

**APPRAISAL OF THE HEALTH BEHAVIOR,
KNOWLEDGES, AND ATTITUDES OF
JUNIOR HIGH SCHOOL STUDENTS**



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APPRAISAL OF THE HEALTH BEHAVIOR, KNOWLEDGES, AND ATTITUDES
OF JUNIOR HIGH SCHOOL STUDENTS

An Abstract of a Thesis
Presented to
the Committee on Graduate Studies
Austin Peay State College

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts in Education

by
Judy Foster Johnson

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ABSTRACT

This study appraised the health behavior, knowledges, and attitudes of 268 junior high school students as measured by the pre- and post-test responses to the Colebank Health Behavior Inventory, and the carry-over value for forty-eight senior high school students as measured by the responses to the Le Maistre-Pollock Health Behavior Inventory.

Findings indicated that: junior high school girls were slightly ahead of boys in pre- and post-test total scores, there was no significant difference between the pre- and post-test total means for junior high school boys and girls, the junior high school student's total means were below the mean scores considered unsatisfactory by the "School Health Education Study," seventh grade students made a larger total improvement than the ninth grade students, junior high school students gained most in knowledges and least in practices, health education at the junior high school level had no carry-over value for senior high school student. as measured by the tests, and the high school seniors were far below the mean scores considered unsatisfactory by the "School Health Education Study." Recommendations for curriculum development in health education at the junior high school level were suggested.

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To the Graduate Committee:

I am submitting herewith a thesis written by Judy Foster Johnson entitled "Appraisal of the Health Behavior, Knowledges, and Attitudes of Junior High School Students." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts in Education, with a major in Health and Physical Education.

Lorraine Stowe
Major Professor

We have read this thesis and
recommend its acceptance:

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Minor Professor

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Director of Graduate Studies

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CHAPTER I

INTRODUCTION

Even though the trend is toward more attention to sound school health programs throughout the country, health education specialists agree that health education is still inadequate. True health education is a complex job, concerned with more than knowledges; it gives equal emphasis to attitudes and behavior. Its purpose is to bring about changes in what pupils know and understand, how they feel about health, and in what they do, through a program appropriately geared to the individual needs and age levels. The final test of its effectiveness is found in the quality of the health behavior of students now and in the future.

Statement of the Problem

The purpose of this study was to determine the value of formal health instruction in the Clarksville-Montgomery County School System, Montgomery County, Tennessee by appraising the health behavior, knowledges, and attitudes of 268 junior high school students and forty-eight senior high school students. More specifically, answers to the following questions were sought:

1. What were the health knowledges, attitudes, and behavior, by grade level and by sex, of junior high school students?
2. Did formal health instruction develop desirable behavior, knowledges, and attitudes in junior high school students?

3. Was formal health instruction satisfying the health needs and interests of junior high school students?

4. Did formal health instruction at the junior high school level have carry-over value for high school seniors?

5. What areas of health instruction were included in the junior high school health programs?

6. How could the health instruction programs be improved?

Importance of the Study

It is becoming more and more necessary for each individual to take prompt advantage of medical science, protect himself against hazards of medical quackery, and achieve for himself, his family, and his community an optimal level of health. Fundamental to the acquisition of such knowledges and practices is a sound program of health instruction in the nation's schools. However, before any action can be recommended, progress must be systematically evaluated locally, or at the state and national level.

It is hoped that the results of this study may be of value to administrators and teachers in developing a more functional health education program or in planning individual class units in the junior high schools.

Limitations of the Study

This study was limited in the following ways:

1. Time did not permit the writer to assess the carry-over value of health instruction for the junior high school students included in this study.

2. Schools in the System that did not include health instruction in their programs, either directly or through integration and correlation, were not included in the study.

3. Junior high school students who were absent from the pre- or post-testing were eliminated from the study.

4. There were possible sources of error in the test scores caused by students misunderstanding the test instructions and not marking properly, students not trying to do their best on the Inventory, slow students not being able to finish in one class period, and special teaching by the instructor in order to get higher results.

5. In analyzing the data, attention was given only to the subpart and total scores of each student. Time and equipment did not permit computing the percentage of preferred responses in each area and plotting of the Health Profile for each student.

Definitions of Terms Used

Clarification of certain terms used in this study made it desirable to include the following definitions:

Health instruction. This means the sum of instruction given within the curriculum which has for its aim the improvement of health conduct of the individual. Many subjects, departments, and other phases of school life contribute to this instruction. Within the curriculum itself the instruction could be given directly in organized health classes or it could be offered in integration and correlation with other subjects. Both groups taught in direct organized classes, and through integration with another subject, are included in this study.

Junior high school students. In this study the classification refers to students in the seventh, eighth, and ninth grades.

Organization

This first chapter has included an introduction, a statement of the problem, importance of the study, limitations, definitions of terms used, and organization of the study. Chapter II is devoted to related literature. Chapter III describes the methods of procedure. Chapter IV is devoted to an analysis of the data. The final chapter includes a review of the major findings of the study and recommendations.

CHAPTER II

RELATED LITERATURE

Health is universally accepted as an objective of education. Health education has proved its value as a method of improving the health of individuals and communities. Conducted by well prepared teachers and coordinated with the work of community agencies, health education can improve the nutrition of children, help children secure needed medical and dental care, increase the number of children vaccinated, immunized, and x-rayed, and reduce the number of children killed or injured by accidents. We should use health education as a means of building a healthier and happier nation (Wilson, 1948).

The most widely known and generally accepted list of educational objectives in the past was that compiled by the Commission on the Reorganization of Secondary Education, which was published in 1918 in a bulletin entitled Cardinal Principles of Secondary Education. Health was at the head of the list of seven with the following explanation: The secondary school should provide health instruction, inculcate health habits, organize an effective program of physical activities, regard health needs in planning work and play, and co-operate with home and community in safeguarding and promoting health interests (Risk, 1958).

Smith (1964) stated that "Health education is foundational for the rest of the curriculum. In today's world no child can afford to be deprived of health education. The United States cannot afford the

luxury of wasting human resources."

Vavra (1961) said that when we use the term "health education" we include the total school health program as it affects the child. This means the health services provided by professional health personnel; healthful school living including the total physical, mental, and social environment of the school; and health instruction in the classroom, through individual guidance.

Oberteuffer (1964), pointed out that the development of the integrated relationship between health and education--so vital to both--is a slow, and often frustrating, process. In simple terms, this relationship implies that one needs to be educated in order to develop and protect one's health, and one needs abundant health to make use of one's education.

Mackey (1961) stated that there are three essentials necessary to the improvement of the health of people in our society. These essentials are: scientific discovery; the provision of medical services; and finally, health education or health instruction.

However, as Kilander (1954) pointed out, health cannot be attained through the efforts of medicine and public health alone. Medicine and public health do things for people, whereas the task of education is to guide people to do things for themselves which are good for their own health and that of others in this and future generations.

Improving health is more a problem of education and less a matter of legislation and sanitary engineering. The great needs are to inform and to motivate people so that they will do for themselves those things which are desirable for their own health and the health of others.

Smith (1958) explained that the national demand for more science and mathematics in the curriculum today must not overshadow other equally valuable aspects of learning. The health of the individual--physical, mental, emotional, and social--is basic to the attainment of other goals in American democracy.

Many definitions and purposes of health education have been reviewed in this study. A few are given below.

Ray Lenart, Health Education Consultant of the district Public Health Office, Dayton, Ohio offered this description of health education: "It is changing what people think and do about health" (Mackey, 1961).

Kilander (1962) said that the purpose of school health education is to bring about changes in what pupils know and understand, how they feel about health, and in what they do. Kilander (1954) defined health education as "teaching us how to live healthfully."

Hein (1947) stated that health education is the sum of processes by which what is known about health is translated into effective personal and community living. When we accept this definition we are then interested in improving attitudes and practices as well as understandings and appreciations. The product of all these factors operating together may be said to make up total health behavior. Improvement in health behavior will insure major progress toward conservation and promotion of child health.

Harnett (1959) said health education is the translation of what is known about health into desirable individual and community behavior patterns by means of the educational process.

