equipment by drilling crews, follows the drill-bit as it makes its way through various geological strata.

7. Visit an oil refinery to observe and study methods of purifying products. Find out uses of these products in industry and everyday life.

D. Wildlife

1. Collect as much evidence as possible by reading and inquiring from old settlers—about the fact that many kinds of wildlife have become extinct or very rare in the locality and make a list of species of wildlife that have become extinct; are threatened with extinction; or have been harmfully reduced. Find out the reasons that have led to this situation, and make plans for conserving the wildlife in your locality.
2. Explore the attitude of the farmers of the community toward birds which are considered harmful, such as owls and hawks. To what extent are farmers' attitudes towards certain birds justified? What useful birds, if any, are not protected by law?

3. See the film:

Know the Hawks
11 min sd
Fish and Wildlife Service
Washington, D. C.
1942

Explains the importance of hawks to rodent control. Shows their nesting and feeding habits, and the care of their young.

4. Visit a bird sanctuary to observe the kinds of birds which are protected and the provisions made for protecting timid birds from starlings and sparrows. What provisions are made for protecting waterfowls? Make list of birds seen; note habits of birds; make sketches of shelters, bird baths, feeding trays, protection thickets, and other attractions for birds. As a follow-up: Build bird houses, maintain a bird bath and feeding station. Write articles for the school paper on the need for bird sanctuaries in the community.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (19), (49), (50), (52), (53)
5. Secure information concerning the number of fur-bearing animals caught and sold each year, and the regulations enforced to insure the necessary protection of these animals. Visit a fur store to get some idea of names in connection with local species when their pelts enter trade.

(1), (2), (6), (26), (46), (53)

6. Ask your parents and other members of the community about wildflowers they knew as children. How many of them have disappeared? Why? What might be done to conserve them?

7. See the filmstrip:

39 fr with script $5

Shows about 40 of the most common wildflowers; tells where they are found and how to identify them.

8. Initiate a campaign to have certain wildflowers and shrubs grown in fence corners. Prepare posters for store windows of nearby towns or cities urging people not to pluck wildflowers.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (50), (51), (52), (53)
9. Take a trip to a meadow, marsh, stream, or woods to study the animal and plant life. Observe the birds with field glasses. Observe birds closely to see what they eat. Gather specimens of shrubs or plants that provide shelter or food. Study carefully the animals' food habits. Do the same plants serve both for food and cover? Do droughts, floods, and fires destroy the nests? Where do animals hide, rest, feed, and raise their young? How effective are the predators? Are they feeding upon desirable animals, either young or old? Is there enough food and cover for all animals present? Take pictures of animals in their natural surroundings in the area. Listen to calls of birds.

E. Recreational Resources

1. Study the community to determine whether there are evidences of misuse, deterioration, and depletion of recreational resources. Discuss possible remedies.

2. Plan a campaign to educate the public for proper use of recreational resources.

F. Forests

1. Take a walk through a wood. Note different kinds of trees, animals, and birds. Observe dead and fallen timber in a woods and special kinds of trees attacked by disease. Look for trees which have been injured by
insects. Look for grubs or larvae. Try to find out what kinds of insects caused the damage. Look for insects under bark of dead trees and fallen timber. Notice ways in which trees have been cut, type of soil as compared with soil outside the forest. Identify trees damaged by: crowded surroundings, wind, water, ice, logging, fire. Gather leaves, twigs, specimens of wood, soil, plants for study.

2. Report on the most serious enemies of forests and how they may be attacked or controlled.

3. Make a poster showing the various causes of fires in the local community or state, the number of acres burned last year, and the estimated damage.

4. (1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (26), (50), (51), (52), (53)

4. See the film:

Ten Thousand Fires
20 min sd
color
Tennessee Valley Authority Information Office.
Knoxville, Tennessee
1942

Emphasizes the destructiveness of forest fires and the need for preventing them.

5. Arrange a visit to a saw mill, paper mill, or some wood-using industry. Note especially: kind of wood used and how used; the source of the logs, pulpwood, or other material used in the industry; disposal of waste material; number of people employed in the plant; ways of preventing waste.
6. Find out what lumber companies are doing to conserve the forests and what difficulties they have in practicing methods of conservation. Write to lumber companies for pictures and make a collection about forests and the lumber industry.

7. What forest products are harvested in your local community? What are some uses of these products? How many persons in your community are employed by local forest industries? Is there a substitute for wood?

8. Report on uses of forests as: watershed protection; prevention of landslides and snowslides; serving as windbreaks for homes, fields, and orchards; recreation; preserving wildlife.

9. If your community were to plan a Conservation Day, how could this problem be presented to the people? Outline a program including use of newspapers, local radio stations, posters, dinners, and assembly programs in all schools.

II. Conserving Natural Resources at the State Level

A. State Activities in Forest Conservation

1. Determine the various types of forestry work done in your state by public agencies in conservation.
2. Find out the total number of technically trained foresters in your state. How many of these are employed by private industries? How many by each of the public agencies?
(1), (2), (6), (26), (46), (53)

3. Bring information to the class concerning the reforestation program in your state.

4. Report on agencies which participate in forest protection and the nature of their activities.

5. Study a list of your state's forest laws and classify according to the following subjects: reforestation, fire, protection, education, mechanical injury to trees, and miscellaneous subjects.

6. Invite your district forester to speak on forest problems.

B. Forest Fires

1. See the films:

**Dead Out**
22 min sd
color
Forest Service
Washington, D. C.
1948

Shows the causes and effects of forest fires caused by carelessness and simple ways to prevent them and keep small fires under control.

**One Match Can Do It**
10 min sd
$49
Simmel-Meservey, Inc.
Beverly Hills, California
1945

Shows a forest fire can begin with a single carelessly discarded match. Illustrates modern methods of sighting and reporting mountain fires. Includes scenes of men battling a forest fire, homes burning, and wild animals in flight. Flood, accentuated by the destruction of watershed forests, is shown as the aftermath of forest fires.
2. Study ways in which forest fires begin; the cost of replacing the loss by fire, and the effects of forest fire.

(1), (2), (3), (4), (6), (7), (8), (13), (26), (46), (53)

3. Prepare posters for use in campaigns to educate the public to the dangers of forest fires.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (50), (51), (52), (53)

4. Students may like to write short articles on the subject: "Protecting Forests from Fire in My State." To secure the necessary information, write to the state forest service for available publications.

5. Visit a fire tower. How far can you see from the top of the tower? Can you see other towers? How does the lookout man use the map and alidade to locate a fire?

(1), (2), (3), (4), (7), (8), (10), (11), (12), (13), (14), (15), (16), (17), (18), (19), (51), (52), (53)

C. Wildlife

1. Make a survey of the present wildlife resources of your state.

2. Study how the following factors affect wildlife resources: pollution, overgrazing of forested lands, burning of forest, range, swamp, and other wildlife habitats, drainage of marsh and swampland areas, decline in productivity of land, public apathy.
3. Does your state require any license for hunting and/or fishing? Inquire about the number of hunting and fishing licenses issued for the past five years. Is the number increasing or decreasing? Explain.

4. Visit the state or Federal fish hatchery nearest home. What species of fish are produced? At what season of the year are they released? How are they released? How large are the fish at the time they are planted? How are the fish fed at the hatchery?

5. Ascertain from the local game warden, game protector, or wildlife ranger how many big game animals are found in their state and make a list of those animals. Ask whether big game animals are increasing or decreasing in the state and learn the reasons why. What is the most important, the most numerous, or the most dangerous big game animal in your section? Explain why it has this ranking.

6. See the films:

   **Realm of the Wild**
   27 min sd color
   Forest Service
   Washington, D. C.
   1945

   Pictures the big game and smaller animals that inhabit the national forests.
Wild Animals—Their Homes and Habitat
Arthur Barr Productions
Pasadena, California
10 min sd
$40

Shows the homes of both birds and mammals and explains how they feed and protect themselves and their young.

D. Recreational Resources

1. Survey all the recreational resources of your state and classify them under such categories as: physical, biotic, esthetic, scientific sites, and historic sites. Compare such resources with those of other states or the nation and determine to what extent they are adequate.

2. See the films:

**Scenic Resources of the Tennessee Valley**
Tennessee Valley Authority
Knoxville, Tennessee
10 min silent
1938

Pictures the scenic and recreational resources of the Tennessee Valley.

**America the Beautiful**
United States Treasury Department, Washington, D. C.
18 min sd
color

The beauty of America's hills and valleys, lakes and rivers, farms and cities.

3. Visit the state park nearest your home. Observe beautiful scenery, nature trails, wildflower exhibits, wildlife enclosures, trees and forests, streams and waterfalls, etc. Observe size and beauty of the very old large trees and learn their age. Make sketches of the mountains, valleys, and waterfalls. Prepare reports to give to classmates unable to take the trip.
III. Conserving Natural Resources at the National Level

A. Forests

1. Enlarge two maps of the United States, one showing forest areas in 1620, the other showing present-day forest areas. What factors have led to the shrinkage of forest areas? How much of the early waste of forest trees was probably justifiable?

2. Write short stories that describe the lumbering practices of the companies that ruined most of the northern forests.

3. Discuss the influence of forests on the nation's development. This would include influences of forests on industrial growth; on social development; on rapid development of transportation and communication.

4. Survey forest industries in a limited area, and prepare reports on the influence of these industries on the economic status of the area. How many people get their living either directly or indirectly from the forest?

   (1), (2), (7), (13), (26), (46), (53)

5. Make a comprehensive plan for forest conservation on the community; state; and national levels.

6. Make a survey of ownership of forests in the United States: private ownership—industrial farmer, other small owners; national forests; state forests; community and school forests. Discuss the problem of government versus private ownership of forests.
B. Government Role in Conservation

1. Have a panel discussion on "Government responsibility for the conservation of natural resources." Some phases of the problems are: Why is some type of government control of most resources necessary for conservation? How much conservation can be attained by education? What conservation measure must be enforced by law? What projects can be carried out only by the government? What are some governmental activities in the conservation of natural resources?

2. Study and report on some Federal water projects such as: Early irrigation projects in the West; Boulder Dam; The T.V.A.; The "New Deal" great public water projects (Grand Coulee, Bonneville, The California Great Valley, Florida Ship Canal); The Federal Waterways Commission; The Mississippi Flood Commission; The Mississippi Valley Committee and The Water Planning Committee of The National Resources Planning Board.

3. Discuss questions such as the following:

   Should sites of great natural beauty or scientific interest be owned by the government.

   Is education a more effective means of promoting conservation than legislation.

C. Soil Erosion

1. On an outline map of the United States, show the areas in which most of the soil has been either severely damaged or completely destroyed by erosion.

2. Study the relation between eroded areas and their prosperity.

3. Secure reliable data on the amount of soil that is washed out of the fields and pastures of America every year.
   (1), (2), (3), (4), (7), (8), (53)

4. Study the results of some recent nation-wide surveys on the extent of erosion in America.
   (1), (2), (3), (4), (7), (8), (53)

5. Estimate the annual monetary cost of erosion in the United States.
   (1), (2), (3), (4), (8), (13), (53)

6. Make a comprehensive plan for controlling erosion on the community, state, and national levels.

D. Mineral Resources

1. Show by means of a bar graph the relative proportion of the world's minerals possessed by the United States. Discuss economic implications.
   (1), (2), (3), (4), (7), (13), (18), (26), (32), (48), (50), (51), (52), (53)

2. On a large outline map of the United States, show by means of colors, the principal mining areas. Label the areas according to the minerals they produce.
E. National Parks

1. Write to The National Park Service, Department of the Interior, Washington, D. C., and secure copies of available booklets dealing with the national parks. Study each of the bulletins and make reports dealing with each of the areas included in the National Park System.

2. See the film:

   **Summertime in Yosemite**
   Sante Fe Film Bureau
   Chicago, Illinois
   10 min sd color
   loan

   Includes all the scenic highlights of the park.

IV. Conserving Natural Resources at the World-Wide Level

A. Effect of Natural Resources on a Country’s Strength

1. Study the relation of natural resources to the wealth and strength of different nations: the relation of the resources of Great Britain and her colonies to its continued power in modern times; the lack of sufficient resources for the large populations of China and India and its effects on their standard of living and strength as world powers; the lack of development of resources in parts of Asia, The East Indies, South America, etc., and the effect on their civilization and strength as world powers; the intensive development and use of resources by Germany and Japan before World War II to attain temporary dominance as world powers; the effect of superior
resources of the United Nations on the outcome of a possible future war.

2. Have a panel discussion of the topic, "Should nations keep their minerals for their own use or should they sell them on the foreign market?" Be sure that the two conflicting points of view: national self-sufficiency versus economic internationalism are fairly presented.

B. War and Natural Resources

1. It has been said that wars are fought primarily for the control of natural resources. Discuss how far this saying is true in the light of what is known about past wars.

2. Find out the effect of wars on the depletion or exhaustion of natural resources.

(1), (2), (3), (4), (7), (18), (26), (48), (50), (51), (52), (53)

3. Visit an army camp. List all the resources which were used in feeding and housing the soldiers and in training them in offense and defense. What war industries in your locality were engaged in the manufacture of the machines of modern war and what raw materials did they use? How did salvaged materials help win the war? What natural resources were conserved?

C. Conservation and Human Welfare

*1. Make a chart to show the world production of petroleum.

Compare figures of several consecutive years. Is the
production increasing or decreasing? What are some of the economic implications? What are possible substitutes for petroleum?

(1), (2), (3), (4), (7), (8), (18), (20), (21), (22), (24), (25), (26), (32), (33), (36), (48), (50), (51), (52), (53)

2. Study and report on such topics as:

a. The effects of natural resources on types and kinds of governments that exist in various regions of the world.

b. The relation between the deficiency or development of natural resources and peoples' ideology.

c. How long will the land of the earth continue to support its population at the present rate of exploitation? What are some possible remedies?

(1), (2), (3), (4), (7), (13), (18), (26), (50), (51), (52), (53)

d. The depletion and waste of some critical mineral resources of some regions of the world.

(1), (2), (3), (4), (7), (13), (18), (26), (48), (50), (51), (52), (53)

e. The possible effects on society of continual exploitation of natural resources.

f. The decline of industry and commerce in some nations and communities due to the depletion or exhaustion of natural resources.
g. The world distribution of mineral resources and its social-economic implications.

3. It has been said that "One-half of the human race actually goes hungry, and famine and starvation still stalk the earth, as in ancient times. Disease, low efficiency, social tensions, and political and economic crises, in many areas, reflect the scarcity of food." Discuss, in relation to the above quotation, the following questions:

a. Area by area, throughout the world, what are the existing shortages, or surpluses, of food?

b. What are the food production capacities of each area? How far have they been developed? What increases could be expected from improved agricultural methods?

c. In surplus producing areas, how much food is wasted that might be used in food scarcity areas? What are the causes of waste? In what ways can waste be reduced?

d. Are the world's farmers producing the right crops for a hungry world?

e. What are the barriers to distribution of the world's food supply in accordance with need? What emergency measures may be needed? How can the channels of
trade in food be kept free?

f. How will these problems be affected by current proposals for extending technical assistance to under-developed areas?

D. Conservation in Foreign Countries

1. Study some recent conservation work in other countries such as: Reclamation of land from the sea in Holland; sand dune control in southern France; bench terraces in China; development of water power in Russia.

2. See the films:

Rice and Bulls  ECA Films
15 min sd New York, New York

Shows how cooperation among the farmers, new agricultural methods, and Marshall Plan machinery are combining to reclaim and irrigate salt lands of the Camargue in Southern France, thus increasing many times the rice yield and the prosperity of this region.

Land Redeemed  ECA Films
22 min sd New York, New York

Pictures land reclamation projects in southern Italy.

Project for Tomorrow  ECA Films
21 min sd New York, New York

A story film telling of the development, sponsored by ERP, of 4-H Clubs among the farm children of Austria.

E. International Projects

1. Study critically examples of international cooperation projects for solving some conservation problems such as: the International Fisheries Commission for halibut conservation (Canadian-American); the international agreement
for protection of whales which were becoming scarce, first sponsored by the League of Nations; the North Pacific Sealing Convention, to prohibit pelagic sealing (America-Great Britain-Russia, and Japan); the Canadian-American Joint Commission for the adjudication of the many water problems of interest to the two countries.
SELECTED BIBLIOGRAPHY


PROBLEMS OF EDUCATION IN AMERICAN DEMOCRACY
PROBLEMS OF EDUCATION IN AMERICAN DEMOCRACY

As never before, the American public seems deeply concerned about its school system. In the vast literature on education, there is more discontent than complacency, more blame than praise, and there is an uneasy feeling that the schools have somehow failed to do their job. Educational controversies on aims and direction, content and method, exist throughout all our educational system. How then, should these problems be handled?

In a democracy, problems are solved by the people themselves, rather than by some external authority or by some small group. It is the responsibility of the school, therefore, to help students understand problems that concern them, and develop the ability and zeal to solve such problems intelligently.

This unit is designed to guide students in their direct attack on problems of education in American democracy.
Objectives

To help students:

1. Appreciate the values of education to both the individual and society.

2. Explore educational opportunities in the community and know how to make best use of them.

3. Gain an understanding of the impact of education on such social institutions as the home, church, and government.

4. Understand the role of education in perpetuating and re-creating democratic ideals.

5. Evaluate the effectiveness of the school in meeting their needs as well as those of the community.

6. Realize the responsibilities of governmental units toward providing equality of educational opportunity for all American youth.

7. Develop an insight into the relationship of education to the standards of living in a given community.

8. Understand the influence of pressure groups on education.

9. Examine current criticisms of education and develop constructive measures for eliminating the causes of dissatisfaction.

10. Trace the development of education in the United States.

11. Study the organizations and functions of the federal, state, and local governmental agencies controlling school systems.

12. Compare educational systems of various countries.

13. Understand the role of education in promoting international understanding.

Scope

Studying problems of education at the:

I. Local level

II. State level

III. National level

IV. International level
I. Studying Problems of Education at the Local Level

A. School-Community Relations

1. Have a round table discussion on desirable home-school relations and the techniques a school can use to help laymen understand the school program. Which of these techniques are being used by the school? How effective are they?

2. Plan a community survey to find out what laymen like best about the school, what things they think could be improved, what the school should do that it is not now doing. Share the findings with members of the school staff.

(1), (2), (3), (4), (6), (7), (18), (26), (45), (46), (50), (51), (52), (53)

3. Conduct a panel discussion on "How the School Can Improve Community Living."

4. Prepare a handbook describing the school program. Invite parents and other members of the community to observe the work of the class.

5. Ask the janitor for information concerning community groups that use the facilities of the school. What rules and regulations apply to the community use of these facilities?

B. Community Organizations

1. List the organizations which serve youth in the community
through a definitely organized program. What are their purposes and activities? To what extent is there an overlapping of functions? Evaluate the services in terms of their educational value.

2. Interview the educational directors of several churches. What is the nature of the church program? What provisions are made for the various age levels? Is the leadership salaried or voluntary? What activities of a recreational and social nature does the church sponsor?

3. Secure data on the number of students who participate in leisure-time organizations such as the YMCA, YWCA, Boy Scouts, Girl Scouts, and Camp Fire Girls. Ask members of these organizations to discuss the aims and activities of the organizations. What services do such organizations render to the school?

4. Make a directory of community organizations and activities. Include: addresses, telephone numbers and names of leaders; purposes; nature of the activities; types of assistance they offer the schools.

C. Community Agencies

1. List the movies seen by members of the class during a given period of time. How did each influence the attitude and behavior of the students? To what extent are movies supplementing or counteracting the influence of the school, the home, and the church?
2. Measure in column inches the amount of space devoted to items on education in several newspapers. What items are given most space? least space? What is the attitude of these newspapers towards education in general? The local public schools in particular? 
(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (26), (48), (50), (51), (52), (53)

3. Invite a representative from one of the local newspapers to participate in a panel discussion on the topic "The role of the press in solving educational problems of a community."

4. Post a list of radio and television programs of educational significance on the bulletin board. How many students listen to these programs?

D. Pressure Groups

1. Make a study of interest and pressure groups in the community. What is the nature of these groups? How do such groups exert pressures on the school? Can such groups promote the welfare of the school?

2. Interview the school principal and secure information about some instances where the school was subject to external pressure. How did the school handle the problem?
E. Adult Education

1. Invite the director of the adult education program to discuss the need for adult education and the importance of continuing one's education beyond "schooling." How can the activities of the different agencies and individuals in the community best be coordinated?

2. Plan visits to adult education agencies such as agricultural groups, government vocational classes, libraries, museums, workgroups, and evening school. Describe and evaluate the activities of these agencies.

3. See the films:

   **Learning Democracy through School-Community Projects**
   Locke Films Inc., Kalamazoo, Michigan
   20 min sd 1947
   $75 color $150 rent $6

   Shows how typical public schools and communities in Michigan are serving as the proving grounds for democracy by providing opportunities for both young people and adults to participate in special projects involving realistic democratic procedures. Includes elementary and high school student councils, a rural field day, safety patrols, an audio-visual education club, a school clean-up campaign, a vocational guidance conference, Red Cross work, the parent-teacher-student organization, a community council meeting, and a youth center.

   **Not by Books Alone**
   Social Documentary Films, College Park, Maryland
   22 min sd 1945
   color $100

   How one library serves the citizens of its community in education enrichment and recreation, making better homes, earning a living, and intelligent citizenship.
F. Community College

1. Visit a community college in the vicinity and collect information on its enrollment, student population, staff, financial support, and curriculum. Ask some member of the staff to discuss the objectives and functions of the college.

   (1), (2), (6), (26), (46), (53)

2. Make a chart showing the growth of the community college during the period 1930-1950. What factors have contributed to this growth?

   (1), (2), (3), (4), (6), (7), (18), (20), (22), (24), (25), (26), (32), (33), (34), (36), (46), (48), (50), (51), (52), (53)

G. Special Education

1. Make a study of the special education programs and services available to meet the needs of the exceptional child in the community. How many children are involved? Are the necessary resources available for their care and treatment? What provisions are made for their education?

2. Visit a special class or school. Ask the teacher to explain such features as: admission and withdrawal; medical care and therapy; housing and equipment; nourishment and rest; special guidance for children and parents.
II. Studying Problems of Education at the State Level

A. Inequalities

*1. Make a chart showing the expenditure per pupil of each state for education. Where does this state rank? What factors may account for this? (1), (2), (3), (4), (6), (7), (8), (18), (26), (27), (32), (46), (47), (48), (50), (51), (52), (53)

*2. Collect evidences of educational inequalities concerning: rural and urban schools; small and large schools; accredited and non-accredited schools; private and public schools; Negro and white schools. Discuss the causes of the differences and their significance in a democracy. (1), (2), (3), (4), (6), (7), (18), (26), (27), (47), (48), (50), (51), (52), (53)

3. See the films:

One Tenth of Our Nation
International Film Bureau
26 min sd
Chicago, Illinois
$75 rent $4.50 1940

Gives an authentic picture of the education of Negro children in the rural South, from one-room shacks to high schools and colleges.

4. Outline a plan on the local, state, and national levels for providing a greater measure of educational opportunity.

*5. Discuss: Should the federal government help the states meet current costs of school operation? (1), (2), (3), (4), (7), (8), (18), (26), (48), (50), (51), (52), (53)
B. State Control

1. Make a chart showing the organization and functions of the State Department of Education.

2. Write to the offices of the Secretaries of State for information concerning legislation affecting schools. What is the law relative to instruction on the United States Constitution, history, ideals, and patriotism; the use of the flag in public schools; observance of special days? Summarize the findings on a chart.

3. Compare state standards for minimum educational programs. Consider such points as: qualifications of teachers, supervisors, administrative officers; teacher salaries; curriculum requirements; compulsory school attendance; pupil transportation.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (48), (50), (51), (52), (53)

III. Studying Problems of Education at the National Level

A. Historical Development

1. Prepare reports on education in: the colonial period; the early national period; the period 1865-1890; the period 1890 to the present.

2. Compare the modern secondary school with the Latin grammar school by means of skits or short plays. The comparison might emphasize such points as: purposes; curriculum; method.
3. Report on the influence on education of the following: the church; the scientific movement; the changing social order; legislation; national committees and organizations; educational leaders.

4. Make graphs to represent the growth of enrollment in secondary schools between 1890 and 1950. Discuss reasons for this growth and its social consequences.

5. Have a panel discussion on the topic: "Should Secondary Education Be Made Available for All Youth or for a Limited Group?"

6. Make a mural depicting the growth and functions of public education.

B. Drop-Outs

1. Make a study of the drop-out problem in the school. At what age and grade do most students drop out? What are the chief reasons given by drop-outs for leaving school?

2. Make a follow-up study of students one, three, and five years out of school.
3. In the light of data collected about drop-outs, what changes do you suggest for the school to encourage students to remain in school?

C. Conflicting Philosophies

1. Visit some schools that are termed "progressive" and some that are termed "traditional," and compare their curricula and practices.

2. Make a survey of the literature to determine the major criticisms of present-day education. These might be depicted in cartoon form.

3. Discuss: Should controversial issues be dealt with in the high school?

IV. Studying Problems of Education at the International Level

A. Illiteracy

*1. Examine statistics on illiteracy in various countries of the world. Are statistics available for all the world’s population? To what extent are such statistics reliable? Are there common criteria for determining what illiteracy is?

*2. Indicate on a world map the percentage of illiteracy in various countries. Discuss: causes of illiteracy; the relation of climate and general public health to the
amount of illiteracy in a given country; the relation of school laws and national policies of education to illiteracy.
(1), (2), (3), (4), (7), (18), (26), (51), (52), (53)

3. Report on the efforts of various countries to eradicate illiteracy.

B. UNESCO

1. Make a chart showing the organization of UNESCO. Discuss the purposes, membership, and program of UNESCO.

2. Discuss some of the handicaps under which UNESCO operates. Formulate a plan for making it more effective.

3. See the film:

This Is Their Story Film Program Services
20 min sd New York, New York
$49.50 rent $3

Shows what young people are doing throughout the world to restore education and culture.

4. See the filmstrip:

Story of UNESCO Nestor Productions, Inc.
46 fr si with text Los Angeles, California
$6.50 1948

Explains the ideals and concepts of UNESCO and opens the door to participation by students and others in its work.

C. Fulbright Act

1. Report on the provisions of the Fulbright Act. What procedures have been developed for its administration? What are its difficulties and limitations?

2. Evaluate the Fulbright Program as a tool for promoting international understanding.
D. Education in Other Countries

1. Invite a foreign student or a foreign person living in the community to speak about the educational system of his country.

2. Compare the educational systems of various countries. Consider such points as organization, curriculum, bases for admission, requirements for graduation, materials and techniques, physical plant of the school.

3. See the films:

   **Schools to the South**  
   15 min  sd  
   $19.96  
   Castle Films  
   San Francisco, California  
   1943

   Portrays the schools of Latin America and the trends in education in these countries.

   **Hungry Minds**  
   11 min  sd  
   $25  rent $1.50  
   Brandon Films Inc.  
   New York, New York

   Documentary report of intellectual starvation in countries scourged by Nazi occupation. Film suggests that textbooks, writing materials, research equipment, and other tools of knowledge are needed to break apathy and hostility and to open young minds to the promise of a more peaceful world.

   **The Three A's**  
   20 min  sd  
   rent $2.50  
   British International Service  
   London, England  
   1948

   Age, ability, aptitude—the three A's. Shows how the modern British school coordinates classroom studies with practical experience, so that the children learn to apply their knowledge to the demands of everyday life.
SELECTED BIBLIOGRAPHY


Hand, Harold, "For Whom Are High Schools Designed?" *Educational Leadership,* VI (March, 1949), 359-65.


Skaife, Robert, "They Oppose Progress," *The Nation's Schools*, XLVII (February, 1951), 31-3.


**Still Unfinished - Our Educational Obligation to America's Children.**


PROBLEMS OF CONSTRUCTIVE USE OF LEISURE
PROBLEMS OF CONSTRUCTIVE USE OF LEISURE

The substantial increase in leisure for all people, as a result of our technological developments, has made the question of its worthy use of paramount importance. Depending upon the use made of it, leisure can degrade or elevate people.

