VISUAL AIDS IN HEALTH EDUCATION

by

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A Thesis

submitted to the faculty of the Department of Education in partial fulfillment of the requirements for the degree of Master of Arts in the Graduate College University of Arizona 1940

Approved: [Signature] Director of Thesis Aug 13, 1940 Date


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ACKNOWLEDGEMENT

Appreciation is due Mr. W. T. Machan, a pioneer in the use of the motion picture in education, for his inspiration and encouragement in the preparation of this course.
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CHAPTER I

INTRODUCTION

The Importance of Health Education

In the statement of the seven cardinal principles of education, health was given first place. This is significant of the importance attached to good health. We often comment on the achievement of good health as being the key to complete living without any serious thought of its contribution to the full realization of the other objectives of education. It is difficult to conceive of a person in poor health contributing his full share to home life, accepting the responsibilities of a good citizen, exercising full command of the fundamental processes, enjoying his fullest earning capacity, spending his leisure time in the most creative manner, or exerting the finest influence of a good ethical character.

The schools must accept a part of the responsibility for providing the basis upon which sound health may be maintained. This means the provision of a good, wholesome environment for school living with clean, comfortable buildings which are properly lighted, heated, and equipped. It also means that an adequate health service program must be developed in all of its phases. The physical education program must be placed on a sound educational basis for contributing to both health and to recreation. Further, it
means that, contrary to the opinions of many, a course in health education must be provided for in the curriculum. We like to think that we solve the problems of life from the standpoint of knowledge and logic. It is just as logical to develop our health and to maintain it on a high level on the basis of our knowledge of good practice as it is to operate a farm on the same basis. Adequate health experience must be provided in the traditional manner of a separate course or ample provision made for it in an integrated program. It must be remembered that good health behavior springs from a knowledge of health principles, just as good teaching develops from a knowledge and understanding of sound educational principles rather than from definite techniques and methods applicable only in specific cases.

From the narrow viewpoint of the general school program alone an effective course in health instruction has proven to be a great asset. In an experiment to test the improvement in educational achievement accompanying a health education program it developed that the health instruction apparently aided the learning process as the following table indicates.¹

In spite of the exercise of careful controls there is some possibility that the acceleration may have been partially due to a number of causes. We may, however, accept the author's comment as being reasonable.

"On standardized tests participants in health education projects exceeded the grade standards, and one can be reasonably confident that these pupils gained more than is commonly expected of the average pupil in his progress through the intermediate grades. The non-participants, while up to standard, gave no indication of an accelerated rate of achievement."

The Problem

This study is undertaken with the conviction that knowledge is the essential guide in health behavior and there is a definite need in this field. Specifically the problem involves the building of a course in health education supported by a closely correlated program of visual
aids for use in the sixth grade at Creighton School, Maricopa County, Arizona. It will include the determination of the health needs of the children; the selection of objectives based on these needs; and the construction of teaching units suggested by them.

Limitation of the Problem

Necessity requires that this course be organized for the sixth grade only. It is assumed that justification for such a course is unnecessary, and that the value of films and other visual aids will be unquestioned. Although a complete health program has many phases and involves many activities, this study will take into account only the problem of instruction in health.

Method of Procedure

This course is primarily prepared for use in a specific community, and, therefore, the objectives are to be based on the needs of the children in that particular area. The population is perhaps more nearly homogeneous than can be found in any other similar district of the state. The enrollment of children from other than white American homes amounts to less than 4 percent of the total enrollment. Practically all families are self supporting without any of extreme wealth and only a few in dire stress as was indicated by the fact that only five children from three families in
the district received free milk during 1938-1939 and none more than an occasional free lunch.

Data regarding the needs of the children were gathered by the following means:

1. Direct observation of the children.

2. Two doctors who live in the community were interviewed and their knowledge of the needs of the pupils was recorded. One of these doctors was a child specialist and had a wide practice in the community. The other was a specialist on diseases of the chest and was outstanding for his achievements.

3. Reports and consultations with the State and County Health Departments were followed for the specific information they offered.

4. Records of the school nurse were examined, and this material was supplemented by classroom observations.

5. The data received from these sources was supplemented by reference to the Arizona Course of Study Bulletin on Health and Physical Education and other authoritative studies in the field.

In an effort to secure the contribution of parents a panel discussion was arranged under the auspices of the local Parent Teacher Association. A stenographic report of the discussion was made and provided a source of new material and supported that already obtained.
Around the objectives established in this manner teaching units have been developed supported by films and other visual aids, which have been thought to be useful in the successful conduct of the program. In all cases films have been chosen for their contribution as an aid to learning in the case of the particular unit to which they are to apply.

The Status of Health Education

A study of the literature in the field of health education reveals the fact that prior to the World War any instruction that was offered in the field of health was based on formal studies of anatomy and organized propaganda based on temperance. The literature since the war refers to the great number of physical defectives revealed by the draft as being the stimulus which has given rise to a new era in health education. Brammell's study\(^2\) indicated that out of 272 schools investigated only six had provided for a definite program in health before 1910. One hundred forty of these schools made such provision between 1925 and 1929. His study further indicated that out of 1089 schools only sixty had regular health teachers; instruction in health was left to the physical education director in most cases; in others it was left to the science teacher, the nurse, the school

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physician, or some other member of the faculty far less qualified to teach the subject. In only 42 percent of the schools investigated did he find definite courses in health education, and in three-fourths of the schools offering such instruction no effort was made to measure its effectiveness.

The following table represents a summary of the findings of Sullivan in a similar survey made three years later, 1935. He sent questionnaires to thirty representative school systems throughout the nation. These systems were noted for their achievements in this field.

TABLE II

PERCENT OF POSITIVE ANSWERS TO CERTAIN QUESTIONS IN QUESTIONNAIRE REGARDING HEALTH EDUCATION PRACTICES

<table>
<thead>
<tr>
<th>Question</th>
<th>Percent positive answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you a course of study in health instruction?</td>
<td>80</td>
</tr>
<tr>
<td>2. Have you a director or supervisor of health education?</td>
<td>75</td>
</tr>
<tr>
<td>3. Is a special certificate for teachers of health education required?</td>
<td>20</td>
</tr>
<tr>
<td>4. Is safety instruction given as a part of the health course?</td>
<td>75</td>
</tr>
<tr>
<td>5. Is mental hygiene included as a part of health instruction?</td>
<td>80</td>
</tr>
<tr>
<td>6. Are text books used in health instruction?</td>
<td>80</td>
</tr>
<tr>
<td>7. Do you permit commercial health material to be used in the classroom?</td>
<td>75</td>
</tr>
</tbody>
</table>

The answers to other questions in this study indicated that the amount of time allotted to the study of health education varied greatly; the average was one hour per week. The question as to the measurement of results was almost completely ignored; apparently nothing was accomplished in this line.

The awakening interest in health education is reflected by the following quotation from the same source:

"In 1918 there were only eleven states with laws providing for a department of health and physical education in the State Department of Education and only four states with state directors of such departments. In 1930 thirty-six states, representing 90 percent of the population of the country, had such laws in effect; thirty-one states, representing 80 percent of the population, now have such laws and state courses of study; and twenty states, representing 65 percent of the population, have laws, courses of study, and directors of health education."

Sullivan closes his study with this significant and critical statement:

"Not until such time as there is a course of study scientifically constructed for all grades can we expect a unified, graded, and progressive plan of instruction and training in health."

This statement is borne out by a study of school health needs as described by administrators carried on by Pauline Brooks Williamson and Fannie Moochline for the Metropolitan Life Insurance Company.4 The two thousand replies to their

questionnaire brought positive answers to the following questions as indicated:

<table>
<thead>
<tr>
<th>Question</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. &quot;Should school health education courses be given in summer schools?</td>
<td>96</td>
</tr>
<tr>
<td>2. &quot;Would you yourself be interested in a course for the administration of school health?</td>
<td>74</td>
</tr>
<tr>
<td>3. &quot;Have you had such a course?</td>
<td>26</td>
</tr>
</tbody>
</table>

The following needs were also indicated by this study:

1. "There is a special need for trained administrators.


3. "There is a need for a body of reliable information:
   a. Monographs
   b. Organized source materials
   c. Wide field of literature dealing with health.

4. "There is need for cooperation with other health agencies.

5. "There is a demand for a course built on school health needs.

6. "There is a need for material on mental hygiene.

7. "There is a need for instructors of the course who have had practical experience, men who have built effective courses, specialists."

Jay B. Nash of the University of New York made the following comment regarding the findings of this study:

"I am growingly convinced that total health outcomes result from an administrative way of doing things rather than from the teaching of specific facts. I would say that from the standpoint of the
promotion of the nation's health, nothing would be more opportune than such a course as has been suggested by the school administrators."

The tenor of the analytical literature in the field is that instruction in health is considered a new area in education and as a result it is far from reaching the goal expected. Conversation with school administrators from all parts of the state leads one to believe that, locally, health instruction is given much less consideration than it merits. All administrators claim credit for having a health program, but usually it develops that the prevailing concepts of health activities vary to such an extent that answers to questions of an objective nature are so inconclusive that an appraisal of the status of such a program would have to be based on the results of a series of personal interviews. It can be assumed, however, that the situation is probably similar to that found in national surveys and is unsatisfactory.

Apparently this condition arises because of a lack of a philosophy of health education and suitable principles upon which to base such a program. We may accept the results of a study carried on by the Joint Committee on Health Problems in Education as being indicative of this fact. The questionnaire was sent to school administrators, general

medical practitioners, school physicians, and parents. The general conclusions were:

1. "There is here shown almost universally the genuine goodwill and warm interest of all the groups in the health and well being of school children.

2. "While the groups are fundamentally agreed in seeking the welfare of children, their efforts are yielding results disproportionately small, due to the fact that team work is still imperfect, in many cases not even considered as desirable.

3. "These replies indicate a divergence of opinion so great that all parties concerned should give continued study to these important problems."

Another study of a similar nature was carried on by Edmonson of the University of Michigan in which he dealt with some debatable issues in health education. From his study there developed seven issues upon which some degree of uniformity must be reached before health education can be developed to the point of maximum value. These were:

1. "How complete a program of health and care should a school provide for all children?

2. "Should the health objective or the recreational objective be the controlling aim in the school's program of physical education?

3. "What are the health facts having scientific endorsement that should be presented to the pupils, and what health habits should pupils be helped to form or strengthen?

4. "How much knowledge of health matters should a classroom teacher be required to possess?

5. "To what extent must schools avoid health instruction that conflicts with the teachings of religious groups?

6. "Should school officials or other governmental officials be given the legal authority to require pupils to secure needed dental or medical attention when the parents neglect or refuse to provide the necessary care?

7. "How can the most effective coordination of community health services for school children be brought about?"

There are prospects that from this uncertain condition we will soon have new developments which will give us better command of the situation. The field is new, and interest and enthusiasm are gradually growing to a point where real progress may be expected. A study of recent activities in the field and the constant reference to this fact in professional literature builds high hope in those who are interested. Shepard, in an article on recent progress in health education, refers to the use of motion pictures in health education, the creation of the Office of Health Education as a part of the United States Public Health Service, the integration of school health and community health activities, and new developments in curriculum building, as great strides toward a more adequate health education program. He mentions the period of destructive criticism of classroom instruction as leading now to new content in courses of study and more adequate training for teachers.
"It is to be expected that health education will soon be understood as something more than habits and skills; it is the ability to continually adapt oneself to change. Health authorities should meet their responsibilities as to what to teach. The teacher should determine how and when."  

CHAPTER II

DETERMINING OBJECTIVES OF THE HEALTH EDUCATION COURSE

Definitions

Many definitions of health have been composed and offered as complete concepts of the term. Few of these, however, have been broad enough to be accepted for all purposes. Health, as envisaged in this course, might be defined as that condition of the individual in which he is able to live, work, and play vigorously, successfully, and harmoniously in his relationships with others. This concept of health has four elements: physical, moral, mental, and social well being; it means a condition of adjustment in which the individual lives happily and works effectively and efficiently and always in association with others.

It is the function of health education to foster and develop this condition. Wood’s definition of health education provides a definite and concise understanding of the term: "the sum of experiences in school and elsewhere which favorably influence habits and attitudes and knowledge relating to individual, community, and racial health." ¹

¹. Wood, T. D. and Rowell, H. G. Health Supervision and Medical Inspection of Schools, p. 36.
Principles of Health Education

In the light of these definitions certain principles have been evolved to guide in the construction of this course:

1. The school must serve as a cooperating unit with the home and public health agencies in the promotion of healthful living. The course in health education is to be considered a part of the community health program.

2. The objectives of this course are to be based on the needs of the children for whom it is prepared.

3. Good health behavior must be motivated by sound knowledge.

4. The instruction must be within the range of comprehension of the children for whom it is planned.

5. Opportunity for the practice of the desired health habits is to be provided as far as possible. In all cases illustration by the use of films and other visual aids pertinent to the lessons is to be used. Such materials are always to be selected for their value as teaching aids and are not to constitute the teaching program.

6. In so far as possible the program must be such that it will gain articulation in the home. This is to be accomplished through the use of projects and activities which will stimulate discussion and interest in the home.

7. "One's health is determined by both his heredity and
his mode of living." The materials and procedures are to be selected because of their possible effect on the mode of living which is within the scope of immediate control.

General Aims of Health Education

The complete achievement of full physical vigor, intellectual and emotional balance, freedom from disease, happy social adjustment, and many other ideals of healthful living are many times beyond the attainment of more than a limited number of our people. However, the general objectives formulated by the Joint Committee of the National Education Association and the American Medical Association are basic in the determination of the more immediate aspects of this course, and the data available for the determination of the objectives will be evaluated in the light of these general objectives.

1. "To instruct children and youth so that they may conserve and improve their own health.

2. "To establish in them the habits and principles of living which throughout their school life, and in later years, will assure that abundant vigor and vitality which will provide the basis for the greatest possible happiness and service in personal, family, and community life.

3. "To influence parents and other adults, through the health education program for children, to better habits and attitudes, so that the school may become an effective agency for the promotion of the social aspects of health education in the family and community as well as in the school itself.