A symposium prepared for the American Association of Public Health (1947) gave two definitions of health education. Health education is the sum total of all our experiences and motivations which add to health knowledge or influence health behavior. Health education is the process of providing experiences for children, and adults for the purpose of favorably influencing their knowledge, attitudes, and practices relating to health. Important goals in health education are to help each individual develop desirable personal health practices and to share in community health efforts.

Hoyman (1965) said of health education, health is the goal and education is the process.

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association (Sliepcevich, 1964a) described health education as "the process of providing learning experiences which favorably influence understandings, attitudes, and conduct in regard to individual and community health."

Because of the size and importance of the nationwide "School Health Education Study," it seemed appropriate to discuss it at this point. The "School Health Education Study" began in September 1961 for the purpose of improving health instruction programs in the public schools of the United States. An interdisciplinary advisory committee of nationally recognized leaders from the fields of medicine, public health, school and college health education, and school administration has given direction and guidance to the project.

The period between September 1961 and December 1965, financed by the Samuel Bronfman Foundation of New York City, has been devoted to: (1) the publication of a monograph summarizing research related to health instruction; (2) a status study of large, medium, and small size school districts to determine health instruction program practices; (3) a survey of student's health behavior in grades six, nine, and twelve; (4) the development of a conceptual framework for the health education curriculum extending from K through grade twelve and the preparation of two sample sets of instructional materials; and (5) the testing of the experimental curriculum materials in four school tryout centers.

Health as the "comprehensive" and generalized "concept" was viewed as an entity with three dimensions--physical, mental, and social. Three key concepts served as the unifying threads of the curriculum and characterized the process underlying health--growing and developing, decision making, and interactions (Sliepceovich, 1966).

In organizing the study it was found that essential to the maintenance of an optimal level of health in the nation is the possession of basic information to permit individuals to make intelligent decisions regarding their own, their family's, and their community's health. Acquisition of this scientific knowledge and understanding about health must of necessity begin in early childhood. The school has a highly significant role in helping young people acquire the skills essential for making intelligent decisions about health. The purpose of education in a democracy places upon the schools direct responsibility to provide experiences which will achieve this goal.

A survey of health instruction practices was conducted in a stratified random sample of large (over 25,000), medium (3,000 - 25,000), and small (under 3,000) school districts in the United States. The study covered content and scheduling of health education at the various grade levels (Sliepcevich, 1962). Below are answers to some of the questions researched in the Study.

Health education was offered in grades seven and eight by 61.2 per cent of the large, 69.1 per cent of the medium, and 48.0 per cent of the small school districts. The percentage of those offering a separate class in grades nine through twelve was 52.2 per cent of the large, 43.1 per cent of the medium, and 31.8 per cent of the small districts.

Health education was a required subject for all students in grades seven and eight in 55.6 per cent of the large, 62.2 per cent of the medium, and 48.0 per cent of the small districts, and the average requiring health education for all students, grades nine through twelve, was 25.0 per cent of the large, 37.5 per cent of the medium, and 24.9 per cent of the small districts.

General science, home economics, physical education, and biology were most frequently mentioned as including specifically planned health units.

On the secondary level, provision for separate classes of boys and girls was the most widely reported practice by all districts.

Research data supported the need to emphasize the following areas as a part of health instruction, and in some instances, provide reasons for earlier grade placement: alcohol education; community health

problems; consumer health education; environmental hazards; health careers; international health activities; nutrition and weight control; sex education, family life, parenthood, and child care; smoking; and venereal disease education.

Sliepcevich (1964b) is hopeful that the findings of the School Health Education Study will serve as a base line of information for further studies in local or regional areas by focusing on problems and issues identified.

One of the most important controversies in our field today is concerned with the most effective place for health education. Thompson (1955) felt that there is just one way to give this important subject area its proper emphasis as a basic course of instruction--to allow it to stand on its own feet as a separate course. The alternate-day health class is under tremendous pressure to become a bad-weather-day class. As a part of a science course, health education may avoid the pitfalls encountered in combination with physical education, but it runs into the problem of emphasis. Most science teachers accept health as an essential area of required instruction, but are already pressed for time for adequate coverage of other science units.

The best-prepared teacher, regardless of his subject combination, should be the instructor in health. He should not be permitted to sandwich other subjects or units into the course. He should utilize all of the community resources in the class--such as health specialists as speakers, films, and field trips. In addition, a limited amount of health education should be integrated in science, physical education, and other courses.

After reviewing many studies Veenker (1966) indicated that good results could be expected from health teaching when it was given by the direct method in a separate course. Also, the attitudes of the students toward the content material seemed to improve when the content in health concepts was organized into a separate course.

Gmur and Witham found that statistically significant differences in pre- and post-test scores favored direct health instruction over both correlation and integration. Indirect health instruction in related subjects was effective (Veenker, 1966).

Kilander (1954) pointed out that very few schools had a well-integrated program in health education. The teaching of health through special courses had certain advantages. It enabled all students to take the course; it enabled the subject greater importance and so gained more respect from students as well as teachers; it permitted normal-sized classes; and it facilitated the granting of credit.

The National Association of Secondary School Principals (1953) gave other advantages of health as a separate course: boys and girls could be taught in the same class; use was made of teachers who were specifically trained in health education; more effective guidance and supervision were given to health experiences; the course served as a focal point for the integration of all general health knowledge and behavior in the school; and many opportunities were available for ready evaluation of knowledge, attitudes, and behavior of students as well as of teaching methods.

Wilson (1948) said opportunities for health education in connection with health service activities need to be utilized fully. The health instruction program must include incidental teaching, correlated instruction, and direct health teaching. The latter is particularly important at the senior high school level where in the opinion of many individuals and groups, health classes should meet daily for at least one year.

Wilson (1961) also added that despite the value of incidental education, such efforts are not sufficient to provide intermediate pupils with an understanding of themselves, the ways they can protect their own health and that of others, and various other factors that influence health and well-being. There is a need for planned, systematic health education, adapted to the developmental characteristics of boys and girls at different ages.

Curriculum development in health education has long been one of the most persistent difficulties and obstacles to progress in the field. As far back as 1798 what was probably the first course of study in health education to be used by teachers and students was introduced in New York from Europe. Health textbooks were published since the earliest days of public schools. The wave of legislation requiring instruction in alcohol, tobacco, and narcotics in the late 1800's, and the open-air classrooms and schools, strongly influenced curriculum content and organization. The Modern Health Crusade of the National Tuberculosis Association which began in 1915 provided direction to the curriculum also. New ideas also came from the Health Education Movement and the Child Health Organization.

In more recent years attempts at curriculum development in health education have largely stemmed from local and some state efforts. National curriculum projects were not initiated for nearly a half century following the First World War (Means, 1966).

After surveying curriculum guides produced in school systems throughout the country Wagner (1964) found a growing attention was being given to programs in physical fitness and sound health habits. Apparently, curriculum planners were of the belief that good health was necessary for happy and productive living, and therefore, should be given substantial emphasis in our school programs.

This trend does not, however, mean that our health programs are as adequate as they should be or that there is universal acceptance of the essentialness of vital and effective health programs. It is hoped that all schools will take a fresh look at their current health program in terms of the actual results that are being produced. And these results should be viewed in the context of sound mental and social health as well as physical health.

Curriculum guides devoted exclusively to health programs appear to be relatively limited. Consequently, health education is often a part of the physical education or social studies curriculums. Obviously, nutrition and nursing care are normally found to be taught in the home-making classes.

Only relatively few such general guides have been prepared at the secondary level, but here the emphasis is on the integration of health education with other subject fields, as noted above. There are some

systems, however, that have deemed it wise to develop separate curriculum guides in health education.

Whether a local school system decides to develop a separate curriculum guide in health education or to integrate health education with other areas of the curriculum, it is important that there be an adequate range of topics and practices. Of course, these topics and practices should be geared appropriately to ascending age levels and to individual needs and interests.

Kilander (1954) found that the tendency was to include the following ten major areas of health instruction on the secondary level: personal and community living sanitation, nutrition, physical activity, safety education, first aid, emotional and social health, education for family living, and home nursing. In the junior high school course emphasis was placed on the interests and problems of the adolescent.