The school cannot escape the responsibility of giving definite attention to this problem, if education is to prepare young people to meet successfully the realities of living. A much larger share of school time and energy than ever before should be devoted to developing in youth the ability to use leisure time constructively. The relationships of school experiences to the future use of free time should be considered; the whole question of extending the use of school facilities for the benefit of the people should be reviewed; cooperative efforts between the school and other agencies concerned with the problem of leisure, should be promoted.

To such a comprehensive leisure-time program, this unit could make a significant contribution, by helping students solve their leisure problems, extend their interests into new channels, and develop their abilities to select, pursue, and enjoy worthy recreational activities.
Objectives

To help students:

1. Use their leisure time healthfully, safely, and enjoyably.

2. Become acquainted with available resources for leisure-time activities in the community, nation, and other lands and make use of such resources.

3. Develop skills and attitudes for the enjoyment of a wide variety of leisure-time experiences—physical, emotional, social, intellectual, and cultural.

4. Cultivate hobbies they can enjoy and become aware of the opportunities which avocation holds for vocational pursuits.

5. Assume personal responsibility for solving leisure-time problems in the home, school, and community.

6. Plan for a rhythm of work, rest, and play.

7. Develop a feeling of personal success and satisfaction.

8. Understand the historical development of recreation and the relationship of recreation to social standards of living.

Scope

Guiding students to constructive use of leisure by exploring:

I. Hobbies

II. Available leisure resources
I. Guiding Students to Constructive Use of Leisure by Exploring Hobbies

A. Collecting Hobbies

1. Invite a stamp collector to talk to the class on such points as: Why people collect stamps; how to start a stamp collection; what tools are needed; how to become acquainted with other collectors; what magazines are devoted to this hobby.

2. A student or staff member whose hobby is collecting coins might give the class some information on: How to start a coin collection; what coin catalogues are available; how to mount coins; what periodicals are devoted to coin collecting; what organizations for coin collection and exchange are available.

3. Display collections of newspaper and magazine clippings. What is the value of this hobby? Should clippings be classified and filed?

4. Visit a museum to study collections of minerals and rocks. Ask someone who is in charge of the museum to tell how to start a collection.

5. Invite the science teacher to talk to the class about the kinds of insects that live in the locality and to demonstrate how insects are collected and preserved. Visit a museum to study insect collections.
B. Animal Hobbies

1. Visit the Humane Society or a veterinarian to obtain information on the care of pets.

2. Invite a show dog trainer to talk to the class about the entrance requirements, judging points, and personal rewards of shows.

3. Visit a pigeon loft and ask the owner to talk about the problems and pleasures of pigeon-raising.

4. Invite a canary bird hobbyist to talk to the class on how to start a canary aviary; breeds of canaries; how to teach canaries to sing correct, clean notes; valuable publications. Have a canary in the room for care and observation.

5. Construct a glass ant hill. Keep a diary of the activities observed.

6. Invite a hobbyist to talk to the class about rabbit-raising. He might give information on: Personal benefits to be realized from rabbit raising; selection of a breed; cost of materials; record keeping, housing and equipment; birth and care of the young.

(1), (2), (3), (4), (6), (7), (8), (26), (47), (49), (53)

C. Gardening and Plant-growing

1. Plan visits to different kinds of gardens; for example, rock gardens, flower gardens, water gardens, and vegetable gardens. Ask someone in charge of the various
gardens to talk on such points as: Making a garden plan; garden equipment; cultivation problems.

2. Grow plants in a water culture. Observe the growth of plants and keep a record of your findings.

D. Arts and Crafts

1. Invite students or staff members whose hobbies are arts and crafts to demonstrate leathercraft, woodwork, metal work, pottery making, papercraft, weaving, block printing, and painting.

2. Visit an art museum to see collections of textiles, metals, jewelry, ceramics, and paintings. Visit an art studio, pottery company, glass factory, or metal shop.

E. Photographic Arts

1. Invite a specialist or an amateur to demonstrate some common types of cameras and to explain the advantages and limitations of each.

2. Construct a pin-hole camera; take pictures; develop and print the negatives. Mount the pictures on cardboard for display.

3. Take a trip to a newspaper plant and observe: The halftone cuts; the photographic mats; the plates on the presses that actually print the pictures.

F. Musical Hobbies

1. Invite members of the school orchestra or band to demonstrate their musical instruments. Ask each to tell the
class how he started his hobby; how he plays his instru-
ment; what special skills are needed for a good per-
formance; what books he recommends for beginners.

2. Invite members of various vocal groups to talk to the
class on such points as: The different vocal groups in
the school; how to become a member of such groups; and
special skills needed to participate effectively in
group singing.

3. Invite the music teacher to hold a music appreciation
hour.

4. Announce radio and television programs that are of
special value in enhancing music appreciation.

G. Dancing

1. Demonstrate various kinds of dances. What are the
values of dancing as a hobby?

2. Learn several simple folk dances of different countries.

3. Invite an expert to teach the fundamental steps of
social dancing. Plan a class dance.

4. Hold a square dance for beginners.

H. Amusement and Entertainment Hobbies

1. Ask students whose hobbies are palm reading or fortune
telling to give a demonstration to the class. Ask
each person to give a brief history of the art.

2. Have demonstrations of ventriloquism or sleight of hand
and magic. Try to find out how the various tricks are
performed.
3. Develop a set of criteria for rating movies. Make scrapbooks of movie reviews. Classify the reviews under headings such as social values, story, direction, settings, dialogue, photography, lighting, and sound effects. Post movie ratings on the bulletin board.

4. List favorite radio and television programs. Post the radio and television time tables for each week, calling attention to some of the most outstanding programs.

I. Sports and Games

1. Survey the kinds of games and sports which boys and girls of high-school age enjoy; such as, football, baseball, archery, basketball, bowling, boxing, golf, skating, swimming, and tennis. Report on each of these sports with regard to its basic rules, skills needed for its mastery, when and where played, cost, equipment, and appropriate dress.

(1), (2), (3), (4), (6), (8), (26), (47), (49), (53)

2. Debate: Resolved, that every student should be an expert in one activity.

3. Provide a recreational equipment library. Assume responsibility for the loan, care, and repair of the equipment.

4. Draw cartoons or collect pictures relating to sports for a bulletin board display.
J. Travel

1. Ask students or members of the community who have traveled widely to share their experiences with the class. They might tell about places they have been, what one can see and do there, and the cost of the trip.

2. Write a feature article on an interesting trip.

3. Prepare talks on such wonders as Yellowstone National Park, the Great Smokies, the Grand Canyon. Discuss the location; what one may see there in the way of geological formations, forests, plants, and animals; the possibilities for camping, fishing, mountain climbing, horseback riding, swimming, and skiing. Report on foreign travel.

4. Plan a camping trip for the class. List the responsibilities of each person, equipment, menus, and expenses.

K. Dramatics

1. Invite members of the school dramatics club to talk on the values of dramatics; types of activities appropriate for an amateur dramatics organization; how to select, produce, and present plays.

2. Make puppets of paper sacks for a play.

3. Develop criteria for judging dramatic products. Attend a play and compare evaluations.

4. Do group charades, give pantomimes, and dramatize short stories.
5. **Write and produce a play for an assembly or class meeting.** Use committees for writing, casting, staging, designing, directing, and making sets and costumes. (1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (19), (26), (40), (50), (51), (52), (53)

L. **Reading and Writing**

1. **Make a survey of the reading interests of the class.**
   
   Check in the school library to find out how much reading is done and the types of books and materials that are read by students in the school. (1), (2), (6), (26), (46), (53)

2. **Make a bulletin board display calling attention to new books and materials in the library.**

3. **Display various magazines that are read regularly by the members of the class.** Discuss quality of illustrations, kind of advertisements, degree of sensationalism, arrangement of features, and value of the editorial.

4. **Present a program of favorite poems and short stories.**

5. **Invite a writer to discuss criteria for judging the quality of writing and to give suggestions for developing a good style.**

M. **Scientific Hobbies**

1. **Plan a star gazing evening with an expert.** Observe some of the familiar constellations. Follow up with a visit to an observatory.
2. Invite the science teacher to perform several experiments in chemistry. Ask him to suggest some books for the amateur chemist, chemical apparatus, and materials for performing simple experiments.

3. Invite the science teacher to give a talk and demonstrate how to make a crystal receiving radio set; how to put up a simple one-wire aerial; where to buy the needed equipment; what books are of special value to beginners.

4. Attend a school or regional science fair, and study the various exhibitions.

II. Guiding Students to Constructive Use of Leisure by Exploring Available Leisure Resources

A. Family Recreation

1. Report on the various leisure-time activities pursued by the family. Compare them with activities reported by other members of the class. Which activities seem to be most popular?

1, 2, 3, 4, 6, 7, 18, 26, 46, 48, 50, 51, 52, 53

2. Make constructive suggestions as to possible leisure-time activities that can be enjoyed by the family. What equipment is necessary for carrying out such suggestions?

3. See the film:

*Fitness Is a Family Affair*  
National Film Board of Canada  
New York, New York  
1948
Neighbors, by pooling their resources, find new interests and enrich community living. Two families in a neighborhood are contrasted, one that has no sense of unity, the other that works together, sharing the business of living. The first family is persuaded to try out the cooperative ideas of the second and discovers new kinds of fun and recreation.

B. School Recreation

1. Explore opportunities for pursuing leisure-time activities. Obtain information on requirements for participation as well as the time schedule for various activities.

*2. Survey students' interests in leisure-time activities.

In what activities are students most interested? Least interested? Disinterested? On the basis of these data, make recommendations for possible improvements. Submit these to the student council.

(1), (2), (3), (4), (6), (7), (18), (26), (45), (46), (50), (51), (52), (53)

*3. Have a hobby fair. Invite parents and other members of the community to participate.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (19), (26), (49), (50), (51), (52), (53)

C. Community Recreation

1. Survey facilities in the community for leisure-time activities such as playgrounds, lodge halls, churches, YMCA, YWCA, and parks.
2. Make a report on how community recreation is financed. What are the chief sources of revenue for the support of public recreation? Investigate the cost of supervising and caring for community recreation.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (50), (51), (52), (53)

3. Visit a settlement house to observe types of recreation available. How are supervision and instruction provided for various age groups?

4. See the films:

Play Is Our Business
Sun-Dial Films
20 min sd
New York, New York
$45 rent $3
1946

Shows typical playschool settings in public schools, a settlement, and a housing project where children from 5 through 13 years of all races and creeds are provided with a wide range of enriching play activities for their after-school hours in winter and all day during summer vacations.

5. Visit the recreation department to secure information on regional planning. Has recreation in the community been adequately planned? Have cities and counties neglected to retain water fronts and other spaces for beaches, parks, playgrounds, and civic centers?

6. Visit the recreation center of a large industrial concern. What recreational programs are provided for employees? What benefits are gained from such programs?

7. See the films:
After Work  Brandon Films, Inc.
10 min  sd  New York, New York
$25  rent $1.50  1945

Contrasts working conditions in factories with the leisure time pursuits now available to workers. We see them bowling, swimming, dancing, sketching, sewing, and doing carpentry.

D. Recreation at the State and National Levels

1. On a map of the United States, locate points of interest that anyone may visit. Display pictures of parks, forests, deserts, mountains, and caves. Consult Holiday magazine.

2. Make a study of how the state plans for recreation. Compare recreational facilities of your state with those of other states. What recommendations can be made for the improvement of the state program?

3. Investigate recreational programs offered by such agencies as public libraries and museums.

4. See the film:

   Yellowstone—Grand Tetons  Paul Hoefler Productions
   22 min  sd  Los Angeles, California
   color $160  1947

   Emphasizes recreational facilities as well as natural wonders and wild life of the parks.

5. Trace the growth of recreation in the United States. Compare the rigor of pioneer days and the puritan idea of "detestation of idleness" and disapproval of games, sports, and amusement to the present day concept of leisure.
E. Recreation at the World-Wide Level

1. Invite the physical education teacher to lead a panel discussion on "The International Character of Recreation."

2. Report to the class on modern and ancient Olympic Games. When and where were the games first played? Why were they discontinued? Give details of the games in 1932 and 1948. Discuss how these games have been instrumental in bringing about better international relations. Consult a history of the Olympic Games.

3. Learn to play games of other countries. How do these compare with those of America?

4. Arrange an international music festival. Include music of various countries, native dances, and costumes. Invite natives of other countries who live in the community to contribute to such a program.

5. Invite foreign students to talk to the class on leisure and recreation in their countries.
SELECTED BIBLIOGRAPHY


PROBLEMS OF FAMILY LIVING
Problem Area 9

PROBLEMS OF FAMILY LIVING

In a world where the social and economic patterns are shifting very rapidly, there is so much insecurity outside the home that young people need to gain a sense of security within the family group.

Recognizing that there are many adjustments within the family, students should have the opportunity to gain an objective point of view which will add enjoyment to their present home life, gain appreciations which will prove valuable in understanding family problems today, and help in establishing their own homes later. Since young people are members of families and nearly all of them will establish homes of their own, it is desirable that they understand the factors that contribute to successful family living.
Objectives

To help students:

1. Gain an insight into the importance of the family as a basic unit in democracy.
2. Understand the effect of technological development on family living.
3. Establish sound, wholesome relations with all members of the family.
4. Understand factors that may affect the success of a marriage.
5. Recognize the duties and responsibilities as well as the privileges and rights of family living.
6. Develop an understanding of the problems one faces in establishing and maintaining a satisfying home life.
7. Develop a cooperative attitude in solving family conflicts.
8. Become aware of the interacting influence of home and community and of the individual's responsibility for helping raise the standards of community life.

Scope

Studying problems of family living in the:

I. Home

II. Community
I. Studying Problems of Family Living in the Home

A. Changing Family Life

*1. Make a comparative study of the family of today and that of fifty years ago. Include: size of the family; functions performed by the family unit; leisure time; family relationships. What has caused these changes? How do such changes affect family life?
(1), (2), (3), (4), (48), (50), (52), (53)

*2. Find out in how many families in the community both parents are working. What is the effect upon family life?
(1), (2), (6), (7), (20), (21), (22), (24), (25), (26), (45), (46), (47), (53)

3. Have a panel discussion on the topic: "A Mother's Place Is in the Home."

*4. Secure from the office of the Common Pleas Judge, statistics on divorces in the community. Prepare graphs or charts to depict the ratio of marriages to divorces. What reasons are given for the divorces?
(1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36)

*5. Secure from the Probate Court statistics on juvenile delinquency in the community. In the light of such statistics, find out: Are there more or fewer delinquents now than formerly? What is their average age? What grade
had they reached in school? Do they come from broken homes? Is the community responsible for this condition?

Make suggestions for improving the situation.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (27), (28), (29), (46), (47), (48), (50), (51), (52), (53)

B. Family Relations

1. Make a survey of parent opinion concerning such problems as use of the family car and dating on school nights. Form a panel of parents and students to lead a discussion on these problems.

(1), (2), (3), (6), (26), (45), (46), (48), (50), (52), (53)

2. Write a play highlighting problems faced by a teenager in a modern home. Include dating, getting along with parents and brothers and sisters, and finance.

3. Work out a plan by which all members of the family may share the radio, daily paper, and telephone.

4. Make a bulletin board display of cartoons which are concerned with family problems; for example, "Our Neighbors" and "The Berrys."

5. Listen to radio programs dealing with family life such as, "Corliss Archer," "One Man's Family," and "Henry Aldrich." Analyze the sources of conflict and how conflicts are resolved.

6. Write a brief family narrative based on some book or
drama, as *David Copperfield*, *Little Women*, or *King Lear*, using some episode that shows the character of family relations.

7. See the film:

*Families First*  
New York State Department of Commerce,  
Film Library  
$50 rent $3  
Albany, New York  
1948

By a sequence of everyday episodes in the lives of two contrasting families, this film demonstrates the causes of tensions, frustrations, and anti-social attitudes, likewise the opposite end results of affection, achievement and harmonious personality adjustment.

8. Keep a record for a period of one month of the times your actions disrupted harmony in the home. What were the primary causes? How were the differences resolved?

9. Give a series of role plays illustrating democratic and undemocratic relations of parents to children.

10. Report on happy occasions in the home which contribute to wholesome family relations such as, arranging for parties, birthday dinners, trips, and holiday celebrations.

11. Write a paper discussing the importance of affection in successful family adjustment.

12. Have a panel discussion on factors which affect family relations. Include: fatigue, worry, insecurity, unhappiness, dominance, jealousy, separation, and divorce.

13. Report on recreation in your home. How do games, the radio, television, and the automobile bring the family together?
What other leisure-time activities do your families share? What are the advantages of recreation in your own home?

14. Plan a "Parents Day" on which parents have an opportunity to visit the school and participate in the various activities.

C. Courtship and Marriage

1. Make a survey of class reaction to the following: "going steady" during high school; getting married before the completion of a high school education; age at which young men and women should marry.

(1), (2), (3), (6), (8), (26), (46), (48), (50), (52), (53)

2. Have a panel discussion on the important factors to be considered in choosing a wife or husband; for example, health, education, heredity, cultural interests, socio-economic status, religion, and racial or national backgrounds.

3. Invite a young married couple to lead a discussion on the role of the courtship period in determining the success of a marriage.

4. Report to the class on one of the studies of marriage and family living in the _Ladies' Home Journal_ in the "How America Lives" series. In the report show how married couples meet their problems.
5. Invite a marriage counselor to discuss: emotional, intellectual, and social maturity as prerequisites to a successful marriage; sex adjustment in marriage.

6. Interview a married career woman about her work and how it affects the pattern of her family's life.

7. Visit a marriage clinic and secure information on the services offered; for example, staff personnel and functions performed by the clinic.

8. Visit the appropriate office in the County Court House to determine the number of divorces granted during the year. How does this compare with the number granted during the last ten year period? What are some of the major causes of divorce and family separation? (1), (2), (3), (6), (8), (20), (21), (22), (24), (25), (26), (36), (46), (48), (50), (52), (53)

9. See the film:

Courtship to Courthouse
15 min sd
apply

RKO Radio Pictures, Inc.
New York, New York
1948

Shows the ease with which some states grant divorces and how impulsiveness and present day environment and living conditions are some of the contributing factors which lead to divorce. Further shows that our divorce problem is really a marriage problem and to solve one there must be an understanding of the other.

10. Discuss the purpose of the pre-marital examination and what it should include.
D. Maintaining the Home

1. Interview some parents to find out what responsibilities they expect their children to assume. Discuss the findings in relation to individual family patterns. 

2. List household duties which need to be performed daily, weekly, or occasionally. Plan a fair distribution of these duties among the family members. Upon what basis is the distribution made? Why should every member of the family have a part in maintaining the home? What contribution can you make to keep your home in good order?

3. Invite the home economics teacher to demonstrate and discuss equipment for the home. She might include such points as the selection, utility, cost, and care of the equipment.

4. Consult magazines such as House Beautiful, Better Homes and Gardens, or The American Home for suggestions on how to make the home attractive with limited means. Mount pictures on heavy cardboard for a display.

5. Discuss the implications of making a house a home.

6. Help your parents plan the family budget for a period of time. Keep a record of your personal expenses for a month and determine if you are receiving more or less than your share of the family's income.
II. Studying Problems of Family Living in the Community

A. Recreational, Social, and Educational Facilities

1. Make a survey of recreational facilities in the community.
   Include community facilities, commercial recreation establishments, sponsored group work, and recreation organizations. Explain how provisions differ for children and adults. Decide what further provisions should be made and how the community can do it.

2. See the film:

   Fitness Is a Family National Film Board of Canada New York, New York 1948
   19 min sd $50 rent $2.50

7. See the films:

   Family Life Coronet Instructional Films
   10 min sd Chicago, Illinois
   $45 color $90 1949

   Shows how, through proper home management of schedules, responsibilities, privileges, and finances, a family begins to enjoy life as it should.

   Problems of Housing Encyclopedia Britannica Films, Inc., Wilmette, Illinois
   11 min sd 1948
   $45 rent $2.60

   Shows standards for pleasant and healthful housing, and demonstrates simple, practical ways of modernizing homes to conform to these standards. Stresses protection from weather, adequate light, safety, beauty, and freedom from insects.
Neighbors, by pooling their resources, find new interests and enrich community living. Two families in a neighborhood are contrasted, one that has no sense of unity, the other that works together, sharing the business of living.

3. List the social organisations and clubs available to families in the community. Note those to which your family or some member of your family belong. What needs are not met? How might this be remedied? Formulate some plan for action.

4. Make a study of the educational opportunities in the community that members of the family can use. Include schools, libraries, museums, art galleries, and adult education programs.

B. Health Services

1. Visit the local county health department to find out what health services are available in the community. Discuss the adequacy of these facilities.


3. Have a panel discussion on "The Responsibility of Every Home for Community Health and Sanitation."

4. See the film:

   Your Health Department in Action
   Department of Health
   New Orleans, Louisiana
   20 min sd
   rent $4

   A discussion of the health protection needs of a community and how they are met.
c. Participation in Community Life

1. Make a list of conditions existing in the community which make family living difficult. For examples: unsightly vacant lots, dusty streets, poor garbage collection, smoke, and careless driving on residential streets. What can you and your family do to bring about community action?

2. Report on what families in the community are doing to promote civic beauty. What is the community doing to beautify streets, parks, school grounds, and other areas for general public use? How can unsightly dumping grounds for the disposal of debris be eliminated?

3. Plan a clean-up day which can be carried out in the community in cooperation with a city department or the civic section of some organization.

4. Invite a city official to lead a discussion on the family's responsibility to the community in regard to voting, law enforcement, proper treatment of public property, and participation in community programs.

D. Housing

1. Arrange for a tour through various district in the community. Take pictures representing the best homes, middle class homes, and the worst homes. Discuss the effects of inadequate housing on the individual, the family, and society.
2. Secure from the office of the city building inspector, statistics on the following: number of houses recommended for condemnation; number of houses without electricity, running water, indoor toilet, or adequate heating. Compare these statistics with those of another city of similar size. Discuss what can be done about such conditions.

(1), (2), (3), (6), (28), (48), (48), (50), (52), (53)

3. Invite a member of the local planning commission to tell the class about plans for attacking the housing shortage in the community.

4. Invite an architect to discuss recent developments in housing. Analyze these from the standpoint of meeting the needs of the family.

5. See the film:

**Challenge of Housing**
Brandon Films Inc.
10 min ad
$25 rent $1.25

A brief survey of the causes and effects of present housing conditions and an indication of attempts being made to provide adequate homes. Emphasizes need for a planned attack on the housing shortage.

E. Marriage and Divorce

1. Interview the County Clerk or a justice of the peace and secure information regarding the marriage and divorce laws in your state as to the procedure for obtaining a license, the age of consent for marriage, the number of marriage
licenses issued last year, and the grounds for divorces granted.

2. Write to government agencies in neighboring states for information concerning marriage and divorce laws. Compare these and draw conclusions as to their relative merits.

3. Arrange a panel discussion on "The Need for Uniform Marriage Laws."

4. See the film:

Marriage and Divorce
Radio Pictures, Inc.
15 min sd
New York, New York
$55
1949

This picture frankly surveys the problems of broken homes and offers the opinions of many experts as to what should be done.

5. Invite a psychologist to discuss the effects of divorce upon the couple, their children, and society.
SELECTED BIBLIOGRAPHY


PROBLEMS OF COMMUNICATION
Problem Area 10

PROBLEMS OF COMMUNICATION

Communication is the basis of all social life. In our dynamic and rapidly expanding society citizens constantly engage in a two-way process of communication. In a democracy where people are called upon to think clearly, it is imperative that the citizens read, talk, listen, and write understandably and intelligently. In order to live in a democracy, it is essential that the citizens have a knowledge of, and skill in using, the communicative arts.

Perhaps the most urgent challenge to education today is the task of removing the obstacles that block common understanding. For in a very real sense the destiny of society and of each individual will be determined by the ability of people to communicate with one another.

This unit is designed to help students attack problems of communication.
Objectives

To help students:

1. Understand the role of communication in a social life.
2. Develop an increasing awareness of the various media of communication.
3. Realize the importance of developing skills for the effective use of communication techniques and devices.
4. Appreciate the effect of technology on the growth and improvement of communication.
5. Understand the methods, dangers, and necessary controls of mass communication.
6. Understand the factors that enhance or hinder effective communication among individuals, groups, and nations.

Scope

Studying problems of:

I. Inter-personal communication
II. National mass communication
III. International mass communication
I. Studying Problems of Inter-personal Communication

A. Conversation

1. Develop a set of criteria for evaluating the quality of a conversation. Rate yourself as a conversationalist in the light of these criteria. What improvement do you need to make?

2. Draw cartoons illustrating strong and weak points in conversations.

3. Give an account of a conversation you have heard involving two persons who were angry. Discuss important points in the conversation, including the content and how it could have been handled to get better results.

4. Dramatize acceptable ways for: Introducing people; shifting conversation; opening conversation (greetings); apologizing; calling the police or fire department on the telephone; making an engagement with the dentist; making a date with a girl (or boy); terminating a lengthy or untimely telephone conversation; making a long-distance call.

5. See the filmstrip:

How to Converse Society for Visual Education, Inc.
44 fr si with text Chicago, Illinois
$5.00

Calls attention to some of the fundamental concepts which should be observed in conversation.
B. Speech

1. Prepare a five minute speech in which you introduce yourself. Deliver it as you would in talking to friends in a conversational and informal manner. You may talk about your home town, interests, hobbies, travel experiences, or anything else which you think would interest the audience. What are the general reactions you have toward the speech? How well did you maintain poise? Confidence? What faults in speaking are you aware of? Were you able to avoid them in this speech?

2. Invite a speech expert to talk to the class on such problems as improving speech, speech difficulties and how they may be rehabilitated.

3. Analyze the voice tone and speaking pattern of types such as the following: the villain in a dramatization; the crooner; the motion picture gossip reporter; the fashion editor; any others that may occur to the group. What are the effects achieved by the speakers? How are they achieved? Do these effects have any social significance?

4. Dramatize: Change of the meaning of words or expressions as a result of change of the tone of voice or inflection.

5. Make a recording of your speech and listen to it in order to locate specific short-comings. Pay particular attention to the quality of the voice, breathing, rhythm, diction, volume, tempo, enthusiasm, and confidence.
6. Invite the music teacher to talk on how to cultivate a pleasing voice.

7. See the filmstrip:

*How to Deliver a Speech*  
$3.00

Calls attention to the most important factors which should be observed in delivering a speech.

C. Physical Expression

1. Illustrate facial expressions of fear, pain, bravery, delight, jealousy, anger.

2. Observe the gesture language carried on by deaf mutes.  
Do all deaf mutes use the same gesture language?

3. Report on gestural language used by theater ushers;  
football referees; baseball umpires; policemen.

4. Dramatise desirable and undesirable physical expressions commonly used by speakers.

5. Play a group game where one member of the class acts while the others guess the meaning of the act. Do all students give the same interpretation of the act? If not, what are the social consequences of that?

D. Etiquette

1. Discuss the role of dress, personal appearance, cleanliness, in communication.

2. Discuss: "Manners, the Expression of Personality."

3. Make a booklet containing desirable manners for various occasions. Illustrate by cartoons. Distribute to other students.
4. See the filmstrip:

Relation of Personality to Communication
44 fr $1 with text
$3.00

Points out how an individual's own personality can be utilised in communicating his ideas to others.

E. Written Expression

1. Make a bulletin board display of forms of letters used for such occasions as: Inviting someone to a party; applying for a job; expressing congratulations; conveying sympathy; ordering equipment or articles of food.

2. Ask the English teacher to speak on common mistakes in writing and how they might be avoided.

3. Make a display of books that are valuable for improving one's writing.

4. See the filmstrip:

How to Write: The Four Uses of Words
42 fr $1 with text
$3.00

Points out how the four uses of words—to inform, to systematise, to incite, and to evaluate—can be used most effectively in writing.

II. Studying Problems of National Mass Communication

A. The Press

1. Report on the historical development of newspapers and periodicals. What important changes have taken place with regard to their number and kinds?
2. Find out which of the local newspapers or magazines have the greatest or least appeal to readers of your community. Analyze in each case the reasons for their wide or limited communication.