4. "To improve the individual and community life of the future; to insure a better second generation, and a still better third generation; a healthier and fitter nation and race."

Data Regarding Health Needs

The records of the school nurse were tabulated in the hope of finding a reliable source of information regarding the needs of the children. In addition to this, certain classroom observations were made in the search for individual needs of the children. Information from parents was sought, but casual conversations revealed that the results which would have been obtained with a questionnaire would have been unreliable. In order to overcome this a panel discussion was arranged under the auspices of the Parent Teacher Association, and a stenographic report was made of the discussion. The panel consisted of two medical doctors, a representative of the State Health Department, the school nurse, and two parents. In addition the reports of the State Health Department were analyzed with reference to possible teaching objectives suitable for this age group.

The records of the school nurse revealed histories of contagious diseases reported by the children in the various grades, the immunization history of the children, a record of the results of the Mantoux skin tests for tuberculosis together with the reports on the X-rays taken of those with a positive reaction. To some extent it was possible to
secure a history of the tuberculous contacts of the children. The following tabulations were made from the nurse's records.

**TABLE III**

**HISTORY OF CONTAGIOUS DISEASES REPORTED BY PUPILS IN THE VARIOUS GRADES**

<table>
<thead>
<tr>
<th>Grade</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Measles</td>
<td>67</td>
<td>65</td>
<td>60</td>
<td>75</td>
<td>82</td>
<td>72</td>
<td>73</td>
<td>494</td>
</tr>
<tr>
<td>Scarlet fever</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>13</td>
<td>13</td>
<td>7</td>
<td>9</td>
<td>63</td>
</tr>
<tr>
<td>Smallpox</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Tonsillitis</td>
<td>18</td>
<td>16</td>
<td>17</td>
<td>22</td>
<td>14</td>
<td>21</td>
<td>13</td>
<td>121</td>
</tr>
<tr>
<td>Whooping cough</td>
<td>64</td>
<td>45</td>
<td>50</td>
<td>52</td>
<td>61</td>
<td>64</td>
<td>56</td>
<td>392</td>
</tr>
<tr>
<td>Mumps</td>
<td>14</td>
<td>16</td>
<td>25</td>
<td>31</td>
<td>22</td>
<td>25</td>
<td>22</td>
<td>155</td>
</tr>
<tr>
<td>Chicken pox</td>
<td>64</td>
<td>45</td>
<td>48</td>
<td>49</td>
<td>61</td>
<td>44</td>
<td>55</td>
<td>366</td>
</tr>
<tr>
<td>Typhoid fever</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Diphtheria carriers</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Enrollment</td>
<td>163</td>
<td>117</td>
<td>117</td>
<td>121</td>
<td>116</td>
<td>103</td>
<td>110</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE IV

**IMMUNIZATION RECORD BY GRADES**

<table>
<thead>
<tr>
<th>Grade</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccination</td>
<td>85</td>
<td>66</td>
<td>68</td>
<td>86</td>
<td>78</td>
<td>66</td>
<td>72</td>
<td>521</td>
</tr>
<tr>
<td>By disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Not immune</td>
<td>77</td>
<td>50</td>
<td>48</td>
<td>32</td>
<td>35</td>
<td>31</td>
<td>37</td>
<td>310</td>
</tr>
<tr>
<td>Typhoid fever</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innoculation</td>
<td>61</td>
<td>57</td>
<td>45</td>
<td>70</td>
<td>62</td>
<td>58</td>
<td>50</td>
<td>403</td>
</tr>
<tr>
<td>By disease</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Not immune</td>
<td>102</td>
<td>59</td>
<td>72</td>
<td>50</td>
<td>53</td>
<td>44</td>
<td>60</td>
<td>440</td>
</tr>
<tr>
<td>Diphtheria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization</td>
<td>97</td>
<td>84</td>
<td>74</td>
<td>96</td>
<td>72</td>
<td>60</td>
<td>64</td>
<td>507</td>
</tr>
<tr>
<td>By disease</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Not immune</td>
<td>65</td>
<td>32</td>
<td>43</td>
<td>19</td>
<td>43</td>
<td>41</td>
<td>42</td>
<td>285</td>
</tr>
</tbody>
</table>

### TABLE V

**RESULTS OF MANTOUX SKIN TEST AND X-RAY EXAMINATIONS BY GRADES**

<table>
<thead>
<tr>
<th>Grade</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mantoux skin test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative reaction</td>
<td>7</td>
<td>18</td>
<td>47</td>
<td>42</td>
<td>38</td>
<td>37</td>
<td>35</td>
<td>224</td>
</tr>
<tr>
<td>Positive reaction</td>
<td>2</td>
<td>4</td>
<td>17</td>
<td>21</td>
<td>38</td>
<td>29</td>
<td>26</td>
<td>137</td>
</tr>
<tr>
<td>X-ray examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1</td>
<td>4</td>
<td>12</td>
<td>14</td>
<td>19</td>
<td>24</td>
<td>19</td>
<td>93</td>
</tr>
<tr>
<td>Positive</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>9</td>
<td>13</td>
<td>5</td>
<td>7</td>
<td>40</td>
</tr>
</tbody>
</table>
### TABLE VI

**CHILDREN WHO HAVE BEEN EXPOSED TO TUBERCULOUS CONTACTS**

<table>
<thead>
<tr>
<th>Grade</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children in a tubercular environment</td>
<td>12</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>Number of above with a positive skin test</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Number of those exposed with a positive X-ray</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Number of those exposed who were not tested</td>
<td>8</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>28</td>
</tr>
</tbody>
</table>

From a study of these tables certain indications as to the needs of health instruction become obvious:

Table III indicates that definite instruction in the recognition of the symptoms of the more common childhood diseases is needed. There is also a need for instruction in the ways of preventing the spread of these diseases together with the development of an attitude of responsibility in the matter. The observation of cases of ear trouble, impaired vision, kidney ailments, weakened conditions of the heart, and glandular irregularities indicates that a proper
regard for care during the period of convalescence is necessary. The absence of records regarding the common cold, which statistics reveal to be the greatest single cause of loss to the average citizen, indicates a need for consideration of this disease, its treatment, and the responsibility for the spread of the infection.

Table IV indicates a need for instruction in the necessity for immunization which will be carried to the home. Classroom discussion revealed the fact that there was much prejudice against vaccination and immunization. In one class the number of those opposed to vaccination amounted to 20 percent of the enrollment. This was due to religious belief and pure prejudice. In this case parents visited the school following the class discussion, and it was possible to overcome about half of the opposition.

Table V indicates the results of the Mantoux skin test and X-ray examinations for tuberculosis. In keeping with the vital statistics of the state the incidence of tuberculosis is very high. In this situation continuous instruction in the nature of the disease, its mode of contraction, and preventive measures is needed in order to overcome the inertia bred by an ever present situation. Table VI reveals the heavy incidence of tubercular infection in families with a tubercular history. In these cases intelligent care and preventive measures must be constantly practiced in order to avoid endangering the health of all members of the family.
TABLE VII
MISCELLANEOUS CONDITIONS RECORDED BY THE SCHOOL NURSE

<table>
<thead>
<tr>
<th>Irregularity</th>
<th>Poor vision</th>
<th>Inflamed eyelids</th>
<th>Draining ears</th>
<th>Poor hearing</th>
<th>Throat</th>
<th>Nose</th>
<th>Glandular Irreg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I</td>
<td>4</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>23</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Grade II</td>
<td>28</td>
<td>28</td>
<td>0</td>
<td>2</td>
<td>36</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Grade III</td>
<td>20</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>31</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Grade IV</td>
<td>30</td>
<td>27</td>
<td>2</td>
<td>2</td>
<td>39</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Grade V</td>
<td>22</td>
<td>18</td>
<td>0</td>
<td>16</td>
<td>29</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grade VI</td>
<td>31</td>
<td>19</td>
<td>2</td>
<td>13</td>
<td>25</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Grade VII</td>
<td>30</td>
<td>20</td>
<td>3</td>
<td>14</td>
<td>26</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

The nurse's records revealed a number of unsatisfactory conditions of the eyes, ears, nose, and throat. With the exception of eye and throat troubles these items received no special attention. Granulation, pink eye, and general inflammation of the eye are recorded as inflamed eyelids. Poor vision represents any variation from normal as indicated by the use of the Snellen chart. Irregularities of the throat usually involved the tonsils and in many cases repeated reference to throat trouble was made until the tonsils were removed. Obstructions in the nasal passages were often remediable being caused by adenoids, a deviated septum, or growths of various kinds. The record of glandular irregularities was confined to observable enlargement of the
glands in the neck, under the arm, or in the groin. All of these conditions indicate a need for definite hygienic instruction which will lead to correction or at least to such care that the condition will not spread to other parts of the body or to other people in case it is of a contagious or infectious nature.

Tables IV and V are complete and reveal an actual picture of the situation. Tables III and VI are less complete and indicate an actual situation only to the extent that they are complete. The information regarding tuberculous contacts was gathered only as the opportunity presented itself and where the parents were willing to give information—obviously it merely indicates probabilities as to the actual situation.

Classroom observation over a period of several months indicated the following needs:

1. There is a probability of dietary deficiency in 22 percent of the children in the fifth, sixth, and seventh grades.

2. Twelve percent of the children in these grades gave evidence of definitely poor posture; there was a much larger percentage which needed corrective work to avoid a similar condition.

3. Seventeen percent of these children gave evidence more frequently than their fellows of poor social and mental adjustment.
In the panel discussion, previously referred to, the following items were noted as points in which the school health program should aid adjustment:

1. General health habits—play, cleanliness, the eating of simple foods, sleep, attention to ventilation, clothing, et cetera.

2. A general health consciousness.

3. Aid in the development of mental health to overcome the stress and strain which the depression has fostered in the home.

4. A knowledge of the structure and function of the various organs of the body.

5. The care of the body with reference to diseases and the way in which they are spread. Special emphasis was placed on tuberculosis.

6. The instruction of all children in the necessity for vaccination and immunization as a means of lessening the danger from those children whose parents are opposed to vaccination or immunisation.

7. First aid.

8. Safety with regard to swimming and other sports.

9. The substitution of good habits for bad.

10. The improvement of posture.

11. A knowledge of bacteria and the ways in which they are spread by putting fingers, pencils, et cetera in the mouth.
12. The control of the reading light in order to protect the eyes.

13. The control of the diet in order to meet individual needs.

14. The provision of a good supply of drinking water.

15. The safe disposal of sewage.


17. The care of the teeth. Especially the effect of fluorides on teeth.

18. The use of individual towels, wash cloths, cups, the sterilization of wash basins.

19. The recognition of the symptoms of appendicitis. The United States' mortality rate in appendicitis is 5.3 percent higher than it is in several European countries.

20. The proper use of the handkerchief during cold infection in order to avoid mastoiditis.

21. Develop the knowledge that the common cold is one of the most infectious of diseases and that people who are infectious should be isolated.

22. Develop a sane attitude toward school activities such as the making of awards for perfect attendance at cetera.

The Report of the Arizona State Board of Health submitted by Dr. J. D. Dunshee under date of March 1, 1938 contains some data as to the health needs of the community.
which could be met through the health education program.

Although a large percentage of the children of the district come from homes served by the Phoenix water and sewer systems, the problem of rural water systems and sewage disposal remains a vital problem. Of the total state population 48.9 percent still depend on the individual means of sewage disposal. 3

"The most serious sanitation problem facing the rural districts is the almost universal use of the cess-pool for those rural homes using a water carriage method of sewage disposal. The cess-pool is usually excavated to a porous underlying stratum, that besides adequately draining the cess-pool, also serves as an excellent underground sewer that drains the cess-pool into the well. This is particularly true of the irrigated farming districts, which might easily account for the high typhoid and dysentery death rates in these sections of the state." 4

Other health needs which could be improved by instruction are referred to in the following quotations from the same source:

"The screening of homes, irradiation of dumps, and other methods to minimize fly breeding should be employed." 5

"Under the existing milk law of the state, standards are so lax with respect to bacterial and sanitation standards that a safe quality of milk is not assured." 6

It is commonly known that this is true in certain

3. Dunshee, Dr. J. D. Report to the Arizona State Board of Health, March 1, 1938. p. 17.
4. Ibid. p. 18.
5. Ibid.
6. Ibid. p. 20.
localities where a standard ordinance is not in effect. The legal status of milk control makes it, to a large extent at least, a political job with the usual ineffective performance.

The report also points out the absence of control in the manufacture of food products which is a vital factor due to the presence of bacteria laden dust, our large tubercular population, and the use of laborers from Mexico where the standard of living is low. The same situation applies in all places where food is handled. These points should be considered in the instructional program in health education.

Reference is also made to the unsanitary conditions of swimming pools throughout the state. Out of sixty-five pools registered in the Office of the State Board of Health only fifteen are up to satisfactory standards. The only community requiring the adherence to a minimum standard is Phoenix.

The law prohibiting the use of the common drinking cup and common towel is adequate and the condition has practically ceased to exist. The law is too lax, however, as to the minimum requirements for drinking fountains, and some of the poorer types of fountains are as unsanitary as the common cup.

Garbage disposal in rural areas also presents a problem.

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7. Dunessee, Dr. J. D., op. cit., p. 21.
8. Ibid., p. 23.
which can be easily solved if the facts regarding the dangers of accumulated garbage are understood and appreciated.  

Rodent control is becoming an important factor in Arizona, and little is commonly understood regarding the menace to health that rodents present. Rabies are rapidly become more prevalent and the state is subject to sylvatic plague and tularemia.  

A comparison of the needs suggested above with the topics outlined by Wood and Lorrigo in scales for grade placement of materials and with the State Course of Study reveals the fact that alcohol and narcotics were not mentioned as a topic in which instruction is needed. It is obvious that the environment of the average child is more or less affected by these factors, and that instruction as to their nature is necessary. The fact that they are now commonly used in many homes makes instruction far more difficult than formerly. In spite of the objective the school may wish to attain, the method should not reflect to the discredit of the parent in the eyes of the child. 