Wagner (1964) pointed out that the following were illustrative of topics included in forward-looking curriculum guides for the junior high school level: personal appearance, community health, safety education, first aid, communicable diseases, body structure and function, the need for both adequate exercise and rest, dental health, social and emotional development, harmful drugs, effective human relations, adequate nutrition and general physical fitness, and health misconceptions.

The following resolutions were recently passed by the Joint Committee (National Education Association and American Medical Association, 1964), and should be of value in planning a health curriculum:

- (1) That schools in every community incorporate appropriate units on consumer education into their health education programs.

- (2) That schools accept appropriate responsibility for reinforcing the efforts of parents to transmit knowledge about the values inherent in our family system, and about the psychic, moral, and physical consequences of sexual behavior.
- (3) That schools, physicians, health departments, and other community agencies cooperate in an aggressive program designed to discourage children from starting the smoking habit and to influence youth who are smoking to discontinue the habit.

Harnett (1961) emphasized that by the time a boy or girl graduates from the twelfth grade, he should have an adequate health knowledge in the following areas: an understanding of the causes and consequences of disease and illness; a workable understanding and use of competent health services; the ability to choose wisely and develop sound judgment in buying health aids; the ability and desire to keep himself free from hazards and the threat of accidents and injuries; an understanding of the effects of alcohol, tobacco, and narcotic drugs; the use of consistent good judgement in regard to food and health; a good development of the skills of living; a wholesome attitude toward sex as an essential and natural part of human existence; an active interest and participation in physical activity best suited to the individual; and a realization that health is not only a personal matter, but a family responsibility, a community concern, and a world problem of great importance.

According to Harnett, junior high school emphasis may be planned to provide a sound understanding of the wonderful complexity of the human body, responsibility for personal care and daily hygiene, the

values of physical fitness, first aid and prevention of accidents, good nutrition, personal appearance, the effects of alcohol, narcotics, drugs, and tobacco, the scientific basis of disease control, and good social relationships.

And in the senior high school health instruction should include several broad areas of interest to the boy or girl rapidly maturing, preparing to enter an adult world, and assuming increasing responsibilities. Some of these areas may be centered around consumer goods and services; dating, preparation for marriage, family living; heart disease, and cancer education; community health responsibilities; occupational health; health organization on the local, state, national, and world basis; health and safety aspects of civil defense; and personal adjustment.

The success of a health program in any secondary school lies largely in the realm of leadership and planning. The wholehearted support of the school administration is an important factor, and the responsibility of the program should be assumed by the health co-ordinator, either on a full-time or part-time basis. A health committee or school health council can be invaluable in a decision-making and action program.

Many articles have been written and many studies have been made to emphasize the importance of instruction based on needs and interests of the students. A few of these will be reviewed on the following pages.

The American Association of School Administrators in the 1952 Yearbook, Health in Schools, stated the following: "The course of study needs to be carefully planned to avoid duplication and to meet the needs, interests, and capacities of the particular group" (Lantagne, 1952).

Since health is a foremost objective of education, organized emphasis in this area should not be left to chance, or made elective. Teaching health education as a "rainy day" subject in physical education is indefensible. Rather, such a course should be planned to meet the needs of the pupils, and required, with credit for the equivalent of two semesters.

No course is of much value unless it is functional. Adequate emphasis in health education, adjusted of course, to the age, grade, and needs of pupils, should include in the school life the following: human growth and development, personal hygiene, physical fitness, nutrition, mental hygiene, communicable and noncommunicable diseases, consumer health education, safety education, community health and sanitation, and family life education (Jackson, 1955).

Jewett (1964) pointed out that modern health education programs are more meaningful to boys and girls when they are built upon their interests and their present and anticipated needs.

There is general agreement among educators that the health needs, interests, and problems of children and youth should serve as a basis for curriculum planning in health education. Studies that were conducted and reported during the past several decades indicated that many individuals were concerned with the task of identifying these health needs, interests, and problems (Veenker, 1966).

The first study concerning health interests was done in 1929 under the direction of Clair E. Turner (Lantagne, 1952).

Southworth, Latimer, and Turner (1944) reported one of the most extensive studies of interests conducted prior to 1950. After testing 10,000 high school pupils it was found that the scores on the practice tests were much lower than those on the knowledge and attitude tests. The interest tests showed more questions asked about medical advice than any other subject. Other frequent questions written in by students were related to skin, posture and exercise, nutrition, care of the hair, acute diseases, mental health, body weight and height, oral hygiene, tobacco, and chronic diseases. Individual items most frequently checked on a list that was submitted to students were related to massaging the scalp, dandruff, personality, dental health, poisons in foods, colds, the need for fresh air while sleeping, exercise and the heart, the effect of tanned skin on health, the control of bleeding, and purification of drinking water while camping.

Williams and Southworth (1959) studied the interests of tenth grade students to determine the effect of instruction on the health interests of the students. Those items that aroused the most interest prior to instruction were concerned with venereal diseases, the reasons why some people are nervous, the effect of smoke and smog on health, the effect of cola beverages on the stomach, the need for blood tests prior to marriage, the meaning of geriatrics, the differences in the way boys and girls think and feel, the effect of the mother's emotions on an unborn child, the hereditary characteristics of feeble-mindedness, the amount of sleep needed, and how deep emotion causes a "lump in the throat."

Lantagne (1958) also studied 4,000 junior and senior high school students to determine their interests in marriage and parenthood. The

girls were found to have greater interest in pregnancy problems, happiness with home and family, normal sex relations, and living with the opposite sex; whereas boys items of greatest interest were juvenile delinquency prevention, living with the opposite sex, the demands of the opposite sex, job or probable career, and college education.

Lewis (1947) reported that health interests were studied by the Denver Public Schools Committee because they felt that instruction might be made more functional if experiences were selected and the activities provided were related to their interests and needs. The Committee tried to identify health interests of children at each grade level in the Denver Public Schools. For the study a pupil checklist of 250 items was given to 3,600 children from all socio-economic groups. The subjects were selected from grades four through twelve. The main interests of those in grade nine were dental health, nutrition, and building muscles. The main interests of those in the tenth grade were food and complexion; eleventh grade, teeth, food, and weight; and twelfth grade, young people's problems, selecting a mate, social diseases, and effects of petting. All ages were concerned with why people do or do not like me.

Dowell (1966) made a study to identify certain health education implications for secondary schools. Selected health problems of local communities were surveyed by means of a checklist administered to 164 professional workers in health and 180 school teachers and administrators. The needs and interests of 360 secondary school students were also surveyed. It was found that: (a) health curriculums should be vitally concerned with the teaching of the effects of alcohol, drugs, and tobacco; mental

health; and sex education; (b) more effective means of health instruction need to be devised in certain health areas; (c) certain health areas need to be emphasized at different stages in the secondary schools; and (d) interests and worries differ greatly between sexes, implying possible benefit in segregation of the sexes for certain phases of health instruction.

Schaller (1960) in his study of the needs and interests of secondary school students in Indiana, developed an inventory which was administered to 501 students, 100 parents, twenty health educators, and seventeen medical doctors. On the basis of the inventory and sampling used in this study, the following conclusions were made: (1) There was a common core of interest among high school students regardless of the categories into which the students were placed; (2) The expressed needs of girls and boys were markedly different, which may support the separation of the sexes in the health class; (3) The areas of understanding mental health and mental illness, personal care of the body, understanding harmful habit-forming substances, the importance of activity and rest, interpreting health, and medical advances for health appeared to be the most important areas for inclusion in a high school course; and (4) The areas of structure and function of the human body, community health services, community health facilities, and official and voluntary health programs appeared to be the least desirable for inclusion in a high school course.

Girard used a personal health inventory to investigate the health needs of high school students. The needs that were found by the study as most common for this group were in the areas of nutritional problems, visual problems, accidents, and emotional conflicts (Veenker, 1966).