3. Collect a number of advertisements and analyze them to see how they are intended to communicate to the reader certain ideas. What makes a good advertisement as regards its communication?

4. Visit a local newspaper building to observe how papers are printed. Secure information as to the number of copies printed each day, various departments and responsibilities of each.

5. Have a panel discussion on "The Effect of Print upon Public Opinion."

6. Discuss what is meant by freedom of the press. Evaluate the extent to which such freedom is desirable.

7. See the film:

Democracy's Diary RKO Radio Pictures, Inc.
16 min sd New York, New York
1948

Tells the story of modern journalism and shows how the news is gathered in papers like the New York Times and disseminated to the people of America.
B. The Radio and Television

1. Make a study of the impact of radio and television on the culture. To what extent are they molding public opinion? What is their influence on voters, farm families, the reading of newspapers, etc.? Is there any way to know the influence of radio and television programs?

2. Make a report on how radio and television programs are financed, and its effect on the quality of programs.

3. Survey the likes and dislikes of various listeners in the school. Analyze reasons for the popularity of certain programs. Communicate this information to the sponsors of these programs.

4. Have a panel discussion on: "Strengths and Weaknesses of Commercial Radio Programs."

5. Develop some criteria for evaluating commentators, such as accuracy and adequacy in the use of facts, impartiality of interpretation. A straw vote might be taken to find out which commentator is the favorite of the class. Analyze why one is more popular than another.

6. Show the films:

   Radio Broadcasting Today
   19 min sd
   $55

   March of Time Forum Films
   New York 17, New York
   1948
Appraises all the types of programs, good and bad, which make up radio today.

Television Today Columbia Broadcasting System
35 min sd New York, New York
loan 1949

Shows the growth and significance of television. Complete story of television operation including programming audience as sales medium, and some technical aspects.

7. Visit a broadcasting station and secure information on how it works.

8. Invite the science teacher to demonstrate how a radio receiver works.

C. Motion Pictures

1. Find out the reaction of members of the class to the films they see. Which films do they like best? least? Analyze reasons in each case.

2. View some films designed especially for children. To what extent do they succeed in communicating with children?

3. Have a panel discussion on: "The Values of Motion Pictures."

4. Write a paper on the influence of movies on young people.

5. Keep a movie diary and share your judgments once a week in the classroom.

6. Post on the bulletin board several reviews of a particular motion picture. Discuss the comparative merit of such reviews.
7. Develop some criteria for judging motion pictures.
   Include such points as the social values, story, direction, setting, scenery, costuming, acting, and the like.

8. Discuss: Should there be censorship of all movies.

9. Ask the science teacher to explain how a motion picture works.

D. The Fine Arts

1. Invite the art teacher to discuss painting (or any other phase of art) as a medium of communication. How does art differ from verbal language in communicating ideas, feelings, emotions?

2. Visit an art gallery and try to determine what a particular artist is trying to communicate. Does everyone who looks at a particular picture interpret it in the same way?

3. See the film:

   Your National Gallery  United World Films, Inc.
   10 min sd  New York, New York
   $45 rent $3  1948

   A motion picture tour through the National gallery of art at Washington, D.C. Shows the priceless paintings, sculptures, and tapestries.

4. Ask the music teacher to play some records and explain what they try to convey to the listener.

5. Arrange for the class to attend a concert. What was the performer trying to communicate to the listener? At what points was the music thunderous or plaintive, frighten-
ing or soothing, pleasant or unpleasant, sharp and stinging or sweet and soft? Compare your reactions with those of the members of the class. To what extent did the students hear the same thing?

III. Studying Problems of International Mass Communication

A. Technology and Communication

1. Make a report on the role of wars in accelerating technological facilities of communication.

2. Make a study of modern technological improvements in rapid, cheap, long-distance communication of words and images, and analyse their social and cultural effects.

B. Barriers to Communication

1. Discuss some barriers to communication of words and images across national boundaries. Include barriers of language, religion, social custom, literary and governmental restrictions at national borders. Suggest ways for removing those barriers.

2. Discuss: Should censorship on foreign news be abolished?

3. Report on devices designed in various countries to prevent listening to international short wave broadcasts during the last world war. Include legal prohibitions against listening to foreign broadcasts; removing short-wave reception gadgets from all home receivers, conscious
interference with enemy programs by broadcasting noise effects on the same frequencies, and confiscation of all private receiving sets. Are such barriers justifiable?

C. Improving Communication

1. Examine the adequacy and potentialities of the existing instruments of international mass communication and suggest possible improvements.

2. Have a panel discussion on the role of the government and private agencies in stimulating understanding among peoples through the mass communication media.

3. Discuss: Would the development of a "universal" language improve understanding among nations?
SELECTED BIBLIOGRAPHY


PROBLEMS OF DEMOCRATIC GOVERNMENT
Problem Area II

PROBLEMS OF DEMOCRATIC GOVERNMENT

Democracy as a form of government, a way of living, and a method of solving problems, is a heritage for Americans to cherish. But democracy is an unfinished task. Institutions, policies and programs are in a constant state of evolution to meet the challenge of emerging problems. They are set up by the people themselves rather than by some external authority and are subject to modification or rejection in accordance with the will of the people expressed by their representatives.

A government based on the sovereignty of the people depends for its success on educated citizens. This defines the role of the school. It should provide an environment for students and teachers in which all may participate in the procedures of democratic living. It should also make provisions for the clarification of the meaning of democracy on the part of all students, encourage the expression of their beliefs and opinions, and help them to learn to use the methods of intelligence as a guide to behavior. The school should cooperate with other community agencies in furthering the democratic ideals.

To such a comprehensive program of education for democracy, this unit could contribute a great deal by providing students with an opportunity for making a direct attack on the intricate problems confronting democracy at all levels.
Objectives

To help students:

1. Understand their responsibilities and rights as citizens in a democratic society.

2. Acquire a sense of personal worth as participating members of a social-civic group and understand their role in contributing to a better democratic living in the home, school, community, nation, and world.

3. Acquire the understandings, skills, and attitudes necessary for effective participation in group living.

4. Gain an understanding and appreciation of democracy as a way of life.

5. Understand the organization and functions of local, state, and national governments.

6. Become aware of the importance of an effective and intelligently-informed public opinion in a democratic society.

7. Compare democratic with non-democratic patterns of life.

8. Become aware of the threats or barriers to democratic living and possible remedies.

9. Examine the possibility of establishing a democratic world government.

10. Understand possible contributions of the United States to furthering the democratic ideals in the world.

11. Trace the development of democracy and consider its possible future.

Scope

Studying problems of democratic government at the:

I. Personal-school level

II. Local level

III. State and national levels

IV. World-wide level
I. Studying Problems of Democratic Government at the Personal-School Level

A. A Citizen's Rights and Duties

1. Make a study of the civil rights of the people. Consider the kinds, sources, importance, meaning, and effect of these civil rights on daily living. Use "The Rights of All the People to Know." Survey Graphic. Special issue, December, 1946, as a guide.

2. Invite a lawyer, judge or competent civic authority to speak on, "Civil Liberties and the Individual." Ask him to cover such points as: the duties a citizen should perform; the strengths and weaknesses of citizen participation; the issues now under consideration.

3. See the films:

<table>
<thead>
<tr>
<th>Title</th>
<th>Studio</th>
<th>Duration</th>
<th>Rating</th>
<th>Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democracy</td>
<td>Encyclopedia Britannica Films Inc.</td>
<td>11 min sd</td>
<td>$45</td>
<td>$2.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chicago, Illinois</td>
<td>1948</td>
<td></td>
</tr>
<tr>
<td>Our Bill of Rights</td>
<td>Academic Film Company</td>
<td>20 min sd</td>
<td>rent $3.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New York, New York</td>
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 Presents the nature and meaning of democracy with its two unique characteristics, shared respect and shared power, defined and described.

There is a discussion of two important conditions which have historically promoted the growth of democracy: a balanced economic distribution and enlightenment.

Recreates the forming and adopting of the first ten amendments. Uses the influential men of the period to help the realism.
B. Heritage

1. Develop a radio drama concerning a family living on the frontier. Through the use of various techniques point our their ideas on: political issues, personal liberties and duties, natural resources, education, and recreation.

2. Assume the class is a Town Meeting of a colony prior to the formulation of the Constitution. What vital issues are discussed? Why are these issues vital? How are decisions reached? Are those decisions important today?

3. Plan an exhibit of the origins of your community. Through cooperation with the local historical society, library, private collectors, and old families in the community collect and make an orderly arrangement of the available materials. When and from what beginnings did the community stem? When and what were the crucial stages of development? How did individual initiative influence the development?

4. See the film:

   **Milestones of Democracy** United World Films, Inc.
   10 min  sd Chicago, Illinois
   $40  rent $2

   Shows a high school class discussion of the contributions of a long chain of democratic milestones such as, the Magna Charta and Bill of Rights.

C. School Organizations

1. Attend a meeting of a school organization and rate the group participation on the basis of a set of criteria.
Was the group prepared for the meeting? Was the group interested? Did the group give attention to all points of view? Was a decision reached that took cognizance of the welfare of all?

2. Have a committee visit several local organizations as observers. Compare them with the school organizations. How did the participation of those present in each situation vary? Was there evidence of the democratic process?

3. Select a recent successful school project or undertaking for study. Analyze the elements that made it successful. How did the project originate? How were the leaders chosen? Was there evidence of shared responsibility? Did groups plan and execute the various phases? Did any phase of the plan fail to function? Can suggestions be formulated to improve participation?

4. See the film:

*Lessons in Living*  
Film Center, Inc.  
22 min sd  
Chicago, Illinois  
$40 rent $2.50

The revitalization of Lantsville, British Columbia is accomplished through a school project. Responsibility for his environment is placed on the local man.

D. Group Participation

1. Make a transcription of a group discussion on a subject of vital interest to the students. Play the transcription back and rate the participants upon the basis of self-
expression and self-control. Were facts distorted by emotion? How can the members of the group improve their discussion techniques?

2. Have two group observers, one to chart the flow of discussion and one to record the facts as the group discusses a student organisation in terms of its government. Plot the interaction in sociogram form. Was the issue covered? Were the significant facts presented? Was there active participation in the discussion? Where did leadership lie? Why did the leaders arise? What responsibility does each member have for leadership? How can more active participation be achieved? Why is participation by all desirable?

3. Develop a set of criteria for effective group participation. Rotating the role of observer hold round table discussions of a current issue of political impact in relation to the school or community. Was the group informed? Were there evidences of bias or prejudice? Did the group follow up points? Was there continuity?

4. Write a letter to the editor of a local newspaper concerning a current controversy. Evaluate the letter on the basis of facts presented, evidences of prejudice, and clarity of the statement of points of view.

E. Government and Citizenship

1. Write a biographical sketch of one of the following,
stressing his understanding and practice of citizenship:
Susan B. Anthony, Sam Houston, Buffalo Bill, Eugene V.
Debs, Oliver Wendell Holmes, Thomas Jefferson, Abraham
Lincoln.
2. Select some songs that reflect the ideas and ideals of
the west. Sing these as a group in the spirit they
suggest. See Lomax and Lomax, American Ballads and Folk
Songs.
3. Depict in mural form the crucial issues facing the
American citizen in various historical periods.
(1), (2), (3), (7), (8), (9), (11), (12), (13), (14),
(15), (16), (17), (18), (47), (49), (50), (51), (52), (53)
4. Prepare a pageant depicting the growth and development of
the rights and duties of the American citizen.

II. Studying Problems of Democratic Government at the Local Level

A. Forms of Government

1. Make a study of the structure, personnel, and functions of
the local government. Does the local government meet the
needs of the community? What are the strengths and weak-
nesses? Is control vested securely in the people?
2. Write to cities that have established new governmental
forms, such as Galveston, Texas, and Dayton, Ohio. Com-
pare these forms of government with the usual form. Plan
the steps necessary to improve the government at the
local level.
B. Functions

1. Make a graphic presentation of the tax structure of the community. How are taxes levied? What is the basis of tax distribution? What services are provided by taxes? Are the services sufficient for the needs of the people? (1), (2), (3), (4), (7), (8), (18), (26), (32), (49), (60), (51), (52), (53)

2. Visit the county courthouse or the State Capitol. Interview a legislator. Following are some suggestive questions: Who makes the laws? Who enforces them? How is court set? Who collects taxes? How are elections held? What limitation is there on state power? Why? Do these limitations protect citizens in a democracy?

3. Attend a jury trial. How are the jurors selected? Are any people exempt from jury duty? How does a jury function? How are jurors shielded from public opinion? How are decisions reached? What decisions may a jury return.

C. Plans for Action

1. Invite a member of the League of Women Voters to lead a round table discussion on local issues or state issues as they affect the local community. How do the issues affect the local group? What action is needed? How may the group help?

2. Prepare a speech in favor of a candidate, a proposed levy,
or a platform now under political debate. Are the facts presented clear? Are they convincing? Is the welfare of all the people considered?

(39), (40), (41), (42), (43)

3. See the films:

**Fight for Honest Ballots**
United World Films, Inc.
40 min sd
rent $1.50
Chicago, Illinois 1947

What active citizens did to insure clean elections through watchful enforcement of existing election laws.

**Story That Couldn't Be Printed**
Teaching Film Custodians, Inc.
11 min sd
New York, New York

The history of John Peter Zenger who was arrested, and tried for publishing certain reports. The masterly statement before the jury on the freedom of the press won his release.

D. Public Opinion

1. Invite the editorial writer of the local newspaper to lead a round table discussion on the editorial policy of the paper.

2. Develop a set of standards upon which various committees may rate radio and television programs over a period of several weeks. Compare the programs as to: factual material, unbiased presentation, and consideration for group welfare.

(37), (38), (39), (40), (41), (42), (43)

3. Make a study of factors affecting public opinion, such as, the local press, traditions, and radio.
III. Studying Problems of Democratic Government at the State and National Levels

A. State Government

1. Construct a "time and event" line showing people and events that have contributed to the development of the state, in their proper time placement. Was the state ever a part of another state? Did governments other than the United States ever have claims that affected the land in this state? When was the state admitted into the Union?

2. Make a chart showing the various officials, departments and commissions of the state government. What are their duties and qualifications?

3. Attend a meeting of the state legislature. How is the district represented in the state legislature? What legislation, if any, has been introduced in the state legislature by these members? How did each of these members vote on the various bills introduced in the last legislative assembly? How many members are there in the state legislature? What are their qualifications?

4. See the film:

State Legislature Academy Films
20 min sd Hollywood, California
$90 rent $5 1948

Filmed during a session of a state legislature, explaining the detailed procedure of the legislative branch of our state governments in the enactment of a state law.
B. Constitutional Government and the Federal System

1. Write day-by-day newspaper accounts of the proceedings of the Constitutional Convention of 1787. When were the meetings held, who presided, who were the spokesmen of the day? What kind of people were they? Who was responsible for the actual wording of the Constitution? What was the attitude of the delegates toward the completed document?

2. Compare the constitutions of some clubs and organizations in the school or community with the state constitution and the constitution of the United States. In what respects are they similar? Do they have a preamble? Have they a bill of rights? What are the essential parts of a constitution? Why is it necessary for any constitution to contain a provision for its amendment? Why is it necessary that a constitution be interpreted? What difficulties does this present?

3. Make a chart comparing the division of powers between the states and the federal government. On what general basis are the powers divided? What controversies over the powers of the federal government have arisen? Investigate current issues in which federal control is involved: for example, federal aid to education.

C. Voting and Elections

1. Make a graph or pictorial chart comparing the total vote in a presidential election with the total adult popula-
tion of the United States. Obtain figures from the World Almanac. What per cent of the eligible voters voted? What might encourage people to vote in large numbers?

(1), (2), (3), (4), (6), (7), (18), (26), (32), (46), (48), (50), (51), (52), (55)

2. Have committees attend political rallies and collect campaign techniques. Which are designed to appeal to reason and which to emotion? Which types seem to predominate? Which seems to be most productive of results? What tentative conclusions can be drawn from these data concerning civic intelligence in the matter of voting? What remedies can be suggested for apparent weaknesses?

3. Select two or more newspapers which hold divergent views on certain election issues. Read these papers for a period of a week or more, noting how each presents its view of the issues. Make a bulletin board display of articles, editorials, and cartoons bearing upon these issues.

4. Conduct school elections according to requirements for regular elections, using members of the class as election officials.

5. Visit the polls on election day to observe the proceedings.
D. Political Parties

1. Interview a cross section of citizens in the community on questions such as: What do you think of political parties? What do you think of politicians? Why do you have this opinion? Do you take any part in politics? Why or why not? Classify and discuss the data. Does the citizen have an understanding of the importance of political parties? Is party membership necessary? Can a voter be intelligently independent? On what basis should a person determine his party membership?

(1), (2), (3), (4), (6), (7), (26), (45), (46), (50), (51), (52), (53)

2. Investigate the organization and functioning of a political party, tracing it in detail from the party worker through the district leaders and committees to the national committee. What are the duties of the various individuals? What is the relation of each to the person immediately above him? How is the local organization tied in with the county, state, and national organization? From these data make a chart for bulletin board display.

4. Stage a national convention for an assembly using members of the class on the National Committee.

E. Corruption and Graft

1. Make a study of current instances of graft and corruption. What factors are involved? Why are these practices so prevalent (if they are)? Who is to blame? How are these instances uncovered? What can be done to prevent such practices? Report on the administrations of Grant and Harding.

2. Investigate some well-authenticated cases of graft in connection with securing a public position, selling goods to the government, or evading a penalty. How was the incident arranged? Was any consideration asked or given? Why was the favor done? What was expected in return? Evaluate these cases. Was anything wrong actually done? Were individuals or the public injured? Were principles of democracy violated?

3. Have special reports on the work of the Kefauver Committee. What was the purpose of the committee? When was it formed? Who were its members? What did the committee accomplish?

F. Branches of the National Government

1. Have committees make a study of the three branches of government. What are the duties and powers of each? What are the qualifications for the various offices? Make a bulletin board display illustrating the system of checks and balances.
2. Make a map of the United States showing the distribution of electoral votes as compared with the population. How many electoral votes does this state have? What determines the number of electoral votes to which each state is entitled? Under the electoral system how is it possible for a candidate to win the popular vote and not the election? Has this ever been the case? What changes in this system have been suggested?

(1), (2), (3), (4), (6), (7), (18), (26), (32), (46), (47), (48), (49), (50), (51), (52), (53)

3. Present scenes from "State of the Union" or "Nine Old Men" for an assembly program.

4. Make a pictograph of the steps in making a bill a law.

What are the sources of bills? How is a bill formulated? How does a bill get out of committee? What happens to a bill after it is on the floor? What are the chief sources from which pressure is brought to bear upon members of Congress in efforts to secure or prevent the passing of laws?

5. Investigate a case currently being tried before the United States Supreme Court. What kinds of cases come within the jurisdiction of the Supreme Court? How does the court interpret the constitution?

6. Discuss whether the United States Supreme Court should be required to give advisory opinions as to the constitution—
ality of proposed laws when asked by Congress or the
President to do so.

7. See the films:

**Meet Your Federal Government**
Young America Films, Inc.
New York, New York
15 min sd
$48

Explains the powers of the federal government as well as the nature and function of each of the three main branches.

**How a Bill Becomes a Law**
Pictorial Films, Inc.
New York, New York
22 min sd
$60

A step-by-step visualization of the parts played by the ordinary citizen, his legislators and the Chief Executive in the making of our laws.

**The Supreme Court**
Coronet Instructional Films
Chicago, Illinois
10 min sd
$45 color $90

Follows a case from inception, through the lower courts, to final hearing before the Supreme Court. Shows the Supreme Court as the guardian of constitutional rights; teaches its function, powers, and jurisdiction.

IV. Studying Problems of Democratic Government at the World-Wide Level

A. Democratic versus Non-democratic Governments

1. Invite representatives from foreign countries to talk about the kinds of government in their countries and to answer questions.

2. Give reports on the influence of religious, economical, cultural, geographical factors on the type of government in a country.
3. Make a comparative study of democracy, fascism, communism, socialism, concerning such items as: form of government; purpose of the state; leadership; relationship of the citizen to the state; public opinion and political parties; religion; education; freedom of speech. How may any of forms of government be evaluated?

4. Indicate, in color, on a world map the areas of democracy and autocracy as they stand today, and a century ago. Is there a definite trend? How can one account for it?

B. World Government

1. Plan a panel on: "Should America Support a World Government?"

2. Give reports on such topics as: "World Government and Peace"; "World Government and America's Economy"; "Powers of a Federal World System."

C. Democracy in International Relations

1. Evaluate America's foreign policy in terms of its democratic ideals. To what extent has America practiced democracy in its relations with Canada and Mexico; Europe; Asia; the Middle East?

2. Collect newspaper articles which have reference to international policies. Evaluate these in terms of democratic principles.
SELECTED BIBLIOGRAPHY


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PROBLEMS OF PERSONAL AND COMMUNITY HEALTH
PROBLEMS OF PERSONAL AND COMMUNITY HEALTH

Health education is a concomitant of living. Health understandings, attitudes, habits, become functional when acquired by students in their day-by-day living. This suggests that the whole school should provide an environment conducive to healthful living, and that all staff members share the responsibility of promoting students' health.

To supplement, enrich, intellectualize such incidental teaching, this core unit is designed to deal with the various aspects of personal health problems that might not be handled adequately by any other means. But since community, national, and even international conditions also affect the health of the individual, favorably or adversely, the unit extends its scope to deal with health problems of the community—broadly conceived.
**Objectives**

To help students:

1. Develop desirable health understandings, attitudes, and habits.
2. Become acquainted with community agencies for health improvement and develop a desire and ability to cooperate with such agencies.
3. Eradicate health fallacies and develop a critical attitude toward health information and self medication.
4. Develop an understanding of the causes of accidents and ways of reducing or preventing them.
6. Understand the relation of nutrition to health and plan their own diets adequately.
7. Solve their sex problems and develop a wholesome attitude toward the different aspects of sex.
8. Gain some understanding of the functioning of the human body and how to maintain it in good condition.
9. Practice rules conducive to good mental and social hygiene.
10. Develop an understanding of the scientific bases of healthful living.
11. Understand the influence of social and economic factors prevailing in a country on the health of its people.

**Scope**

Achieving and maintaining healthful living at the

I. Personal level

II. Home-school level

III. Community level

IV. National and international levels
I. Achieving and Maintaining Healthful Living at the Personal Level

A. Posture

1. Invite the physical education teacher to lead a discussion on such questions as: What is a good posture? Why is good posture desirable? What habits tend to make for good posture? He may also demonstrate good posture for various activities and appropriate exercises for improving posture.

2. Display pictures of spinal curvature of various types, round shoulders, legs of unequal length, and uneven shoulders. Explain the causes of each.

3. Take snapshots of members of the class (side and front views) while they are engaged in different activities. Display them on a bulletin board and discuss the extent to which various students are practicing sound habits of posture.

4. See the film:

   Posture Habits
   Coronet Films
   10 min sd
   Chicago, Illinois
   $45 color $90
   1947

Develops posture consciousness and motivates the cultivation of good posture habits in the growing child. It treats standing, walking, and sitting positions, using a puppet to explain bodily structure and showing scrapbook examples of good posture among adults and why posture is important to everyone.
B. Exercise, Rest, and Sleep

1. Ask the physical education teacher to discuss problems of group concern. For example: Should every student have exercise? What are the factors that should be taken into account regarding the kinds and amount of exercise? Should one have a physical examination before playing? How long should one wait after meals before going into the water? Is it harmful to drink water during or immediately after a hard game? How should one cool off after strenuous activity?

2. Make a report on the problem of fatigue: its nature, causes, effects, and cure.

3. Keep a record for at least one to two weeks of time spent in bed each night and how much of that time you think you actually sleep. Are you forming good sleeping habits? If not, try to find out what prevents or disturbs your sleep. Work out a plan of improvement.

(1), (2), (3), (7), (8), (13), (18), (26), (27), (47), (50), (51), (53)

4. See the films:

**Exercise and Health**

Coronet Films

11 min ad

Chicago, Illinois

$45 color $90

1949

Shows that the right kind of exercise will go a long way toward making students healthier, happier, and more apt to succeed in any undertaking.
Best and Health Coronet Films
10 min sd Chicago, Illinois
$45 color $90 1949

Explains the fundamental facts about rest and teaches students to build correct rest habits.

C. Nutrition

1. See the films:

- **Balanced Way**
  - Castle Films Division, United World Films, Inc.
  - San Francisco, California
  - 20 min sd
  - Loan
  - 1945

Discusses the importance of various foods in the daily diet and the proper balance of foods for necessary nutrition—with special emphasis on milk products.

- **Vitamin-Wise**
  - National Film Board of Canada
  - New York, New York
  - 18 min sd
  - $50 rent $2.50
  - 1944

Explains vitamin categories of the main fresh vegetables and fruits. The film shows proper cooking methods to obtain the maximum food value, and conservation of both food and fuel.

*2. Keep a record of food intake each day for a period of a week. Study the record critically to determine whether the diet was balanced and whether it was suited to your particular health requirements.

   (1), (2), (7), (8), (53)

*3. Feed white rats or guinea pigs on a diet lacking some essential nutrient or vitamin, and compare their growth with those receiving an adequate diet.

   (1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (26), (47), (48), (50), (51), (52), (53)
4. Set up a display of balanced meals, indicating the approximate cost of each. Wax display foods or pictures pasted on cardboard are suitable for such displays. (1), (2), (3), (4), (6), (7), (8), (18), (47), (48), (50), (51), (52), (53)

5. Make reports on vitamins. Cover such points as: general history and circumstances of discovery; the letter name and scientific name of each; food sources of the vitamin; diseases resulting from vitamin deficiency; accepted minimum daily requirements; the effect of various methods of food processing on vitamins.

6. Clarify common food fallacies such as the following: Meats cause high blood pressure, kidney disease, and rheumatism. Eating acid fruits or vegetables and starches together causes indigestion. Milk and fruit juice taken together will upset the stomach. White meat is less harmful than dark or red meat. (26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

D. Overweight and Underweight

1. Make a study of such problems as: how to determine "normal" weight; how to gain weight; how to reduce; what causes overweight and underweight? (1), (2), (3), (4), (7), (8), (18), (26), (27), (28), (29), (47), (50), (51), (53)
2. Clip reducing advertisements from magazines and newspapers and post them on the bulletin board. Evaluate them in terms of such criteria as: Is the advertisement so worded as to be misleading? Are the claims scientifically sound? If the suggested directions were followed, would harmful consequences be apt to result? Are harmful drugs used? The school physician is a good source for help. (The same idea may be carried out with advertising along various other lines concerning health.)

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

E. Alcohol and Tobacco

*1. Make a study of such points as: alcohol and nutrition; effect of alcohol on mental and physical efficiency; alcohol and the average length of life. 
(1), (2), (3), (4), (5), (7), (18), (20), (21), (22), (24), (25), (26), (35), (51), (52), (53)

*2. Find out what alcoholism costs the nation. Present the findings in the form of a pictograph. 
(1), (2), (3), (4), (6), (8), (18), (26), (32), (47), (48), (50), (51), (52), (53)

3. Have a panel discussion on the topic "What We Can Do to Prevent Alcoholism."

4. See the films:
Where Does It Get You?
20 min sd
$50 loan
National Woman's Christian Temperance Union
Evanston, Illinois. 1946

Discusses the properties of alcohol and shows that it gets you nowhere if you want agility, stamina and judgment, the requirements for successful living.

Alcohol and the Human Body
15 min sd
$36 rent $4
Encyclopaedia Britannica Films, Inc., Wilmette, Illinois 1949

Shows the specific effects of ethyl alcohol on the body, describes the characteristics of the liquor and traces its course through the body, and its effects upon the brain, and actions of the imbiber.

5. Invite the school physician to discuss with the class the problem "How Harmful Are Cigarettes?"

6. Through library research work, compile different views on the relation of tobacco to health. Report these to the class.

F. Communicable Diseases

1. Prepare a tabular review of present knowledge of important communicable diseases, listing the name of the disease; the germ which is the causative agent, if it is known, the source of infection; the agent and mode of transmission; whether a method of active immunization is practiced; and whether there are special methods of control.