The matter of instruction in the relation of housing to health was not mentioned in any of the discussions, but it was found in the State Course of Study. Housing is 

10. Dunshee, Dr. J. D., op. cit., p. 25.  
beyond the control of school children; however, it arouses considerable interest if presented under the proper circumstances and merits some attention.

The Determination of Objectives for the Health Instruction Program

The health needs as revealed by the procedures just described were grouped together in teaching units with suitable teaching outcomes formulated for each unit. Methods and materials were selected and formed into weekly work divisions. Film sources were canvassed and films for each weekly unit selected. In as much as these films must be secured on a rental basis it becomes necessary to book them several months in advance to insure service at the time it is needed. In order to overcome the inflexibility presented by such a plan, nine rather large units were prepared. Within these larger units there is opportunity for more attention to the interests of the pupils than is possible in smaller units.

In the selection of materials it is assumed that children in the sixth grade are keenly interested in their own personal development. They are hero worshipers. The boys try to imitate first one and then another celebrity, and as a rule these heroes are capable athletes which calls for training on the part of the worshiper. The girls are quite conscious of themselves, and are interested in their
appearance. They aspire to all the beauty and attractiveness of a Sonja Heinie. In all cases health, if it contributes to their aspirations, has a strong appeal. Pupils of this age are also keenly interested in Scouting, Campfire, 4-H clubs, Cub Scouting, et cetera. This awakening of community interest provides a basis for the introduction of civic activities pertaining to a good health program.
CHAPTER III

UNITS OF INSTRUCTION
UNIT I

HOW WE MAY IMPROVE OUR PERSONAL QUALIFICATIONS FOR LIVING

General objectives:

1. To develop a sense of obligation for the proper care of the body from both a personal and a social point of view.

2. To promote the formation of those habits which tend to build strong, healthy, and attractive bodies.

3. To stimulate the correction of remediable defects such as decayed teeth, poor vision, constipation.

Presentation:

This unit may be presented through a discussion of the qualifications one must have if he is to be successful in finding and filling a place in life. It must be made clear that though good health habits do not guarantee good health, they should be practiced in order not to rob ourselves of the values which they hold. Health should be promoted, not as an end in itself but as a means of living at one's best—being able to play ball, to hike, to live an unshackled life.

The unit is to deal with:

1. General health habits—personal hygiene.
   a. Cleanliness
   b. Care of the skin—hands—hair—feet
   c. Selection of shoes
d. Care of clothing
e. Elimination
f. Care of the teeth
g. Care of the eyes
h. The value of regular medical examinations
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   d. The World Book Encyclopedia.
UNIT I

Part I. The Health Habits Which Help Us to Improve and Maintain our Health

Specific outcomes:

A. Knowledge. To develop a knowledge of the following items.

1. Care of the hands and feet.
   a. Care of finger and toe nails.
   b. Selection of suitable shoes.

2. Care of the skin.

3. Care of the hair and scalp.

4. Elimination of waste.
   a. Results of improper elimination.
   b. The organs of elimination—the part each plays.

B. Habits and skills.

1. Bathes regularly.

2. Keeps hands clean.

3. Keeps finger and (toe)nails properly cut and cleaned.

4. Keeps hair clean, cut, and well combed.

5. Wears clean clothes.

6. Attends to elimination matters regularly.
   a. Avoids laxatives by eating proper foods and drinking a sufficient amount of water.

Materials:

A. Textbook—Health and Service—Chapter I.
B. Film—Forming the Habits of Health
   National Motion Pictures Co., Mooresville, Ind.

C. Mimeographed health habit charts.

D. Scissors, nail file, orange wood stick, brush, comb.

Lesson in detail:

1. New words:
   a. cuticle 
   b. pores 
   c. arch 
   d. Sweat glands 
   e. acne 
   f. manicure 
   g. laxative

2. The points of a well kept body listed in the textbook are indications that good habits of living have been carefully followed. Discuss the value of health charts in evaluating one's habits.

3. Illustrate by drawings and demonstrations the proper way of cutting finger and toe nails.

4. There are no oil glands in the palms of the hands; therefore, they must be kept clean and in case of exposure to cold windy weather oil may sometimes be applied to prevent chapping.

5. Ingrown toe nails are caused by tight shoes and cutting the nails back at the corners.

6. Demonstrate how walking with the toes pointing outward causes the arch to drop. Have each child take an impression of his foot by either placing a wet foot on blotting paper or by rubbing the soles of the feet with...
a rag moistened with olive or mineral oil and taking
the impression on scratch paper.

7. Examine the pores with the use of a magnifying glass.
   Discuss the function of perspiration.

8. Demonstrate the activity of the oil glands by holding
   a piece of paper on the skin near the nose. Discuss
   the value of the oil in keeping the skin soft and
   pliable and the hair and scalp in good condition. The
   presence of this oil makes bathing with warm water and
   soap necessary.

9. If there is a readiness discuss the use of cosmetics.

10. Have the children collect ads for laxatives. Explain
    how they act and the reason for avoiding them. Explain
    the value of mineral oil in cases where there is con-
    stipation which cannot be overcome by a corrected diet
    and exercise.

11. There are two arches in the feet which must be sup-
    ported by the shoes. When walking with bare feet the
    ground provides a solid support for these arches; when
    heels are worn the shoe must provide this support.
    Improperly made shoes or poorly fitted shoes do not
give this support and fallen arches often result.
Show how corns and bunions result from wearing too
narrow shoes.
12. Posture is affected by the feet. Demonstrate how high heels throw the body out of balance. If possible use a shoe of the 1920 vintage as an example of the extreme style. Exhibit a shoe made on the Munson last for men and a good sport shoe for women.

13. Discuss and have the children write essays on the points which would affect the choice of an employee if training and ability were equal.
UNIT I

Part II The Health Habits which Help us to Improve and Maintain our Health—Continued

Specific outcomes:

A. Knowledge.

1. To develop an understanding of the value of regular medical examination.

2. To develop a knowledge of some factors to be considered in the selection of a doctor.

3. To understand dangers of self diagnosis and self medication.

4. To develop a general knowledge of the part habits of eating, exercise, and rest play in keeping us physically fit.

B. Habits and skills.

1. Eats a wide variety of foods, avoiding an excess of those which are hard to digest such as rich pastries and fried foods.

2. Eats regularly. Chews food well.

3. Contributes to a pleasant atmosphere at the table.

4. Spends all the time possible in outdoor play.

5. Sleeps in a well ventilated room for as much as ten hours or more each night. Regulates rest and sleep to meet individual needs.
Materials:
A. Textbook—Health and Service, Chapter I.
B. Film: The Road to Health and Happiness
   Akin and Bagshaw, Denver, Colorado.

Lesson in detail:
1. New words:
   a. "Quack"  
   b. chiropractor  
   c. naturopath  
   d. osteopath  
   e. Patent medicine

2. Develop an understanding of the words mentioned above.
   Compare the training of a chiropractor, naturopath, and osteopath to that of a medical doctor.

3. Discuss the limits within which the laws allow each of them to do business.

4. Have children collect ads for each of these types of practitioners. Compare this practice with that of men of the medical profession. Point out the motive for "secret cures" as compared with ethical medical practice.

5. Discuss possibility of finding a list of reliable doctors through nurses' registries and hospitals. Such doctors will have met the requirements as to preparation, but as in every other profession some members are more efficient than others.

6. Discuss the dangers of self medication. The children may volunteer a list of remedies bought to treat colds or some other illness. Compare the cost of these with
the cost of treatment by a doctor.

7. Have the children make a list of items in their home medicine cabinet. See if these are listed by such books as *A Hundred Million Guinea Pigs*, *The American Chamber of Horrors*, *Consumers Union*.

8. Read the story of the early life of Theodore Roosevelt. Discuss the health practices he followed. Have each child compare them with his own.

9. Develop with the pupils some form of health scale on which they can record their progress in health achievements at monthly intervals during the school year.

10. Have the children keep detailed diaries of their activities for a few days and evaluate their habits.

11. Discuss the relationship between exercise and the need for oxygen and food. What are the values of exercise in the elimination of waste by perspiration, increasing the need for oxygen.

12. Activity means the creation of wastes and fatigue products. How are these eliminated?

13. Three principles to be observed in the proper ventilation of a room are:

   a. The temperature of the air.

   b. The movement or circulation of the air.

   c. The humidity or moisture content of the air.
14. Organize committees to read the thermometer, and regulate the ventilation of the room.
UNIT I

Part III  How to Take Care of the Teeth

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of how the teeth are made and of the foods which provide good building materials.

2. To develop a knowledge of the causes of tooth decay and the care which will aid in preventing it.

3. To develop the ability to choose tooth brushes and tooth pastes or powders, mouth washes wisely.

B. Habits and skills.

1. Eats foods that are good for the teeth.

2. Exercises the teeth and gums to increase the circulation.

3. Cleans the teeth regularly—uses dental floss and tooth brush skillfully.

4. Avoids use of teeth in such a way that the enamel will be injured.

5. Uses knowledge gained in buying tooth paste, brushes et cetera.

6. Visits dentist at least once a year.

Materials:


B. Film—Science Makes a Dentifrice.  Y. M. C. A.
C. Dental floss, tooth brush, tooth pastes and tooth powders, strong reading glass.

D. Mr. Chew--Booklet from American Dental Association.

Lesson in detail:

1. New words:
   a. dental floss        c. calcium
   b. tartar              d. phosphorus

2. The teeth are living structures. They are built of the food we eat and must be constantly nourished as are other parts of the body.

3. The diet should be rich in calcium, phosphorus, and vitamins C and D.

4. Solid foods such as raw carrots provide good exercise for the teeth and gums.

5. Candy and other sweets should be eaten at the end of a meal in order to maintain the appetite for body building foods.

6. Posters may be prepared showing foods which contain large quantities of tooth and bone building materials--milk, fruits, et cetera.

7. Inspect teeth for soft chalky areas caused by flourides in the drinking water. These may often be mottled due to the penetration of fruit stains into the soft enamel.

8. From data supplied by the State Health Department maps may be made of the areas in which flourine bearing
water is found.

9. After the permanent teeth have completely formed the flourine no longer affects the teeth (about the age of twelve).

10. All foods should be eaten slowly and chewed thoroughly. This aids in the mechanical cleansing of the teeth and in the proper development of the chewing muscles.

11. Teeth decay because a break in the enamel allows bacteria to act upon the dentine and pulp of the teeth. Sometimes this happens in spite of the fact that good care is taken of the teeth, and sometimes people have sound teeth in spite of the fact that they take very poor care of them. Fissures in the enamel are often present when the teeth first appear.

12. The accumulation of food particles between the teeth gives bacteria a chance to form.

13. Demonstrate the proper use of a tooth brush in cleaning the teeth. Demonstrate the use of dental floss.

14. Biting thread, cracking nuts et cetera may crack the enamel and allow decay to develop.

15. In selecting a tooth brush the following points should be observed:

   a. small head
   b. medium bristles (for the average person)
   c. as a rule unbleached bristles last longer
   d. sterilized and protected from the hands of the public
16. The brush should be rinsed thoroughly and kept in a clean place where it will dry. If a rack is used, it should never come in contact with other brushes. A little salt sprinkled on the brush after rinsing aids in keeping the brush clean.

17. Examine tooth powder with a strong reading glass. Some powders and pastes are gritty and injure the enamel. Have the children write to the American Dental Association for lists of approved dentifrices and mouth washes.

18. In cleaning the teeth, the cheeks, tongue, and gums should be gently brushed.

19. Thumb sucking and mouth breathing cause malformation of the jaws and decrease the effectiveness of the chewing process.

20. The teeth should be examined at least once a year by a qualified dentist. He will clean the teeth if necessary, remove all tartar, and in case a cavity has appeared he will be able to fill it before it becomes serious. During the period of childhood and adolescence it is wise to see the dentist two or three times a year.
UNIT I

Part IV Guarding our Vision—the Most Precious of the Senses

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of our dependence on our eyes.

2. To develop an understanding of the parts of the eye and how the image is carried to the brain.

3. To develop a knowledge of the care of the eyes, and the precautions to be taken to avoid infection of the eye.

B. Habits and skills.

1. Reads with the light coming from the left in sufficient amount to avoid tiring the eyes.

2. Avoids reading in the glare of bright sunlight.

3. Uses own towel and wash cloth.

4. Avoids rubbing the eyes or putting pressure on them when a foreign particle enters the eye.

Materials:

A. Textbook—Health and Service, Chapter IV.

B. Film—Eyesight


C. Reading Glass

D. Camera with a piece of ground glass
Lesson in detail:

1. New words:
   a. lens  c. cornea  e. retina
   b. iris  d. pupil  f. optic nerve

2. Discuss our dependence on our eyes. What observations have been made in regard to people who have lost their eyesight?

3. The eye is a special nerve ending.

4. With the camera and the ground glass demonstrate the action of the eye. Focus images on the glass; they will be inverted. Manipulate the shutter to regulate the amount of light admitted. Explain why the dark box is necessary. With the reading glass demonstrate how light rays are bent with relation to the focusing.

5. Explain the new words with reference to the demonstration.

   The lens focuses the image.
   The iris gives color to the eye and regulates the size of the pupil which admits the light.
   The back of the eye is the retina which acts very much as the film in a camera does. It is lined with special nerve cells which combine to form the optic nerve which carries the image to the brain where it is interpreted.
   The cornea is the front part of the eye.

6. The eye is one of the most sensitive and delicate organs of the body. Foreign particles should be removed
carefully with a piece of sterile gauze if the tears do not wash the eye clean. In any case do not press on the eye or rub it.

7. Infection is usually spread mechanically. Therefore, it is necessary to have our own wash clothes and towels. It is also dangerous to try other people's glasses.

8. Have the pupils cup the hands over the eyes then watch the contraction of the pupils in each other's eyes when the hands are removed. In connection with this let them try reading in the direct glare of the sunlight for a few moments. Explain the dangers of glare, of reading in bed, and of reading while riding.