A recent study reported by Rich (1960) derived the health needs of tenth and twelfth grade students through the use of health behavior inventories, problems checklists, personal data questionnaires, and information recorded by physicians after physical examinations. Findings showed the greatest needs to be related to rest, sleep, and relaxation; prevention and control of chronic and degenerative diseases; safety education; consumer health; mental health; personal health; nutrition; stimulants and depressants; and orthopedic, dental, visual, and skin defects.

McKee (1956) investigated the health needs of junior high school students through the use of a free-writing technique and questionnaires. The information submitted by the students indicated needs in the following areas: personal appearance; boy-girl relationships; family problems; health habits, knowledge, and attitudes; sex information and attitudes; and community relationships.

Bobbitt and Sellery reported on a series of studies at different grade levels in the Los Angeles city schools in order to determine health instruction needs. At the junior high school level, evidence of the student's health needs was demonstrated by a weakness in their knowledge about nutrition, rest and sleep, exercise, posture, consumer health, prevention and control of disease, safety education, care of special senses, family life education, mental health, stimulants and depressants, and personal health. Dental health was the one area in which knowledge was not indicated to be weak. Those who scored well on the health knowledge or health practice inventory tended to have a more favorable school attendance record (Veenker, 1966).

Lantagne (1952) used a health inventory compiled by O. E. Byrd to test 10,000 students from ten different states. The five major areas which received the greatest interest indication were habit-forming substances, safety, family health, mental health, and exercise and body mechanics.

Edwards (1956) said the word attitude, with its various meanings and ramifications, affords a possible clue to the endless search for the "why" of man's actions and responses. Attitudes furnish man with a readiness for responses, and can be regarded as a form of mental disposition which determines both the actual and potential responses of each person.

Knowledge, attitudes, and habits have been the basis of our health principles for many years. To regard proper health attitudes as an essential objective of health instruction, and then not to adequately evaluate them seems an essential waste of time and energy for the teacher and curriculum constructors.

Much of the value of health education can't be determined until after a reasonable period of time, but attitudes are developed almost instantly and can be evaluated within a short time limit.

Health attitudes can be determined in various ways. The most traditional combines random observations and oral student appraisals. Questionnaires and checklists have been used by the more progressively minded teacher. Many feel that a "paper-pencil" scaling technique is the most successful. The two that are most popular and standardized are those by Byrd and Mayshark. It is felt that these scales should be used

until a more satisfactory way is found to measure man's health attitudes.

Mayshark's study (1958) was designed to analyze the few attempts to measure health attitudes during the past thirty years. It was found that even though much research remains to be done in the field, many studies have been outstanding, such as the Massachusetts Study by Southworth, Latimer, and Turner; The Health Awareness Test by Derryberry and McCall; and Byrd's Health Attitude Scale.

Starr (1954) stated that one who is health-educated understands the basic concepts of health. Possession and use of these concepts is the index of the health-educated person. Such goals are not new or unique in today's health program. All teachers may be aware that students need to achieve these goals to become health-educated, but sometimes they assume that knowledge of these goals is sufficient to motivate health behavior. But results have proved that this cannot be assumed.

Actually, there is little correlation between what a person "knows" about health and what he "does" about it. Our experience has shown that the way in which pupils acquire health facts makes the difference. The health-informed and the health-educated person may possess the same factual information, but the latter uses his information to improve his life, while the former files and forgets--or remembers and feels guilty.

If one is to acquire these health understandings and concepts, and put them to personal use, the pupil must acquire them in such a way that he recognizes them as authoritative and understands their significance to himself. As he meets a health problem, he needs to see the relationship between the information he has on the subject, and the problem with which

he is confronted in his own classroom, home, and community.

Health teaching is directly concerned with attitude development, often referred to as the emotional tone toward facts or health concepts. In this phase of health education the teacher encourages students to value these health concepts as directives to their daily living, so that when they are faced with any health problem they will want to draw upon the "right facts" to help them meet and solve it.

Anderson (1951) said most educators will agree that the greatest challenge to teaching is the development of desirable attitudes. The course or procedure which a teacher might follow in developing health attitudes suggests itself: (1) Survey of the attitudes and purposes the students already have; (2) Implementation by providing situations that enable the students to express themselves; (3) Supplementation by providing situations which will develop further attitudes; (4) Projection of attitudes to wider areas of experience; (5) Intensification through comments and experiences by the teacher and other persons; (6) Crystallization by organizing the thinking and feelings of the students into a whole that will operate as a control of further behavior; and (7) Evaluation and indoctrination by appraising the standards and ideals established and helping the child realize his personal achievement.

The truly remarkable changes in health practices from the beginning of this century to the present could not have occurred without medical research and tremendous advances in scientific knowledge. The legal and administrative approaches were responsible for much of it. The educational

approach attempted to close the gap between the knowledge achieved by research and the existing practices and behaviors of American citizens.

The health problems of yesterday such as smallpox, poliomyelitis, and community sanitation have been replaced with complex problems of population control, chronic disease, accident prevention, and mental health.

Imaginative health education has never been more greatly needed. The situations provided for learning and re-learning, to result in changes in health practices, must be looked at anew, and creatively. The basic components of learning situations are still the same--awareness, motivation, communication, and decision making processes, but what worked in the past does not seem to work today.

We must advance on at least three broad fronts. First, we need to know much more about learning situations and change processes. We need health officers, public health social workers, public health nurses, all other public health practitioners, and especially public health educators, not satisfied with traditional education methods and willing to experiment. Third, we must consider the direction and scope of our efforts and whether they are enough to bring about the changes needed today in health practices. In our efforts in public health we must place more emphasis on the family as an educational target.

If what public health workers advocate is valuable and sound, eventually citizens will adopt the practice. The concern of the public health worker is to shorten the time before the public accepts sound health practices. A. L. Knutson emphasizes that "the individual must become dissatisfied or frustrated or at least curious regarding his

present state of health affairs before he is likely to acquire an interest in doing something about it."

Griffiths (1966) stressed that the gap between health knowledge and health practice must be shortened if our goals for the health of the public are to be achieved. The educational approach to health, the major means today for achieving change in health practices, can best advance through focusing its emphasis on the family as a unit, conferring a high priority to broad community planning, increased research in the learning and change process, and imaginative and experimental application of health education practice.

Dr. M. G. Candeau, Director-General of the WHO, has stated, "It is fully recognized today that no lasting progress in health work can be achieved without simultaneously undertaking to educate the public in health matters." The solution to many present day health problems depends on each individual doing what he can to protect and improve his own health. If he is to do a good job, he must be educated in health matters. The foundations for his understanding of health are built during the school years (Wilson, 1961).

Mayshark (1958) summed it up well in saying, "In health education more than any other subject matter we do not do a successful job until we favorably change behavior."

Below are a few studies made in the area of health behavior, knowledges, and attitudes.

Baker (1951) reported on the Crystal Lake Community High School, Illinois, which was chosen to work in the area of health with the Illinois Secondary School Curriculum Revision Program. A group of

1,085 students in grades nine, ten, and eleven were tested in the areas of health practices, attitudes, and knowledges. Results showed a large gap between health practices and knowledges of the students.

Cauffman (1963) appraised the health behavior of 452 seventh and eighth grade students at Placertia Junior High School, Los Angeles, through the use of the Colebank Health Behavior Inventory and attendance records. Significant differences favoring girls were found in the mean total test scores and in the knowledge and practice subpart scores on the inventory. Highest mean scores were established in the health attitude subpart of the Inventory. Only nominal or nonsignificant differences were evidenced between inventory items and scores of attendance groups. The findings were useful to the health coordinator, teachers, and others in developing instructional materials. The internal scoring, which was revealed through the item analysis, focused further attention upon basic concepts, which needed to be taught more or less explicitly in given content areas.

Durfee (1953) reported that throughout more than thirty years of its organized existence, the American College Health Association has had an excellent opportunity to evaluate the health knowledge of thousands of high school graduates. College students, representing a significant proportion of the product of our primary and secondary schools, are not well equipped with factual health information.

Latimer (1943) conducted a survey of the health practices, interests, knowledges, and attitudes of high school pupils and found that there was a definite need for development of a course of study for health instruction in the senior high school based upon actual needs and

interests. Also, teachers needed to become more conscious of the health problems of their pupils.