2. See the films:

How Disease Is Spread
15 min sd
$25 rent $1.50
Bray Studios Inc.
New York, New York
A series of dramatic episodes showing how bacterial infection is transmitted through carelessness in the ordinary contacts of life spread of infections; necessity of careful habits, and the proper cleaning of food materials.

Insects as Carriers of Institute of Inter-American Disease Affairs Washington, D. C. 1946

A cartoon story presents the fly, mosquito, and louse as carriers of dysentery, malaria, and typhus.

5. Study bacteria by preparing several petri dishes of sterile agar.

   a. Leave one dish open to the air for about fifteen minutes; then cover the dish.

   b. Put a few drops of unpasteurized milk into a dish; then cover it.

   c. Rub your fingers across the surface of a dish; then cover it.

   d. Keep a dish of the sterile agar tightly closed.
   
   Keep the dishes at room temperature for several days.
   
   Examine them and report your findings to the class.

G. Disease Control

1. See the films:

   Body Defenses against Disease Encyclopedia Britannica Films, Inc., Wilmette, Illinois 1937
   
   $45 rent $2.50

   Exposition of the three lines of defense—skin, phagocytic cells and lymphatics, and the blood, including a section on immunology. Microphotography of phagocytosis. Application of defense mechanism in specific cases. Action of liver and spleen. Types of anti-bodies and their effects.
Combines animation and life photography to show external symptoms of disease and how they affect the bloodstream. The film shows how immunity is achieved, either by surviving a disease, which usually provides active immunity, or by vaccination which, by providing passive immunity, is equally effective, without endangering life. The preparation of vaccines for such diseases as smallpox, pneumonia, and diphtheria is shown step by step in the film, with demonstrations of the use of each of the vaccines.

2. Invite the school physician to lead a discussion on immunisation. For what common communicable diseases are means of immunisation available? When should each be used? Must any be repeated from time to time? If so, at what intervals? What are the immunisation treatments which any child should receive from the time it is born until it is grown-up? Are such treatments available through any public agency in your community?

*3. Draw cartoons showing the necessity for inoculation and vaccination against communicable diseases. Make charts showing the effect of vaccination on the number of cases of typhoid and other communicable diseases.

(1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36), (46), (48), (50), (51), (52), (53)

4. Make reports on the contributions of scientists such as Pasteur, Koch, Lister and Jenner to disease control.
5. See the films:

**Story of Louis Pasteur**

Teaching Film Custodians, Inc.

17 min sd

New York, New York

Deals with Pasteur’s struggle to institute his new treatment for hydrophobia using serum to combat the disease; the jealousy and opposition shown him by the members of the French Academy of Medicine; and his final vindication after saving the lives of a small boy and a group of Russians.

6. Have a panel discussion on "The role of the individual in controlling disease."

H. Cancer

1. Read *The Challenge of Cancer* and prepare reports concerning such points as: What causes cancer? How may cancer be diagnosed, treated, and cured? What is the relation of cancer to such factors as age, nutrition, occupation, humidity, and hormones?

(1), (2), (3), (4), (5), (7), (18), (20), (21), (22),
(24), (25), (26), (35), (51), (62), (53)

2. See the films:

**Challenge: Science against Cancer**

Medical Film Institute

36 min sd

New York, New York

$45

Tells the story of cancer research.

**Battle against Cancer**

American Cancer Society, Inc.

12 min sd

New York, New York

1947

Microscopic slides are shown illustrating normal cell division followed by the invasion of cancer cells breeding wildly. The use of surgery, x-ray and radium in effective treatment are illustrated.
3. Take a trip to a hospital and ask a doctor to show and explain:
   a. Laboratory for preparation and examination of tissue specimens.
   b. X-ray equipment for diagnosis and treatment.
   c. Radium and how it is handled.

4. Make posters to illustrate: cancer danger signals; growing menace of cancer; whom cancer strikes—and where; leading causes of death in the United States. (1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (47), (50), (51), (52), (53)

I. Oral Hygiene

1. Interview a dentist and write a report for the class on the subject "How to Have Good Teeth."

2. Make a study of such problems as: Does brushing the teeth do any good? How should the teeth be brushed? How useful are dentrifices and mouth washes? Why and how do teeth decay? What are the common dental disorders and how can they be prevented? What causes "bad" breath and how can it be avoided?

3. See the film:

   **Oral Hygiene**
   10 min sd
   $15

   Castle Films Division, United World Films Inc.
   San Francisco, California

   Demonstrates the proper methods for brushing teeth, massaging gums and using dental floss.
J. Hygiene of Digestion

1. See the film:

**Digestion of Foods**
Encyclopedia Britannica Films, Inc., Wilmette, Illinois
11 min sd
$45 rent $2.50 1938

Summarizes the digestive process including the work performed in mouth, stomach, and small intestine. Secretions, enzymes, systems affected, and products formed. Microphotography of reactions, digestive movements and their control. Relation of circulatory and nervous systems to the digestive process.

2. Discuss such problems as: What eating habits and conditions aid digestion? What are some of the causes of indigestion? How long should one rest after meals? What are the causes of constipation? How effective are laxatives?

3. Analyze the errors involved in the widespread belief in "acidosis" and the value of alkalizers. Review critically the claims of advertised remedies for "indigestion."

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

K. Hygiene of Respiration

1. See the film:

**Mechanisms of Breathing**
Encyclopedia Britannica Films, Inc., Wilmette, Illinois
11 min sd
$45 rent $2.50 1936

Shows the breathing mechanism in operation. Technical animation of gaseous exchange in lungs and body tissue cells, including pathological conditions. Demonstration of artificial respiration. Nervous control of breathing and factors affecting rate and depth of breathing.

2. Count your rate of breathing while sitting quietly.

Count it again after exercising vigorously for one or two
minutes. Make a chart comparing rates of individual members of the class and explain results.
(1), (2), (3), (4), (6), (7), (8), (15), (26), (46), (48), (50), (51), (52), (53)

3. Make a study of such points as: the relative values of nasal and mouth breathing; the value of respiratory exercises; the value of proper ventilation; the effect of tobacco on the respiratory organs; common disease of respiratory organs and how they may be avoided.

4. Invite the music teacher to talk on "The Use and Control of the Vocal Organs and the Breathing Apparatus."

5. Ask the school physician or nurse to show an x-ray film of tuberculous lungs and point to the tubercles formed; a film showing the results of injuries due to industrial dust.

I. Hygiene of Circulation

1. See the film:

<table>
<thead>
<tr>
<th>Heart and Circulation</th>
<th>Encyclopedia Britannica Films, Inc., Wilmette, Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 min sd</td>
<td>1957</td>
</tr>
<tr>
<td>$45 rent $2.50</td>
<td></td>
</tr>
</tbody>
</table>


2. Study blood under the microscope. Prick your finger with a sterilized needle and place a small drop of blood on a slide. Place a cover glass on the blood and examine it with the low and then the high power of the microscope.
3. Take pulse rate before and after exercise. Discuss ways in which exercise, excessive excitement, and emotional strain modify the condition of the blood, and the results of changes in pulse rate in counteracting these changes.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (46), (48), (50), (51), (52), (53)

4. Watch blood circulate in a frog's web under microscope or through a microprojector. Name corpuscles and plasma. Differentiate blood flow in arteries, veins, and capillaries.

5. Discuss ways in which knowledge of the circulation of the blood has been obtained. Study the social and scientific background for Harvey's discovery of the circulation of the blood and the reasons for the opposition to his theory by his contemporaries. Discuss Harvey's experiments as illustrations of scientific method. Trace the refinement of Harvey's theory as more facts become available with the discovery of the microscope and the scientific advances.

M. Hygiene of the Skin and Hair

1. See the film:

<table>
<thead>
<tr>
<th>10 min sd</th>
<th>Care of the Skin</th>
<th>Encyclopedia Britannica Films, Inc., Wilmette, Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50 rent $2.50</td>
<td></td>
<td>1949</td>
</tr>
</tbody>
</table>

Demonstrates the food habits of skin hygiene which every child should form. Portrays children as they prepare for
bed, showing the proper way to wash hands and face, and to bathe. Common skin ailments are illustrated. Animated drawings describe the structure of the skin and explain why soap is necessary for cleanliness.

2. Make a study of such problems as: How often should one take a bath? What kind of bath should one take before going to bed? When exhausted? When cold or wet? What causes sweat? How often should hair be washed? What causes baldness? Do hair tonics help to improve the hair?

3. Invite the school physician to talk on "Skin Disorders: Their Causes and Cures."

4. Collect suggestions for the care of the skin and hair from newspaper and magazines advertisements. Determine which are inaccurate and which are extravagant in their claims. What are some possible hazards in using cosmetics?

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

N. Hygiene of the Nervous System

1. See the films:

Functions of the Nervous System

Knowledge Builders

New York, New York

1948

$40 rent $2

Illustrates and describes the nervous system and its functions. Emphasis is placed upon its regulation of all healthy bodily functions.

2. Make a study of such problems as: How does the brain control the activities of the body? What is reflex action? Upon what does the health of the nervous system depend? How are habits formed? How do we learn? Why is a healthy nervous system so important?
3. Invite the school physician to talk on "Nervous Disorders: Their Causes and Cures."

4. Early in the day, try various tests of skill and thinking. Repeat them at the end of the day to discover any difference in reaction. Adding columns of figures makes a suitable test.

(1), (2), (3), (6), (26), (46), (47), (48), (50), (52), (53)

0. Hygiene of the Eye

1. See the film:

   Your Eyes
   10 min sd
   $40
   Young America Films, Inc.
   New York, New York
   1947

   Shows the construction of the human eye and the function of each of its parts. Explains such maladjustments as farsightedness and nearsightedness, and their manner of correction. Stresses the importance of proper care of the eyes.

2. Make a study of problems related to causes of eyestrain and their prevention; eye defects; wearing glasses; and diseases of the eye.

3. Secure a chart for color-blindness and examine members of the class. As a follow-up, discuss the cause of color-blindness and its social consequences.

4. Invite the nurse or school physician to demonstrate how to remove an object from the eye.

P. Hygiene of the Ear

1. See the film:
Your Ears

Illustrates the construction of the human ear and the function of each of its parts. Discusses the manner in which certain diseases cause deafness, and stresses the necessity for proper care of the ears.

2. Make a study of such problems as: How do we hear? What is the cause of deafness? What causes humming in the ear? What makes the eardrum pop? How can one stop earache? Why is hearing affected when one has a cold? How does lip reading help those who are deaf?

3. Invite the school physician to demonstrate the testing of each ear to show that some tones may be heard while others are not audible.

Q. Hygiene of Sex

1. Invite the school physician to discuss: What happens to bring about menstruation? Do boys have any function similar to menstruation? Why do some girls start menstruation earlier or later than most girls do? What causes the seminal emission? What is the effect of masturbation? How can one break the habit of masturbation? Why are some boys circumcised and others not? Why do some boys have night dreams of sexual relations? Is "necking" harmful? What is "petting?" What about pre-marital sex relations?

2. See the films:
Animated drawings and diagrams tell in a pleasant, direct and scientific fashion the frank story of this natural phenomenon.

Human Reproduction
20 min sd
apply

A factual film on the human reproduction systems and on the process of normal human birth. Models and animated drawings are used to describe the anatomy and physiology of the individual reproductive organs of both men and women. Stresses biological normalcy of reproduction and emphasizes importance of clear, objective familiarity with these facts as important to the success of marriage and parenthood.

3. Make a study of venereal diseases: their causes, effects, and prevention. What procedures are set up by the state for the reporting of syphilis and gonorrhea? What is the purpose of requiring a blood test before a marriage license is issued? At the time of pregnancy?

R. First Aid

1. See the films:

First Steps in First Aid
31 min sd
loan

Basic information contained in courses for beginners in first aid. Depicts series of accidents, what not to do, correct manner of handling accident cases, symptoms and first aid treatment for shock, treatment of bleeding, treatment for burns, warning against wound infections.

Artificial Respiration
9 min sd color
$43.67

Basic information contained in courses for beginners in first aid. Depicts series of accidents, what not to do, correct manner of handling accident cases, symptoms and first aid treatment for shock, treatment of bleeding, treatment for burns, warning against wound infections.
Demonstrates artificial respiration in counteracting the effects of drowning, asphyxiation or electrical shock. Shows the prone position of the victim, and the position of the person practicing artificial respiration.

**Fundamentals of First Aid**
Castle Films Division United World Films, Inc.
18 min sd
color $83.43
San Francisco, California
1948

Shows the five main parts of personnel damage control: fundamentals of first aid; wounds; bomb blast and burns; fractures; artificial respiration.

2. Invite the school nurse to demonstrate first aid treatment for various conditions.

3. Prepare a first-aid kit which will be suitable to take with you on overnight hikes and on trips in the family car. Consult the school nurse or family physician as to the most useful materials to include.

### S. Emotions and Health

1. Make a study of such points as: how anger and fear affect the body, emotions and diseases; how to attain emotional control; attitudes that are conducive to good mental hygiene; emotions as guide to action.

2. Discuss the thrill stories that are on radio and television. What is the emotional reaction to them? What is the effect of these programs on the mental health of young people? What kind of programs might replace at least a part of these so-called thrillers? Send conclusions to several radio and television stations. Give some consideration to movie thrill stories.
3. See the filmstrip:

*Keep Your Head*
15 min sd 100 fr
$20 rent $5

Zurich General Accident and Liability Insurance Co., Ltd.
Chicago, Illinois
1947

Discusses the control of one's emotions and its relationship to health and safety.

II. Achieving and Maintaining Healthful Living at the Home-School Level

A. Healthful Homes and Schools

1. Make a health checklist for evaluating your home and school. Include such points as: location, ventilation, furnishings, fire protection, heating, odors, lighting, cleanliness, eating facilities, garbage disposal, toilet facilities, and care of lawn and garden areas.

2. Make snapshots in your city to illustrate: homes lacking the conditions necessary for healthful living; homes that are economical but hygienic.

B. Health Examinations

1. Invite the school physician to talk about the purpose, content, and use of health examinations. He might demonstrate the uses of the stethoscope, fluoroscope, ophthalmoscope, otoscope, and other instruments in his office.

2. Arrange to have a complete health examination.

3. Discuss the responsibilities of the individual for making use of the results of his health examination. Include
such topics as treatment of physical defects; correction of unhealthful habits; planning a healthful schedule for work, rest, and play.

C. Safety

1. Collect news items concerning accidental injuries in the home and school. Analyze these in terms of the nature, causes, results, and possible prevention of the accidents.

2. Draw cartoons to illustrate safe and unsafe conditions and practices in the home and school.

3. Keep a record of accidents that occur in the school. Record: date and time of accident; age and grade of children involved; type of accident; first-aid treatment given. How can the number of accidents be reduced?

4. See the films:

<table>
<thead>
<tr>
<th>Film Title</th>
<th>Duration</th>
<th>SD/Color</th>
<th>Price</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let's Play Safe</td>
<td>10 min</td>
<td>SD</td>
<td>$45</td>
<td>color $80</td>
</tr>
<tr>
<td>Safe Living at School</td>
<td>10 min</td>
<td>SD</td>
<td>$45</td>
<td>color $90</td>
</tr>
</tbody>
</table>

Shows school children on the playground. Six playground incidents are dramatised showing hazardous situations developing. Just as it appears that someone will get hurt the action is stopped, and animated characters show what might happen. The children are given an opportunity to repeat their performance, but to correct their attitudes and do it safely.

We go on a safety tour to see the safety features of a school and to learn what students can do at school to live safely. With emphasis on three basic safe living principles: courtesy, good housekeeping, skillful and correct actions.
III. Achieving and Maintaining Healthful Living at the Community Level

A. Health Department

1. Visit the health department in your city or county and study its organization and functions. Also visit the laboratories and clinics of this department.

2. Accompany an inspector from the health department as he inspects various restaurants of the community and report to the class.

3. Study the regulations of the health department for the control of communicable diseases such as chicken pox, diphtheria, measles, mumps, poliomyelitis, scarlet fever, typhoid fever and whooping cough.

4. Secure statistics and make graphs of the spread of communicable diseases during the past five year period.

(1), (2), (3), (4), (7), (8), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36), (48), (50), (51), (52), (53)

5. Report on the work done by health officials to suppress "nuisances" such as noise and smoke.

B. Health Resources

1. Make a survey of the health resources of your community.

This may include: the number, training and specialities of physicians and surgeons; the hospitals and clinics, and their facilities, staff, and financial resources; number of private registered nurses and public health nurses.
Compare findings with available information on conditions elsewhere.
(1), (2), (3), (4), (6), (7), (18), (26), (46), (48), (50), (51), (52), (53)

2. Investigate community provisions for safe water and milk, pure food, sanitation, and sewage and industrial waste disposal; mosquito and fly control; rodent control; immunisation against communicable diseases; quarantine; control of dusts and fumes; recording vital statistics.

3. Visit a hospital and go through its laboratory, x-ray rooms, operating rooms, and wards. Observe methods used to obtain asepsis and learn about precautions taken in the isolation ward to prevent the spread of communicable diseases.

C. Sanitary Measures

1. Analyze laws relating to public health services in your community; for example, those concerning sale of foods, methods of fighting insects and disposal of waste. Compare them with laws of other communities. Suggest changes and additions that might increase their effectiveness.

2. Make trips to:
   a. A dairy to observe pasteurization and handling of milk.
   b. A local water supply plant to observe steps in the
purification of water.

o. Local garbage and rubbish-disposal plants.

3. Analyse the causes of food poisoning and discuss methods of emergency treatment.

D. Industrial Hygiene

1. Visit an industrial plant and find out about any special hazards in the plant and provisions for the protection of workmen on the job. What is the role of government in industrial hygiene and safety?

2. Make a graph to illustrate the industrial accident rate in the community for the last twenty year period. How do you account for the results?

E. Traffic Safety

1. Obtain data on accidents occurring during the last five years from the police department. Compare these data with the state and national figures. Is the number of accidents increasing or decreasing? Explain.

2. Spend fifteen minutes at a busy intersection and record the errors made by pedestrians and drivers. Compare
your observations with those of your classmates.
(1), (2), (6), (8), (26), (46), (48), (52), (53)

3. Invite a speaker from the automobile association to give
a talk on "How Traffic Accidents May Be Reduced or
Prevented."

4. Visit the automobile association or the police department,
and with their assistance prepare a spot map showing the
number and location of accidents in your city.
(1), (2), (6), (26), (32), (46), (53)

5. Write several automobile companies for information con-
cerning safety devices in the cars they manufacture.

6. Plan a campaign for reducing traffic accidents in the
community.

IV. Achieving and Maintaining Healthful Living at the National and
International Levels

A. America's Health Record

41. Illustrate graphically:

a. Average length of life in the last half century.
b. Infant mortality in the last half century.

c. Tuberculosis death rate.
d. Diphtheria death rate.

What trends do these graphs show? Explain.
(1), (2), (3), (4), (7), (8), (18), (20), (21), (22),
(23), (24), (25), (26), (27), (32), (33), (34), (36),
(47), (50), (51), (52), (53)
2. Secure data on the health of draftees as evidenced by pre-induction examinations. To what extent do these data give a picture of the health status of the nation? (1), (2), (3), (4), (6), (7), (18), (20), (21), (22), (24), (25), (26), (43), (45), (46), (50), (51), (52), (53)

3. Compare the chief killers of today with those of fifty years ago. What do you deduce from such a comparison? (1), (2), (3), (4), (6), (7), (8), (18), (26), (46), (48), (50), (51), (52), (53)

B. Improving National Health

1. Report on the work of Federal and private organizations and institutions which promote public health; for example, American Public Health Association, The American Red Cross, The National Tuberculosis Association, and The Children's Bureau in the Department of Labor.

2. Investigate the work done by institutions endowed for the advancement of medical science such as: Carnegie Institute; W. K. Kellogg Foundation; National Foundation for Infantile Paralysis; Rockefeller Foundation; Julius Rosenwald Fund; Alfred P. Sloan Foundation.

3. Investigate group health insurance as one solution for providing adequate medical care. From insurance agents or other sources find out the provisions and costs of some typical health and accident policies and to whom
they are available.

(1), (2), (7), (8), (53)


5. Have a panel discussion on the topic: "Should a Program of Socialized Medicine be Adopted in the United States?"

C. Control of Disease

1. Investigate the precautions taken to prevent the spread of communicable diseases from one state to another.

2. Investigate the measures taken at the international level to prevent the spread of disease.

3. Invite a quarantine officer or sanitary inspector who works at an airport or seaport to talk to the class on how he helps safeguard the health of the nation.

D. Factors Affecting Health

1. Study the effect of educational, social, and economical conditions prevailing in a country on the health of its people.

2. Discuss the effect of war on nutritional diseases.

3. Investigate the extent and distribution in the United
States by region and by income groups of major deficiency diseases such as scurvy, pellagra, beri beri, and rickets.

(1), (2), (3), (4), (7), (8), (18), (26), (48), (50), (51), (52), (53)
SELECTED BIBLIOGRAPHY


Williams, William O., "A Resource Unit in Healthful Living for the Tenth Grade Core Class at the University School." Unpublished Master's thesis, The Ohio State University, Columbus, Ohio, 1948.

PROBLEMS OF ECONOMIC RELATIONSHIPS IN A DEMOCRACY

- 306 -
Problem Area 13

PROBLEMS OF ECONOMIC RELATIONSHIPS IN A DEMOCRACY

As a result of the technological developments in the last half century, the pattern of American economy is changing. Among these changes are: the preponderance of power wielded by organized economic groups as compared with the economic power of the individual, the tendency of concentration of economic power in a few hands, domination of the corporation as an economic organization, government participation in economic life, the increased role of the individual as a consumer.

Such changes have significant implications for both the life of the individual and society. Students should become economically literate since individuals and groups are in a position where their actions are potentially able to affect the lives and fortunes of so many. Failure of any part of our closely-knit economy to function affects the operation of every other part.

This unit is designed to help students attack the more common and persistent economic problems that influence their lives.
Objectives

To help students:

1. Become intelligent and effective consumers.
2. Understand how the consumer's welfare is protected through the activities of various agencies.
3. Learn to manage their personal financial affairs efficiently.
4. Become oriented to vocational living.
5. Study the national economy, its past, present, and probable future.
6. Study the impact of science and technology on economic living.
7. Understand the interrelationship of a nation's welfare and its economic strength.
8. Understand the interdependence of the economic, social, political, and cultural aspects of living.
9. Compare the major economic systems of the world.
10. Recognize the economic interdependence of the peoples of the world.

Scope

Studying problems of economic relationships at the:

I. Personal-family level
II. Community and national levels
III. International level
I. Studying Problems of Economic Relationships at the Personal-Family Level

A. Consumer Advertising

1. Read critically the pages of advertising in some magazines or newspapers. Collect samples of false or misleading advertisements; honest advertisements; advertisements containing exaggerated claims. Post these on the bulletin board with comments under each. Discuss your comments with classmates.

(37), (38), (39), (40), (41), (42), (43), (44), (45)

2. Analyze some advertisements as to specific facts and attention-getting devices. What types of information did you find? What part of the printed matter of each advertisement was devoted purely to giving information? What information, if any, is lacking? What devices such as pictures and startling headlines were used to gain attention? Check the factual accuracy of each advertisement against the best information you can find.

3. Discuss the extent to which you can rely on the information and advice you get from the advertiser about health, diet, investments, how to spend a vacation, or any other of the practical affairs of life. To what extent must you be skeptical and wary about what advertisers say? Do the same conclusions apply to all advertisers? Why should a person build up a defense against consumer propaganda?
B. Consumer Protection

1. Select examples of good and bad labels and explain reasons for your classification.

2. Examine several labels found on clothing (e.g. "all wool," "shrunken," "preshrunk," "shrinkproof"), then tell some of the most important items that such labels should contain.


4. Read the labels on foods that are purchased during one entire week for use in your home. List the specific information on the labels that indicate quality and content. Find out which foods measure up to government standards.
5. Examine the products in your home medicine cabinet. Study the labels and find out whether the products comply with the regulations of the Federal Food, Drug, and Cosmetic Act.

6. Write to the Food and Drug Administration of the United States Department of Agriculture to have your name placed on the mailing list to receive Notices of Judgment against manufacturers and distributors. Make a summary of the findings in a particular case and report to the class.

7. Select some canned fruits or vegetables and send them to the Marketing Service of the United States Department of Agriculture for testing. Report results to the class.

8. Test some commercial products such as tooth pastes and powders, soaps, creams, hair dyes for any harmful ingredients.

9. Report to the class on the work of the Consumer's Union, Consumer's Research, the American Medical Association, and other private agencies. How do such agencies aid the consumer?

10. List ways in which the government protects the consumer in your community. Include the inspection of milk, water, food stores, and barber shops; the licensing of doctors and beauty operators. Is the protection service adequate in each case? How are the protective measures enforced?
11. As a class project write a booklet entitled "How to Get Your Money's Worth."

12. See the films:

**Consumer Protection**
Coronet Instructional Films
10 min sd Chicago, Illinois
$45 color $90 1948

Compares the buying habits of two families with reference to the use of consumer services for intelligent guidance. Stresses the improved standards of living of one family who protect their buying by the use of the wealth of information available from governmental and private services.

C. Effective Buying

*1. Select some article that is sold from house to house, by mail order houses, and by local stores. Compare prices and quality. How do you account for any differences? (1), (2), (3), (4), (6), (7), (8), (18), (26), (48), (50), (51), (52), (53)

*2. Make a cost analysis of some commercial product and determine the percentage of the retail price that goes to the producer, the retailer, and the advertiser. (1), (2), (3), (4), (7), (8), (18), (26), (47), (50), (51), (52), (53)

*3. Ask the science teacher to help you make some toothpaste, toothpowder, or ink. Compare the cost of the materials with the retail price of similar commercial articles. Explain the difference in price. (1), (2), (3), (4), (6), (7), (8), (18), (26), (47), (48), (50), (51), (52), (53)
4. Analyze the reasons why you and your family buy from the places where you are accustomed to buy groceries, drugs, clothing.

5. List the purchases of your family for a week, giving reasons for each purchase. Were the purchases planned? Was the choice influenced by need, value, or appeal?

6. Compute the total cost of purchasing a costly item on the installment plan. How does this compare with the cash price? What are possible advantages and disadvantages of installment buying? Discuss governmental control of installment buying.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (47), (48), (49), (50), (51), (52), (53)

7. See the films:

**Installment Buying**  
Coronet Instructional Films

10 min sd  
Chicago, Illinois

$45 color $90  
1948

A young doctor’s experience in buying furniture on installments. Demonstrates to students some of the pitfalls of installment buying and encourages them to make a complete investigation of installment credit, contracts, and rates of interest before making credit purchases.

8. Investigate the policies of local stores in selling for cash and on credit. Which ones have variations in price? How much is the difference? What additional carrying charges are added in the case of credit sales?

9. Invite the business education teacher to talk on "How to Take Advantage of Bargain Sales."
D. Managing Money

1. Make a plan for apportioning your allowance among the activities and needs for which you are responsible. What proportion of family income should be used for your personal needs?

2. Make a study of the income and expenditures of your family. On the basis of the information you obtain from your family, prepare a budget of the income and expenditure for twelve months.

3. Dramatize: A family that believes it ought to budget but never gets around to it; a family that tried a budget and gave up; and, a family that started a budget, stuck to it, and made it work.

4. Discuss such problems as: How much of one’s first earnings belong to himself; and to the family? How should one save for college years; for establishment of home and family?

5. Ask members of the class who have saving accounts to talk on how to open an account. What are the advantages? Learn how to write checks.

6. List agencies in the community that lend money. Visit some of them to secure information on personal loans and
security loans. How do their rates compare? Where would a wise consumer attempt to secure a loan?

(1), (2), (3), (4), (6), (7), (8), (18), (26), (48), (49) (50), (51), (52), (53)

7. Invite an insurance expert to talk to the class on how to select a policy.

*8. List the assets of your family that should be insured.

Invite an insurance expert to talk to the class on how to select a policy.

*8. List the assets of your family that should be insured. Ask an insurance expert to estimate the amount of coverage needed, the cost, and the probable return.