9. Explain the work of the oculist, the optometrist, and the optician.

10. General health affects the vision, and the fact that only the oculist can prescribe treatment for the eyes in case of infection makes it unwise to select anyone with less training than he possesses.

11. Organize committees to regulate the shades and lighting of the room.

12. Cooperate with the nurse in the examination of the eyes, and in securing correction where it is needed.
UNIT II

HOW WE MAY MAKE OUR COMMUNITY A SAFER PLACE IN WHICH TO LIVE

General objectives:

1. To develop a sense of responsibility for the prevention of accidents of all kinds.

2. To develop a knowledge of safe practices in the home, on the street, and at school.

3. To develop a safety consciousness on the part of the children and through them on the part of the parents.

Presentation:

This unit should be presented as soon as possible after the beginning of school with the expectation that it will actually function in the lives of the children. Similar units have been planned for both the fifth and seventh grades which will come at different times during the year. Films have proved to be a powerful influence in this work, and films ordered for the different grades can be used to keep the subject alive throughout the year in all grades. People who drive cars are seldom found in the fifth and sixth grades; however, discussion at school coupled with inspection and discussion at home on the part of the pupils has frequently brought about the repair of unsafe brakes and lights and the correction of unsafe driving practices. Much literature is available from insurance companies which can be distributed without cost.
It is planned to present the material under the following headings:

1. Safety for pedestrians
2. Automobile safety
3. Safety in the home
4. Safety with a bicycle

Recognition is to be given the fact that the majority of the pupils are brought to school in the school bus, that the school is located on a busy, paved road, that the majority of the children live in a suburban environment.
Bibliography:

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   Ruth M. 
   Health Problems.

3. Fowlkes, John Guy, Jackson, Lora, and Jackson, 
   Arnold S. 
   Healthy Living.

4. Payne, E. George 
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UNIT II

Part I. How We May Avoid Accidents on the Street

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that it is unsafe to do the following:
   a. Play in the street.
   b. Walk between parked cars.
   c. Walk on the right side of the road.
   d. Jay walk.
   e. Run across streets.
   f. Disregard signal lights and signs, or directions of the patrol boys.

2. To develop a knowledge of the great loss of life, due to carelessness on the streets.

3. To develop a knowledge of the great loss of time and money caused by accidents.

B. Habits and skills.

1. Abides by all traffic rules.

2. Crosses streets deliberately.

3. Always faces the traffic while walking along the highway.

4. Plays in safe places only.

Materials:

A. Textbook—Health and Service, Chapter VIII.

B. Film—Street Safety for the Upper Grades.
C. Booklets supplied currently by the Travelers Insurance Company. (Available through any local agent).

Lesson in detail:

1. New words:
   a. pedestrian  
   b. right of way

2. Secure list of rules and regulations governing pedestrian traffic from the police headquarters or formulate such a list in class discussion.

3. Prepare simple tables and charts regarding the causes, location, and time of accidents from materials in booklets secured from the insurance company.

4. Develop in class discussion a check list with which a survey of pupil pedestrian practices can be made.

5. Prepare original talks and plays in safety to be presented either in assembly or in other classrooms.

6. The effect of our carelessness upon other people.
   In the discussion develop these points:
   a. The loss to the family from payments for doctor fees, hospital costs, nurses fees et cetera.
   b. The permanent injury likely to result.
   c. The possibility of dependence.
UNIT II

Part II How Accidents May be Avoided by the Safe Operation of Automobiles

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the safe methods of:
   a. Making turns.
   b. Passing.
   c. Stopping.
   d. Meeting requirements of the highway.

2. To develop an understanding of the uniform highway signs.

3. To develop an understanding of the conditions under which an automobile may be operated with safety.

4. Develop good judgment in appraising driving skill.

B. Habits and skills.

1. Recognizes good driving.

2. Aids in keeping windshields clean.

3. Recognizes evidence of good brakes, lights, steering mechanism. Realizes value of frequently checking these factors.

4. Recognizes dangerous road conditions.

Materials:

A. Textbook—Health and Service, Chapter VIII.

B. Film—Horse Sense in Horse Power
   University of Arizona.

C. Driving booklets supplied by insurance companies.
Lesson in detail:

1. From materials in booklets supplied by insurance companies develop a discussion of the causes of accidents.
2. Have the class draw diagrams of arm signals used in indicating turns and stops.
3. Construct a model highway with uniform signs and highway markings based on leaflet supplied by the Arizona Highway Commission. Use toy autos to demonstrate turning, passing, etcetera. Left turns are made from the inside lane. Right turns are made from the outside lane. U turns are made from the inside lane. In all cases avoid crossing other lines of traffic as far as it is possible to do so.
4. Discuss highway courtesy—discourtesy is a major cause of accidents.
5. Organize with the class a check list which may be used to determine the condition of the family automobile. Duplicate these that they may be taken home and used by the parents. The highway commission will cooperate in supplying literature for distribution.
6. Prepare a road map of the community on which the pupils can locate dangerous corners where the view is obstructed or where signs are obscured or are inadequate.
UNIT II

Part III  How We May Avoid Accidents while Riding a Bicycle

Specific outcomes:

A. Knowledge.

1. To develop a knowledge that safety on a bicycle depends greatly on the skill of the rider.
2. To develop a knowledge of the following regulations.
   a. That one should ride as near the right of the road as possible.
   b. That bicycle riders should always follow one behind the other, never ride two or three abreast.
   c. That if a bicycle is to be ridden at night, it should be equipped with a head light and a reflector type tail light at least three inches in diameter.
3. To develop a knowledge that it is dangerous to do stunts on the highway with a bicycle.

B. Habits and skills.

1. Keeps the bicycle in a safe condition.
2. Rides with ease at all times.
3. Never takes chances.
4. Obey all regulations governing the use of the highways. Is courteous at all times.
Materials:

A. Film—Spinning Spokes.

B. Bicycle.

Lesson in detail:

1. Discuss the rules which make for the safety of bicycle riders. Discuss the reasons for each rule mentioned in the objectives.

2. Conduct a bicycle inspection based on a check list developed by the class.

3. Plan a bicycle carnival or a parade for the class.

Suggested activities:

- Races—stunts—bicycle polo—demonstrations.

Allow no one to enter whose bicycle is not in a safe condition.

4. Conduct a Saturday bicycle excursion.

5. Hold a series of bicycle courts in which violators of safe practices are tried.
UNIT II

Part IV  How We May Avoid Accidents in the Home

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that "more than one-third of all fatal accidents and nearly half of all injuries are sustained in and about the home."¹

2. To develop a knowledge of some of the common causes of fire.

3. To develop a knowledge of the loss due to fires including forest fires.

4. To develop a knowledge of the function of insurance.

5. To develop a knowledge of the common causes of accidents around the home and the steps which can be taken to prevent them.

B. Habits and skills.

1. Always puts burned matches in a metal container or breaks the match before dropping it if outside.

2. Never plays with matches or inflammable materials such as gasoline.

3. Never uses a match to test for gas leaks.

4. Can replace a fuse plug safely.

5. Always covers a campfire with dirt or puts it out with water before leaving it.

¹ American National Red Cross Check List for Common Hazards in and about the Home. (Form 1479).
6. Always puts toys, tools, et cetera away.
7. Keeps basements, workrooms, and play rooms clean.

Materials:
A. Textbook—Health and Service, Chapter VIII.
B. Film—The Bad Master
Akin and Bagshaw, Denver, Colorado.
C. Home Inspection Blank for School Children.
National Board of Fire Underwriters.
D. Check Lists for Common Hazards in and About the Home and on the Farm—American National Red Cross.

Lesson in detail:
1. New words:
a. Insurance  b. inflammable  c. hazard
2. Secure statistics regarding loss by fire. Formulate a table or graphs containing this material.
3. Insurance distributes this loss among many citizens.
4. By discussion develop lists of causes of fire. Compare these lists with those provided by insurance companies.
5. Distribute copies of the home inspection blank provided by the National Board of Fire Underwriters or from discussion develop a similar blank which can be duplicated and used by the children in making a survey of their homes to determine presence of fire hazards.
6. Demonstrate replacement of fuse plug explaining how it functions.

7. Have children collect various types of insulators used in electric wiring for a classroom exhibit.

8. Discuss methods of turning in a fire alarm when within an area served by the fire department.

9. Develop with the children a check list on accident hazards and have them make a survey of their homes to reveal dangerous conditions and practices which may lead to injury. The American Red Cross has such an inspection sheet for distribution. From these surveys various needs may be revealed upon which teaching may be centered.

10. Discuss the proper ways of building and extinguishing fires on camping trips. Develop posters on this subject.
UNIT III
HOW WE MAY MEET EMERGENCIES

General objectives:

1. To develop the ability to meet emergencies as they arise.

2. To develop a knowledge of the treatment of minor injuries which occur in daily life.

Presentation:

Children of this age are interested in artificial respiration and in the treatment of emergencies which arise in connection with camping, picnics, et cetera. Treatment for drowning, snake bite, scorpion sting, and bee sting is of vital interest to them because this knowledge promises to make their outdoor activities safe. Furthermore, they like to treat each other in case of minor injuries, and in case of illness they try to care for each other without a thought as to the consequences.

The work of the Boy Scouts and Camp Fire Girls gives a good background for this unit.

The actual learning can best be accomplished by practice drills. The films should be used to illustrate the best techniques. First aid instructors from some industrial concern such as the light and power company may be invited to give demonstrations as a means of building the feeling that first aid is accepted as a necessity in industry.
Due to the importance of first aid it is suggested that teams be organized according to Boy Scout practice, problems be assigned and competitive drills be held at intervals throughout the year. Problems covered in the preceding year's work may be reviewed in this manner.
Bibliography:

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B. Pupil References

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   First Aid: Merit Badge Pamphlet.

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   Jackson, Arnold S.
   Healthy Living.

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4. Metropolitan Life Insurance Company
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UNIT III

Part I How to Care for Minor Injuries, Fractures, and Heat Prostrations

Specific outcomes:

A. Knowledge.
   1. To develop a knowledge of aseptic treatment of wounds.
   2. To develop a knowledge of treatment for shock, fainting, heat prostration.
   3. To develop a knowledge of simple and compound fractures and their treatment.

B. Habits and skills.
   1. To develop skill in the use of the roller and triangular bandages.
   2. To develop skill in the application of splints.
   3. To develop skill in the various methods of carrying the injured.
   4. To develop skill in the use of simple disinfectants and remedies for shock, fainting, heat prostration.

Materials:

A. First Aid Textbook—American Red Cross.
B. Film—Before the Doctor Comes.
C. Triangular and roller bandage materials.
D. Splints as used in Red Cross and Boy Scout First Aid work.
E. Canvas or newspapers for patient to lie on.
Lesson in detail:

1. New words:
   a. antiseptic
   b. disinfectant
   c. sterilize
   d. infection

2. Prepare a list of items to be used in a first aid kit.
   Prepare personal kits to be used on hikes or other trips.

3. Discuss the meaning and use of antiseptic, and disinfectant. Discuss the meaning and use of sterile. Discuss infection with relation to these concepts as they are used in first aid.

4. Shock is caused by a nervous reaction which affects the flow of blood through the blood vessels. It is likely to occur in cases of injury of any degree. The common symptoms are paleness, blueness of nails and lips, cold and moist body, rapid but weak pulse, stupor, unconsciousness, and vomiting. Except in cases of severe bleeding or absence of breathing treatment for shock should precede other treatment. The treatment consists of getting patient warm, and of the inhalation of aromatic spirits of ammonia. Stimulants may be used if the patient can swallow.

5. Painting is usually caused by a lack of blood in the brain and is characterized by paleness. In such cases the lowering of the head and the application of cold cloths to the head is usually sufficient. In case
convulsions develop slip something between the teeth to prevent the biting of the tongue.

6. Sunstroke and heat exhaustion are common, and in case of poor health susceptibility increases. Sunstroke in particular is very serious—frequently fatal. Salt is usually prescribed as a preventative.

<table>
<thead>
<tr>
<th>Sunstroke</th>
<th>Heat Exhaustion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cause</strong></td>
<td><strong>Cause</strong></td>
</tr>
<tr>
<td>Exposure to heat—particularly sun's rays.</td>
<td>Exposure to heat—either sun's rays or indoor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Symptoms</strong></th>
<th><strong>Symptoms</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache—red face—skin hot and dry, no sweating—pulse strong and rapid—high temperature, usually unconscious.</td>
<td>Pale face—skin moist and cool—sweating profuse pulse weak—temperature low—seldom unconscious for long period but often faint.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Treatment</strong></th>
<th><strong>Treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lying with head elevated.</td>
<td>Lying with head level or low. Often requires external heat. Stimulants always indicated.</td>
</tr>
<tr>
<td>Cool body with bath or cold applications.</td>
<td>No stimulants.</td>
</tr>
</tbody>
</table>

7. A simple fracture is a break without a wound; a compound fracture requires treatment for a wound. In no case is it wise to try to set a broken bone. Demonstrate and have children practice preparation and application of temporary splints.

8. Demonstrate and have children practice use of roller and triangular bandages.

9. Supervise children in the actual application of first
aid to minor injuries which occur on the school grounds. Never allow more than two pupils to work together and always insist on strictly sanitary procedures.

10. The poisonous snakes of this region are the coral snakes and the vipers. The coral snakes are identified by black rings running completely around the body, and edged on either side by yellow. The red and black rings are broad. The greater portion of the head is black; at the back of the head is a yellow band and behind this a red ring. The vipers are the rattle-snakes and the copperheads. The presence of pits on either side of the head gives them the name, Pit Vipers, and gives the appearance of four nostrils as an identification. Snake venom acts through the bloodstream, and in case of accident this should be controlled by a tourniquet and the wound opened with a knife and as much blood as possible should be removed. Cauterization is helpful and should be used as there is always danger of blood poisoning. A stimulant may be given in case of fainting.

11. The black widow spider can be identified by the "hour glass" on the under side of the female, and a variety of red markings at various stages of development. The poison is believed to be a neuro-toxin and
no incisions should be made. Recovery usually takes place in three days. Heat and the injection of calcium salts relieves pain. Stimulants should be administered.