The original unpublished Colebank Health Behavior Inventory (Colebank, 1964) was utilized in the "School Health Education Evaluative Study" in Los Angeles. The administration of pre-tests and post-tests before and after instruction evidenced the effectiveness of instruction. Post-tests showed evidence of students' growth, particularly in health attitudes and knowledge. Minor improvements in practices were noted in short-period follow-up testing. Testing of pupils indicated that: (1) health knowledge scores were higher than health attitudes and health practice scores in most instances; (2) health practices appeared to lag behind knowledge and attitudes; and (3) more improvement was noted in knowledge and attitudes than in practices as a result of the testing accomplished after a period of instruction.

Washnik (1957) used the Shaw-Troyer Health Knowledge and Application Test to find out what high school seniors know about health. The greatest difficulty was in questions dealing with nutrition, safety, first aid, mental health, and health in the home, school, and community. Girls were slightly ahead of boys in the knowledge subpart.

Administration of the Colebank Health Behavior Inventory (Colebank, 1964) to appraise the health knowledge, attitudes, and practices of 581 pupils in grade eight showed pupil weaknesses to be apparent in all areas of health knowledge except dental health; in health attitudes concerning consumer health, dental health, mental health, and prevention and control of diseases; in health practices in prevention and control

of disease, family life education, care of special senses, consumer health, and mental health. Apparent weaknesses in all three parts of the inventory indicated that special emphasis in health instruction was needed for eighth grade pupils in the areas of prevention and control of disease, consumer health, and mental health. The investigation concluded that the use of health behavior inventories with eighth grade pupils was an effective means of discovering pupil's health instruction needs and was a useful technique in motivating pupil interest in health, and in developing effective learning situations.

As Byrd (1959) pointed out, if an adequate school health program is to be developed, schools must cooperate closely with community health agencies, parents, professional medical and nursing groups, dental groups, public health authorities, and many other segments of the community. A health curriculum constructed out of an exploration of community resources is bound to be broader and richer in its potential than the curriculum constructed by a small group of teachers working in isolation from the community.

Hein (1947) also said a successful school health program depends above all on the volunteer partnership between parents and teachers, with the child being the common ground. Some commonly suggested methods of changing parent's attitudes and understanding about the school health program are parent-teacher meetings, parent's classes, contacts through the public health nurse, letters to parents inviting comments and questions, exhibits, films, and many others. The approach into the

adult area must be planned, continuous, coordinated, and supervised.

Heustis (1964) explained that we need to think of health education as a total process, involving children, parents, doctors, nurses, dentists, schools, health departments, voluntary agencies, and many other community groups. The schools are often ill-prepared to meet this whole responsibility.

The impact of what is done in the classroom may be increased by what the health department is able to do in working with parents to encourage them to set an example for their youngsters.

When properly coordinated, when built on a base of the community as a whole, rather than the school alone, health instruction and a child's experiences with health services take on a meaning which is indelibly impressed upon him. This is more than knowledge of mere facts or mechanical skills, but it is knowledge which is well enough understood and of sufficient importance to be retained and applied, to be "lived" by the child. The cooperative effort will pay off with the greatest yield in the long run in dealing with problems such as alcoholism, traffic safety, physical fitness, disease prevention, and nutrition in improving our effort in family life education and in making health careers more desirable to young folks.

The goal is pretty well summed up in the following quotation: "The heritage of knowledge passed on by the comparatively few exceptional individuals in each generation becomes a source of power only when it is understood, appreciated, and used by many" (Heustis, 1964).

Health education, being a personally functional learning process, is only partially measurable by such academic means as testing of health

knowledge and pertinent skills. These criteria need to be augmented by the recognition of certain subjective evaluations, such as the observed changes in the pupil's attitudes and behavior, attention of the pupil to his remedial defects, and improvement in his health standards. Other important evaluations of the health education course will come from the pupils, from parents, from other teachers, and from the community at large (Kilander, 1954).

Byrd (1950 and 1958) pointed out that the determination of health interests and needs cannot be left to student discretion entirely, for an inadequate and even trivial expression of interests may be the result since the pupil may be entirely unaware of future and even current health problems, and his interests may be largely undeveloped. It should be apparent that for curriculum construction in health some guidance is needed as to what are significant health problems around which learning experiences can be built by the instructor and his pupils.

Byrd has developed the most detailed approach to health problems or health topics as a basis for curriculum planning. The 300 problems suggested in 1950 became 500 topics in 1958. This list was prepared from a briefing of 25,000 articles that appeared in periodicals over a period of fifteen years. The list may be used by the instructor to explore student health interests by merely requesting each pupil to encircle the number of each specific health factor or problem which he would like to have included in the course content.

Haag (1953) emphasized that health teaching is one of the most demanding phases of our instructional programs. The teacher must realize above all that the effectiveness of health instruction depends on satisfying the student's health needs and interests. In order to determine these, the teacher must be familiar with objective devices that give information on the student's health status, knowledge, attitudes, and practices.

Objective devices that might be helpful in determining students' health status are health and dental record cards; results of tuberculin, x-ray, vision, and hearing testing programs; results of physical education and postural diagnostic tests; results of nutritional screening; and systematic observation by the teacher.

To determine the type of health knowledge the student should possess, the teacher must discover the health problems of the community, school, and home. The survey, rating-scale, checklist, and questionnaire are a few objective devices. Then teacher-made or standardized objective health tests can be given to determine the students' adequacy of health information.

The self-appraisal list, questionnaire, or checklist can help to reflect health attitudes. A suggestion box, panel, debate, and open discussion will also help to reveal attitudes.

Practices may be determined by systematic observation, demonstration of skills, student surveys of classmates, and standardized tests.

The teacher can also get information about student's health needs and interests through surveys by the school health council; statistical information from the local health unit and state department of health;

records of volunteer health agencies; and conferences with the school dietitian. Those needs and interests that appear with the greatest frequency become the basis for health instruction.

After reviewing many studies on methods of teaching, Cauffman found that more growth in behavior necessary for democratic living and critical thinking took place when students were taught by the problems approach rather than by the topical approach, and it proved as effective as the lecture method in teaching factual information (Veenker 1966).

Cushman (1953) concluded that there was evidence that democratic methods enhanced learning and students learned better when learning exercises were related to needs and interests. Several studies showed that "attitudes" and behavior patterns could be changed more readily and with more lasting effectiveness through direct rather than vicarious experience.

In the developmental method or problem-solving method of teaching the student undergoes certain experiences directed to reach certain objectives under the guidance of the teacher. It is a "natural" for health educators because the aim is to teach young adults to do things for themselves and to put knowledge into action.

After reviewing several studies on retention, Veenker (1966) came up with several conclusions that can well be applied to health education programs:

1. Retention of principles is better than that of isolated facts. Good health teaching involves the use of organized principles and basic concepts as a basis for presentation of health facts.

2. Motor skills are better retained than intellectual ones. Health educators should translate many health learnings into "doing" activities rather than "thinking" ones.

3. Reliance on one's own capacities results in better retention and continuance of learning. Pupil participation is far more effective than the more commonly used method of teacher presentation.

After reviewing several studies on the readability of health textbooks, McTaggart (1964) concluded that many widely used modern health textbooks were too difficult for the grades in which they were used. This high level of difficulty seemed to be mainly due to the excessive use of difficult words. Wide variations in reading difficulty were found within any given health text and between texts designated for use in a given grade.

CHAPTER III

METHODS OF PROCEDURE

Method of Collecting the Data

The Inventory. The Colebank Health Behavior Inventory, devised by Dr. Albert D. Colebank of the University of California at Los Angeles, was selected for the purpose of testing junior high school students. This selection was made for these reasons:

1. The Colebank Health Behavior Inventory for junior high school students is unique in that it attempts to measure the health needs of junior high school boys and girls in terms of practices, attitudes, and knowledges. A triple survey method devised by Colebank attempts to match as nearly as possible three integrated items concerned with a basic health principle; practices, attitudes, and knowledges.