(1), (2), (3), (4), (7), (8), (13), (26), (53)

*9. Plan an insurance proposal that you think would give your family adequate protection. Consult an insurance expert for detailed information.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (47), (48), (49), (50), (51), (52), (53)

10. See the film:

<table>
<thead>
<tr>
<th>Sharing Economic Risks</th>
<th>Coronet Instructional Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 min sd</td>
<td>Chicago, Illinois</td>
</tr>
<tr>
<td>$45 color $90</td>
<td>1947</td>
</tr>
</tbody>
</table>

Through a high school boy whose bicycle is stolen various aspects of property and life insurance and the principle of sharing economic risks are shown. Insurance terms are defined.

E. Earning a Living

*1. Survey the various occupations in your community, grouping them under the headings: agriculture, mining, industry, transportation, trade, public service, professional service, domestic and personal service, and clerical work.
Make a series of graphs showing the number of employees in each of the above occupations for the last twenty year period. What trend is apparent?

1. (2), (3), (4), (6), (7), (8), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36), (46), (47), (48), (50), (51), (52), (53)

2. Invite several personnel managers to serve on a panel to discuss the competencies needed in various vocations, opportunities in their fields, financial and other compensations, and pleasant and unpleasant aspects of various jobs.

3. Visit the local employment agency. Find out what kinds of jobs are generally available.

4. Choose some occupation in which you are interested and report on its past, present, and probable future in the community. What education is needed to do the job well?

1. (2), (3), (4), (6), (7), (8), (13), (18), (20), (21), (22), (24), (25), (26), (33), (44), (46), (47), (48), (50), (51), (52), (53)

5. Make a job thermometer showing the occupational opportunities in the community as revealed by a survey of the want ads in the daily newspaper.

1. (2), (3), (4), (6), (7), (18), (26), (32), (46), (48), (50), (51), (52), (53)
6. Visit a small business, a factory, or a store in the community. Find out: the number of new employees hired each year; qualifications for employment; the work to be done; salary offered; and opportunities for advancement.

(1), (2), (3), (4), (6), (7), (8), (53)

7. Ask some members of the class securing part-time jobs to talk about problems of concern to the class such as: deciding whether to take a part-time job or not; choosing among several part-time jobs.

II. Studying Problems of Economic Relationships at the Community and National Levels

A. Government and Finance

1. Make a study of the various sources of government income at the local, state, and national levels and make graphs comparing the revenues from these sources at each level. (1), (2), (3), (4), (6), (7), (8), (18), (26), (32), (47), (48), (49), (50), (51), (52), (53)

2. Compare the income and expenditures of your state with those of other states. How do you account for any differences?

(1), (2), (3), (4), (6), (7), (8), (18), (26), (48), (50), (51), (52), (53)

3. List the services provided by each unit of government under which you live.
4. Make a study of some particular tax such as the income tax and find out: the rates of taxation; the basis upon which the taxes are levied; how taxes are collected; for what purposes the tax money is used.

(1), (2), (3), (4), (6), (7), (8), (18), (26), (47), (48), (49), (60), (61), (52), (53)

5. Illustrate by means of a graph how the federal tax dollar is spent.

(1), (2), (3), (4), (7), (8), (18), (26), (32), (47), (48), (50), (61), (52), (53)

6. Make a graph showing government expenditures during the last twenty year period. What trend is apparent? What factors have contributed to this state of affairs?

(1), (2), (3), (4), (7), (8), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36), (48), (50), (51), (52), (53)

7. Illustrate graphically the national debt during the last twenty year period. Is the debt increasing or decreasing? How do you account for this? If each person in the United States were required to pay an equal share of the national debt, approximately how much would your share be?

(1), (2), (3), (4), (7), (8), (18), (20), (21), (22), (24), (25), (26), (27), (32), (33), (34), (36), (47), (48), (50), (51), (52), (53)
8. Invite an economist to lead a panel discussion on the effect on the consumer of devaluing the dollar. What is the effect upon debtors, creditors, salaried workers, wage earners, and business men?

9. Write a paper on "How Inflation May Be Prevented."

10. Make a four-columned chart showing some of the characteristic indications of prosperity; decline in the business cycle; depression; and recovery. Describe the present period and discuss the outlook for the future.

11. Investigate the influence of the Federal government on prices of farm products and report to the class.

12. Write to the Regional Office of Price Stabilization for information concerning government control of prices. What prices are being controlled? How do present-day prices of meat and other commodities compare with those of 1945? with those of pre-World War II?

13. Plan a panel discussion on the topic: "Should the Federal Government Control Prices?"

B. Our Changing Economy

1. Make a list of materials in common use today which were unknown in this country in colonial days; civil war days.

2. Define some economic problems faced by modern industrial society. What can the individual do to help solve these problems?
3. Compare the machine power utilized in the production of goods today with that of 1930; 1900; 1850. What is the outlook for 1960? What has been the effect upon the output of goods?

(1), (2), (3), (4), (7), (18), (20), (21), (22), (24),
(25), (26), (33), (34), (36), (48), (50), (51), (52), (53)

4. Make a chart showing the hours of labor the average factory worker had to give in 1914 to earn some products such as shoes or a piece of furniture, compared to hours required in 1950.

(1), (2), (3), (4), (7), (8), (16), (26), (32), (48),
(50), (51), (52), (53)

5. List specific examples of machinery that have made it possible to increase production and lower costs.

6. Debate: Resolved, that the increasing use of machinery in industry tends to increase the number of unemployed.

(1), (2), (6), (7), (18), (26), (47), (48), (50), (51),
(52), (53)

7. Make a graph comparing the United States' production of wheat, steel, cotton, coal, and oil with that of the rest of the world in 1950; 1920; 1900.

(1), (2), (3), (7), (18), (26), (32), (48), (50), (51),
(52), (53)

8. Discuss the advantages and disadvantages of specialization in industry.
9. Make a map showing the location of the great steel mills in the United States. Do the same for the main centers of the automobile and petroleum industries. Discuss reasons for their location. On these maps trace the routes which the raw materials follow on their way to the industrial plants.

10. Draw a series of cartoons illustrating the interdependence of the farmer, the laborer, the manufacturer, and the consumer.

11. Give special reports on:
   "The History of a Large Corporation."
   "Production of Goods by the Government."
   "Government Regulation of Big Business."

C. Labor

*1. Investigate the wage rates for various occupations in your community. How do these rates compare with the cost of living in the community? How do they compare with wage rates in other communities?

   (1), (2), (3), (4), (6), (7), (8), (18), (20), (21), (23), (24), (25), (26), (48), (50), (51), (52), (53)

*2. Interview a representative from the local office of the United States Employment Service to find out the number of unemployed in the community. What are the major causes of unemployment in the community?

   (1), (2), (7), (53)
3. Study several of the most important local industries to determine the reasons why they developed in this particular area.

4. Make a bulletin board display of newspaper clippings dealing with a recent strike or lockout in the community. What caused the dispute? What was the effect on the economy of the community? How was it settled?

5. Make a graph showing the number of strikes in the United States in the period 1938-1951. How do you account for any marked variations? What is the effect of strikes on the economy of the nation?

6. Make a study of the extent of unemployment in the United States during the last twenty years. At what point was unemployment greatest? least? What is the outlook for the future?

7. Make a chart showing the major provisions of the Federal Fair Labor Standards Act; Healey Act; Workmen's Compensation; Social Security Act. Make recommendations for bringing about greater economic security.
D. Standards of Living

*1. Make a chart showing the purchasing power of the dollar over the last thirty year period. How do you account for the fluctuations? What happened to the purchasing power of the average income between 1945 and 1950? 
(1), (2), (3), (4), (6), (7), (8), (18), (20), (21), (22), (24), (25), (26), (32), (33), (34), (36), (48), (50), (51), (52), (53)

*2. Compare the average yearly income of managers, professionals, skilled workers, clerical and sales persons, farmers, and laborers. How do you account for any inequalities that exist? 
(1), (2), (3), (4), (7), (8), (18), (26), (27), (47), (48), (50), (51), (52), (53)

*3. Determine the relative prosperity of individuals in various states by comparing the number of automobiles, radios, telephones, and other products owned per one hundred persons. Analyze the factors which contribute to any pronounced inequalities. 
(1), (2), (3), (4), (7), (18), (26), (48), (50), (51), (52), (53)

*4. Make a chart showing the number of minutes of working time required for the purchase of one pound of selected foods in the United States and several other countries. Data may be secured from the United States Bureau of Labor Statistics.
5. Propose a plan for raising the standard of living of the lower brackets of our population.

E. Natural Resources

1. Make a list of the ways that modern society is wasting its natural resources. Suggest some methods for reducing this waste.

2. Study the extent of the depletion of natural resources in the United States. How long will the country's present resources in forests, coal, and oil last? Estimate the monetary cost of this depletion.

3. Show by means of a graph the relative proportion of the world's resources possessed by the United States. Discuss the social-economic implications.

4. Have a panel discussion on government responsibility for the conservation of natural resources.

5. Report on some government activities in the conservation of natural resources.

6. Make a survey of the ownership of natural resources in the United States. Discuss the problem of government
ownership versus private ownership of natural resources.

7. Discuss the relation of the resources of the United States and our standard of living; our strength as a world power.

8. Propose a comprehensive plan for conservation of natural resources.

III. Studying Problems of Economic Relationships at the International Level

A. Trade and Exchange of Goods

1. Study the bases and advantages of international trade. Explain how it is possible for the countries concerned to gain in the exchange of goods, how trade makes more materials available to more people, and how no nation is really self-sufficing.

2. List some countries including the United States which depend entirely upon international trade for certain goods. Mention the goods which they do not produce domestically and give reasons why they do not produce them.

3. Explain why the higher the standards of living and the greater the prosperity of the people of a nation, the greater is their economic interdependence. Discuss the advisability of nations specializing in production, exchanging their products, and becoming more and more interdependent.
4. Make a chart showing the chief exports and imports of the United States in 1950; 1940; 1920 and 1900. How do you account for any differences? What was the effect of World Wars I and II?

5. Keep a record for a week of the foods you eat. Which are produced in the United States? Which are imported?

6. Trace the route of a commodity imported by the United States from its natural source to the American home.

7. Make a chart showing the chief exports and imports of the United States, Russia, Great Britain, France, and Japan. How do these exports and imports affect the economy of the country involved?

8. Debate: Resolved, that the United States should adopt a policy of free trade.

9. Give arguments for protectionism. Include such points as protection of infant industries, industrial independence in the event of war, and protection against lower wage scale.

10. Make a report on one or more factors that have tended to unbalance international trade, such as the wars of the 20th century, drastic changes in price and trade rela-
tionship, trade barriers, and international cartels.

11. Write a report on efforts to stabilize world trade, include reciprocal trade agreements, lend-lease, the European and Recovery Programs.

12. See the filmstrip:

<table>
<thead>
<tr>
<th>International Trade</th>
<th>McGraw Hill Book Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 fr si</td>
<td>New York, New York</td>
</tr>
<tr>
<td>$5.50</td>
<td>1950</td>
</tr>
</tbody>
</table>

B. Economic Cooperation

1. Discuss the importance of international economic cooperation and the efforts launched in order to promote it. Include the work of the United Nations, the Economic and Social Council, the International Labor Organization, and the World Health Organization.

2. Explain the aims of the Marshall Plan. How was it accepted by European nations? Discuss the handling of this plan, and the successes and failures involved.

3. Discuss the various aims for international economic cooperation through the United Nations, such as giving relief to war-stricken areas, repairing the damage done to agriculture and manufacturing during the war, developing new industries as a means of raising standards of living, stabilizing currencies and reducing trade barriers, and balancing agricultural surpluses and deficiencies.

4. List and give your reaction to the agreements made by the International Trade Organization at Havana in 1948. Do
you consider these agreements as steps toward international economic cooperation?

5. Interpret the following statement and give reasons for agreeing or disagreeing with it: "During the 19th century, the United States, as a debtor nation, was on the receiving end of an undesignated Point Four Program. Now it is the turn of the United States to be at the other end of such a program."

6. See the filmstrip:


New York, New York

$3.00

Covers Europe's past war needs, the philosophy and plan of ERP, and the factors that will be important in the program's future.

C. World Resources

1. Discuss the economic effects of the uneven distribution of natural resources throughout the world.

2. Locate the chief sources of the essential natural resources of the world. Discuss the relation between a nation's natural resources and its standard of living; its industrial development; its strength as a world power.

3. Make a study of the uranium deposits of the world. What governmental controls are in effect? Compare the governmental control of uranium and lumber. How do you account for any differences?
4. Study the extent of the depletion and exhaustion of the natural resources of the world. How long will such resources as oil and coal last? How can the supply be made to last longer? What sources are yet to be developed?
(1), (2), (3), (4), (7), (18), (26), (50), (51), (52), (53)

5. Dramatize the development of a large corporation such as the United Fruit Company. What effect did its development have on the countries involved?

6. Study the motives behind the colonization programs of France, England, Italy, and Germany. Report your findings to the class.

7. Locate a number of outstanding industries throughout the world and give factors influencing geographical specialization.

8. Identify countries that are improving their economic conditions through the use of water resources. Point out sections of the world which are not using their potential water resources. Why are these potentialities not put into use?

9. Identify on a world map the outstanding deposits of energy resources, include coal, petroleum, natural gas, water power, etc. What are the economic effects of these resources on the nations which possess them?
D. Comparative Economic Systems

1. List the economic advantages and disadvantages of capitalism.

2. Describe the type of government necessary for each of the various economic systems. Show how economic institutions exist only where political institutions make it possible for them to work.

3. Report on one or more types of socialism, such as scientific socialism, Marxian socialism and state socialism. How do these types differ?

4. Describe the policy of the Socialist Party in the United States. Do the leaders of the party advocate the overthrow of capitalism? If so, what is their plan? Have they met with any success? Explain why or why not.

5. State the differences between socialism and communism. What countries represent each? Have either of them met with economic and political success? If so, to what extent?

6. Compare a system of capitalism with a system of collectivism with respect to private property, freedom of contract, freedom of enterprise, government control and planning.

7. Explain the difference between private enterprise and collectivism, socialism and communism, communism and fascism.
8. Write a report on the British experiment with socialism, answering such questions as: To what extent has the economic system been nationalized? How successful has the government been in solving such problems as the cost of living, unemployment, social security, and foreign trade? Has individual liberty been preserved or lessened?

9. Give reasons why you believe or do not believe that capitalism and communism can function together in the world. Must all countries have a similar economic system in order to have peace?
SELECTED BIBLIOGRAPHY


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PROBLEMS OF CRITICAL THINKING
Problem Area 14

PROBLEMS OF CRITICAL THINKING

In a democracy, problems are solved by the people themselves, rather than by some external authority or by some small group. Critical thinking, then, is an essential concomitant of democratic living. It is, therefore, the responsibility of individual citizens to form the habit of thinking critically with open-mindedness and whole hearted interest.

Critical thinking enables one to direct his activities toward definite purposes; it enriches and gives meaning to action. Thinking becomes functional when the habit is acquired by students in their day-by-day living. This suggests that attention be given to reflective thinking in all areas of the school.

This unit is designed to give special attention to critical thinking by helping the students apply it to problems in a democratic society.
Objectives

To help students:

1. Gain an understanding of critical thinking in contrast to its alternatives.

2. Develop the ability and the desire to use the scientific method in solving problems in all areas of living.

3. Examine their beliefs critically and reconstruct them in the light of further evidence.

4. Develop a scientific attitude of mind.

5. Understand the relation of critical thinking to democratic living.

6. Realize the importance of planned procedures in solving both personal and societal problems.

7. Study the forces that influence public opinion.

Scope

Utilizing critical thinking in solving:

I. Personal problems

II. Social, civic, and economic problems
I. Utilizing Critical Thinking in Solving Personal Problems

A. Solving Problems Scientifically

1. Read the story of the life of some scientist and report to the class on the problem he attacked and the method he used in solving the problem. Listen to similar reports given by other members of the class. Discuss:
   What is meant by the scientific method? What steps does a scientist use in solving a problem? What skills and attitudes are exemplified in a scientist's work?
   
2. See the film:

   What Is Science
   10 min sd
   $45 color $90

   Coronet Instructional Films
   Chicago, Illinois
   1947

   An exposition of the meaning of the word science—through application of the scientific method, which embraces five major steps: curiosity, observation, hypothesis, testing of hypothesis, and conclusion.

3. See the filmstrip:

   How We Learn about the Sky
   51 fr si with text
   $4.50

   The Jam Handy Organization
   Detroit, Michigan
   1947

   Familiarizes the student with the great leaders in astronomy and their contributions to scientific exploration. The scientific method is contrasted with the early practice of accepting opinions and superstitions as explanations of astronomical phenomena.

4. Dramatize two methods (trial and error vs. scientific method) of attacking a personal problem such as "How Should I Select My High School Courses?" As a follow up, analyze
the steps used in each method and represent them graphically.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

*5. Think of a problem that has recently challenged you. Discuss your method of solution with the class. To what extent was your approach scientific?

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

*6. Describe how you would use the scientific method in solving the following problems:

a. Why do some people seem to dislike me?

b. Should I wear one heavy coat or two light ones when I watch a football game in cold weather?

c. How can I get all the vitamins I need in the most economical way?

d. On what basis should I select my vocation?

e. How can I find my lost dog?

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

*7. Which of the following do you consider to be scientific behavior? State your reasons for accepting or rejecting each.

a. Eating a particular kind of breakfast food because it was recommended by a famous athlete.

b. Treating a cold with a remedy suggested by a friend.

c. Brushing the teeth regularly because it was recommended by a dentist.
d. Taking certain courses in school because they are said to be easy.

e. Buying a particular type of camera because it is the most widely advertised.

f. Taking pills which are advertised for reducing weight.

g. Consulting a doctor before taking vitamin tablets.

h. Having a thorough physical examination before taking part in strenuous physical activities.

i. Avoiding attendance at a party where there are to be only thirteen people.

j. Making decisions by flipping a coin.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

B. Blocks to Clear Thinking

1. Have a panel discussion on the topic "Blocks to Clear Thinking and How They May Be Removed."

2. Ask each member of the class to report on an instance in which he felt that his thinking was temporarily blocked. Determine the probable cause and compile a combined list of these blocks.

3. Discuss how emotions and feelings affect one's ability to think clearly. What distorting factors are apt to enter into one's thinking upon such controversial issues as racial discrimination, labor legislation, and sex education? To what extent is it possible to prevent emotions from dictating thinking?
C. Evaluating Sources of Information

1. Search in a current magazine or newspaper for a report of a new scientific discovery. Who made the discovery? Is it likely that the report is reliable?

2. Make a report on how scientific thinking is challenging authoritarianism. Refer, for example, to Galileo's challenge of Aristotle's claim that objects of different size fall toward the earth at a rate in proportion to their weights.

3. For each of the following indicate where you could obtain reliable information:
   a. What should I eat in order to gain weight?
   b. What are the quarantine regulations for diphtheria?
   c. Where are the national forests?
   d. Is aspirin a safe headache medicine?
   e. What kind of annual flowers will grow best in a porch box?

4. Make a handbook listing the easily available sources of reliable information that can be found in the school; in the community.
5. See the films:

How to Judge Authorities  Coronet Instructional Films
10 min sd  Chicago, Illinois
$45  color $90  1948

Shows how a student encounters a puzzling conflict between statements of "authorities" and how he uses intelligent evaluative practices. He considers the "internal evidence" on each authority, the experience from which each speaks, and the evidence of his own experience to reach sounder decisions.

How to Judge Facts  Coronet Instructional Films
10 min sd  Chicago, Illinois
$45  color $90  1948

Helps students establish a judicious mental attitude toward fact finding. Like the high school sophomore who writes a "sensational" story for his school newspaper, they will learn to guard against platitudes, false analogies, assumptions, and double meanings.

D. Testing Beliefs and Values

1. Write the "life history" of one of your most strongly-held beliefs. This might be a belief about religion, ethics, morality; race and minority group relations; patriotism; social class; sex and courtship.

*2. Discuss such problems as: How do beliefs change? Are unreasoned beliefs of any value? How are beliefs tested? By what methods do people usually support beliefs if challenged? How do these methods differ from the scientific method?

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

*3. Report on the various theories of the origin of the earth. Which do you tend to accept and why?

(37), (39), (40), (41), (42), (43), (44)
4. Make diagrams or models to show the changes in beliefs about the nature of the earth and the universe from the time of the ancients to the present day.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (14), (15), (16), (17), (18), (19), (47), (48), (50), (51), (52), (53)

5. Have a panel discussion on the topic, "Is the scientific method applicable to the realm of values?"

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

6. Examine critically the following beliefs. Which of them are based on misconception? superstitions? tradition? authority? fact?

a. The earth is the center of the universe.
b. No matter what a teacher does, he should always be obeyed.
c. Bald-headedness is due to tight hat bands.
d. All life has evolved from simpler forms.
e. Women should not take the initiative in courtship.
f. Toads cause warts.
g. Illness is attributed to sorcery.
h. There is no defense against the atomic bomb.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

E. Testing Statements and Assumptions

1. Design plans for testing the following statements:

a. Grandfather says that the climate is changing; the
winters are not nearly so cold as they once were, and the summers are hotter and drier.

b. A salesman claims that a certain kind of cloth does not fade in laundering.

c. The health book says that vitamin A is essential for growth and prevention of certain infections.

d. An advertisement in the local newspaper claims that there is a new chemical that when sprinkled on a lawn will kill dandelions without injuring the grass.

e. One boy claims that he runs faster than a second boy.

f. A light iron ball falls as rapidly as a heavy iron ball.

g. Fresh orange juice is less expensive and more nutritious than canned juice.

*2. Discuss such questions as: What is an assumption? What is the difference between an assumption and a fact? How do assumptions influence our thinking? Why should we strive to identify assumptions?

*3. Identify the assumptions involved in the following statements. Compare your answers with those of other class members.

a. I’ll see you tomorrow.
b. Our dog is sick and will die unless treated by a veterinarian.

c. I do not want to get typhoid fever while I'm taking my vacation trip, so I'm going to get typhoid injections before I go.

d. All communists in the United States should be sent back to Russia.

(39)

44. Analyze an editorial concerning some controversial issue.

Does the writer really prove the proposition he apparently wishes to establish? What are the principal statements which in your opinion the writer uses to "prove" his proposition? Arrange these statements in what you believe is the logical order and reconstruct his argument. Indicate which of them you believe to be statements of fact and those which you believe to be assumptions.

(37), (38), (39), (40), (41), (42), (43), (44), (45)

5. Take the following tests:


Consists of a series of described situations which presumably justify the conclusion stated at the close of each description. Measures the abilities connected with analyzing written arguments.

Interpretation of Data Test (Forms 2.51--2.52). Evaluation in the Eight Year Study, American Education Fellowship, Chicago, 1939.
Consists of ten exercises in which data are presented in one of a variety of ways—line graphs, bar graphs, pictographs, statistical tables, running paragraphs, and charts. Evaluates the student's ability to draw conclusions and to make interpretations of the new data presented to him.

F. Superstitions

1. Compile a list of the superstitions prevailing in your community and plan to examine them critically.

2. Set up a series of exercises that are designed to determine how superstitious a person is and ask members of the class to react to them. The following is illustrative:

If you were just starting on a trip and saw a black cat cross your path, which of the following would you do?

a. Return home and delay the trip another day.

b. Go ahead but use extreme caution because of the danger of bad luck.

c. Pay no attention to the incident.

d. Go back to the nearest corner and take a new route.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

3. Make a table of good and bad happenings. Fill in this table with the important things you remember as happening to you during the past two weeks, noting only those things that seem unusually good or those that seem to you unfortunate. Break a mirror. Keep your good and bad happenings record for two weeks more. Report whether you find any difference in the list for the two weeks.
after breaking the mirror and that for the two weeks be-
before.

(26), (39), (40), (43), (44), (45)

#4. Report on a "tall story" that you have read or heard.
How can its validity be checked?

(39), (40), (43), (44)

5. Make a series of cartoons to illustrate how science is re-
placing mysticism.

6. See the films:

Science and Superstition- Coronet Instructional Films
10 min sd Coronet Instructional Films
$45 color $90 Chicago, Illinois
1947

Trains the students' own thinking to the scientific method as a screen class enthusiastically proves, by sound research and reasoning, the inaccuracy of some common misbeliefs, to answer their beginning query, "What is a superstition? What is a fact?"

7. Write and dramatize a two-act play to contrast man's thinking before and after the beginning of the scien-
tific era.

G. Consumer Propaganda

1. Analyze the types of appeal used by advertisers of patent medicines such as, the play upon personal insecurity, the craving for beauty and appeal to the opposite sex, and popular symbols of pride and prestige. Keep notes of flagrant types of misrepresentation. Mount advertise-
ments with critical comments on bulletin board.

*2. Collect advertisements of one item such as cigarettes.

Compare the claims of the various brands. Can all of the
claims be true? To what authorities do advertisers refer to support their claims? Make a plan for testing these claims.
(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

3. Select some advertisements designed to attract persons who are experts with reference to the goods or services advertised; for instance, advertisements of cameras and films in amateur photographer's magazines; advertisements of rifles, guns, and shells in magazines for sportsmen; or those of the classified ads in the daily paper which appeal only to a small group of specialists. Compare these advertisements with similar advertisements designed for the general non-expert public. Is there any evidence that the character of the reader has something to do with the content and character of the advertisements?

4. Have a panel discussion on the topic: "The Role of the Individual in Improving Advertising."

5. Collect advertisements of antiseptics such as tincture of iodine, mercurichrome, carbolic acid, and ethyl alcohol. How can you determine which is the best antiseptic? Who is qualified to say? What does the expert need to know about the conditions under which the antiseptic is to be used? Is there a measure of the germ-killing power of an antiseptic?
*6. Collect and discuss illustrations of testimonial advertising. For example: In an account in the newspaper an old man reports that he has had rheumatism and has suffered considerable pain in his legs. He has taken six doses of the famous "----" and is now much better. How convincing are such testimonials? Give reasons.  
(38), (39), (40), (43), (44)

*7. Read critically the pages of advertising in some magazines and newspapers. Collect samples of false or misleading advertisements; honest advertisements; advertisements containing exaggerated claims. Post these on the bulletin board with comments under each.  
(37), (38), (39), (40), (41), (42), (43), (44), (45)

*8. Analyze some advertisements as to specific facts and attention-getting devices. What types of information did you find? What part of the printed matter of each advertisement was devoted purely to giving information? What information, if any, is lacking? What devices such as pictures and startling headlines were used to gain attention? Check the factual accuracy of each advertisement against the best information you can find.

*9. Discuss the extent to which you can rely on the information and advice you get from the advertiser about health, diet, investments, how to spend a vacation or any other of the practical affairs of life. To what extent must
you be skeptical and wary about what advertisers say?
Do the same conclusions apply to all advertisers? Why
should a person build up a defense against consumer
propaganda?

(37), (38), (39), (40), (41), (42), (43), (44), (45)

II. Utilizing Critical Thinking in Solving Social, Civic, and Economic Problems

A. Critical Thinking and Democracy

1. Discuss such questions as: Do citizens need special
qualifications in order to vote? If so, what qualifications are desirable? Why do so few citizens vote? Do
those who go to the polls think critically before casting
their votes? Where can one obtain reliable information
concerning present political, economic, and social
issues?

2. Make a community survey to find out how well the electorate is informed concerning the issues and candidates in a
forthcoming election. Formulate conclusions on the basis
of the findings. What are the reasons for this state of
affairs? What are its possible consequences in a democracy?

(1), (2), (3), (4), (6), (7), (18), (26), (45), (46), (47),
(48), (50), (51), (52), (53)

3. Discuss the implications of the following statement: "The
success of a democracy depends on the ability of citizens
to carry on critical thinking on a group basis in terms of defining problems, gathering and interpreting data, and drawing conclusions."

*4. Analyze and compare the values of democracy and the method of science. To what extent do they go hand in hand?

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

5. Have a panel discussion on the role of the citizen in solving problems of public concern in a democracy and in an autocracy.

B. Group Thinking and Planning

1. Discuss such points as: the importance of group thinking in a democracy; advantages of group thinking; conditions necessary for optimal group thinking; factors that influence group thinking.