A scorpion in similar to the black widow. The poison species of scorpion injects a neuro-toxin and the treatment should be similar to that for black widow bites. The poison scorpion is more serious, however, and the use of anti-venom should be employed.

12. NEVER ALLOW FIRST AID TO TAKE THE PLACE OF MEDICAL TREATMENT WHEN IT IS NEEDED.
UNIT III

Part II How to Apply Artificial Respiration and Control Bleeding

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the Prone Pressure or Schafer Method of artificial respiration and when to use it.

2. To develop a knowledge of the control of venous and arterial bleeding.

B. Habits and skills.

1. To develop skill in the application of artificial respiration.

2. To develop skill in the finding of pressure points and in the application and use of the tourniquet.

3. To develop skill in the application of bandages to wounds where bleeding is from a vein.

Materials:

A. First Aid Textbook--American Red Cross.

B. Film--Life Saving and Resuscitation

Control of Bleeding

University of California

C. Triangular and roller bandage materials.

D. Canvas or newspapers for patient to lie on.
Lesson in detail:

1. New words:
   a. Resuscitation
   b. Tourniquet

2. Demonstrate the proper method of administering artificial respiration. Follow the First Aid Textbook in all details.

3. Have the pupils group themselves in pairs and practice.

4. Using the chart on page 19 of the Red Cross Textbook demonstrate the location of the principal pressure points. Demonstrate the application of a tourniquet explaining the necessity for releasing the pressure at fifteen minute intervals to avoid gangrene.

5. Have pupils practice these points in pairs.

6. In cases where the flesh is shallow or where bleeding is from a small artery or wound the flow of blood may be controlled by a compress. Demonstrate and have pupils practice this procedure.
UNIT IV
HOW CONTAGIOUS AND INFECTIOUS DISEASES ARE CONTROLLED

General objectives:

1. To develop a knowledge of the germ theory of disease, and an ability to make application of the theory in daily living.

2. To foster a feeling of responsibility in seeking immunization against those diseases to which it is applicable.

3. To establish a standard of personal conduct in avoiding crowds during epidemics and in avoiding those practices which may prove dangerous to others.

Presentation:

This unit is so planned that it may be presented from the historical point of view. Materials published by the Metropolitan Life Insurance Company are of particular value in this unit. These include the film, Man Against Microbe, film strips, and brief biographies arranged in a Health Hero Series.

Cooperation with the nurse and public health officials in the promotion of the immunization program gives a fertile field of activity.
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   Health Hero Series.
   One Hundred Years of Progress in Medicine.
UNIT IV

Part I  How Man Has Conquered in His Battle For Existence

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the history of man's fight against disease, the contributions of Pasteur, Koch, Lister, Trudeau and others.

2. To develop a knowledge of bacteria and how they both help and destroy mankind.

3. To develop in an elementary way a knowledge of the way the body protects itself against disease.

B. Habits and skills:

1. Makes application of knowledge of bacteria in daily living.

2. Seeks immunity to smallpox, diphtheria, typhoid fever.

3. Abides by quarantine requirements and other public health regulations to avoid the spread of disease.

Materials:

A. Textbook—Health and Service, Chapter VI.

B. Brief biographies of Pasteur, Koch, Trudeau, Florence Nightingale, Reed. -- Metropolitan Life Insurance Co.

C. Film—Man Against Microbe

Metropolitan Life Insurance Co.

D. Film strips to accompany the above biographies.
Lesson in detail:

1. New words:
   a. bacteria   c. immunization   e. quarantine  
   b. immunity   d. vaccination

2. Discuss the life and work of the health heroes. Use the film strips for illustration. It may be wise to have groups report on the various individuals in order to get a more thorough study of the men. Include in this study the contribution of Lister.

3. The work of these men may be presented by dramatization.

4. Demonstrate by the use of decaying wood how bacteria aid in keeping the earth a pleasant place to live. Demonstrate with cheese the helpfulness of bacteria and the way in which they may be controlled. The flavor of cheese is determined by the type of bacteria used in its manufacture.

5. Bacteria cultures may be grown on potatoes. Demonstrate the technique required in such work and the conditions necessary for the growth of bacteria (heat, moisture, darkness).

6. Refer to use of antiseptics and disinfectants in first aid work.

7. Discuss the ways that the body has of defending itself against disease and infection. Discuss the development of natural immunity.
8. Discuss the work of Jenner in vaccination. There are two principles upon which immunity is based: 1. A vaccine is introduced into the system which has the effect of inducing a condition similar to a slight attack of the disease, and the body builds up antibodies in the blood. 2. The antibodies are built up in the body of an animal and serum from this blood is then injected into the body of man.

9. Discuss the use of quarantine in the control of communicable diseases.

10. Prepare a list of communicable diseases in which quarantine is used.

11. Have the class prepare a chart showing the immunization record for the class. Include as immune those who have developed immunity by having had the disease or are not susceptible to the disease as indicated by the Schick or Dick tests.

12. Discuss and have the children list a few of the most easily remembered symptoms of disease and explain the necessity of reporting to the nurse or to parents whenever any of these indications are observed.
UNIT IV

Part II How Man Has Conquered Diphtheria and Other Diseases

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of how diphtheria, typhoid fever, smallpox, and the common cold are spread.
2. To develop a knowledge of the preventive measures available in the case of each of these diseases, and the application of the principles involved to other diseases.

B. Habits and skills.

1. Develops habits of conduct which will avoid the spread of contagious and infectious diseases.
2. Develops habits which will lead to avoiding contact with those infected.
3. Allows sufficient time for convalescence following illness.
4. Follows a doctor's advice as to immunization and vaccination against smallpox, diphtheria, typhoid fever, whooping cough, and scarlet fever.

Materials:

A. Textbook--Health and Service, Chapter VI, pages 122-127
B. Film--Conquest of Diphtheria

Metropolitan Life Insurance Company.
Lesson in detail:

1. New words:
   a. contagious   c. convalescence   e. toxin
   b. infectious   d. epidemic       f. antitoxin

2. Diphtheria, typhoid and scarlet fever, smallpox, chickenpox, measles, and the common cold may all be carried by discharges from the mucous membranes in various parts of the body. In addition to this mode of transmission, smallpox, scarlet fever, and chickenpox may be contracted by personal contact in which the discharge from the pustules may carry infection to the individual. Entrance is gained through the mouth, respiratory organs, or lesions in the skin. Typhoid fever bacilli are spread through the discharges of the patient from which it is carried through contaminated milk, water, food, dishes, et cetera. This disease is a problem in sanitation. In the case of diphtheria, colds, measles, and scarlet fever the usual medium is the discharge from the nose and mouth which is carried by particles of moisture when the patient coughs or sneezes. The disease organism is also left on dishes or other articles with which the discharge from the patient comes in contact.

3. There is a definite and positive means for the prevention of smallpox, diphtheria, and typhoid fever which
is so simple that no question should ever arise as to its use—vaccination and immunization. There is also an immunization process available for scarlet fever, but it is not yet as highly perfected as in the other cases and the reaction is often severe. As a result doctors do not recommend its use as universally as they do in the case of other diseases. Immunization is also available against whooping cough which is effective in about 95 percent of the cases. In periods of epidemic a temporary immunity against measles may be induced.

4. The common cold presents the most serious problem. Susceptibility is universal—so also is carelessness. Communicability is greatest during the first few days of the disease, and rest in bed during this period not only hastens recovery but also results in the comparative isolation of the patient during the period of greatest danger. The disposal of tissues carrying discharges from the nose and mouth is very important. A period of immunity usually follows recovery. In some cases vaccines may be used successfully in creating a temporary immunity.

5. Prevention is very difficult and uncertain. Good health habits contribute much in building resistance. Drafts should be avoided. Exposure to cold following a warm bath, wet clothing, and fatigue increase
susceptibility. The courtesy of covering the mouth when coughing and sneezing, and standing at a reasonable distance from people with whom we talk should be emphasized.

6. Discuss the nature of diphtheria. The use of toxin and toxin-antitoxin.

7. Discuss the use of tests for susceptibility—Schick test and Dick test.

8. A report on the work of Von Behring may be used to good advantage in developing the material on diphtheria.

9. Discuss the effects of disease on the body and the need for recuperation. List some of the difficulties which may arise from the failure to observe the necessity for recuperation.
UNIT IV

Part III How To Avoid Tuberculosis

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of how tuberculosis affects the body.

2. To develop a knowledge of how it is contracted and how it may be avoided.

B. Habits and skills.

1. Practices those health habits which build resistance to the disease.

2. Develops those habits which help to protect us from contact with the disease, and applies knowledge of bacteria in daily living.

Materials:

A. Textbook—Health and Service, Chapter VI.

B. Film—Behind the Shadows

Arizona Anti-Tuberculosis Association, Phoenix, Arizona

Lesson in detail:

1. New words:

   a. tubercle bacillus  
   b. preventorium  
   c. sanatorium  
   d. lymph node

2. Review the work of Koch and Trudeau

3. Discuss the prevalence of the disease. Have the children make graphs showing the success of the battle
against the disease. Stress the necessity for honesty in regard to the disease.

4. After a desirable attitude has been developed about the disease find out about the incidence of the disease among the families of the class members.

5. Tuberculosis is caused by the tubercle bacillus which usually enters the body through the mouth. It usually finds its way to the lungs where the tissues build a wall around it. This is called a tubercle. As long as the bacillus is thus imprisoned no infection develops. If the bacillus escapes, the lymph nodes filter it out of the system but are damaged in the process. Failure of the body to keep the bacillus in the tubercle results in the activity of the disease.

6. Almost every one has been slightly infected with the disease by the time he has reached twenty five years of age.

7. Early diagnosis is necessary if the disease is to be overcome and THE INFECTION OF OTHER PEOPLE IS TO BE AVOIDED. All of us can withstand an occasional attack of the bacillus, but continuous contact almost always results in the disease.

8. The diagnosis of the disease in childhood is facilitated by the use of the Mantoux skin test and the use of the X-ray on those with a positive reaction to the tuberculin test.
9. A hygienic routine in living is the only way of avoiding the disease. Such a routine has already been outlined in the study of health habits. Children who are predisposed to the disease usually get better care in a preventorium than at home. The items which are most important in preventing the disease are protection from further infection, rest and sleep, proper food, sunshine and fresh air, and protection from mental and physical strain.

10. Have the children prepare a schedule of activities to be followed by some one who is threatened with tuberculosis.

11. The disease is curable by hygienic living. In all cases rest is the deciding factor. Rest in bed and a carefully regulated diet is the usual method. Artificial rest of the lung is often required. This is accomplished by the injection of air around the lung which collapses it, the removal of the ribs which causes a collapse, or the severing of the nerve which controls the action of the diaphragm.

12. Have a list made of those activities which are most likely to spread infection from one person to another, namely standing too close to people to whom we are talking, putting pencils in the mouth, et cetera. Have check lists made of these and let the children record
their observations. What relationship is there between these habits and courteous behavior?
UNIT V

HOW WE MAY IMPROVE OUR PHYSICAL DEVELOPMENT

General objectives:

1. To develop a desire for the development of a well balanced, attractive, strong body.
2. To develop a knowledge of the values of exercise and a pleasure in beneficial games and sports.
3. To develop an awareness of good posture and a knowledge of, and skill in, those activities which promote good posture and good body mechanics.

Presentation:

Children of this level are highly competitive; the boys are anxious to develop strong muscular bodies such as they see in physical culture magazines and the girls are beginning to be quite conscious of their appearance; clothes, grace, and charm have a particular appeal for them at this time. An appeal to vanity provides a good source of motivation for those activities which will aid in the accomplishment of the objectives sought. Sixth grade pupils easily see that a strong active body will aid them in the activities they wish to carry on.

A certain amount of corrective work can be done where defects are purely functional. Before such work is begun the instructor should make certain that the defects are functional and that a corrective procedure will lead to no ill effects. In most cases it is well to seek the advice
and follow the prescription of an orthopedist.

Instruction in this unit is particularly well adapted to the playground where unrestricted activity is possible.
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UNIT V

Part I: How We May Improve Our Posture

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the value of good posture in the maintenance of good health and in carrying on one's life work.

2. To develop a knowledge of muscle development and good health as the basis of good posture.

3. To develop a knowledge of the exercises which will aid in the correction of posture.

B. Habits and skills.

1. Exhibits good body balance in all activities.

2. Criticizes his own posture constantly to the end that it may be improved.

Materials:

A. Textbook—Health and Service, Chapter V.

B. Film—Good Posture Wins

Akin and Bagshaw, Denver, Colorado.

Lesson in detail:

1. New words:

   a. functional

   b. anatomical

2. Discuss the value of good posture in every day contacts. This phase may be dramatized.
3. Discuss the causes of poor posture:
   a. anatomical structures.
   b. functional defects.
   c. dietary deficiencies (vitamin D).

4. Discuss the effects of poor posture on health.

5. Demonstrate the use of the straight line test of posture.

6. Have the children rate each other according to an accepted posture scale.

7. Discuss the correction of poor posture. Conduct postural exercises to correct those functional defects which do not require the diagnosis of a specialist.

8. Posture depends on the "set of opposing muscles".
UNIT V

Part II  How We May Develop Our Muscles

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that muscles like the rest of our body are made from the food we eat. The number of muscles and muscle tissues does not increase with age or exercise. The strength of the muscles, usually indicated by a thickening of the muscle, increases with exercise.

2. To develop a knowledge of the relationship of exercise and rest in the maintenance of good muscle tone.

3. To develop a knowledge of such games as baseball, volley ball, and basketball, and the rules governing them. To develop a knowledge of the values of such sports as these.

4. To develop a knowledge of the responsibilities which must be assumed if one is chosen captain, referee, or umpire.

B. Habits and skills.

1. Develops the ability to act as leader or captain in playing various types of group games; to serve as a referee, or umpire in a manner acceptable to his classmates.

2. Develops skill in playing a large number of games.
3. Develops an ability to accept without question the referee's decision.