2. The Colebank Health Behavior Inventory is a standardized instrument which appraises health behavior. Items for the Inventory were selected from authoritative sources and were screened by experts in public health, medicine, and health education. In addition, several trial forms of the Inventory were used to screen evidence leading to the final form of the Inventory. Results of a study of health interests and needs of junior high school students played an important part in the choice of items for the final Inventory. The reliability coefficient, using split halves method with Spearman-Brown correlation, is .89.

3. The Colebank Health Behavior Inventory seems practical in that no special qualifications are required for administering the test. It

could be administered in one average class period and a minimum amount of student data is requested.

The health Behavior Inventory, devised by Harold Le Maistre and Marion Pollock of the University of California at Los Angeles, was selected for the purpose of testing a group of high school seniors to determine if there was carry-over value in formal health instruction. This test was selected for the following reasons:

1. The test, composed of seventy-five multiple-choice items, presents a problem situation format to determine the status of health knowledge and the effectiveness of health teaching.
2. The Health Behavior Inventory is a standardized instrument which appraises health behavior as a whole rather than in specific components. Validation techniques utilized in developing the instrument included: selection of items from authoritative sources; screening of items by subject matter authorities, teachers, health service personnel, and health administrators; statistical validation of items through discrimination indexes; and other refinements resulting from administration of trial revisions of the Inventory. The reliability coefficient, computed through the use of the Kuder-Richardson formula 20, is .89.
3. The Health Behavior Inventory was very practical in that no special qualifications were required for administering the test and it could be administered in one average class period.

Both the Colebank Health Behavior Inventory and the Le Maistre-Pollock Health Behavior Inventory were published by the California Test Bureau, Del Monte Research Park, Monterey, California.

Content areas for the Colebank Health Behavior Inventory includes nutrition, personal and mental health, community health, smoking and drinking, infection and disease, safety, care of eyes, dental health, and rest and recreation. There are twenty-five questions on behavior, twenty-five on attitudes, and fifty on knowledge.

Content areas of the LeMaistre-Pollock Health Behavior Inventory includes nutrition, personal health, community health, family health, mental health, infection and disease, dental health, exercise, rest and recreation, safety and first aid, drinking, smoking, and narcotics. The seventy-five problem situations were centered around every day experiences of two typical senior high school students.

The Subjects. The students used in this study were 268 junior high school students and forty-eight senior high school students in the Clarksville-Montgomery County School System. All students in the study represented stratified random samples. No attempt was made to control sex, age, mental ability, previous training in health, methods used by the teacher, and socio-economic background.

The pre-test was administered at the beginning of the second semester to students before they had formal instruction in health education. The post-test was administered at the conclusion of the course. On the following page is a schedule of the pre- and post-test administration to the junior high school students:

<u>School</u>	<u>Sex</u>	<u>Pre-test Date</u>	<u>Post-test Date</u>	<u>No. Tested</u>
Greenwood	Boys	1-6-67	5-12-67	104
Greenwood	Girls	1-9-67	5-5-67	83
Montgomery Central	Girls	2-20-67	5-10-67	21
Montgomery Central	Boys	2-20-67	5-10-67	24
Burt High	Boys	1-18-67	5-9-67	36
Total				268

The ninth grade students at Greenwood Junior High School and Burt High School were enrolled in health education for a full semester, meeting five days a week under the concentrated plan. The seventh grade students at Montgomery Central High School were enrolled in a science class with a ten week health unit integrated into the program.

The seniors represented a random sample of volunteer students at Clarksville High School. This group received their health instruction at Greenwood Junior High School in the ninth grade and did not have a course in health education at the high school level. The high school seniors were tested once during the second semester. Below is a schedule of the test administration to the high school students:

<u>School</u>	<u>Sex</u>	<u>Test Date</u>	<u>No. Tested</u>
Clarksville High	Boys	3-28-67	30
Clarksville High	Girls	3-28-67	18
Total			48

Treatment of Data

Immediately following each test phase the completed answer sheets were hand scored with the use of a scoring stencil and divided into groups according to grade, school, and sex. After the post-testing was completed for the junior high school students, a listing was made

of every student's answer sheets. For each individual student who participated in the testing phase an identifying code was given for the school, grade, sex, and pre- and post-test scores. The students were matched in pre- and post-tests.

The codes, and subpart and total scores, were then transferred to IBM punch cards. A punch card was prepared for each student on the junior and senior high school level and verified twice through the use of an IBM Card Verifier and a listing processed by the IBM 1401 System.

Through the IBM 1401 Data Processing System the mean, standard deviation, and standard error of deviation were found for all individuals and groups. With this data and the use of a printing calculator, t values were computed for local groups and national norms. From these findings, tables were constructed which will be discussed in the following chapter.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Pre-test and Post-test Results

Table I showed a comparison of total pre- and post-test scores for all junior high school boys and girls included in the study. Even though a difference in means was noted, none were found to be significantly different. The girls had higher total mean scores, with an improvement of only 3.91 raw score points, while the boys improved only 3.53 raw score points. From Table I, and throughout the total findings, the results seemed to indicate that the health education course for junior high school students was of no value as measured by the tests. Noting Table I, there was a significant difference of the pre-test and post-test total score means of the boys only. Analysis follows later to indicate that one school contributed to this significant mean difference.

Table II reported a comparison of the total pre- and post-test scores of all the junior high school students by school and by sex. Again mean differences were found, but none were significant. The Greenwood girls had the highest pre- and post-test scores and the Central girls were second. Greenwood boys had higher pre-test scores than the Central boys, but lower post-test scores. Burt boys had the lowest pre- and post-test scores, but the largest mean improvement of 7.17 raw score points. Central boys had an improvement of 5.66 and Central girls improved by 4.00. Greenwood girls improved by 2.63, and the Greenwood boys had the lowest improvement of 1.77. Again noted

in Table II was the significance of pre- and post-test total means. The boys from Burt and Central were found to be significant beyond the five per cent level. It was the investigator's opinion that cultural differences entered into the findings.

TABLE I

A COMPARISON OF THE PRE- AND POST-TEST TOTAL SCORES, BY SEX, OF JUNIOR HIGH SCHOOL STUDENTS

Sex	Boys Pre-test	Boys Post-test	Girls Pre-test	Girls Post-test
M	62.02	65.55	71.69	74.60
SD	15.158	12.758	11.949	11.229
SE	1.187	0.999	1.177	1.106
t_{05}	2.28*		1.81	
N	164		104	

* Five per cent level of significance

TABLE II

COMPARISON OF PRE- AND POST-TEST TOTAL SCORES, BY SEX AND BY SCHOOL,
OF JUNIOR HIGH SCHOOL STUDENTS

School and Sex	Greenwood Boys		Greenwood Girls		Burt Boys		Central Boys		Central Girls	
Test	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
M	65.44	67.21	73.30	75.93	50.72	57.89	64.17	69.83	65.33	69.33
SD	14.265	12.510	11.586	10.892	14.700	13.285	10.838	7.139	11.222	10.991
SE	1.406	1.233	1.279	1.203	2.485	2.246	2.260	1.489	2.509	2.458
Range of Individual scores**	12-89	24-90	32-95	36-94	16-78	35-81	32-81	52-84	36-88	42-87
t ₀₅	.95		1.50		2.14*		2.09*		1.11	
N	104		83		36		24		21	

* Five per cent level of significance

** Highest possible score: 100

Table III showed a comparison of all junior high school students, by sex and by school, with national norms developed on the Colebank Health Behavior Inventory-Junior High Level. The investigator knew of no study utilizing the same instrument to develop recommended scores for students who had formal health education. However, it was felt that it would be of value to compare the subjects used in this study with national norms developed on the Colebank Health Behavior Inventory in the nationwide "School Health Education Study." It is to be kept in mind that the purpose of that study was to evaluate the nation's health programs; test students in health behavior; and find student's needs, interests, strengths, and weaknesses. Total and subpart scores of the national study were found to be unsatisfactory, and the scores of the junior high school students included in this study were found to be even lower than those of the national study.