*2. Develop some criteria for evaluating the quality of group thinking in the class. What conditions tend to facilitate group thinking? hinder it? What part does the leader play in guiding group thinking?

(37), (38), (39), (40), (41), (42), (43), (44)

*3. Attend meetings of the student council, the Parent-Teacher Association, the city council, or the Red Cross. With what problems is the group concerned? Evaluate the quality of group thinking on the basis of the criteria
developed in the preceding activity.
(37), (38), (39), (40), (41), (42), (43), (44)

4. Make a study of city planning. What are evidences of street planning, development of waterways and frontages, zoning, construction of bridges, and the laying out and controlling of public utilities in cities in the area. Why is such planning necessary?

5. Compare a recent community project that was successful with one that was not successful. Identify and discuss the factors that contributed to the success or failure of the projects.
(39), (40) (43)

6. Make a study of projects such as the Tennessee Valley Authority emphasizing the part played by critical thinking and group planning in originating and carrying out such projects.
(39), (40), (43)

C. Social, Economic Problems

1. Report on some problems that have recently been settled in your community. How were they solved? To what extent was the approach scientific?
(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

2. Examine some current social or civic dispute and try to form an opinion scientifically. What are the facts? How are they ascertained? How reliable is the information
available? Compare your opinion with those of the other members of the class.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

*3. Invite an expert to talk on the use of the scientific method in detecting crimes and criminals; in studying the causes of crime and its prevention.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

4. See the film:

**They're Always Caught**
Teaching Film Custodians Inc.
21 min sd
New York, New York

apply

Illustrates a case in which a crime is solved by crime laboratory technique.

5. Invite a member of the local planning commission to report on plans for attacking the housing problems in the community.

6. See the film:

**Challenge of Housing**
Brandon Films Inc.
10 min sd
New York, New York

$25 rent $1.25

A brief survey of the causes and effects of present housing conditions and an indication of attempts being made to provide adequate homes. Emphasizes the need for a planned attack on the housing shortage.

*7. Develop a role-playing situation involving the settlement of a labor dispute. Show how the scientific method applies to the solution of such problems.

(26), (37), (38), (39), (40), (41), (42), (43), (44), (45)

8. See the film:
Discusses the operation of a labor-management production committee and its activities in solving problems arising in the construction of an airport in England.

9. Take the tests:

Test on Beliefs on Social Issues. (Form 4.21-4.31)

Consists of 200 statements, classified under the following areas of issues: democracy, economic relations, labor and unemployment, race, nationalism, and militarism.

10. Have a panel discussion on the limitations of the scientific method when applied to social problems as contrasted to its application to physical problems.

D. Public Opinion

1. Gather evidence on attempts to influence public opinion and analyze these to determine the various devices for influencing the thinking of the public. The institute for Propaganda Analysis classification of propaganda devices ("name calling," "band wagon," "transfer," "card stacking," "plain folks," "testimonial," "glittering generalities") might give some insight into this problem.

2. Make a bulletin board display of cartoon stereotypes from various newspapers and magazines. How do such cartoons influence public opinion?

3. Make a collection of slogans used in various political campaigns and analyze them in terms of their influence on
group thinking.

4. Make a chart of the important purposes of various organized groups, such as the Chamber of Commerce, the Republican and Democratic parties, the Red Cross, the National Association of Manufacturers, the Congress on Industrial Organization, the American Federation of Labor, and the National Education Association. Use this chart as a framework within which to interpret the specific materials these groups put out for public consumption. Note the appeals made.

5. Make a critical study of selected newspapers and magazines. Make a manual describing these in terms of their ownership, editorial policy, news policy, point of view, and readers. What is their probable effect on public opinion?

6. Make biographical studies of individuals who play and have played an important part in American opinion, such as Henry Luce, William Allen White, Robert McCormick, Marshall Field, and William Randolph Hearst.

7. Make a study of the measurement of public opinion and report to the class on the history and techniques of public-opinion polling. Include such polls as the Literary Digest, the Gallup, the Fortune, and the Crossley. Why do some polls get good results while others "rise and fall?" How can such polls be used as bandwagon devices? (44), (45)
8. See the films:

**Public Opinion**
13 min sd
$45 rent $2.50
Wilmette, Illinois
1946

Analysis of public opinion, what it is, how it is formed, and what it can accomplish.

**Does It Matter What You Think?**
15 min sd
$47.50 rent $2.50
New York, New York
1947

Offers the challenge that organized opinion can accomplish wonders when rightly used and that each member is vital in a pressure block, his responsibilities great no matter how offhandedly he forms or puts forth his opinion. Press, radio, and films are cited as possible opinion-shapers.
SELECTED BIBLIOGRAPHY

Alberty, Harold, et al., *Thinking versus Propaganda.* (Mimeographed), Columbus: The Ohio State University, 1947.

Backus, Howard P., "Defining and Evaluating Thinking-Planning Competency of Students in the College of Education at the Ohio State University." Unpublished Doctor's dissertation, The Ohio State University, Columbus, 1943. 371 pp.


Curran, Clyde, "Teaching People to Think," *Progressive Education,* XXVIII (February, 1951), 132-35.


PROBLEMS OF ACHIEVING PEACE IN THE ATOMIC AGE
PROBLEMS OF ACHIEVING WORLD PEACE
IN THE ATOMIC AGE

The release of atomic energy and its subsequent use as a war
weapon has shaken the roots of our civilization. It has created many
problems which must be solved if civilization is to avoid the catas-
trophe of an atomic war. But while wars are fought with weapons,
weapons do not start wars. Wars begin in the minds of men, and therefore,
it is in the minds of men that the defenses of peace must be constructed.
The prevention of war itself is the only effective safeguard against the
use of destructive weapons.

As educators, we are obligated to become well informed about the
nature of atomic energy and those related problems which confront us,
so that reliable information may be passed on to our students. We
should also provide opportunities for students to become atomic
literate and study the intricate problems of peace so that they can
act as intelligent citizens. They should share their information
with those about them, and develop their leadership function. The
school should take its part in a community-wide effort to reduce
ignorance in the critical areas where lack of information and under-
standing on the part of the citizens can mean disaster.
Objectives

To help students:

1. Explore some contemporary theories concerning the causes of war.
2. Study the various effects of war on human progress.
3. Study different proposals for establishing world peace.
5. Study problems resulting from the liberation of atomic energy.
6. Understand the consequences of an atomic war.
7. Explore present and probable future peace-time uses of atomic energy.
8. Study different proposals for controlling atomic energy on an international level.
9. Gain sufficient scientific information about atomic energy to participate intelligently as a citizen in the solution of current national and international problems.
10. Identify and understand those factors which will promote better understanding and cooperation among people.
11. Understand the foundations of lasting world peace.
12. Understand their role in contributing to world peace, and accept responsibility for translating their understandings into action.

Scope

Contributing to the achievement of world peace in the atomic age at the:

I. Personal level
II. Community level
III. National level
IV. International level
I. Contributing to the Achievement of World Peace in the Atomic Age at the Personal Level

A. Atomic Energy

1. Make a pictograph entitled "Milestones to Atomic Energy."
   Start with the Greek’s view of the atom (400 B.C.) and end with Hiroshima bomb (August, 1945).

2. Make charts illustrating: the structure of the typical atom; radio activity; nature’s heaviest atom; isotopes; chain reaction. Prepare a brief explanation to accompany each illustration.

3. Construct models of atoms using sponge rubber balls or wooden balls to represent the nuclei and electrons. Strands of wire can be utilized for mounting and for representation of electron orbits.

4. Invite the science teacher to explain how the fission process is apparently induced in the atom bomb.

5. Prepare disintegration charts for radio-active elements tracing the steps from uranium to lead.

6. Make a bulletin board display of atomic energy pictures and articles. The following are chosen from Life Magazine:

   - Bomb Explodes       July 22, 1946   p. 22
   - The Atomic Pile     Dec. 31, 1945   pp. 45-48
   - The Plutonium Laboratory    July 8, 1946 pp. 69-83
   - The Atom             May 16, 1949   (Reprint)
   - The Atomic Bomb     Feb. 27, 1950   pp. 91-100

7. Compile a glossary of "Atomic Terms" commonly used in newspaper, radio, and other discussions of atom bombs, nuclear energy, and related matters.
8. Make a "Who's Who" booklet containing brief biographies and, if possible, the pictures of nuclear scientists.

9. Find out what raw materials are known to be necessary for the manufacture of atomic bombs. On an outline map of the world, show where the known deposits of the materials necessary for the production of atomic bomb may be found. What countries are self-sufficient in these materials?

10. Collect and discuss the opinions of atomic scientists concerning the question of whether or not America possesses some scientific secrets which scientists in other countries do not know, and without which their governments cannot manufacture atom bombs. Also collect the opinions of these scientists in reference to the time it will take other nations to begin producing atom bombs.

11. See the films:

<table>
<thead>
<tr>
<th>Atomic Physics</th>
<th>United World Films, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 min sd</td>
<td>New York, New York</td>
</tr>
<tr>
<td>$400 rent $40</td>
<td>1948</td>
</tr>
</tbody>
</table>

An authoritative film that traces 140 years of history and development of our knowledge and use of atomic energy from the theory first proposed in 1908 by John Dalton, through the cumulative discoveries by many scientists in many lands, culminating in the application of uranium fission in the atom bomb and its great promise of peaceful services.

<table>
<thead>
<tr>
<th>One World or None</th>
<th>Film Publishers, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 min sd</td>
<td>New York, New York</td>
</tr>
<tr>
<td>$30 rent $2</td>
<td>1948</td>
</tr>
</tbody>
</table>

Shows the basic facts that there can be no real secrets, that the atomic bomb is a unique weapon that cannot be compared to any previous weapon; that there can be no defense, and that a system of international control must be achieved.
Nature of Energy
Coronet Instructional Films
10 min sd guide Chicago, Illinois
$45 color $90 1949

Shows the relationship of atomic energy to other forms of energy and provides the basis for understanding scientific advancements and the specialized units of electricity, sound, light, and heat.

B. Atomic Energy in War-time

1. Make a bulletin board display of the results of the bombing of Hiroshima and Nagasaki.

2. Collect photographs and statistics and make graphs or charts showing the difference in explosive power and in cost between the conventional and the atom bomb. Make charts to compare nuclear energy with other forms of energy.

(1), (2), (3), (4), (6), (7), (18), (26), (32), (48), (50), (51), (52), (53)

3. See the films:

Tale of Two Cities
Signal Corps Film Libraries
20 min sd Chicago, Illinois
free rental

Presents the destructive results of the bombings of Hiroshima and Nagasaki. Many close-up shots that show the effect of the blast and radiation on building and materials are included. The opening and closing scenes are of the Alamagordo explosion and are likewise impressive.

Operation Crossroads
Office of Public Information
27 min sd color Navy Department, Washington
$121 rental free

An official Navy film in full color of the two Bikini test explosions and the preliminary preparations. The photography is excellent, the scenes of the explosions awe-inspiring.
4. Use the following recording:

**Deadline for Living**
National Education Association
14 min 33 1/2 rpm 16 in Washington, D. C.
$10

A program originally prepared for the National Education Association. Briefly and vividly presents what atomic warfare did to Hiroshima, examines basic facts about future destructive power, possible defenses, etc., and concludes with a rather effective call to action. Script is available separately for dramatic skits for 25 cents.

5. In the light of what happened to Hiroshima and Nagasaki, discuss how an atomic blast would affect your community.

C. Atomic Energy in Peacetime

1. Investigate the probable peacetime uses of atomic energy.

Organize your finding under the following titles: "In Industry"; "In Chemistry"; "On the Farm"; "In Medicine"; "For Consumers."

2. Use the recording:

**Peacetime Uses of Atomic Energy**
Lewallen Club Productions
Chicago, Illinois
20 min 12 in 78 rpm
Complete kit $12.50

Outlines clearly the possible applications and limitations of atomic energy in the fields of industry, medicine, and basic research. In contrast to most of the other audio-visual material, it considers the enormous benefits that man can derive from atomic energy, concluding with the warning that such benefits can only be realized if international control is achieved.

3. See the film:

**Report on the Atom**
March of Time Forum Films
20 min sd New York, New York
$55 1950

Shows the non-military uses of atomic energy. Research conducted in the laboratories of the AEC are shown and
the uses already being made of radioactive materials in medicine, biology and industry are illustrated.

D. Defense Against Atomic Attack

1. Discuss what one should do if an A-bomb should fall on a city. Find out first what an A-bomb does. Summarize your findings, mimeograph and distribute them to all students in the school.

2. Make a diagrammatic illustration of the effectiveness of the atomic bomb at varying distances from the site of explosion.

3. Discuss what a student can do to help people who may suffer from burns, bleeding, or fractures.

E. Current News about Atomic Energy

1. Make a scrapbook of current information (articles, editorials, pamphlets, photographs, and cartoons), concerning the atom bomb, nuclear energy, world government, and related matters. The scrapbook might contain such section headings as the following: "Technical Developments;" "Results of the Hiroshima and Nagasaki Bombings;" "Results of the Los Alamos and Bikini Tests;" "Atomic Scientists and Their Contributions;" "Nuclear Compared with Other Forms of Energy;" "Proposals for the Control of the Atom Bomb;" "Peace-time Uses of Nuclear Energy." Keep it up-to-date.

2. Prepare, keep up-to-date, and post conspicuously a "Guide to Coming Broadcasts" which deal with any aspect of the
atomic question. The Sunday editions of metropolitan newspapers and the bulletins of the National Committee on Atomic Information will prove helpful in this regard.

3. Prepare, keep up-to-date, and post current cartoons, photographs, and other pictorial materials which treat any aspect of the atomic problem.

F. Sharing Information

1. Prepare talks or dramatic skits on various of the topics or problems of peace in the atomic age. Present them before interested community organizations or in assembly programs in the school.

2. Write editorials or articles for the school paper on problems of atomic age. This might take the form of a weekly column. Try to induce the editors of local newspapers to reprint them for the education of the public.

3. Prepare posters calling attention to the forthcoming radio programs devoted to various phases of the atomic problem. Supply this information to the school and community newspapers.

4. Discuss with your family and friends, such problems as:

   Is there any adequate defense against atomic bombs? Can we have a lasting monopoly of atomic secrets? Can atomic energy be controlled?
5. Prepare an attractive leaflet on atomic information and have a copy placed in the pay envelop of every industrial worker in the community.

6. Organize and conduct an atomic energy week in your community to help people see that atomic energy is their business. Use all sorts of communication media.

II. Contributing to the Achievement of World Peace in the Atomic Age at the Community Level

A. The Church

1. Invite the minister of a local church to give his point of view on the following problems: Where does the church stand on the problem of using atomic weapons for mass destruction? Is there any intrinsic moral differences between one weapon and another? What is the church's role in promoting world peace?

2. See the film:

Atom Bomb--Wrong or Right? Film Forum Foundation
20 min sd Jewett House
$87.50 rent $5.25 Spokane, Washington
1948

Shows the development and use of the atomic bomb during World War II and raises questions regarding the moral justification of atomic warfare.

B. Organized Groups

1. Prepare reports outlining what various organizations and individuals are doing to prevent an atomic war. Consult the bulletins of the National Committee on Atomic Infor-
nation, the *Journal of the National Education Association*, and whatever guides to periodical literature the school and community may contain. Do not overlook the work of the Campaign for World Government (505 South Dearborn, Chicago, Illinois), Americans United for World Government, Inc., (1860 Broadway, New York City), or Chancellor Hutchins' group at the University of Chicago. Also read and discuss the press and other criticisms of the work of these organizations and individuals.

2. List the organized groups in the community which support educational programs of any sort (service clubs, labor unions, parent-teacher associations, churches). Suggest to the program chairman of these organizations that they schedule one or more meetings devoted to the problems of atomic energy. The class might be able to "borrow" some speakers thus utilized and have them speak at school assemblies.

C. Community Attitude Toward Atomic Bomb

*1. Conduct a carefully planned poll among the adults and high school youth of the community to discover their attitudes toward keeping the "secret" of the atom bomb, how long they think it will take other countries to produce such bombs, whether or not there is likely to be an adequate scientific or military defense against the bomb, and whether or not fissionable materials should be controlled by some type of world government. Review
findings against the background of what the atomic scientists, military leaders, educators, and other men prominent in American life, say about these matters. What, if any, needs for community-wide education does this review bring to light?

(1), (2), (3), (4), (6), (7), (18), (26), (45), (46), (50), (51), (52), (53)

2. Interview four or five people in each of the following occupations and ask them what they think the effects of an uncontrolled atomic armaments race is likely to have on people in their respective lines of work: Merchandising, real estate, the ministry, mechanics, newspaper work, salesmanship, scientists, utilities work, and teachers. Then compare these answers with the predictions in this regard given in the reprint from Look Magazine which is contained in the study kit on Atomic Energy of the National Committee on Atomic Information. Indicate what you conclude from these findings in reference to the need for adult education in the community.

(1), (2), (3), (4), (6), (7), (18), (26), (46), (48), (50), (51), (52), (53)
III. Contributing to the Achievement of World Peace in the Atomic Age at the National Level

A. National Defense

1. Study national defense against an atomic attack. Discuss defenses against the club, spear, bow and arrow, rifle, the modern naval gun, the torpedo, the machine gun, and the bomber. Could any similar defense be adequate against atomic explosives? If we lived in fear of an atomic attack, would we dare let any foreign ships or planes come to our country? Is it advisable to undertake a dispersion of cities and industries before such an attack? Would preparedness for counter-attacking after the bombs had come make the enemy afraid to attack us? Mention several reasons why the United States is particularly vulnerable.

2. Plan panel discussions on the following topic: "Should Universal Military Training Be Established?"

B. Neutrality

1. Study and discuss various viewpoints on neutrality. What is meant by neutrality? How can a nation remain neutral in time of war? Why do some nations prefer not to be neutral? Discuss the Neutrality Act of 1939. Would it not be advisable for the United States to be neutral in European or Asiatic wars?

2. Discuss the political, economic and social effects of a large-scale peace-time military program in the United
States. When a country wishes to be neutral should it maintain a large or small army and navy?

C. Control of Atomic Energy

1. Arrange for a panel discussion on whether or not the "secret" of atomic energy should be given to other nations.

2. Debate: Resolved, that atomic energy should be under civilian control.

3. Secure a copy of the Atomic Energy Act of 1946, which sets up the United States Atomic Energy Commission. Summarize its provisions briefly. Who are the present members of the commission?

4. Discuss the educational implications of atomic energy and investigate what is being done in the nation to give youth information concerning atomic energy?

IV. Contributing to the Achievement of World Peace in the Atomic Age at the International Level

A. Causes of War

1. Invite a psychologist to lead the class in discussing psychological theories concerning the causes of war. Discuss such questions as: Is fighting a fundamental tendency in human beings? Do people fight because of simple acquisitiveness; simple frustration, fear of strangers?

2. Discuss economic theories concerning the causes of war.
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Is modern war the direct and inevitable outcome of imperialism? Is capitalism monopolistic rather than competitive? Is it necessary for all nations to trade? List necessary products which are not found in the United States. Make an outline map of the world, locating the major mineral resources. Are these fairly distributed among countries?

3. Arrange for a panel discussion on the political theories concerning the causes of war. Do all states tend to expand and grow demanding more living space, more national security, and more respect for political ideals? Discuss disarmament, a world government, and a federation for western Europe.

B. Effects of Wars

1. See the film:

Seeds of Destiny
18 min sd
$44 rent $3

Nu-Art Films Inc. New York, New York 1947

Shows the grim and tragic story of hunger and destitution which follow war.

*2. Give an oral report on the economic consequences of wars. Give specific illustrations of the following: destruction of human lives; destruction of natural resources; creation of huge debts for both winners and losers; creation of high taxes; property destruction, scarcity and inflation.
(1), (2), (3), (4), (6), (7), (8), (18), (26), (46), (47), (48), (50), (51), (52), (53)

3. Discuss the biological effects of wars, such as: physical deterioration of the race; extermination of the race by the use of explosives, poisonous gas, disease, starvation, blockades, molecular force.

4. Discuss the social and moral effects of war, such as disrespect for life, political graft, false perspective, and lowering of moral standards.

C. International Cooperation

1. Study and discuss the development of attempts at establishing peace. This should include the Hague Conference, The League of Nations, The Kellogg Plan, The International Food Conference, Bretton Woods and its outcome, UNRRA, the United Nations, and UNESCO. What did or does each attempt to do? What was or is being accomplished? Discuss reasons for their successes and failures.

2. Review biographies of people who have endeavored to bring about better international understanding.

3. Study some blocks to international cooperation. Suggest how they may be removed.

4. Study the organization and cooperation of the United Nations: Who are the United Nations? What are their common purposes? What is lend-lease and how does it work? How can problems of cooperation in diplomacy and
strategy be solved? Why and how have both Britain and the United States collaborated?

5. Discuss some of the proposals for permanent world organization.
   a. Should one great nation rule or try to rule the world?
   b. Should the English-speaking peoples rule the world?
   c. Should large independent regions be organized?
   d. Should the democratic countries band together in opposition to others?
   e. Should the League of Nations be re-established?
   f. Should the United States "protect its own interests" and otherwise return to isolation?
   g. What is the relation of these questions to our basic aims?

6. Discuss the following problems: Should the United States "impose" democracy on other countries? Must there be another world war? What must be done so there will be just and lasting peace?

D. International Law and World Government

1. Discuss the relation of international law and peace. Can there be peace without laws? Why or why not?

2. Study the meaning, origin, and development of international law. How and why did international laws originate? Trace the development of these laws from the eleventh century to
the present time. What are the sources of international law?

3. Choose one of the following subjects for study and give a report on it: "The Right of Equality of States"; "The Right of Self-preservation"; "The Monroe Doctrine"; "Water-rights and Air-rights of a Nation."

4. Suggest how a world federation might be set up. How should members be chosen? Should there be an international police force and an international court? Could an international union control international commerce?

5. Compare and contrast the types of governments the following countries had in 1937 with the types they had in 1950. Account for the changes. Great Britain, Switzerland, Turkey, France, Japan, Russia, Norway, Finland, Sweden, Denmark, China, Belgium, Cuba, and The Netherlands.

E. Foundations for Lasting Peace

1. Have a panel discussion on the ideological forces that have been the determining factors in civilization. Discuss the importance of religious faith, of social, economic and political ideas in the making of war and peace. Include the militant crusading spirit of Christianity, divine right of kings, Mohammedanism, Protestant Reformation, liberalism, communism, facism, and nazism. Each of these has fought for a purpose and some fought long and hard with great sacrifice. Was their final purpose peace?
2. Discuss the importance of economic forces in striving for lasting peace. What should be the attitude of those countries rich in natural resources and in industries, toward those in dire economic circumstances? Give illustrations of how economic pressures have brought about war, and how relief of economic pressure acted as a restraint on war. Discuss the influence that famine, pestilence, exchange of goods and services, trade barriers, reciprocal trade, tariffs, and immigration have on international peace.

3. Trace, from the end of World War II, the agreements of nations to seek world control of the atom bomb. Make a pictograph to compare and contrast the proposals of Russia and those of the United States. Can they be reconciled?

4. Study and discuss the charter provisions and the continuing work of the United Nations. How does it differ from the League of Nations? Mention hindrances and limitations of each. Was either intended to secure international peace?

5. Investigate the possibilities for international control of aviation. What is the purpose of the International Civil Aviation Organization? What is the doctrine of "Closed Skies"? Would this influence or control the atomic bomb?
6. Discuss some political aids to peace. Do you think it is possible to: Abolish secret diplomacy? Create trusteeship for all nations? Remove fear by cooperative guaranty? Create neutral zones? Reserve atomic energy for the United Nations? Unite the democracies by common citizenship, common defense force, common monetary system, postal and communication union, and a union for free trade? Why or why not?

7. Discuss the following economic aids to peace? Practice of tariff reciprocity; practice of the exchange of surplus commodities; increase of purchasing power at home; provisions of sea outlets for various nations; forbidding private manufacture of munitions; regulation of investments in backward countries; solving the problem of overpopulation.

8. Study, outline, and bring to class a plan for some sort of cooperative international organization that you think can help in checking vicious forces that make for war and at the same time strengthen those forces which make for peace.

9. Discuss the role of education in bringing about better human relations among the people of the world.
SELECTED BIBLIOGRAPHY


"Educating for Responsible Citizenship in the Atomic Age." Education. LXX (March, 1951), Entire issue.


PROBLEMS OF INTERCULTURAL RELATIONS
Problem Area 16

PROBLEMS OF INTERCULTURAL RELATIONS

On local, national, and international levels we are facing serious problems in the field of human relations. Prejudices based on suspicions of racial, religious, and class differences, discriminations, biases, misunderstandings impair good human relations and constitute a real threat to democracy which is founded on the principle of human equality.

Since a cooperative world cannot be built on ignorance and misconceptions, students need to be provided with intercultural knowledge that is scientific in nature and democratic in value to serve as a broader moral support to them when they have to take a stand in matters related to intercultural problems. But knowledge alone is not enough; intercultural attitudes should be lived and thus learned. This suggests that the school should provide wholesome experiences for practicing desirable inter-group relations both inside and outside the school. In this way the school contributes to the integration of the American culture and the building of a better world.

This unit seeks to provide an opportunity for raising to a conscious level not only the values inherent in good inter-group activities but their bearing upon the intercultural problems that must be met and solved intelligently.
Objectives

To help students:

1. Develop an awareness of intercultural conflicts in the immediate and wider communities and study their causes and effects.

2. Develop a feeling of personal concern and responsibility for the solution of intercultural problems by democratic processes.

3. Acquire knowledge of and appreciation for the contributions of all cultures to the welfare of mankind.

4. Understand and appreciate the composite character of the American population and its consequent advantage to the American culture.

5. Realize the conditions under which racial or minority groups live within our nation.

6. Practice wholesome, friendly, mutually respectful human relationships in everyday living.

7. Recognize and understand both the similarities and the differences between various culture patterns.

8. Examine the origin, prevalence and persistence of existing beliefs and attitudes that influence intercultural relations and develop a willingness to modify those attitudes that are not based on facts.

9. Evaluate intergroup relations in terms of the democratic ideals.

Scope:

Studying problems of intercultural relations at the:

I. Community level

II. National level

III. International level
I. Studying Problems of Intercultural Relations at the Community Level

A. Racial Problems

1. List and report to the class derogatory remarks about minority race groups which you hear in your school, in your family, in your community, over the radio or in your church. Are they founded on fact or are they prejudiced? Are they generalizations made unfairly from one incident?

2. Make a survey of newspaper articles which reveal race prejudice. Try to discover the reason for prejudice. Who is responsible for the article? What is the purpose of it?

3. Keep a record of movies given during a period of time which portray racial or national groups as undesirable or inferior people. What constructive measures could films take to promote understanding between peoples and to portray members of groups fairly?

5. Invite an anthropologist to discuss racial characteristics and other scientific facts that refute prejudices about racial "superiority"; a psychiatrist to analyze the neurotic basis of prejudice; or a socio-economist to discuss the motivation of prejudice.

8. Interview workers in an employment agency to find out about employment practices. Are races or religions of persons registered in applications? What would happen if
people were sent out for jobs only on the basis of merit? What concern does the agency have with discriminatory employment practices?

B. Religious Problems

1. Interview leaders of various churches and temples in order to better understand and appreciate different faiths. Clergymen may be asked whether they accept minority groups into their congregations. What reasons are given for acceptance or rejection of certain groups?

2. Attend services of various denominations. Notice the similarities of ritual, beliefs, and architecture of building. Are there any similarities among the Jews, Catholics, and Protestants? List similarities and differences among the protestant churches.

3. Study the background and the bases on which the Jews, Catholics, and Protestants built their faith. Is understanding and cooperation difficult among these faiths? Why?

C. Ethnic Problems

1. Study juvenile delinquency in the community. What groups, if any, produce more delinquency than others? Why? Does the police department have any kind of remedial program? Sources of information are: a judge of a juvenile court, top police officials, and social workers.

(1), (2), (3), (4), (6), (7), (18), (26), (46), (48), (50), (51), (52), (53)
2. Read and give individual reactions to one or more of the following books: *A Tree Grows in Brooklyn*, *The Yearling*, *Grapes of Wrath*, *The Jungle*, *Not Without Laughter*. (These books are included in the bibliography.)