Materials:

A. Textbook—Health and Service, Chapter IV.
B. Film—Muscle Building
   Akin and Bagshaw, Denver, Colorado.
C. Various types of athletic equipment to be used in playing games.

Lesson in detail:

1. New words:
   a. voluntary muscles    b. involuntary muscles

2. Discuss the relationship of food to the building of the body.

3. Discuss the values of exercise in the strengthening of all types of muscles. Exercise results in fatigue products which must be eliminated by rest. Over-training results in the excessive use of food in activities and retards normal growth and development.

4. Collect pictures of well developed athletes and of various types of sports for the bulletin board. Several pupils may wish to follow the fortunes of different baseball teams, boxers, wrestlers, et cetera and may find interest in keeping a scrapbook of clippings from the sport page on their selected topic.
5. Divide the class into groups and allow each group to select its own leader who is to direct the playing of various games. The completion of this lesson should extend over a period of several weeks in order to allow all members of the class to serve as leaders and officials. Careful observance of the rules of the various games should be required. In all cases the activities of the student referee should be carefully supervised to the end that his decisions will be accepted without argument. Good sportsmanship should be observed at all times.
UNIT VI

HOW LIVING CONDITIONS IN OUR HOME, SCHOOL, AND COMMUNITY MAY BE IMPROVED

General objectives:

1. To promote a sense of responsibility for the welfare of our community.

2. To develop a knowledge of the ways in which diseases are spread and the ways in which they can be controlled.

3. To discover the activities carried on by our governmental units which have to do with public health and welfare.

Presentation:

It is intended that this should be the most extensive unit of the course, and that it should be based on the awakening interest of the pupils in group activities. The writer has observed that a strong appeal can be made to pupils of this age on the grounds that the welfare of the group depends on each one doing his part. This is not true prior to this time when interest centers in the desires of the individual himself.

The unit may be divided into five parts:

1. The general organization and activities of a public health department.

2. The maintenance of a good water supply.

3. A safe method for the disposal of sewage and
4. The ways in which diseases are carried.

5. Activities involved in the supervision of food production.

Activities should be planned which will allow pupil participation and which will involve activity at home. This has proved to be an effective means of securing discussion of health problems by the parents and has awakened them to the responsibility for the sanitary environment of the home.
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7. The Book of Knowledge.
UNIT VI

Part I  How The Health Department Guards The Health of the Community

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the activities of the health department and of how it serves our community.
2. To develop a knowledge of the way the public health department is supported.
3. To reveal the possibilities of future employment in the field of public health service for those who are qualified.

B. Habits and skills.

1. Cooperates with public health authorities by reporting conditions which are not favorable to the health of the community.
2. Applies knowledge gained in a careful appraisal of conditions observed as to the possible effect on health.

Materials:

A. Textbook—Health and Service, Chapter VIII.
B. Film—Your Health Department

  National Motion Pictures Company, Mooresville, Indiana.
Lesson in detail:

1. New words:
   a. bureau
   b. vital statistics
   c. sanitation
   d. sanitary engineer

2. Make a list of the activities of the public health department or unit. Discuss and write brief paragraphs describing each of these activities and telling how they affect us.

3. Discuss the cost of maintaining the County Health Unit. What is the cost per capita? How do you think the cost compares with the cost of medical care which might be required if the work of the health unit should be abandoned?

4. Prepare a list of the personnel of the health department and discuss the qualifications required. Is the field a developing one which may offer the possibility of effective service for both men and women?

5. Have a survey made of the community to reveal any unsanitary conditions which might exist. Discuss the significance of these conditions. If they justify such action, report them to the proper authorities.
UNIT VI

Part II  How our Welfare Depends on a Pure Water Supply

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the way in which a safe water supply has been secured for the local community. The school is supplied from this system. To understand the methods used to insure the purity of this supply.

2. To develop a knowledge of the requirements of a good rural water supply.

B. Habits and skills.

1. Develops the ability to estimate from the surroundings the probability as to the purity of well water.

2. Develops the habit of boiling water when on camping trips or whenever the purity of the available water is questionable.

3. Develops the practice of having water tested from time to time in order to make sure of its quality.

Materials:

A. Textbook--Health and Service, Chapter VIII.

B. Film--Turn on the Water

Akin and Bagshaw, Denver, Colorado.
Lesson in detail:

1. New words:
   a. sediment  
   b. filter  
   c. chlorination  
   d. contamination

2. The local water supply is taken from the Verde River. It is filtered through large sand fields in order to remove silt and trash before it enters the pipeline. Before it reaches the consumer, chlorine gas is added to destroy any bacteria which may be present. Filtering does not purify water. The water is tested daily to insure its purity. The drinking water for the school is received from this source.

3. A good rural water supply comes from a deep well, preferably a drilled well, that has been cased to exclude surface drainage. The well should be safely covered to prevent any sort of contamination from the top. The chief dangers to wells in this community are from seepage from irrigation water and cesspools. During storms and when irrigating there is also danger of surface filth being washed into the well if it is not properly covered. Danger from cesspools can be avoided by proper casing and locating the well so that the natural drainage will be away from it.

4. Well water should be tested in order to be sure of its purity. What agency will do this for us?
5. Most streams in Arizona are used for watering stock and are usually attractive homesites or suitable for the location of resorts. This creates a condition in which the water is subject to pollution, and the water should be boiled when uncertain as to its purity. Boiling is the most satisfactory way of purifying small quantities of water. Chlorine tablets are also available for the camper.

6. Collect clippings regarding the development of safe water supplies and use them in a scrap book or on a bulletin board.

7. Encourage the children to discuss wells that they consider to be questionable or unsafe.
UNIT VI

Part III. How Sewage Is Disposed of in Cities and on the Farm

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that the proper disposal of sewage is necessary in order to avoid epidemics of many kinds. The most important problem is the disposal of human wastes in order to prevent the spread of such diseases as typhoid fever.

2. To develop a knowledge of the ways employed in cities and in rural communities in the disposal of sewage. The problem is to avoid pollution of water sources and to avoid the creation of a nuisance.

B. Habits and skills.

1. Develops the ability to recognize satisfactory systems of sewage disposal.

2. Develops skill in camp sanitation problems involving the disposal of garbage and sewage.

Materials:

A. Textbook—Health and Service, Chapter VIII.

B. Film—Sewage Disposal

University of California

What Price Health
National Motion Pictures Co.,
Mooresville, Indiana.
Lesson in detail:

1. New words:
   a. micro-organism

2. Discuss the dangers of poor sewage disposal. Compare present day conditions in a modern city with those of 100 years ago.

3. Sewage of cities is commonly disposed of by three different methods or combinations of these. They are direct disposal into the ocean, sewage purification by tank and sprinkler system, and purification by sand filtration. In all cases except direct disposal into the ocean, micro-organisms are depended upon to devour most of the solids. Spraying the sewage into the air allows the oxidization of some of the solids. When the sprinklers are used, periods of rest must be allowed in order that the putrifying bacteria may absorb oxygen. When the sewage is finally discharged, bacteria attack whatever solids remain. These bacteria become food for one celled animals, and these in turn provide food for minnows and fish.

4. What system of sewage disposal is used by the city of Phoenix?

5. Discuss the disposal of sewage in rural areas. Here, most of the garbage and most of the sewage other than the human wastes is converted into fertilizer or pig feed before it becomes a problem. The use of the
outdoor privy is common and is a constant source of danger because of flies, insects, and rodents. All privies should be fly and vermin proof, and so located that the natural drainage from the pit is away from the water supply. In cases where a water carriage system is used, cesspools provide the common means of disposal. A better method is the use of the septic tank principle. This keeps the sewage near the surface where it dries and is subject to the continuous action of bacteria. The septic tank relies on the action of bacteria for its efficiency. It also avoids the danger of seepage into nearby wells.

6. Provide for a survey of conditions in the district to reveal dangerous conditions in the disposal of sewage. Encourage the testing of water for contamination.

7. Compare cost of correction of these conditions with the probable cost of disease which may be caused by the condition.

8. Secure material costs and estimate the cost of installing a septic tank. Secure specifications for a standard septic tank and encourage those who are interested to draw plans which could be followed in the construction of such a system.

9. Invite the sanitary engineer from the County Health Unit to discuss the problem. As a means of presenting a possible vocational field have him discuss his preparation and the future possibilities in the field.
UNIT VI

Part IV  How Flies Carry Disease

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the life cycle and the habits of the fly.
2. To develop the knowledge of the ways in which the fly carries disease.

B. Habits and skills.

1. Recognizes conditions which will provide a breeding place for flies.
2. Destroys breeding places and uses screens to exclude flies from the home.

Materials:

A. Textbook—Health and Service, Chapter VIII.
B. Film—The Fly as a Disease Carrier

Lesson in detail:

1. New words:
   a. larva       b. pupa       c. proboscis

2. Discuss the life cycle of the fly. Collect larvae and keep them in a warm moist place until the pupils have had an opportunity to watch the progress of the life cycle.

3. Examine the legs and feet of the fly under a microscope or a powerful reading glass. Discuss his special
aptitude for carrying bacteria. It is estimated that one fly may carry as many as 6,000,000 bacteria.

4. The barnyard provides the most desirable place for flies to breed. It provides moisture, warmth, and food. The life cycle requires only two weeks for the larvae to develop. This means that the manure must be disposed of within that period if the flies are to be controlled. One pound of borax is sufficient to treat sixteen cubic feet of manure; it is the most effective larvicide to use if the manure is to be used later for fertilizer. Flies also breed in any moist, decaying matter.

5. Prepare a map of the community on which the pupils may locate places where flies may breed freely. Prepare posters illustrating the menace from flies and indicating methods of control. These posters may be placed in store windows and in other places where they will be seen.
UNIT VII

Part V How Mosquitoes Carry Disease

Specific outcomes:

A. Knowledge.
   1. To develop a knowledge of the life cycle of the mosquito and its habits.
   2. To develop a knowledge of the methods of control which can be used.
   3. To develop the knowledge that the mosquito, unlike the fly, serves as a host to the one celled animal, plasmodium, which causes malaria.

B. Habits and skills.
   1. Develops skill in the recognition of the conditions which promote the growth of mosquitoes.
   2. Develops the habit of destroying such breeding places.

Materials:

A. Textbook—Health and Service, Chapter VIII.
B. Film—Mosquitoes
   Akin and Bagshaw, Denver, Colorado.

Lesson in detail:

1. New words:
   a. Anopheles  b. host  c. malaria (mal--aria)

2. The life cycle of the mosquito conforms to that of other insects.

3. There are several species of the mosquito. The Anopheles carries malaria. (Malaria used to be at-
tributed to the bad, damp air of the swamp areas—
Malarial.

4. The mosquito lays her eggs in water. Usually the water
is stagnant. The larva and the pupa are air breathing.
The adult female is the only one found to carry malaria.
It requires blood to carry on the reproductive process.
In case the mosquito bites a malaria victim it serves
as host to the disease organism until it is injected
into the person who provides the next supply of blood.
Since the mosquito must have air in the larva and pupa
stages, and since it breeds in water, either drainage
or the application of oil are effective means of control.

5. Read the story of the building of the Panama Canal.

6. Collect the eggs or larvae of mosquitoes and allow
them to mature in the classroom where the pupils may
watch the process.

7. Conduct a mosquito killing campaign. Destroy all cans
and other places where water may collect and stand for
a period of ten days or more. Drain or apply oil to
pools where they may breed.

8. Prepare posters for use where they will be seen by
adults in the community. Local mosquitoes are not
usually of the malaria type, but they are a nuisance
and should be eliminated.

9. Locate on a map the location of areas where malaria
is prevalent.
10. Other diseases, dengue fever, yellow fever, and filariasis are also carried by different types of mosquitoes.
UNIT VI

Part VI How Rats Carry Disease

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that rats and other rodents carry diseases of many kinds; that they also destroy great quantities of grain and other property.

2. To develop a knowledge of the methods of control.

B. Habits and skills.

1. Recognizes conditions which are favorable for infestation of rats, and methods of control.

Materials:

A. Bulletins from the Department of Agriculture.

B. Film—How to Get Rid of Rats

University of California.

Lesson in detail:

1. New words:

   a. plague
   b. rodent

2. Read the story of the great plagues in Europe. Emphasize the thought that the rats affected the history of the world.

3. Rats, prairie dogs, and ground squirrels have been found to be infected with the plague. It apparently began with the spread of rats from the water front in San Francisco, and has spread eastward north of the Grand Canyon. This disease is spread by the rat flea
to which the rat is host.

4. Rats also carry diseases mechanically from the garbage can to the pantry.

5. The diseases which rats have been found to carry are: bubonic plague, typhus fever, spirochetal jaundice, rat-bite fever, food poisoning, tularemia, rabies, trichinosis, and a number of diseases peculiar to domestic animals.

6. The Department of Agriculture estimates the annual loss of property due to activities of rats at more than $189,000,000.

7. Rats are scavengers, but the debris they leave behind is more objectionable than the waste they eat. No service of any value can be attributed to the rat.

8. Rats multiply so rapidly that it would be possible for one pair to have as many as 350,000,000 descendants in three years.

9. Recommended methods of control include poison, (red squill), traps, poison gas, cats and dogs, and rat proof buildings.

10. Have pupil write to the Office of Information, United States Department of Agriculture, Washington, D. C., for Farmers' Bulletins 1533 and 1638 on Rat Control and on Rat Proofing Buildings and Premises. (Free bulletins)
11. Essays and posters may be prepared illustrating the dangers from rats and the means of controlling them.
UNIT VI

Part VII  How the Quality of our Food Supply is Protected

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that in many cases the quality of the foods we eat is guaranteed because of the Pure Food and Drug Laws of the Federal and State Governments, and the inspection services they maintain.

2. To develop the knowledge of certain standards that must be adhered to in order to provide good, pure foods.

3. To develop the knowledge that reputable firms depend on the quality of the product they produce to secure their trade.

4. To develop an understanding of the misrepresentation offered in the advertising of various foods and medicines.

B. Habits and skills.

1. Recognizes the use of adulterants in foods.

2. Develops an inquiring attitude as to the conditions under which foods are manufactured, prepared for the table, and served.