Greenwood girls were the only group to be slightly above the national mean by .44. This difference is not a significant one and therefore may be considered comparable. The Greenwood boys were 1.09 below the national mean, and Central boys were 2.36 below the national mean. Central girls were 7.53 below the national mean and Burt boys were the lowest with a difference of 15.81 from the national mean. Again cultural differences were clearly pointed out.

Means of all groups were nonsignificant except Burt, which was highly significant. The test of significance of the mean difference for the Central girls was just barely below the five per cent level.

TABLE III

A COMPARISON OF GREENWOOD, BURT, AND CENTRAL STUDENT'S PRE-TEST SCORES AND NATIONAL NORMS
ON THE COLEBANK HEALTH BEHAVIOR INVENTORY

School	Greenwood		Greenwood		Burt		Central		Central	
Sex	Boys	Natl.	Girls	Natl.	Boys	Natl.	Girls	Natl.	Girls	Natl.
M	65.44	66.53	73.30	72.86	50.72	66.53	64.17	66.53	65.33	72.86
SD	14.265	11.53	11.59	8.81	14.70	11.53	10.838	11.53	11.22	8.81
SE	1.406	.56	1.279	.42	2.485	.56	2.260	.56	2.509	.42
Range of Ind. Scores	12-89	15-88	32-95	30-90	16-78	15-88	32-81	15-88	36-88	30-90
t ₀₅	.60		.33		6.20*		1.01		1.95	
N	104	430	83	430	36	430	24	430	21	430

* Five per cent level of significance

** Highest possible score: 100

Table IV showed a comparison of total scores for all ninth grade students and all seventh grade students, each combining schools and sex into one score. The ninth grade students had a higher pre-test mean, but the seventh grade students had a higher post-test mean. The seventh grade students made an improvement of 4.89, while the ninth grade students made an improvement of only 2.96. Both grades were found to have a significant mean difference at the five per cent level. Again later analysis will indicate which schools and which sex contributed to the above significant findings.

The following three tables revealed the means found in practices, attitudes, and knowledges by sex, grade, and school. Significance of difference of means were not computed for the subpart scores.

Table V showed a comparison of the pre- and post-test practices, attitudes, and knowledges for all junior high school boys and girls. Both groups improved more in knowledges than in any other area, and less in practices. Girls improved more than boys with a 2.01 increase in knowledges and a 1.35 increase in attitudes. However, they had a .17 decrease in practices. Other findings indicated this decrease to be reflected by the scores from the Greenwood girls. Boys improved in knowledges by 1.92, attitudes by 1.04, and practices by .62.

TABLE IV

A COMPARISON OF TOTAL PRE- AND POST-TEST SCORES OF
NINTH GRADE STUDENTS AND SEVENTH GRADE STUDENTS

School and Grade	Greenwood and Burt Ninth Grade Boys and Girls		Central Seventh Grade Boys and Girls	
	Pre	Post	Pre	Post
M	65.99	68.95	64.71	69.60
SD	15.408	13.598	11.035	9.144
SE	1.034	0.913	1.664	1.379
t_{05}	2.13*		2.22*	
N	223		45	

* Five per cent level of significance

TABLE V

A COMPARISON OF PRE- AND POST-TEST PRACTICES, ATTITUDES, AND KNOWLEDGES, BY SEX,
OF JUNIOR HIGH SCHOOL STUDENTS

Sex	Boys						Girls					
Sub-Parts	Practices Pre Post		Attitudes Pre Post		Knowledges Pre Post		Practices Pre Post		Attitudes Pre Post		Knowledges Pre Post	
M	12.01	12.63	17.88	18.92	32.13	34.05	14.18	14.01	19.59	20.94	37.92	39.93
SD	4.189	3.871	4.084	3.420	10.300	9.318	3.413	3.435	3.034	3.006	8.174	7.534
SE	0.328	0.303	0.320	0.268	0.807	0.730	0.336	0.338	0.299	0.296	0.805	0.742
N	164						104					

Table VI showed a comparison of pre- and post-test practices, attitudes, and knowledges of all ninth grade students and all seventh grade students. Again, the greatest improvement was found in knowledges and the least improvement was noted in practices. The seventh graders had a greater increase in all three areas with an improvement of 3.24 in knowledges, 1.29 in attitudes, and .80 in practices. Ninth graders improved 1.70 in knowledges, 1.13 in attitudes, and .21 in practices.

TABLE VI

A COMPARISON OF THE PRE- AND POST-TEST PRACTICES, ATTITUDES, AND KNOWLEDGES, BY GRADE,
OF JUNIOR HIGH SCHOOL STUDENTS

Grade	Ninth						Seventh					
Sub-Parts	Practices Pre Post		Attitudes Pre Post		Knowledges Pre Post		Practices Pre Post		Attitudes Pre Post		Knowledges Pre Post	
M	12.88	13.09	18.58	19.71	34.53	36.23	12.73	13.53	18.38	19.67	33.60	36.84
SD	4.142	3.844	3.943	3.510	10.197	9.550	3.536	3.344	3.013	2.867	8.523	6.646
SE	0.278	0.258	0.265	0.236	0.684	0.641	0.533	0.504	0.454	0.432	1.285	1.002
N	223						45					

Table VII reported a comparison of pre- and post-test practices, attitudes, and knowledges of all the junior high school students by school and sex. Greenwood girls, Central boys, Central girls, and Burt boys improved most in knowledges and least in practices. Greenwood boys improved most in attitudes, and least in practices. All scores showed very little improvement and though no significance of differences were computed, it was not felt that the observed differences were significant.

Greenwood boys increased .46 in practices, .83 in attitudes, and .57 in knowledges; Greenwood girls increased 1.37 in attitudes, 1.73 in knowledges, and decreased .33 in practices; Central boys increased 1.08 in practices, 1.25 in attitudes, and 3.33 in knowledges; Central girls improved .48 in practices, 1.33 in attitudes, and 3.14 in knowledges; and Burt boys increased .78 in practices, 1.50 in attitudes, and 4.89 in knowledges. Central boys had the highest improvement in practices and Burt boys were second; Burt boys had the highest improvement in attitudes, and Greenwood girls were second; and Burt boys had the highest improvement in knowledges, and Central boys were second.

Findings from these three tables showed that very little improvement had taken place in the three areas of health education. In every grouping except one more improvement was found in knowledges, and every group improved least in practices. Chapter II stressed the importance of improving practices in health education. Many facts can be taught and memorized, but until the student puts these facts into practice he is not considered to be properly educated in health.

TABLE VII

A COMPARISON OF THE PRE- AND POST-TEST PRACTICES, ATTITUDES, AND KNOWLEDGES,
BY SCHOOL, OF JUNIOR HIGH SCHOOL STUDENTS

School	Greenwood Boys						Greenwood Girls						Central Boys						Central Girls						Burt Boys					
Test	Pre			Post			Pre			Post			Pre			Post			Pre			Post			Pre			Post		
Subject	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.	Pract.	Att.	Knowl.
M	12.18	18.38	34.88	12.64	19.21	35.45	14.55	20.08	38.66	14.22	21.45	40.39	12.75	19.04	32.38	13.83	20.29	35.71	12.71	17.62	35.00	13.19	18.95	38.14	11.03	15.67	24.03	11.81	17.17	28.92
SE	4.514	4.046	8.806	3.828	3.499	9.394	3.276	2.909	8.074	3.509	2.708	7.428	3.527	3.116	8.845	3.602	2.263	5.334	3.548	2.699	7.910	2.986	3.287	7.680	3.371	3.958	10.94	3.957	3.149	9.367
SE	0.445	0.399	0.868	0.377	0.345	0.926	0.362	0.321	0.892	0.388	0.299	0.820	0.735	0.650	1.844	0.751	0.472	1.112	0.793	0.603	1.769	0.668	0.735	1.717	0.570	0.669	1.849	0.669	0.532	1.583
N	104						83						24						21						36					

Table VIII showed a comparison of Clarksville High School senior's total scores with national norms on the Le Maistre-Pollock Health Behavior Inventory-Senior High Level. The national norms for this test were also developed in the "School Health Education Study" and it must be emphasized that these scores were found to be unsatisfactory.