3. Write down the first thing that enters your mind when you hear the following terms: Negro, Japanese, Jew, American, German, Russian, Chinese, English, Democracy, freedom, and justice.

4. Invite a foreign-born parent to describe his adjustments to life in the community. A vivid picture of his confusions and frustrations induced by strange customs and strange peoples, should help to create sympathetic understanding for immigrant problems.

5. Consider the phrases, "tight as a Scotsman," "cunning as a Slav," "Irish temper." Are all Americans "money-mad?" Are all Negroes musical? Are all Spaniards romantic? What stereotypes can we find in comic books? Radio and television programs? Movies? Magazines? How can we best combat them whenever found? Do stereotypes inhibit clear thinking?

6. Discuss how cooperation enriches all aspects of cultural life, through exchanges of knowledge, methods, ideas, and experiences.

D. Socio-Economic Problems

1. Investigate the composition of cliques in schools. Do some students like to work or play only with their own group or
gang? Do well-to-do students exclude poor students from their group? Are there clubs in your school which are too expensive for some students? Are all students given opportunity to join glee clubs and ball teams?

2. Plan field trips to some of the following places in order to compare and contrast the economic status: a settlement house, "China town," an Indian village, a negro church, and a cosmopolitan club.

3. Study housing and its relation to prejudice. Investigate both good housing and slum housing by visiting both areas. What are the reasons for these conditions? How does our economic system influence housing? How do prejudice and segregation influence housing? Friendly conversations with some of the occupants might reveal interesting facts.

4. Visit a factory and ask to be conducted through the shops. Talk with union men and their stewards, and with management officials. Take advantage of opportunities for informal interviews on problems of discrimination in employment.

5. Check opportunities given minority group members to become teachers. How many religions, races, or national backgrounds are represented among the teachers in the school? Are there rules of the Board of Education which discriminate against qualified teachers because of any particular origin?
II. Studying Problems of Intercultural Relations at the National Level

A. Racial Problems

1. Represent graphically the total population of the United States showing the black, white, red, and yellow segments according to the census of 1950; 1940; 1920; 1890. Have there been any significant changes since 1890? (1), (2), (3), (6), (7), (18), (26), (32), (46), (48), (50), (51), (52), (53)

2. Make maps showing the concentrations of racial groups in the state; in the nation. What is the effect of these concentrations upon the total life of the area; the nation; the racial group?

3. Invite speakers from the National Association for the Advancement of Colored People, for the Negro; from the YMCA, for the yellow race, from the Indian Bureau, for the American Indian, to lead a discussion on the major problems faced by each of these groups. What are possible solutions?

4. Make a study of the Negro in American life. What is the Negro's present place in American life? What opportunities in industry are there for the Negro? What provisions are made for his education? How can the contradictions between the caste status of the Negro and the ideals of democracy be reconciled? What are the next steps in improving Negro-white relations?
5. Have a round table discussion: "Is Racial Discrimination Confined to Any Section of the Country?"

6. Make a study of recent bills introduced in Congress to prevent discrimination in the South, e.g., the Anti-Lynching Bill and the Anti-Poll Tax Bill. Information concerning the provisions of these bills may be obtained from the Congressional Record. Find out how your representative voted on these bills.

7. Give a sociodrama in order to get a picture of how certain individuals feel in regard to segregation. Assume these roles: a white southerner who has worked along with Negroes in industry; a social worker who has worked extensively in "China town"; a college trained Negro who served as a mess steward in the war; a Japanese high school student who was at a resettlement center during the war.

8. Devise a set of questions to discover the extent of racial prejudice in the class. For example, white students might answer questions similar to the following: Would you dance with a Negro? Would you vote for a qualified Negro for mayor? If you owned a house in a white section, would you rent to a Chinese?

9. See the films:

<table>
<thead>
<tr>
<th>Americans All</th>
<th>March of Time Forum Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 min sd</td>
<td>New York, New York</td>
</tr>
<tr>
<td>$55.00</td>
<td>1945</td>
</tr>
</tbody>
</table>
A study of the vital problems with which many U. S. communities are concerned today: how to prevent racial and religious intolerance.

**Boundary Lines**

10 min sd color

$90.00

International Film Foundation Inc., New York 19, New York 1947

A plea to eliminate the arbitrary boundary lines which divide people from each other as individuals and as nations, invisible boundary lines of color, origin, wealth, and religion. The film is composed of animated paintings, moving lines, realistic and abstract symbols; the music is an integral part of the drama.

10. Write and present skits using the "March of Time" technique. Incidents involving race relations which lend themselves to this technique are: Detroit race riots; activities of the Ku Klux Klan; various techniques used to stir up group antagonisms.

**B. Religious Problems**

1. Visit houses of worship to get first-hand appreciation of the ceremonials and varying beliefs.
   a. Arrange with a rabbi to visit a Jewish temple or synagogue. Ask him to show the class some of the symbolic articles of the faith. Attend a ceremony and talk with some members of the temple.
   b. Visit a Protestant church. Ask the minister to explain some of the church rituals. Attend a social event or service at one of the churches.
   c. Visit a Catholic church and ask the priest to show some of the articles used in the mass.
2. Conduct a survey to discover the number of various local denominations. What is the total number in the United States? At what points do these groups agree? differ?

3. Have panel discussions on: "The Influence of All Religions in the Life of America"; "The Guarantee of Freedom of Worship to All Peoples of America."

4. Explore the scapegoating method of blaming one group for the difficulties of society by dramatizing the witch trials of colonial days and the kind of scapegoating found in America today—drawing comparisons and evaluating. Discussion might center around such a question as: How may a minority religious group today be used as a scapegoat?

5. Keep a record of all Jewish and other minority characters represented in comedy and dramatic programs broadcast on national chains for a given period. Classify them according to their type and role—the shrewd, the menial, the avaricious. How many characters are handled as comic characters? How many are presented favorably? How does this create good attitudes or bad attitudes toward members of these groups?


7. Collect magazine and newspaper articles which reveal religious prejudice. Discuss the articles and try to discover the reason for the prejudice. What person or
organization is responsible for the article? What are they trying to accomplish and why?

8. Report on prejudices in the United States that led to the development of one of the following organizations: The Ku Klux Klan; The Know Nothing Movement; The American Protective Association.

9. Investigate groups in the nation whose avowed purpose is to suppress Jews and Catholics. Are any of these groups active in the community? What methods do they use? What organizations are actively engaged in promoting the welfare of these groups?

10. Make a study of the influence of Judaea-Christian tradition on the men who formulated the principles of American democracy. Discussion might center around the ideal of religious freedom and separation of church and state; the trend toward religious cooperation and understanding; why religious misunderstanding and conflict have no place in a democracy.

11. Construct a test for appraising attitudes toward people of various religious faiths. See Powdermaker, Probing Our Prejudices, pp. 64-65.

C. Ethnic Differences

1. Invite a foreign-born parent to describe his adjustments to life in America. What were some of the pleasant and unpleasant experiences he had when he came to this country?
Did he find it difficult to get a job because of his nationality? Were the "old Americans" friendly or unfriendly toward him?

2. Use role playing situations to get the feel of the problem of the immigrant who is faced with the necessity of making new adjustments to a new life. How are these feelings similar to the way urban people feel when adjusting to country life; the way Americans feel when traveling in other countries? Discussion should bring out why Chinese, Poles, Indians, Germans, and other nationality groups have tended to form their own separate groups in the New World.

3. Find out if there are areas of concentration of nationality groups in the community. Are there similar concentrations in the state? in the nation? What is the effect of a "Little Italy" or "chinatown" on the total life of the community? Why is there "voluntary segregation?"

4. Secure the map, "America--A Nation of Many People from Many Countries" from the Council Against Intolerance, Lincoln Building, New York City. This map is pictorial in type showing the location of many of the large racial and national minorities, and indicating their occupations.

5. Make a study of groups of different national origin in the United States and present the findings in pamphlet
form. Include sections on population content of the United States, areas of concentration, income ranges for the group, occupations, and mobility.

(1), (2), (3), (4), (6), (7), (18), (26), (46), (47), (50), (51), (52), (53)

*6. Make a chart comparing the number of foreign-born living in the United States in 1950 with the number in 1920; in 1890. From what countries did they come? What characterized the immigrants? Have there been any significant changes in immigration since 1890?

(1), (2), (3), (4), (6), (7), (18), (26), (32), (46), (48), (50), (51), (52), (53)

7. Invite an immigration officer to lead a discussion on the immigration and Americanization policy. What is the immigration policy towards Orientals; refugees; displaced persons? What program does the United States have for the education of the foreign-born? What should be the policy toward the various ethnic groups?

8. Construct a "Social Distance Scale" to discover attitudes toward nationality groups of the United States. For an illustration of this technique see Vickery and Cole, Intercultural Education in American Schools. p. 141.

9. Present an assembly program based on the cultural gifts of the various nationality groups of the United States. Give special emphasis to groups which are important in the local area.
10. Develop a pageant showing the work of various nationality groups in building the nation.

D. Socio-Economic Disparities

1. Invite a member of the local branch of the United States Employment Service to discuss employment practices. Are races or religions of persons registered in the applications? How do wage scales for Negro and white workers in the same occupations compare? What occupations are not generally open to members of certain racial or national groups? What concern does the agency have with discriminatory employment practices?

(1), (2), (3), (4), (6), (8), (16), (26), (47), (48), (50), (51), (52), (53)

2. Give sociodramas in order to gain insight into the class struggle in America. Topics such as "Tenant Farming in America" and "Negroes in Industry" lend themselves to this approach.

3. Make a chart showing the hierarchy of occupations in social acceptance. Discuss the relation of one's occupation and his social class status. What barriers to employment exist?

4. Make a study of the class system in the United States. What are the classes? Who belongs to each? Can one move from one to another? What evidences of a class system are there in the community?
5. Study the Bill of Rights proposed by the National Resources Planning Board in 1943. This suggested bill was chiefly in the area of economic rights. Would the achievement of such rights do anything to help eliminate the cause of prejudice in the United States?

6. Prepare a panel discussion on one or more of the following topics: "The Caste System in the United States"; "The Importance of Socio-economic Factors in Determining an Individual's Personality and Behavior"; "Social Mobility in Our Society"; "The Effect of Anti-Catholic and Anti-foreign Organizations upon Class Consciousness."

III. Studying Problems of Intercultural Relations at the International Level

A. Race and National Stereotypes

1. Make a study of such questions as: What is race? Is there a pure race? What do biological differences of skin color, hair, eyes, etc., indicate? What are the causative factors influencing variations in mankind? Is there any relationship between cultural achievement and race? Do groups of mankind differ in their innate mental characteristics? Does race mixture produce inferior offsprings?

2. Make a chart contrasting myths about race with scientific facts. Illustrations. 7

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7 See: Ethel J. Alpenfels, Sense and Nonsense of Race. p. 46.
Myths                        | Facts
---                           | ---
a. There are pure races.      | a. The ancestry of all peoples mixed.
b. There is a superior race.  | b. There are only superior individuals, and they are members of all races.

3. Collect and list stereotypes regarding national or racial groups. Example: "Scotchmen are "tight-fisted." Present evidence which would tend to either prove or disprove the stereotype.

4. Indicate your response to the following items by showing whether you agree; disagree; are uncertain. Compare responses of all members of the class and discuss them.
a. Dark-skinned people are as clean as light-skinned people.
b. The average Italian is as intelligent as the average Englishman.
c. Jews should be excluded from the United States.
d. Nordics characteristically display more vigor than other people.
e. A Jew is as likely to be reliable as is a Nordic.
f. Americans have many desirable traits not possessed by Japanese.
g. History has shown Italy to be more aggressive than

---

For a more detailed list see: Austin DeMell Bond. An Experiment in the Teaching of Genetics. p. 98.
h. Japanese are inclined to be dishonest in commercial relations.

i. Mongolians are ordinarily cruel and bloodthirsty.

(1), (2), (6), (26), (46), (53)

5. Ask a large number of students in school to give the characteristics of various vocational groups such as the Irish; the Germans; the Italians; the Japanese; the Chinese. Analyze their responses in the light of scientific facts. What dangers are there in the existence and use of stereotypes?

6. Display on a bulletin board pictures of people from different nationalities or races. Ask members of the class to try to identify them. To what extent are they successful?

7. See the films:

Towards Unity Brandon Films Inc.
11 min sd New York, New York

Shows that, fundamentally, the peoples of the earth are very much alike. A definite plea against racial and national intolerance and prejudice and for peace.

Man—One Family British Information Services
17 min sd New York, New York
$37.50 rent $2.50 1946

Illustrates the scientific principles that there is no physiological master race. Points out that there are no distinct racial groups among human beings and that children everywhere are generally alike in potentiality for growth and achievement, granted sufficient opportunity and encouragement.
Brotherhood of Man
Brandon Films, Inc.
10 min sd color
New York, New York
1946

Presents the scientific facts of the basic likeness of all people.

B. Contemporary Cultures

1. Develop a comparative study of several cultures in their various aspects, emphasizing the likeness of all people.

2. List some of the great books of the world. What cultures do they represent? Make an analysis of the qualities which they possess that have made them an enduring part of world literature. Find outstanding examples of literature which have fanned the flame of discrimination and intercultural conflict. Discuss the significance of literature in molding public opinion with respect to intercultural attitudes.

3. Invite foreign students to talks about their cultural background, their marriage customs, boy and girl relationships, education, dress, houses, and family life.

4. Arrange an international festival depicting the symbolism, idealism, and beauty appreciation of various nations.

5. Prepare reports on the holidays and holiday customs of various nations. Celebrate one or more of the holidays in the foreign manner.

6. Exchange recipes or actually enjoy food prepared by people from various cultural backgrounds.
7. Classify the popular sports of the present time according to the country which first popularized them.

8. Invite the art teacher to speak to the class on the subject, "Art, a Universal Language."

9. Make a scrapbook in which specific examples are given of the contributions of other peoples to our music, literature, architecture, sculpture, and painting.

10. Make a poster of the world's greatest inventions and indicate the nationality of the inventors.

(1), (2), (3), (4), (7), (8), (9), (11), (12), (13), (16), (15), (16), (17), (18), (47), (50), (51), (52), (53)

11. Display the work of the great artists of several nations.

12. Use recordings to illustrate music types found in various parts of Asia, Europe, and Latin America.

13. Arrange a "Hall of Fame" bulletin board on which can be placed the pictures or original sketches of prominent people of all races who have made contributions to world progress.

14. Correspond with students in foreign lands. Share information about other lands with the whole group.

15. Make a "one world" idea map to show how we are linked by our needs and our ideals of service to the brotherhood of men.

16. Compare the governmental organizations of several of the major European, Asiatic, and Latin American nations.
17. Prepare a chart showing the rights, privileges, and duties of a citizen under a democratic and an autocratic form of government.

18. Prepare a chart showing the exchange rate between the money of the United States and other countries.

19. Write a paper discussing the benefits of knowing a foreign language.

20. Prepare a graph showing the relationship between literacy rates and standards of living in selected countries of Asia, Europe, and Latin America. Compare these figures with those of Russia and the United States.

21. Use a bar graph to compare population density and standard of living in each of the following: Russia, the United States, Sweden, Italy, Peru, Argentina, China, India, and Iran.

22. Choose some cultures and prepare reports on major economic problems of each.

23. Write and present a play depicting family life in a foreign country.
24. Make a study of the factors which tend to influence man's culture. Illustrate.

25. Make a report on the effect of natural resources on culture. Illustrate by referring to some rich and poor countries.


27. Check the cumulative book index to secure information as to the number of foreign books that have been translated into English in recent years.

28. Make a study of the class system found in some foreign countries and compare it with that in the United States.

29. See the films:

Expanding World Relationships
11 min sd color
$48.78

Emphasizes how the complexities of modern industrial society enlarged the interdependence of men and nations, and how invention has simplified various methods of communication. The "moral" drawn is that isolation no longer exists and consequently nations must work out ways of settling their differences peacefully.

Story of Culture
40 min sd
free

Shows man striving for truth and beauty from the past to the present time.

Home in Different Countries on the Globe
15 min
rent $1.50

Ideal Pictures Corporation
Chicago, Illinois
Shows what the sentiment "home" means in different countries.

C. International Cooperation


2. See the film strips:

- **Marshall Plan for European Recovery**
  - Current Affairs Films
  - 40 frames silent with textguide
  - New York, New York
  - $3.00

Describes the postwar needs of Europe and the program and philosophy of the Marshall Plan.

3. See the films:

- **Let's Be Childish**
  - A. F. Films, Inc.
  - 21 minutes sound
  - New York, New York
  - free - loan
  - 1950

Children of several nationalities, playing together, prove to themselves that cooperation and united efforts produce a better and happier world.

- **Story of a Rescue**
  - A. F. Films, Inc.
  - 8 min sd color
  - New York, New York
  - free - loan
  - 1950

A color cartoon film explaining how European recovery is being carried on with Marshall Plan aid.

4. Make reports on UNESCO and its contributions to promoting good relations among nations. The following questions
serve to guide you in making the reports: What is UNESCO? Who belongs to UNESCO? How is UNESCO put together as an organization? What is UNESCO's working area as a specialized agency within the framework of the United Nations? How does UNESCO work? What is UNESCO's program?

5. Hold a panel discussion on the topic "What can the individual do to aid UNESCO programs?"
SELECTED BIBLIOGRAPHY


CHAPTER IV

ANALYSIS OF POSSIBLE CONTRIBUTIONS OF MATHEMATICS TO THE CORE ACTIVITIES

The list of mathematical concepts involved in this study was compiled from a detailed analysis of the activities considered appropriate to the sixteen problem areas assumed as a basis for this study. Table I shows that mathematical concepts were essential to carrying out activities in each of the sixteen problem areas.¹

TABLE I

NUMBER OF ACTIVITIES IN EACH PROBLEM AREA IN WHICH MATHEMATICAL CONCEPTS ARE ESSENTIAL

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Number of Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Living</td>
<td>10</td>
</tr>
<tr>
<td>Self-Understanding</td>
<td>7</td>
</tr>
<tr>
<td>Values and Beliefs</td>
<td>15</td>
</tr>
<tr>
<td>Social Relationships</td>
<td>34</td>
</tr>
<tr>
<td>Employment and Vocations</td>
<td>16</td>
</tr>
<tr>
<td>Conservation</td>
<td>23</td>
</tr>
<tr>
<td>Education</td>
<td>15</td>
</tr>
<tr>
<td>Leisure</td>
<td>9</td>
</tr>
<tr>
<td>Family Living</td>
<td>10</td>
</tr>
<tr>
<td>Communication</td>
<td>5</td>
</tr>
<tr>
<td>Government</td>
<td>8</td>
</tr>
<tr>
<td>Health</td>
<td>29</td>
</tr>
<tr>
<td>Economic Relationships</td>
<td>41</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>36</td>
</tr>
<tr>
<td>Peace in the Atomic Age</td>
<td>5</td>
</tr>
<tr>
<td>Intercultural Relations</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>271</strong></td>
</tr>
</tbody>
</table>

¹Tables showing the results of the analysis of each problem area may be found in the Appendix.
The results of the analysis are classified under six major concepts: number, measurement, relationship, proof, operation, and symbolism. Tables present data on each of the major concepts. By this means, it is hoped that the results will be more clearly presented, and the importance of any concept can be judged by its frequency when compared to related concepts. For example, Table III discloses at a glance the relative importance, based on frequency, of directed number as compared with the other aspects of the number concept.

The concepts considered essential to carrying out the core activities were distributed in the manner indicated in the following table:

**TABLE II**

**MATHEMATICAL CONCEPTS ESSENTIAL TO CARRYING OUT THE CORE ACTIVITIES**

<table>
<thead>
<tr>
<th>Major Concept</th>
<th>Related Concepts</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>8</td>
<td>1217</td>
</tr>
<tr>
<td>Measurement</td>
<td>11</td>
<td>376</td>
</tr>
<tr>
<td>Relationship</td>
<td>17</td>
<td>687</td>
</tr>
<tr>
<td>Proof</td>
<td>9</td>
<td>426</td>
</tr>
<tr>
<td>Operation</td>
<td>7</td>
<td>845</td>
</tr>
<tr>
<td>Symbolism</td>
<td>1</td>
<td>220</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>53</strong></td>
<td><strong>3771</strong></td>
</tr>
</tbody>
</table>

The recorded frequency of the concepts represents the number of times, in the judgment of the writer, that each was essential in the carrying out of the activity. In the case of many activities, more than one approach to the mathematical aspects of the problem was possible; only one, however, was used. If a different choice had been made, the frequency table, in all probability, would have been somewhat different.
from that given on the previous page.

The concepts categorized under the major concept of number are shown by Table III. The frequencies of the concepts of whole number and number system led the list in this category, followed by those of fraction, approximate number, and decimal. The 195 cases of fractions resulted from comparing numbers by means of ratio and from the rather extensive use of decimals which are commonly interpreted as fractions that have 10 or some power of 10 in the denominator.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Number of Activities in Which Concepts Are Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole number</td>
<td>220</td>
</tr>
<tr>
<td>Number system</td>
<td>220</td>
</tr>
<tr>
<td>Fraction</td>
<td>195</td>
</tr>
<tr>
<td>Decimal</td>
<td>156</td>
</tr>
<tr>
<td>Directed number</td>
<td>3</td>
</tr>
<tr>
<td>Exact number</td>
<td>133</td>
</tr>
<tr>
<td>Approximate number</td>
<td>185</td>
</tr>
<tr>
<td>Denominate number</td>
<td>105</td>
</tr>
</tbody>
</table>

The concept of denominate number was considered essential in carrying out activities which involve standard measures of length, area, volume, weight, time, money, and temperature.

Since all numbers are exact or approximate, each activity which necessitated the use of numbers depended upon one or the other or possibly both of these concepts. The 133 cases of exact number were cases in which counting was involved or cases in which theoretical
numbers like 25 per cent, $\frac{1}{2}$, and expressions of dollars and cents were essential to the activity. The 185 occurrences of approximate number, for the most part, resulted from rounding off decimals in activities centering around comparison by ratio (expressed as a per cent), though some of the approximate numbers were the result of actual measurements.

The frequency of directed numbers appears insignificant when considered in relation to the totals for the activities in which the related number concepts are essential. The only cases recorded under this heading are those that are primarily the result of interpreting correlations of statistical data.

Table IV shows to what extent concepts of measurement were considered essential to carrying out the activities basic to this study.

**TABLE IV**

**CONCEPTS OF MEASUREMENT ESSENTIAL TO CARRYING OUT THE CORE ACTIVITIES**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct measurement</td>
<td>24</td>
</tr>
<tr>
<td>Indirect measurement</td>
<td>2</td>
</tr>
<tr>
<td>Standard unit</td>
<td>26</td>
</tr>
<tr>
<td>Approximation</td>
<td>26</td>
</tr>
<tr>
<td>Estimating</td>
<td>38</td>
</tr>
<tr>
<td>Possible error</td>
<td>25</td>
</tr>
<tr>
<td>Relative error</td>
<td>25</td>
</tr>
<tr>
<td>Accuracy</td>
<td>25</td>
</tr>
<tr>
<td>Precision</td>
<td>25</td>
</tr>
<tr>
<td>Significant figures</td>
<td>152</td>
</tr>
<tr>
<td>Scale drawing</td>
<td>8</td>
</tr>
</tbody>
</table>

The frequency of the concept of significant figures was four times that of estimating, the concept of next highest frequency. This concept
was not confined to activities involving measurement as such, but was found to be essential to the many activities in which rounding off was involved, in computing percentages, for example.

Indirect measurement appeared to be essential in only two activities. Direct measurement was essential in carrying out twenty-four activities. It should be noted, however, that this concept was essential, for the most part, in activities which called for the making of posters and murals.

There were eight activities which involved scale drawing; in the main, they were activities which centered around the drawing of plans for models or the drawing of maps. The notion that the magnitude of the unit chosen defines the degree of precision was basic to twenty-five activities.

Attention is called again to the fact that some concepts are essential from the standpoint of their being basic to the understanding of other concepts. Concepts were tabulated as being essential whether they were necessary to carrying out the activity or to an understanding of other concepts. For example, the concept of scale drawing is essential in making a map of the school to give to new students. But one cannot make a fairly accurate scale drawing unless he has a working knowledge of the related concepts of direct measurement, standard unit, approximation, estimating, accuracy, precision, and significant figures. Possible error and relative error are basic to an understanding of accuracy. Thus, all of these concepts were tabulated as being essential to carrying out the activity.
<table>
<thead>
<tr>
<th>Concept</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>56</td>
</tr>
<tr>
<td>Constant</td>
<td>56</td>
</tr>
<tr>
<td>Approximate relationship</td>
<td>43</td>
</tr>
<tr>
<td>Functional relationship</td>
<td>20</td>
</tr>
<tr>
<td>Dependent variable</td>
<td>56</td>
</tr>
<tr>
<td>Independent variable</td>
<td>56</td>
</tr>
<tr>
<td>Tabulation</td>
<td>219</td>
</tr>
<tr>
<td>Mean</td>
<td>24</td>
</tr>
<tr>
<td>Median</td>
<td>8</td>
</tr>
<tr>
<td>Mode</td>
<td>11</td>
</tr>
<tr>
<td>Normal frequency distribution</td>
<td>1</td>
</tr>
<tr>
<td>Formula</td>
<td>3</td>
</tr>
<tr>
<td>Graphical representation</td>
<td>50</td>
</tr>
<tr>
<td>Extrapolation</td>
<td>31</td>
</tr>
<tr>
<td>Interpolation</td>
<td>26</td>
</tr>
<tr>
<td>Correlation</td>
<td>3</td>
</tr>
<tr>
<td>Trend</td>
<td>34</td>
</tr>
</tbody>
</table>

The frequency of the various concepts categorized under the major concept of relationship is shown in Table V. Tabulation of data was by far the most frequent, being essential to about four times as many activities as the concepts of next highest frequency. Correlation and formula seemed to be essential only three times, and normal frequency distribution only once.

The activities necessitating an understanding of relationship included both those that involved approximate relationships and those that involved functional relationships. The ratio of these two was about two to one, there being forty-three activities in which the former was essential and twenty of the latter. The concept of functional
relationship was essential primarily in activities which involved various rates, such as birth rates, death rates, and accident rates. The concepts of variable, constant, dependent variable, and independent variable, which are of fundamental importance in clarifying the concept of relationship—approximate or functional—each occurred fifty-six times.

Graphical representation was essential in fifty activities. The cases of graphical representation included line graphs, bar graphs, circle graphs, pictographs, charts, and geographical distribution maps.

The frequency of the uses of the three concepts of average—mean, mode, and median—was twenty-four, eight, and eleven, respectively. The most common uses of extrapolation and interpolation were in interpreting graphs and tables. An understanding of trend was essential in thirty-four activities.

TABLE VI
CONCEPTS OF PROOF ESSENTIAL TO CARRYING OUT THE CORE ACTIVITIES

<table>
<thead>
<tr>
<th>Concept</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deduction</td>
<td>42</td>
</tr>
<tr>
<td>Induction</td>
<td>42</td>
</tr>
<tr>
<td>Assumption</td>
<td>51</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>50</td>
</tr>
<tr>
<td>Definition</td>
<td>44</td>
</tr>
<tr>
<td>Undefined term</td>
<td>44</td>
</tr>
<tr>
<td>Relevance</td>
<td>51</td>
</tr>
<tr>
<td>Reliability</td>
<td>50</td>
</tr>
<tr>
<td>Representativeness</td>
<td>52</td>
</tr>
</tbody>
</table>
The frequency of the various concepts included under proof is shown in Table VI. These concepts had their greatest use in activities suggested in relation to Problems of Critical Thinking and Developing Values and Beliefs, both of these areas focusing on the scientific method in opposition to other methods of arriving at the solution of problems. These concepts were necessary to a more limited extent in other problem areas such as Government, Health, and Economics where activities concerning surveys and opinion polls, analysis of consumer advertising, editorials, speeches, etc., were included.

In this analysis, concepts necessary to an understanding of the scientific method were assumed to be all of those listed under the heading of proof. In all probability, this accounts for the fact that the frequencies of these concepts are almost equal.