3. Develops a critical attitude toward advertising.

4. Develops a critical attitude in regard to weights and measures.
5. Develops the ability to recognize indications of adequate guarantees of quality such as the stamp of the U. S. Meat Inspector, and the ability to use such reports as those of the Dairy Inspector in the selection of milk.

6. Develops the ability to use such reports as those published by Consumers' Union and Consumers' Research.

Materials:
A. Textbook—Health and Service
B. Film—The Story of Milk (Reels 1 and 2)
   Bray Films, Inc., New York, N. Y.
C. Field trip to the Tovrea Packing Plant or one of the local dairies.

Lesson in detail:
1. New words:
   a. adulterated    c. butterfat
   b. preservative   d. standard weights and measures

2. Discuss the pure food and drug laws which aid in the protection of the buyer. What is meant by "let the buyer beware"? Use the local milk ordinance for illustration. Mention the use of formaldehyde in preserving milk.

3. Have the children collect labels from various types of food containers. Use these in preparing a bulletin board, and observe how many indicate the use of
artificial coloring matter, preservatives, or fillers.

4. Conduct a field trip to Tovrea Packing Plant to observe conditions under which meat products are manufactured. Discuss the value of inspection service such as that applied to meat and milk production. Tuberculosis of the bone has become a rare disease since the inspection of cattle for tuberculosis was begun.

5. Discuss some of the more common adulterants such as saw dust and cereal meals in sausage and hamburger together with large amounts of watery preservatives.

6. It has been estimated that less than 15 percent of food products have been adulterated according to the criteria for adulteration established by the Federal Pure Food and Drug Act which was passed in 1906. Is this law adequate for present day conditions? What recent attempts have been made to improve this law?

7. Discuss the fact that even good foods may become a danger if not handled and prepared properly. From the discussion let the class organize a short inspection sheet of points they can keep in mind in patronizing eating places, soft drink stands, et cetera.

8. Discuss the use of various types of containers with regard to deceiving the public: thick glass bottoms, elliptical shapes, long narrow necks, convex bottoms. Discuss the repacking of fresh produce, especially berries, in smaller boxes and the practice of
"bleeding" packaged or sacked goods which the customer seldom if ever weighs. Make a collection of such containers for exhibit purposes.

9. Have advertisements of special health foods and drugs collected for the bulletin board. Discuss the amount of probable truth in the ads. Refer to Consumers' Union reports as to the results of research on the selected list of advertised foods. In the same manner analyze statements made over the radio. Have the children prepare lists of articles of which they question the value and refer to some consumer report for information.
UNIT VI

Part VIII. How We May Protect Ourselves from Disease

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that diseases are caused by organisms with which we come in contact, and that careful application of our knowledge of bacteria we can avoid many of these contacts.

2. To develop a knowledge of the ways in which we are exposed to disease.

B. Habits and skills.

1. Develops a consciousness of the presence of bacteria and the conditions which favor their activity.

2. Develops the ability to habitually avoid dangerous contacts.

Materials:

A. Textbook—Health and Service.

B. Film—How To Prevent Disease.

Bray Films, Inc., New York, N. Y.

Lesson in detail:

1. New words:
   a. pathogenic

2. Review the fact that bacteria are found everywhere, but that most of them are harmless. Only a few are pathogenic.

3. Prepare a list of ways in which we come in contact
with these bacteria.

4. Discuss the application of bacteriology in the following circumstances:
   a. when living in the home, cleaning, cooking, dishwashing, et cetera
   b. when eating in public eating houses
   c. when living in hotels or traveling
   d. when purchasing food

5. Draw diagrams of desirable types of fountains.

6. Good conduct under various conditions may be dramatized, or original plays and dialogues may be written to stress the practical application of bacteriology.
UNIT VII

HOW OUR BODY TURNS FOODS INTO MUSCLE, BONE, AND ENERGY

General objectives:

1. To promote those habits of eating which will aid in the building of stronger, more healthy boys and girls.
2. To develop the ability to choose foods wisely, and to care for them properly until they are eaten.

General presentation:

The natural interest of children in eating provides a means of arousing curiosity in this material. They are anxious to build strong bodies in order to excel in sports, to add to their attractiveness, to add to the pleasures of living. The use of white mice or rats in a classroom experiment provides a convincing example of the value of the lessons which are taught. This type of experiment should be started about four weeks before work on this particular unit is begun in order that some of the results will be obvious at the time of presentation. If animals cannot be used, plant life can be used to good advantage. The effect of food can be illustrated by the use of small amounts of commercial fertilizers.

The unit is divided into three parts:

1. Digestion—the way the body handles the food and converts it to forms usable in the body.
2. The types of foods and the function of each in the body.
3. The care and preparation of foods.
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UNIT VII

Part I How Food Is Changed to Body Building
Materials and Energy

Specific outcomes:

A. Knowledge.

1. To develop a knowledge of the digestive system and its activities in preparing food for use in the body.

2. To develop a knowledge of the care which must be exercised in eating in order to give the digestive system an opportunity to do its work well and to keep it in good condition.

B. Habits and skills.

1. Chooses foods of sufficient variety to keep the digestive system in good tone and to avoid constipation.

2. Develops the habit of chewing food thoroughly.

3. Forms the habit of making mealtime a pleasant occasion and of resting afterward.

Materials:

A. Textbook—Health and Service, Chapter III.

B. Film—Digestion

   University of Arizona

C. Iodine, Fehling’s solutions 1 and 2, crackers, potato, starch, artificial gastric juice made of hydrochloric acid and pepsin, lean meat. These articles are to be
used in demonstrating the results of digestion.

(Experiments in Health by Andress and Brown may be used as a guide in the conduct of the experiments. See pages 121, 117, 119, 123, 125, 127, 131).

Lesson in detail:

1. New words:
   a. intestines    c. mucous    e. gastric juice
   b. peristalsis   d. bile      f. saliva

2. The function of the digestive tract is to prepare food for use in the tissues, to provide opportunity for absorption of the digested foods, and to excrete certain food wastes.

3. The important parts of the food canal are the mouth, esophagus, stomach, small intestine, large intestine, and rectum.

4. Digestive juices are supplied by special glands in the mouth, stomach, and small intestine. These, in conjunction with the mechanical action of the teeth and the peristalsis, accomplish the digestion of food.

5. Saliva moistens the food as it is chewed and begins the conversion of starch to sugar.

6. The stomach serves as a storage place for food until it is partly digested and gradually passed into the small intestine. The gastric juice secreted in the stomach breaks up protein foods.

7. Pancreatic juice, bile, and intestinal juice are
emptied into the small intestine. The pancreatic juice completes the digestion of starch, continues the digestion of proteins, and changes fats into fatty acids and glycerin. The bile aids the action of the pancreatic juice and helps the digestion and absorption of fats. The intestinal juice completes the digestion of proteins and changes sugars to a simpler form for absorption.

8. The food is absorbed through the villi which line the small intestine. The fats are absorbed by the lymph while the other foods are absorbed by the blood.

9. Test starch, potato, and cracker for starch with iodine. Test them for sugar with Fehling's solution. Treat them with saliva and test again for sugar. Compare the results obtained when the substances are finely mashed and when in large pieces. What do these experiments reveal?

10. Demonstrate the action of artificial gastric juice in the digestion of meat (protein). Show the value of thorough chewing in this experiment.

11. Excitement, anger, worry, and other mental states slow up or stop the flow of digestive juices. Explain the relation of this situation to the atmosphere at meal time.
12. Fruits, vegetables, and whole cereals contain roughage which stimulate activity in the muscles of the stomach and intestines called peristalsis. This action mixes the food with digestive juices and keeps it moving slowly through the alimentary canal. Laxatives are effective because they irritate the lining of the food tract and cause a more or less violent peristalsis which is injurious.
UNIT VII

Part II. How We May Supply our Bodies with All the Foods they Require

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that the body requires many types of foods in order to keep in its finest condition.

2. To develop a knowledge of the five types of foods and what each does for the body.

3. To develop a knowledge of the way food value is measured.

B. Habits and skills.

1. Develops the ability to choose foods from all the types in order to have a well balanced diet.

2. Develops the ability to recognize the values of different foods.

Materials:

A. Textbook—Health and Service, Chapter II.

B. Film—The Well Balanced Diet

University of Colorado

C. Crucible, alcohol lamp, small potato, scales

Lesson in detail:

1. New words:

   a. balanced diet
   b. calorie
   c. nutrition
   d. malnutrition
2. It has been found that the average person requires food of all types throughout life. During the period of growth a relatively greater amount of protein and mineral foods is required than in adult life. The average diet should consist of about 15 percent protein, 15 percent fat, and 70 percent carbohydrate.

3. Foods are commonly divided into five classes according to the work they do in the body. Most articles of food represent more than one class. These classes are:

   a. Protein—The most common foods in this class are meats, eggs, cheese, peas, and beans. These are tissue building foods necessary to growth and to the repair of muscles and other parts of the body.

   b. Carbohydrate—Most cereals, fruits, and vegetables fall in this class. These are energy and roughage foods that provide the power for the body.

   c. Fats—Butter, cream, salad oil, fat meat, and the various types of shortening are the most common fats. Fat is a fuel.

   d. Minerals—Fruit, vegetables, whole cereals, milk, and liver are usually rich in minerals. These are necessary for the growth of bones and teeth. They are also necessary
in the blood and in the activity of the muscles. Blood will not carry oxygen or clot in case of injury without iron and calcium.

c. Vitamins—Milk, eggs, fruit, and vegetables are commonly spoken of as the protective foods because they contain vitamins. Without the vitamins the body does not function effectively. The absence of vitamin B affects the nerves; the absence of vitamin D prevents the utilization of calcium. All vitamins known have been found to be necessary to the healthy organism.

4. Food value is measured by the calorie, the amount of heat it will produce. A calorie is the amount of heat required to raise one kilogram of water through one degree centigrade. The number of calories required is determined by the needs of the body. Manual labor requires more energy than office work; therefore, more food is required. The need for growth should determine the amount of food eaten by children.

5. Have the children list the foods they eat over a period of four days and evaluate the diet as to amount, the ratio of carbohydrates, fats and proteins, and the vitamin content. Using these menus as a base correct
them as to proper balance.

6. Most foods contain a high percentage of water. This can be illustrated by dehydrating a potato. The loss in weight is due to the loss of water. In order to appreciate the amount of loss, place an equal weight of water in a glass for the class to see.

7. Place a list of food prices as indicated in newspaper advertisements on the board. Specify a certain amount of money which can be spent for foods, and have the pupils select foods which they think would be adequate and desirable for four people. Illustrate the relative value of a dollar's worth of milk and a dollar's worth of steak.

8. Prepare a scrapbook of recipes for foods, and menus which can be used in preparing good school lunches.
UNIT VII

Part III Why Milk is the Most Complete Food

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that milk is the most complete and important food for all mammals.

2. To develop a knowledge of the care that milk requires if it is to be a safe food.

B. Habits and skills.

1. Cares for milk properly after it has been delivered at the home.

2. Recognizes factors which determine the cleanliness and the quality of milk and applies this knowledge in discussing the patronage of a dairy.

3. Uses milk liberally in the diet recognizing the fact that milk is one of the most economical foods.

Materials:

A. Textbook—Health and Service, Chapter II

B. Film—Milk as a Body Builder

Edited Picture System, Inc., New York, N. Y.

C. Absorbent cotton and beaker to test milk for dirt.

Lesson in detail:

1. New words:

   a. butterfat
   b. bacteria count

2. Experiments with white rats have revealed that milk, when increased over the amount in the normal diet, adds
to the growth, strength, and resistance throughout the life of the rat. Succeeding generations also appear to profit by this added quality in the ancestor. Rapid increases in growth have been recorded for children where milk was added to what was previously considered a good diet.

3. Improvement in endurance has been noted when athletes added or increased the amount of milk in the diet.

4. Milk is the only food which nature has attempted to make. It meets all the requirements of the young of mammals. It is the most nearly complete food. The life and power of all the higher animals which we call mammals depend on milk. The higher the scale of development—the longer the young animal is dependent on the mother. (For the average adult, milk requires the addition of a carbohydrate to make it a balanced diet.)

5. Milk is easily contaminated and in the milking process it receives a large number of bacteria. These bacteria increase rapidly and affect its keeping qualities. Lactic acid bacteria cause the milk to sour. In case any of the bacteria are of the pathogenic type they cause disease, and as beneficial as milk is, it is still responsible for a large number of deaths, especially among infants.

6. Pasteurization was developed as a means of destroying the bacteria in milk without changing its quality or
flavor. The fresh milk is heated to 142-146 degrees Fahrenheit for thirty minutes and then cooled quickly, bottled, and kept refrigerated until delivered.

7. In the home milk must be kept clean and cool. If it is exposed to dust and careless handling or allowed to become warm the bacteria soon make the milk unsafe.

8. The quality of milk is determined by the butterfat content. Good whole milk should not contain less than three and one-half percent butterfat.

9. The laws governing the production of milk specify the maximum number of bacteria per c.c. permissible, but in Arizona the minimum butterfat test is not indicated except by local ordinances. The cream line does not indicate the actual amount of butterfat the milk contains, but dairies deliberately use bottles with small necks in order to show a good cream line.

10. Legally milk is usually graded as "certified", Grade A, or Grade B.

11. In choosing a dairy to patronize consideration should be given the quality of the herd, the personnel, the bacteria count, and the butterfat test. In the summer time the quality of the delivery service is also a factor to be considered.

12. Conduct an excursion to a large milk distributing plant or dairy. Plan to see the laboratory, the provision
made to insure the cleanliness of the products, the
careful use of bacteria in the making of cheese, the
manufacture of butter, and the cold storage room.

13. Construct a book of recipes which require large amounts
of milk. These can be collected by the pupils. Duplicated copies may be given the children to take home
or they may be published in the class magazine if one
is available.
UNIT VII

Part IV How We Get the Greatest Part of Our Energy

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that nearly all our energy and ability to work is created from foods in the carbohydrate group. These foods should provide about 70 percent of our total supply.