Both the senior boys and the senior girls were found to be significantly below the means of the national norms. Senior boys were 9.26 below the mean and senior girls were 7.08 below the mean. These findings strongly suggested that health education at the junior high school level has little carry-over value for high school seniors and that there is a great need for a well-planned health course at the senior high school level. Readers should refer to the discussion in Chapter III concerning the differences between the content of these leveled health inventories.

TABLE VIII

A COMPARISON OF THE TOTAL SCORES OF CLARKSVILLE HIGH SCHOOL SENIORS
AND NATIONAL NORMS ON THE LE MAISTRE-POLLOCK HEALTH BEHAVIOR INVENTORY

Group	CHS Boys	Natl. Norms	CHS Girls	Natl. Norms
M	40.17	49.43	46.44	53.52
SD	14.192	9.95	11.02	6.47
SE	2.635	.48	2.67	.31
Range of Ind. Scores **	4-61	10-69	24-62	26-68
t ₀₅	3.46*		2.63*	
N	30	430	18	430

* Five per cent level of significance

** Highest possible score: 75

In comparing the areas of instruction included in the health courses for the junior high school students in this study with the content areas recommended and included on the Colebank Health Behavior Inventory, it was found that many topics were omitted.

The Greenwood girls studied personality, appearance, behavior, emotions, mental illness, neurosis and psychosis, alcohol, drugs and tobacco, bones and muscles, posture, fatigue and sleep, sports, heart and blood, infectious diseases, body defenses, medical reinforcements, public health, first aid, and safety. They did not receive any instruction in dental health, care of eyes, community health, nutrition, and personal health needs.

The Greenwood boys studied alcohol, drugs and tobacco, emotions, psychosomatic diseases, food, appearance, teeth, posture, infectious diseases, body defenses and medical reinforcements, safety on wheels, sports, and fatigue and sleep. They were not instructed in mental health, personal health needs, community health, and care of eyes.

The Burt boys studied personality, behavior, personal appearance, mental illness, emotions, alcohol, drugs, sense organs, nervous system, endocrine glands, bones and muscles, posture, fatigue and sleep, and sports. They did not study nutrition, personal health needs, community health, smoking, infection and disease, safety, care of eyes, and dental health.

All of the above students used the textbook Modern Health by James H. Otto, Cloyd J. Julian, and J. Edward Tether, 1955-1959 editions. No other texts or references were used throughout the courses. None of

the above students were instructed in the areas of sex education and venereal disease education.

A study of the textbook, Modern Health, and the amount of information devoted to the topics recommended by the "School Health Education Study" revealed that very little, and often no space was provided for the most important health areas for junior high school students. For example, only one small paragraph was devoted to venereal disease education. Other topics recommended were treated in the textbook as follows: alcohol education, nine pages; community health programs, four pages; consumer health education, none; environmental hazards, ten pages; health careers, none; international health activities, none; nutrition and weight control, seventeen pages; sex education, family life, parenthood, and children, none; and smoking, two pages.

The Central boys and girls did not have a textbook, but used various reference materials and were taught by the problem-solving method. They studied nutrition, diseases, skin problems and personal appearance, how and why of body structure and function, and sex education. These topics were integrated into a science class. They did not study mental health, personal health needs, smoking, drinking, drugs, safety, community health, care of eyes, dental health, and rest and recreation.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

Summary

An analysis of the data recorded in Tables I through XIII of Chapter IV indicated the following: (a) junior high school girl's pre- and post-test scores were slightly higher than boy's pre- and post-test scores; (b) there was no significant difference between the pre- and post-test means for the junior high school boys and girls; (c) the junior high school student's total means were below the unsatisfactory national norms; (d) seventh grade students made a larger total improvement than ninth grade students; (e) junior high school students gained most in knowledges and least in practices; (f) health education at the junior high school level seemed to have no carry-over value for high school seniors as measured by the tests; and (g) the high school seniors were far below the unsatisfactory national norms.

These results seemed to clearly indicate that the health education courses for junior high school students were not adequate and had no carry-over value for senior high school students.

Recommendations

The detailed findings of this study offered many practical implications for curriculum development. It is believed that health

instruction at the junior high school level may be improved as follows:

1. More time should be given to the health instruction program. Research studies indicate that the separate and direct course at the junior high school level is more effective.
2. Besides the direct course, health education should be integrated into physical education, science, and the social studies.
3. Health classes should be of normal size for instructional opportunities to provide optimal learning situations.
4. Local schools should plan and carry out evaluation studies annually of their health instruction programs to determine existing strengths and weaknesses.
5. A person with specialized professional preparation in health education should be appointed as a full- or part-time health coordinator to provide supervisory assistance to the health teachers. A school health committee made up of school and lay personnel should be appointed for decision-making and responsibility of the program.
6. The teaching-learning conditions in the health education program should be brought up to a level commensurate with those provided for other curricular offerings. Teachers in health education should be those who are the best qualified and most interested.
7. Workshops for the health teachers should be planned in specific content areas and in-service training meetings should be available to teachers to strengthen and expand their professional competencies in health education.
8. The health teacher should teach only health. The nature and extent of responsibilities other than classroom teaching that are

expected of those designated as health instructors, such as supervision of intramurals and school recreation, teaching physical education, and coaching should be examined. A person qualified for one responsibility can not be equally competent in others.

9. Health teachers should constantly be aware of changes and national research, look for new things to teach, be willing to experiment and work, avoid duplication, and be conscious of student's problems. Curriculum committees should meet together and plan study guides to avoid overlapping, and regularly revise health content in all grades so that it can be a progressive sequence.

10. Health teachers should bridge the gap between knowledge and attitudes, and practices through the problem-solving approach--and put knowledge into action.

11. Gaps in the scope of health topics covered should be closed. Increased attention should be given to sex education, venereal disease education, and other controversial topics.

12. At the junior high school level the goal of health instruction should be development of ability to make intelligent decisions in regard to health matters and not merely memorization of facts.

13. The health course should be carefully planned by all health teachers according to special needs, interests, and problems, and adapted to the developmental characteristics of different ages. Health content included should benefit every student.

14. Schools should seek to develop local curriculum guides, or adopt state guides and materials produced on a national level to meet local needs and problems. From these guides teachers should organize

content according to the cultural level of the group. Professional authoritative sources should be invited in to assist in validating the accuracy of the content.

15. Community resources such as specialists speakers, field trips, and films should be utilized as often as possible. Health programs should cooperate with community agencies, parents, medical and dental groups, public health authorities, voluntary and official agencies, and representatives of professional organizations. They may be invited to assist school personnel where their specialized background, competencies, and experience can be utilized best for improvement of the health program.

16. Evaluation should be constant and both the teacher and the student should evaluate and gain information through the following methods: observation of changes in behavior and attitudes, oral student appraisals, self-appraisal sheets, surveys, questionnaires, checklists, scaling techniques, suggestion boxes, open-discussions, panels, debates, demonstrations, health and dental records, physical education records, standardized and teacher-made objective tests, school surveys, local health unit and state health department reports, volunteer agency information, and dietitian reports.

17. Parents should be reached through letters, parent-teacher meetings, exhibits, and films which may interpret the need for health education, its objectives, and its unique characteristics. Through these means health education may be reinforced in the home and parents may see the importance of setting good examples.

18. Health textbooks should be selected very carefully, with the assistance of local medical and health authorities. They should be appropriate for the grade level and reviewed periodically. Outdated textbooks should be discarded. It is recommended that the textbooks, or several copies of different health books placed in the classroom or library, be used only as references along with free and inexpensive authoritative materials which are obtainable in every health area. The supply and use of audiovisual facilities should also be increased.

19. Credit should be given for health education, as a single subject.

It is also believed that the value of health instruction may be improved through a direct health education course at the senior high school level, based on the needs and interests of high school students preparing to enter an adult world of opportunities and responsibilities.

Analysis of much of the data gathered was beyond the scope of this study. It is hoped that other studies may continue with the data to make other comparisons, analyze the subparts more fully, complete health profiles, and find strengths and weaknesses. It is also hoped that the results of this study, and possibly others, may be of help to administrators and teachers in planning health education programs for junior high school students.

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