Table VII shows that 845 operations were listed under the heading "Concepts of Operation Essential to Carrying Out the Core Activities." These operations were essential to activities distributed among the sixteen problem areas. Comparison and division had the greatest frequencies, closely followed by rounding off and subtraction. The use of multiplication was limited to nineteen activities. Subtraction most often resulted from a comparison of numbers. Comparison included comparison by subtraction or by ratio. Per cent was included under comparison, since a per cent may be interpreted as a ratio. Counting was extensively used in activities involving surveys, opinion polls, and the like.
TABLE VII

CONCEPTS OF OPERATION ESSENTIAL TO CARRYING OUT THE CORE ACTIVITIES

<table>
<thead>
<tr>
<th>Concept</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting</td>
<td>101</td>
</tr>
<tr>
<td>Addition</td>
<td>75</td>
</tr>
<tr>
<td>Subtraction</td>
<td>141</td>
</tr>
<tr>
<td>Multiplication</td>
<td>19</td>
</tr>
<tr>
<td>Division</td>
<td>173</td>
</tr>
<tr>
<td>Rounding off</td>
<td>161</td>
</tr>
<tr>
<td>Comparison</td>
<td>175</td>
</tr>
</tbody>
</table>

The concept of mathematical symbolism was essential to carrying out 220 activities distributed throughout the sixteen problem areas. This concept was essential whenever it was necessary to describe physical things precisely in terms of size, order, and number whether it was in terms of the Arabic numerals, a graph, the decimal point or a formula.
CHAPTER V

MATHEMATICS ESSENTIAL FOR GENERAL EDUCATION

Introduction

One of the questions frequently asked concerning the core program as defined in this study is whether or not mathematics is "in the core." The writer contends that mathematics is "in the core" in the sense that certain mathematical concepts are essential to carrying out a number of the activities considered appropriate to the broad problem areas that provide the basic curricular structure of the core. The underlying question concerns the adequacy of the mathematics essential to carrying out the core activities. In terms of this study, the question is: Are the fifty-three mathematical concepts essential to carrying out the core activities adequate content for general education?

In order to throw some light on the problem of determining the adequacy of the fifty-three mathematical concepts for general education, it was necessary to make a study of several formulations of the mathematics necessary for all students. The three formulations selected for study are the major curricular proposals in mathematics education today. It was assumed, for purposes of exploring this problem, that these formulations are authoritative sources for determining the adequacy of mathematical content for general education.

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Some Formulations of the Mathematics Needed by All

The Joint Commission of the Mathematical Association of America and the National Council of Teachers of Mathematics in 1940 made a study of the problems of the mathematics needed by all and concluded that the average citizen of today needs considerable mathematical knowledge in the activities and experiences of everyday life. This conclusion was reached on the basis of a study of the contributions of mathematics to the objectives of education. This approach, time-honored though it is, seems not very appropriate for determining the mathematics needed by the average citizen as he goes about the business of everyday living. Rather, it seems to be an approach which allows one to justify the inclusion of a great body of subject matter. For even the most traditional subject matter is held to be "needed" in that it contributes to the attainment of the objectives of education.

The commission recommended that the mathematics program be built substantially around seven major fields: number and computation; geometric form and space perception; graphical representation; elementary analysis; logical thinking; relational thinking; and, symbolic representation and thinking. In describing the seven fields, the commission subdivided them into categories such as the following: basic concepts, principles, and terms; fundamental processes; fundamental relations; skills and techniques; and applications.

The seven major fields rather closely approximate the more con-

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ventional subject-matter divisions, that is, arithmetic, informal geometry, algebra, demonstrative geometry, and trigonometry. Justification for including elementary analysis, in particular, as a major field essential for general education is a bit obscure in the report. Moreover, the commission's formulation of such broad fields as relational thinking, logical thinking and symbolic thinking is open to serious question on the grounds that it implies that the thinking process is divisible. Such a breakdown violates the very nature of the thinking process.

In general, however, the seven broad fields compare favorably with the basic structure of the two other proposals which are discussed in this section.

Mathematics in General Education is the Report of the Committee on the Function of Mathematics in General Education of the Commission on Secondary School Curriculum. This commission was established by the Progressive Education Association in 1932, and was charged with the task of examining the fundamental problems of general education at the secondary school level.

The proposals of the commission were intended to contribute to the purpose of helping adolescents achieve a socially adequate and personally satisfying life. On the assumption that the processes and goals of such education must be relevant to the needs of the learner as he interacts with his environment, a study of adolescents was established to provide information on the "problems, interests, and inclinations" of young people. Second, a series of committees was established in each of
a number of areas in instruction in the secondary school, these com-
mittees assuming the responsibility for exploring the contribution of
their particular field to meeting the needs of young people in our
democratic society.

The committee established in the area of mathematics, the Committee
on the Function of Mathematics in General Education, took the position
that the major role of this area in developing the personal character-
istics essential to democratic living lies in the contribution it can
make to growth in the abilities involved in reflective thinking, or
problem solving. In the opinion of the committee the study of math-
ematics is of educational value because mathematics can be made to
throw the problem-solving process into sharp relief. The report of
this committee focuses on the following seven major concepts, with
special reference to their mathematical aspects: formulation and
solution; data; approximation; function; operation; proof; and symbol-
ism.

While the Commission on Secondary School Curriculum did not move
beyond the subject-matter approach to general education, it is signi-
ficant that a study of the needs of adolescents in a democracy was
basic to the work of this commission.

A procedure commonly followed in developing a program of the
mathematics every person should know, is to determine the mathematical
needs of people as they go about the business of day-to-day living.
In recent years, studies concerned with the mathematics needed by members
of the armed forces, have greatly influenced the thinking of many persons
concerned with this problem.
Perhaps the most well-known and widely accepted of the formulations of the mathematics needed by all is that of the Commission on Post-War Plans. In its final report, the commission recommended a program for developing "functional competence" in mathematics for the ordinary affairs of life as a part of general education appropriate to the major fraction of the high school population. The essentials for functional competence were put in a Check List of twenty-nine questions. Functional competence in mathematics was defined by using the experiences of the armed forces. This source of information had already been investigated and the findings published in two committee reports.

It was assumed that the mathematics for minimum army needs, with only slight modification, should be part of the general education of all. The fact that a high percentage of the six hundred jobs in the army have their counterparts in civilian life was cited as justification for making this assumption.

Basically, this procedure for determining the mathematics needed by all is the job-analysis technique, and as such, is subject to several criticisms. First, there is a great difference between the activities that people perform in their jobs and those they ought to perform. But when "oughtness" is brought into the picture, this procedure bogs down, for the activities which people ought to perform may

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not exist at any given time and therefore, cannot be discovered by analysis. In the second place, even assuming that such an analysis could be made, society is changing so rapidly that it would be out-of-date by the time it was completed. And, a program built on such an analysis tends to be adult-centered. While this technique yields valuable data for formulating a program of mathematics needed by all, it cannot, in the opinion of the writer, be relied upon as the only technique for formulating such a program.

The Adequacy of the Fifty-three Concepts

The proposals of the Joint Commission, the Committee on the Function of Mathematics in General Education, and the Commission on Post-War Plans were assumed to be authoritative sources for determining the adequacy of the concepts derived in this study for general education. Chart I, page 423, shows that the structure of major concepts derived from an analysis of the core activities is basically the same as that of the three formulations. (For purposes of comparison, the twenty-nine items in the Check List of the Post-War Commission have been grouped under the five headings shown on the chart.)

In order to determine the adequacy of the fifty-three concepts, a more detailed comparison was necessary. Chart II, pages 424-428, highlights the specific proposals of the three committees and the findings of this study. Due to space limitations, only a brief outline of the concepts basic to the proposals of the Joint Commission and the Committee on the Function of Mathematics in General Education are included in the chart.
<table>
<thead>
<tr>
<th>Joint Commission</th>
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<td><strong>Formula</strong></td>
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<td>Collecting and recording data</td>
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<td>Ordinate, abscissa, axis, coordinate, distance, tangent, line, slope, locus, graph, symmetry, table, formula, scale, bar chart</td>
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<td>Organizing data: tables, graphs</td>
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<td>Translation of quantitative statements into symbolic form and conversely</td>
<td>Uses of symbols in mathematics: for describing physical things precisely in terms of size, order, and number; as shorthand for other symbols; as symbols for other symbols</td>
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<td>root, raising to</td>
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<td>a power</td>
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<td>Structural terms:</td>
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<td>Functional terms:</td>
<td>equation, formula, variable, dependence table, correspondence,</td>
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<td>sine, cosine</td>
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Elementary analysis, as such, occurs only in the proposals of the Joint Commission. However, examination of the concepts related to this field indicates that they permeate these three formulations.
Attention is called to the fact that the major concept of formulation and solution proposed by the Committee on the Function of Mathematics in General Education is not included in the charts. In its report, the committee suggests that mathematics be taught so as to develop a respect for the formulation and solution of problems. There is no reason to believe that the proposals of the Joint Commission and the Commission on Post-War Plans emphasize this concept. In this study, formulation and solution was not claimed as peculiarly mathematical, though mathematics undoubtedly can contribute to an understanding of this concept. However, emphasis on this fundamental aspect of the problem-solving process is almost guaranteed in the core program which is grounded on a study of the problems common to youth in our culture.

In the discussion which follows, the mathematical concepts derived in this study will be compared with the three formulations assumed to be authoritative sources for determining the adequacy of mathematical content for general education.

Comparison of the Concepts Essential to Carrying Out the Core Activities with the Proposals of the Joint Commission

The concepts of number and operation, as derived in this study, coincide with the field of number and computation. An understanding of the fundamental operations and the ability to use them was essential to carrying out the core activities. The operations of counting, subtraction, division, and rounding off, in particular, had wide application. There was wide use of the concepts of ratio and percentage in this study.
Concepts basic to measurement were essential to carrying out a number of the core activities. Form and space perception, as such, were not extensively used in this study, though recognition of common geometric figures, their properties and their construction was necessary in activities involving indirect measurement, scale drawing, and graphical representation.

There were a number of activities which necessitated an understanding of the nature of proof. In this study, proof is interpreted as any means of gaining assurance that a conclusion is valid. This concept of proof is much broader than logical thinking which usually has reference to the process in which one attempts to pass from certain items of information ("possible truths") to others for which they are evidence.

There was extensive use of the concepts basic to relationship in this study. An understanding of graphical representation as a means of presenting data was essential to carrying out a great many of the core activities. It was necessary not only to be able to read and interpret graphs, but also to construct them. Various graphical techniques such as the line graph, bar graph, pictograph, and maps of geographical distribution were essential to carrying out the core activities. Most of the relationships involved in carrying out the core activities were approximate rather than functional. The concepts of variable, constant, dependent variable, and independent variable were of fundamental importance in clarifying the concept of relationship. Tabulation of data had wide application. Formulas were
seldom used. Extrapolation and interpolation, for the most part, were used in interpreting graphs and tables.

The ability to translate quantitative statements into symbolic form, and conversely, to translate symbols into precise verbal statements was basic to carrying out a number of activities.

In this study, there is no major concept which corresponds with the field of elementary analysis. However, an examination of the specific concepts within this field indicates that many of them are included in the list of fifty-three concepts basic to carrying out the core activities. For example, in relation to types of number, both positive and negative numbers as well as fractions were used. Concepts basic to operation were widely used in carrying out the activities. However, there were no activities in which square root or raising to a power was necessary. Concepts basic to relationship such as, variable, constant, independent variable, dependent variable, approximate relationship, functional relationship, tabulation of data, and graphical representation were used extensively. Trigonometric relations were not used in this study.

In general, the fifty-three concepts compare favorably with the proposals set forth by the Joint Commission.

Comparison of the Concepts Essential to Carrying Out the Core Activities with the Proposals of the Committee on the Function of Mathematics in General Education

The concepts of number and operation, as found in this study, exceed the concept of operation defined by the committee. The committee gives some attention to the concept of number but relatively
little as contrasted with the extensive use made of this concept in
carrying out the core activities.

The concepts included under measurement in this study are essen­tially the same as those suggested by the committee as approximations
originating in measurement. The concepts included under approxima­
tions originating in mathematical theory, for the most part, are
grouped under the major concept of number in this study. Statistical
concepts were widely used in carrying out the core activities. In
this study, they are included under the major concept of relationship.

There were a number of activities in which concepts basic to
proof were involved. This necessitated an understanding of the nature
of deduction and induction, the role of assumptions and hypotheses,
and the necessity for defined and undefined terms. Concepts of
relevance, reliability, and representativeness included under proof
in this study, are grouped under data in the committee report.

The committee emphasized functional relationship, whereas in
this study, the concept of approximate relationship was used more
extensively than that of functional relationship. In carrying out
many of the activities, tabulation of data was a necessary step if
relationships not clearly discernible in unclassified data were to
be discovered. In the collection and interpretation of data in rela­
tion to various core activities, such concepts as relevance, reliabil­
ity, and representativeness were found to be essential. In general,
the major concept of relationship as derived in this study, includes
the concepts grouped under function and data in the formulation of
the committee.
The concept of symbolism was essential to carrying out activities whenever it was necessary to describe things precisely in terms of size, order, and number. In this study, there was no attempt to deal with the uses of symbols in non-mathematical language.

In general, the fifty-three concepts compare favorably with the proposals set forth by the Committee on the Function of Mathematics in General Education.

Comparison of the Concepts Essential to Carrying Out the Core Activities with the Proposals of the Committee on Post-War Plans

Computation with whole numbers, fractions, and decimals had wide application in carrying out the core activities. Per cent and ratio, included under comparison in this study, were used extensively. There were no activities in which it was necessary to find the square root of a number. Directed (signed) numbers were seldom used. Concepts basic to number and operation were essential to carrying out activities dealing with problems of the consumer (stretching the dollar). A number of activities called for an understanding of the keeping of simple accounts and the money system.

There were a number of activities which called for an understanding of the nature of measurement. Concepts related to geometric form were essential to carrying out the core activities, but they were not used extensively. Construction with ruler and compasses was essential in making scale drawings and posters. There were no activities in which an understanding of vectors was necessary.

The major concept of proof exceeds the one item on the Check
List concerned with proceeding from hypothesis to conclusion. An understanding of scientific method as opposed to other methods of arriving at the solution of problems was essential to a number of the core activities. This necessitated an understanding of such concepts as induction, deduction, assumption, hypothesis, definition, and undefined term. Relevance, reliability, and representativeness are also included under the major concept of proof.

Concepts basic to relationship were widely used in carrying out the core activities. Tables and graphs were used extensively as a means of organizing and presenting data. Not only was it necessary to construct graphs and tables, but also to interpret them. Concepts of average—mean, median, and mode—were useful in interpreting data. There were no activities in which the 3-4-5 relation or trigonometry was essential. There were few activities in which formulas were necessary.

The major concept of symbolism, as interpreted in this study, encompasses more than is included in the Check List item concerned with algebraic symbolism.

In general, the fifty-three concepts compare favorably with the proposals set forth by the Commission on Post-War Plans.

Can Mathematics Be Learned in the Core?

Basic to the discussion of adequacy is the assumption that the concepts derived in this study can be learned in the core framework. Admittedly, this assumption is open to question. This problem is beyond the scope of the present study. However, it is so closely
related to this study that the writer will make a few comments relative to the problem.

Traditionally, the only logic recognized for the teaching of mathematics derives from the internal structural order and organization of the subject, the order which the specialist recognizes as mathematically logical. Subject matter is presented to the learner on the assumption that he can take over, ready-made, the form worked out by experts after they have developed the insight necessary to build up the systematic structure.

The logic of the core program derives from the pursuit of activities appropriate to broad problems of living. It is assumed that logical structure exists for the learner only as it emerges from experience. In short, the traditionally organized subject matter begins with the systematic structure; while on the other hand, the core approach terminates with the systematic structure.

Basically the question is: Can mathematics be learned in a framework where in all probability it will not be encountered in its logical systematic form? For the most part, studies concerned with this problem have been confined to the elementary level.

There are data which show that the arithmetic achievement of students in activity schools (as measured by tests) compares well with that of children in the traditional schools. One such study was made by comparing the results of New York City's experimental activity schools with its regular schools. After six years of the experiment with a few activity schools, it was found that "the activity and non-
activity pupils seem to be achieving about equally in tests of reading, work-study skills, language usage and expression, and arithmetic.  

Harding and Bryant reported that the course of study in fourth grade arithmetic can be covered by means of direct experiences. Through the use of an experimental and a control group it was found that the functional uses of arithmetic proved as effective as drill procedures in developing computational skill; and, that direct firsthand experiences with projects in which the children had a personal interest proved more effective than vicarious experiences and drill procedures in developing the ability to solve problems. In this experiment, achievement tests were used to measure computational skills and the problem solving ability of the children in the experimental and control groups.

In 1934, Harap and Mapes reported that through the use of real-life situations children in a third and a fifth grade mastered the computational processes usually taught in these grades and also gained much in social understanding and insight. Two years later, the same investigators reported that a group of sixth grade pupils

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mastered the processes involving operations with decimals through their use of activity units.9

The experience units reported by Williams10 revealed "a wealth rather than a dearth of arithmetic inherent in and essential to the daily living of children when they were carrying forward group and individual purposes." Arithmetic periods were regularly scheduled in which the learning, usually related to the experience units, was highly motivated and meaningful. Some drill was also provided.

Another well-known study is that carried on by Hanna11 and his committee. In studying the opportunities for the use of arithmetic in an activity program in the third and sixth grades, they found a "richness and vitality of arithmetic experiences" which served to give pupils "significant meaning and purposes," but they concluded that "functional experiences of childhood are alone not adequate to develop skills."

Such studies as the above bring some evidence to bear on the problem under consideration. It is the opinion of the writer, however, that further experimentation is needed in relation to the problem. It is impossible to tell from the published reports, with one
or two exceptions, just how mathematical concepts and abilities were dealt with when needed, how much time was spent, and what methods were used. Another difficulty is that the achievement of students in arithmetic other than in skills of computation has not been measured adequately.

At the secondary level, there has been relatively little experimentation with the problem. One of the few studies reported at this level was concerned with integrating the "functional learning from English, general science, and elementary algebra." The mathematics teacher involved in the experiment reported that in studying the problem of health "the core became a restraint rather than a stimulus to the motivation of algebra." As a result of this experiment, he expressed the opinion that "the 'coring' of mathematics was fruitless." There seems to have been little, if any, experimentation, however, with the problem as defined in this study.

It may well be that the problem is less critical at the secondary level. How vital is logical sequence in mathematics essential for general education if students have already acquired a working knowledge of the mathematics of the elementary school? How acute is the problem of developing the mathematical concepts and abilities on the spot as they are needed? Does the flexibility of the core program make an appreciable difference in the scope or recurrence of the mathematics essential for general education? If mathematics is not required out-

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side the core, does this mean that a disproportionate amount of core
time will be spent on that area?

Such questions must be asked and answered by anyone who wishes to
determine the effectiveness with which mathematics can be learned in
the core framework. In the opinion of the writer, confident answers
to such questions cannot be given without further experimentation in
the classroom. For it is only as teachers and students work together
in the study of these problems that the effectiveness of any program
can be reliably determined.
CHAPTER VI
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Study

It was the purpose in this study to clarify the role of mathematics in general education by determining the possible contributions of mathematics to selected problem areas that provide the basic curricular structure of the core program. As used here, core refers to that part of the curriculum which is basic for all students and which consists of learning activities that are organized without regard to conventional subject-matter lines. The core is organized in terms of problem areas, broad pre-planned areas of living in which youth usually have problems rather than in terms of organized knowledge.

In order to attack the problem of determining the contributions of mathematics to the core program, it was necessary to develop a series of problem areas appropriate for use in the core program or to accept some list already worked out. The list of problem areas developed by Lucile Lurry⁠¹ was accepted as a basis for this study.

The original plan of the writer was to develop the contributions of mathematics to each of the problem areas defined in terms of purposes and a broad statement of scope. It was discovered, however, that the

contributions of mathematics could not be determined apart from the activities in which students might engage as they come to grips with the problems involved in a given problem area. Thus, the problem of this study was two-fold: first, to develop a series of activities appropriate to the problem areas accepted as a basis for this study; and second, to determine the possible contributions of mathematics to these activities.

The development of activities appropriate to the sixteen problem areas was a cooperative venture. For this part of the study, the writer collaborated with two other investigators concerned with similar problems, i.e., the possible contributions of business and science to the core program.

In developing the core activities appropriate to the sixteen problem areas, the group used the following technique:

1. Survey of literature bearing on the problem area.
2. Definition of scope and objectives.
3. Construction of possible activities on the basis of a set of criteria developed by the group.
4. Submission of possible activities to teachers at the Ohio State University School for criticisms and suggestions.

The contributions of mathematics to the core activities were defined in terms of mathematical concepts essential to carrying them out. A detailed analysis of the core activities disclosed that fifty-three mathematical concepts are essential to carrying them out. These fifty-three concepts were classified under six major concepts: number,
measurement, relationship, proof, operations, and symbolism. At this point, the writer would emphasize that the term essential is not used in an absolute sense. The mathematical concepts derived in this study reflect the judgment of one person and should be interpreted in that light.

Another aspect of the problem explored in this study concerns the adequacy of the fifty-three concepts for general education. In order to throw some light on the problem, it was necessary to make a study of several formulations of the mathematics needed by all. The findings of this study were compared with the proposals set forth by the Joint Commission of the Mathematical Association of America and the National Council of Teachers of Mathematics, the Committee on the Function of Mathematics in General Education, and the Commission on Post-War Plans. It was assumed for purposes of exploring this problem that these formulations are authoritative sources for determining the adequacy of mathematical content for general education.

Summary of Findings

The findings of this study are:

1. Mathematical concepts were essential to carrying out activities in each of the sixteen problem areas.
2. The problem areas most dependent upon the mathematical concepts were Social Relationships, Critical Thinking, Economic Relationships, and Health. Problem areas in which these concepts were essential to relatively few activities were Self-Understanding, Leisure, Government, Achieving
Peace, and Communication. The remaining problem areas called for these concepts in carrying out a moderate number of activities.

3. Fifty-three concepts classified under the headings of number, measurement, relationship, proof, operation, and symbolism were considered essential to carrying out the core activities.

4. Among the concepts listed under number, the concepts of whole number, number system, fraction, decimal, and approximate number showed a much higher frequency than did the concepts of exact number and denominate number. The concept of directed number was seldom used.

5. The frequency of the concept of significant figures was four times as great as that of estimating, the concept of the next highest frequency. The concepts of direct measurement, standard unit, approximation, possible error, relative error, accuracy, and precision were used about the same number of times. The concepts of indirect measurement and scale drawing occurred infrequently.

6. Tabulation of data was the most frequently used concept in relationship. The concepts of approximate relationship, variable, constant, independent variable, dependent variable, and graphical representation were judged essential to carrying out a number of activities. Other concepts under the heading of relationship were less often essential.
7. All of the concepts listed under proof occurred with about the same frequency.

8. Among the operations, subtraction, division, rounding off, and comparison were extensively used. Counting and addition were frequently essential. Multiplication was seldom used.

9. The concept of mathematical symbolism was basic to more than two-thirds of the activities in which mathematical concepts were essential.

10. Mathematical concepts were essential to 271 of the 1262 activities in the sixteen problem areas.

11. The mathematical concepts derived in this study compare favorably with the proposals set forth by the Joint Commission of the Mathematical Association of America and the National Council of Teachers of Mathematics, the Committee on the Function of Mathematics in General Education, and the Commission on Post-War Plans.

Conclusions

The conclusions of this study are:

1. Mathematics makes a significant contribution to general education as defined in this study.

2. The mathematical concepts derived in this study are adequate content for general education.
Recommendations

The recommendations of this study are:

1. Experimentation with the hypothesis of this study in an actual core situation.

There is a need for concrete evidence concerning the operation of the general theory advocated in this study. Considerable insight into the role of mathematics in general education may be gained by suggesting the possible contributions of mathematics to the activities appropriate to the broad problem areas which provide the basic curricular structure of the core. However, this procedure is fraught with several difficulties. In the first place, since the curriculum for any school would vary from that of any other, it is not possible to prescribe the activities which might be included in the core. Furthermore, such a prescription would tend to eliminate or stifle teacher-student planning in the classroom. In the second place, at this level of abstraction, it is not possible to do more than suggest the potential contributions of mathematics to the core activities. The present study is only a beginning. If mathematics is to make a significant contribution to general education as defined in this study, the problem must be attacked on the level of experimentation in an actual classroom situation.
2. Experimentation related to the effectiveness with which mathematics can be learned in the core framework.

There is little question concerning the potentialities of the core program for providing opportunities for developing mathematical concepts, principles, and processes. However, there remains the question of the effectiveness with which mathematics can be learned in the core. More specifically, the question is: Can mathematics be learned in a framework when in all probability it will not be encountered in its logical systematic form? For the most part, studies concerned with this problem have been confined to the elementary level; at the secondary level there has been relatively little experimentation with the problem. In the opinion of the writer, on the basis of experimental evidence, a confident answer to this question cannot be given at this time. Further experimentation in the classroom is needed, for it is only as teachers and students work together that the effectiveness of any program can be reliably determined.

3. Exploration of the implications of this study for the education of core teachers.

Teachers are not prepared to participate effectively in core program development. For the most part, they are prepared to carry on the subject-centered program of the traditional high school. In the opinion of the writer,
provision must be made for the preparation of core teachers if the core program is to fulfill its promise as a significant proposal for the reorganization of general education. The present study is based on the assumption that the broad pre-planned areas of living in which students usually have problems, rather than organized fields of knowledge, provide the basic curricular structure of the school. Materials from all fields of knowledge are utilized as they are needed. This suggests that the core teacher must have a wide background of experience. Examination of the mathematical concepts derived in this study may give some clue as to the mathematical experiences which should be a part of the core teacher's preparation.

4. Exploration of the implications of this study for the education of mathematics teachers to participate in core program development.

Problem areas, as defined in this study, are set up by the faculty of a school in terms of the psycho-biological and societal needs, problems, and interests of students. One of the chief advantages of this type of pre-planning is that the special interest area teacher has an opportunity to think through with those who teach in the core his contributions concerning the development of core activities and assist in their development if this type of pre-planning is done. This emphasis on pre-planning has implications for
the education of the mathematics teacher. If he is to participate effectively in core program development, competency in the teaching of mathematics is not sufficient. He must understand the philosophy of education and the psychology of learning underlying the core and be able to implement these through the area of mathematics.
BIBLIOGRAPHY

Books, Bulletins, Yearbooks


Periodicals


Unpublished Material

Alberty, Harold, et al, Utilizing Subject Fields in High-School Core-Program Development. Columbus: The Ohio State University, 1950. (Mimeographed)


### TABLE VIII

**FREQUENCY OF CONCEPTS ESSENTIAL TO CARRYING OUT ACTIVITIES IN THE PROBLEM AREA ONE, ORIENTATION TO SCHOOL LIVING**

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PROBLEM AREA FIVE, EMPLOYMENT AND VOCATION

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FREQUENCY OF CONCEPTS ESSENTIAL TO CARRYING OUT ACTIVITIES IN
PROBLEM AREA TEN, COMMUNICATION

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### TABLE XXIII

FREQUENCY OF CONCEPTS ESSENTIAL TO CARRYING OUT ACTIVITIES IN PROBLEM AREA SIXTEEN, INTERCULTURAL RELATIONS

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I, Elsie June Stalzer, was born in Cuyahoga Falls, Ohio, June 24, 1924. I received my secondary education in the high school of Cuyahoga Falls, Ohio. My undergraduate training was obtained at Kent State University, from which I received the degree Bachelor of Science in 1945. I taught mathematics in Whittier Junior High School, Lorain, Ohio in 1945 and 1946. In 1947, I taught in the Mathematics Department of Kent State University. From 1947-50, I acted in the capacity of teaching assistant in the Mathematics Department of The Ohio State University. I received the degree Master of Arts from The Ohio State University in 1949. In 1950, I received an appointment as Instructor in the Department of Education of this University. I held this position for two years while completing the requirements for the degree Doctor of Philosophy.