2. To develop the knowledge that the cereal foods constitute more than half of the carbohydrate foods the average person eats.

B. Habits and skills

1. Develops the habit of eating whole wheat bread and whole grain cereals.

2. Develops the habit of securing a good balance in the use of cereals in the diet.

Materials:

A. Textbook—Health and Service, Chapter II.

B. Film—Our Daily Bread

University of California

C. Samples of cereals, white and whole wheat flour, and white and whole wheat bread.

Lesson in detail:

1. New words:

a. gluten

b. cereal
2. Although fats and proteins may be used by the body when there is a shortage of carbohydrates or when there is a surplus of those foods, practically all our energy (heat) comes from the carbohydrate group. This group is composed of the fruits and vegetables, the sugars, and the cereals. The sugars are nearly pure energy foods and produce no "ash". Most of the other carbohydrate foods should be used in a form that will produce other than energy values in the form of "ash".

3. Fruits and vegetables cooked in water which is poured off lose a great deal of their mineral and vitamin value.

4. Vitamin C is especially volatile and over-cooking or evaporation drives most of it away.

5. The greater part of the carbohydrates in the average diet is supplied by cereals— in some areas cereals provide almost the entire diet.

6. Highly refined cereals contain very little more than energy building material.

7. In the milling of white flour the bran (roughage), and the germ containing the vitamin and some of the fat is removed. A small amount of gluten, a form of protein, remains with the flour which is composed largely of starch. The presence of the oil from the germ makes flour hard to keep. It also makes bread made from the whole wheat flour spoil in a shorter time than the
white bread.

8. Burn small amounts of white and whole wheat flour in a crucible. Note the characteristic odor of protein from the whole wheat flour. The same is true of breads made from these two types of flour. Ordinary "whole wheat" bread on the counter contains very little whole wheat flour; "100 percent whole wheat" is more nearly a whole wheat bread.
UNIT VII

Part V  How We May Preserve Our Foods

Specific outcomes:

A. Knowledge.
   1. To develop a knowledge of canning, dehydration, and refrigeration as methods of preserving foods to meet our needs throughout the year.
   2. To develop a knowledge of the principle involved in each of these methods.

B. Habits and skills.
   1. Develops the ability to select canned or dried foods for use when the fresh supplies are not available or are expensive.
   2. Develops the ability to use a refrigerator properly and to keep it thoroughly clean.

Materials:

A. Textbook--no material

B. Film--Refrigeration
   University of California

Lesson in detail:

1. New words:
   a. dehydration

2. Food must be preserved over long periods of time in order to be assured of a variety of foods throughout the year or of a supply during times of drought and other misfortunes.
3. Practically all foods may be preserved either by canning, drying, or refrigeration. Meat, fruits, and vegetables, have been preserved by all three methods for relatively long periods of time. Milk is commonly preserved by canning under a limited dehydrated condition and by complete dehydration. Refrigeration can be effective for only a limited time in the case of milk; butter and cheese may be kept for relatively long periods of time by refrigeration.

4. In the canning of foods success depends on the sterilization of the food and the container with heat and the sealing of the container immediately. In the case of dehydration, preservation is possible because the drying eliminates the moisture necessary for the growth of bacteria. Bacteria do not grow and become active at low temperatures; therefore, refrigeration is effective.

5. There are many conditions which make all three methods valuable. Dried fruits are easily transported. In larger towns and cities it is possible to have fresh frozen fruits and vegetables the year round.

6. In the home, canning and refrigeration have become the chief means of preserving foods. Refrigeration is depended upon for only short periods of time, but the fact that it is commonly available makes the use of a greater variety of foods possible and also makes it possible to use left-overs to good advantage.
7. The family refrigerator requires frequent cleaning if it is to keep foods satisfactorily. This is done by washing with soda every week. Mechanical refrigerators must be defrosted at intervals in order to avoid odors and to maintain efficiency.

8. Effective use of a refrigerator depends on the circulation of air. This means that space must be left for this free circulation. It also means that the coldest part of the box will be in the bottom and immediately under the cooling chamber.
UNIT VIII

HOW WE MAY BUILD A WHOLESALE ATTITUDE TOWARD LIFE
AND ITS PROBLEMS

General objectives:

1. To develop an understanding of some of life's problems and ways of meeting them.

2. To overcome childish reactions in times of difficulty.

General presentation:

Intelligent conduct is based on an understanding of existing conditions or situations, the motives of other people, an evaluation and refinement of our own desires, and the formulation of plans and procedures for attainment. To some, such conduct seems easy and natural; to others, it is possible of attainment by constant effort; to a few, such control is foreign in times of stress.

This unit is planned to give the pupil a knowledge of certain needs we all recognize: a satisfying vocation, a sense of achievement, and at least a small degree of recognition and appreciation for our efforts. Emphasis upon the development of an interesting hobby, if possible one with a vocational aspect, is stressed.
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   Healthy Living.
UNIT VIII

Part I  How We May Build a Wholesome Attitude Toward Life and Its Problems

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that all strive for a vocation which meets the needs of the individual.

2. To develop a knowledge that successful social adjustment is based on the principle of "give and take" in which the needs and desires of all must be taken into account.

B. Habits and skills.

1. Develops the ability to meet and get along well with other people.

2. Develops an interest in a hobby in which the individual excels.

3. Develops the ability to recognize one's own shortcomings as well as those of others.

Materials:

A. Textbook—Health and Service, Chapter X.

B. Film—Use one of three possible sources:

- Untitled film produced by local Scout organization.

- Untitled film produced by local Juvenile Probation Office.

- The Technique of Job Hunting Educational Research Association, Pasadena, California.
(The Scout film is very satisfactory for most classes. The juvenile film may be used effectively if the personnel of the class is such that it will be well received. The vocational film is too advanced for most classes of this type. In all cases very careful previewing and preparation is necessary.)

Lesson in detail:

1. New words:
   a. vocation b. leisure time c. attitude

2. Discuss the need for being self sustaining, and the value of vocational preparation in meeting this need.

3. Prepare a list of vocations in many fields. Are all these vocations of equal service to society? Is the remuneration equal? What makes the difference? Do we all have equal ability in all lines of work?

4. Present a case where there was disagreement. Let the children decide what caused the trouble and ways of eliminating it. Discuss sharing the work at home. What elements are usually found where there is quarreling, and fighting?

5. Hold a hobby fair in the classroom or enlist the entire school.

6. Have the children select some vocation and investigate the training required for it, the possibility of employment, the remuneration, and the ideals involved.
7. The feeling that one's clothes are clean and suitable, that one's body is clean and that the hair is carefully combed helps to make us feel at ease and gives us confidence when in contact with other people.
UNIT IX
HOW OUR CLOTHING AFFECTS OUR HEALTH

General objectives:

1. To develop the ability to choose clothing suitable for the season of the year, the climate in which one lives, and the situation at hand.

2. To develop the ability to care for the clothing in such a way that it will last well, and be attractive and clean.

General presentation:

Pupils in the sixth grade are conscious of their clothing, and become ill-at-ease when it is damaged or soiled. They also are becoming aware of the fact that certain occasions require different kinds of clothes. Unless they are to be taken away from the school during the day or are to appear in a school program they do not like to wear other than their ordinary clothes. When all his classmates wear overalls, a boy feels out of place in his "Sunday clothes" unless there is a real reason for wearing them. Girls seem more anxious to be individualists and wear the best they have at every opportunity.

The discussion of football and baseball uniforms provides a good means of introducing a study of the suitability of clothing, the care it requires, and the fabrics from which it is made. It should be stressed that the appropriateness of the clothing adds to the comfort and ease with which we meet every-day situations.
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UNIT IX

Part I How Our Clothing Affects Our Health

Specific outcomes:

A. Knowledge.

1. To develop the knowledge that clothing may be made of different materials to meet different situations and needs.

2. To develop the knowledge that unclean clothing may be offensive and carry bacteria of all kinds; that wool and silk, both animal fibres, promote the growth of bacteria more than cotton or linen.

B. Habits and skills.

1. Develops the ability to choose clothing wisely.

2. Develops the ability to care for the clothing in a proper manner.

Materials:

A. Textbook—Health and Service, Chapter VII.

B. Film—Clothing

University of Georgia

C. Samples of raw silk, wool, cotton, and linen; cloth made from each of these materials. Samples of rayon may also be used as well as samples of synthetic wool.

Lesson in detail:

1. New words:

   a. solvent

   b. synthetic
2. Discuss the choice of clothing as it is affected by the climate, the season, and the occasion. Prepare scrap books of pictures and explanations.

3. Discuss clothing as it relates to health. Warmth, the evaporation of body moisture, freedom of movement, and cleanliness are important factors. Even in colder parts of the United States people who work in warm buildings wear light underclothing and depend on the use of coats and wraps when outdoors.

4. Clothing holds odors and should be changed frequently. It should be aired by an open window every night. Turning the underclothing inside out and shaking it removes the small particles of dead skin it collects and seems to aid in preventing odors.

5. Wool and silk are animal fibers and allow bacteria to multiply faster than they do on cotton, linen, or rayon. Bacteria from soiled clothing may cause skin infections and other diseases. Boils have been found to be caused by dirty coat collars.

6. Clothes should be washed whenever they become soiled. This, however, wears them out, and if spots can be removed it is sometimes wise to do this.

7. Clothing should be carefully hung on hangers in order to keep it free from wrinkles and in good shape.

8. Soiled clothing should be put in its proper place and never left around the room.
9. Gasoline should never be used to clean clothes. Non-inflammable solvents should be used. Unused portions may be allowed to settle and the clear part used again.

10. Always stress the fact that more time should be spent in building a strong attractive body than in the selection of fine clothing; a fine, well-developed boy or girl in clean, neat, inexpensive clothes is more attractive than a poorly developed person in the finest clothing.
CHAPTER IV

RECOMMENDATIONS

The Place of Health in School Environment

The provision of a clean healthful school environment should be the primary consideration of all school employees from the superintendent to the janitor. In spite of the fact that much of the health instruction will be discounted in the home, the child will learn, make comparisons, and develop ideals from the impressions which he receives at school. The entire health program should be so organized that these will be as powerful as possible. Not only should health service be maintained on a high level, and the health instruction made as effective as possible, but the hygienic conditions of the school should be above reproach. Beyond absolute cleanliness, obvious efforts to maintain properly adjusted desks, well controlled and adequate lighting, and the careful regulation of heating and ventilation, the teacher and all other employees should pass a rigid physical examination and set the example in excluding themselves from the school whenever they are in an infectious condition from any cause.

It is obvious that under the procedures followed in most schools, instruction in health must be given as a separate course with a definite time allotment if it is to accomplish its purpose. All teachers, however, should be
led to attach such importance to it that its full significance will be developed in all courses. The relationships of materials taught in the health and physical education classes should be reinforced in all school experiences.

Revision of Health Record Forms

The records maintained by the nurse are adequate for her purposes when the child is dealt with solely as an individual and his case history is the only thing of importance. The form of the record should, however, be changed to provide for this same information in such a way that it can be tabulated and used to better advantage in the classroom. If information on the health status of the children at stated periods were available, closer cooperation between the nurse and teachers would be possible.

The Use of Visual Aids

Since a great variety of visual aids are available and may be substituted for those suggested in this course, no definite recommendations as to their use are offered. Even in the case of films, substitutions are frequently advisable and necessary; therefore, specific plans for their use cannot be made satisfactorily and finally in advance.

Although the value of films has been established in certain aspects of health instruction, there is need for further investigation in this line. To date, film producers
have had very little information of this type to direct their efforts, and as a result many films are less effective than they might have been with a different development. It is also obvious that certain aspects are capable of illustration by the use of films rather than by any other visual aid, and yet no appropriate ones are available.

One experiment indicates that films do not contribute to the effectiveness of health instruction, and that the demonstration method is the most effective means of teaching in this subject. ¹ This experiment was conducted before the use of films in the classroom had been developed to any great extent, and the films produced were not as effective as they are now. Measurement was based on the development of habits and standards of conduct which were beyond the control of the individual child.

There is also a definite need for research to determine the type of visual aids best adapted to the various units in the instructional program. In a study of clothing only a few points are capable of illustration by the use of a film; the teacher needs other aids in order to make this topic more meaningful to the pupils. The same thing is true in a study of ventilation.

In the use of films it is necessary that the teacher

preview the film before using it in the classroom. If the producer has not provided a teaching guide, the teacher should make her own in order to insure the most effective preparation for the film lesson and to determine the method of follow-up to be used. Notes kept on the film lesson provide a good basis for future use of the material. Where facilities for the projection of slides and opaque material are available, it is sometimes helpful to supplement the film with still pictures, diagrams, charts, et cetera. Questions and outlines projected in this manner also aid in the presentation and fixation of the material in the film. The use of this device naturally requires that the film be previewed before it is used with the children.

Measurement

The problem of measurement in health has not been solved. All lists of objectives contain habits and standards of conduct which are the significant outcomes expected from health instruction and in spite of efforts to use height and weight scales, questionnaires, habit records, and a wide variety of other devices, no valid and reliable measure of health improvement resulting from health teaching has been found. Comparatively little effort has been made to develop standardized tests of health knowledge. Perhaps the Gates-Strang Health Knowledge Test is the most useful test that

has been devised in the field. This test is available in
different forms and has been standardized to some degree.

The Health Awareness Test has been prepared under the
supervision of the American Child Health Association. This
test attempts to measure health awareness and health knowl­
edge, but in ordinary classroom work the test is not satis­
factory.

A health knowledge test is included in both the new
Stanford and the Public School Achievement Tests. These may
be used for survey purposes, but they are limited in scope
and the results obtained are of comparatively little value.

The teacher-made test used as an instructional device
is perhaps the most effective measurement available. These
can be made to suit the needs of the pupils being taught and
the activities that have been carried out. If these tests
are scientifically accurate in the knowledge they propose to
test, they will be of more value than a poorly standardized
test of such outcomes as are looked for in health education
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