Development of a Text on the State of Washington for Fourth Grade Social Studies

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DEVELOPMENT OF A TEXT
ON THE STATE OF WASHINGTON
FOR FOURTH GRADE SOCIAL STUDIES

A Thesis
Presented to
the Graduate Faculty
Central Washington College of Education

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

by
Anne Bruketta Johnson
Patricia Dunlap Smith

May 1957
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INTRODUCTION

The farthest northwest corner of the continent of the United States was the last frontier of this great land. This frontier grew and developed without attracting much attention. The people of this area took themselves, their hardships and their rapid growth as a matter of fact. So the State of Washington emerged from its early struggle for existence a strong and independent state.

Suddenly this young state began to suffer from growing pains. It became aware of itself as a part of a vast nation. Some saw a necessity to inform others about the nature of Washington, and consequently a study of the State of Washington was added to school curriculums.

The authors of this report were made quite conscious of the curricular problem involved when their school social studies curriculum was unexpectedly changed. The new course of study recommended that the study of the State of Washington become the major course in the fourth grade social studies program. As fourth grade teachers the authors soon became fully aware of the lack of appropriate materials available on the State of Washington.

The authors chose as a study for their Master's Thesis "Developing Text Materials on the State of Washington for the Fourth
Grade" with the thought in mind that they could contribute something worthwhile to the curricular area dealing with a study of Washington. The purpose of this report is to show: (1) the research and methods used in organizing a text, (2) how material was collected, (3) organization of this material to prepare text materials, (4) how the materials in unit form were organized to be used in the fourth grade, and (5) one unit of the complete text to illustrate the results of research, material collection and organization.

In making this study the authors limited the problem to the completion of one unit taken from the whole text because it would be too burdensome to include all of the units and their organization within this report. The problem was further limited to geographic concepts on the state rather than historic or world concepts because the authors felt that the greatest contribution of their study was in the geographic field. Materials for the historic and world concepts are relatively easy to find and organize.

The study was divided into eight parts. The first part discusses how the problem was selected and gives an outline of the entire text on the State of Washington, with reasons for choosing only one unit for the study report. The second part is the review of the literature and its application to the problem. The third part shows how conclusions drawn from the literature were applied to the development of the text. The fourth part is concerned with the
collection of materials. The fifth part discusses methods used in the verification of concepts and word lists. The sixth amplifies concepts with material collected. The seventh part is the complete sample unit and the last part includes summary and conclusions.

Concept verification references and page numbers were incorporated into the appendices. The appendices also contain word lists, reference materials that teachers can use with the Cascade unit, books children can use with this unit and an excerpt from the Teacher Preface.
CHAPTER I

THE PROBLEM AND ITS JUSTIFICATION

For many years historians and geographers have neglected the State of Washington, especially in text materials suitable for use at the intermediate grade levels.

At the present time considerable text materials are available to college classes and adult readers. Recently a revised social studies book on the State was re-introduced at the Junior High School level\(^1\) in the Ellensburg Schools. This book, along with supplementary materials,\(^2\) is the basis of the secondary level of study of the State of Washington. Some social studies teachers feel that it is the best available although it does not entirely fill the need.

The shortage of text materials presented the authors with the problem of "Developing Text Materials on the State of Washington for the Fourth Grade" when the Ellensburg Public Schools in which they teach the fourth grade revised the social studies curriculum.

Formerly, the climatic regions of the world were studied

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at the fourth grade level. This was replaced by the study of the State of Washington. The general consensus was that this would be a step forward in the coordination of the whole program throughout the grades. There would be a general progression from the home in the first grade, to the immediate community in the second grade, to the history of the immediate community and the wider community of state and country through the study of pioneers and Indians in the third grade, to a study of the expanding community and state in the fourth grade, to the United States in the fifth grade and then on to the rest of the world.

Principals of the schools informed their teachers during the summer of this change in the curriculum so they could begin gathering materials and organizing units of study. At all other levels the reorganization was not so drastic as there were some text materials, references and graded supplementary books available. But it became evident to the authors of this report that at the fourth grade level there were insufficient materials with which to teach the State of Washington adequately. In their opinion the problem was most acute at this level because there were no supplementary materials or adequate textbooks. They felt that the two texts available would not easily lend themselves to a unit-type study of present-day Washington.

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After a careful analysis of both books it was found that the history book, *Child's Story of Washington*, ⁴ was satisfactory in content but more suitable for third grade than fourth grade. The other available book, *Our Washington*, ⁵ covered the coastal regions adequately, but areas east of the Cascades were not treated completely enough to satisfy the needs of children in this area of eastern Washington. Even its most recent copy (1953) omitted an accounting of the tremendous changes that have taken place in Washington in the past ten years.

The authors of this report felt that the constant change of topics and time within regions made Jones's materials confusing. They felt this would lead to many misconceptions on the part of the children. In teaching Washington they found that concepts that teachers and children felt were important could not be developed without supplementary materials. Since there was not a text nor any supplementary materials to support the major needs of the children toward learning some major concepts of Washington, the authors felt an urgent need to develop new text materials.

Research revealed that in order for a social studies program to be meaningful it should first be in terms of children's general interests and experiences. Then children must be able to

⁴Ibid.
⁵Jones, loc. cit.
read and participate in the social studies program at a particular
grade level. 6 The materials should be such that they can be
organized on a unit basis providing for simple research skills, which
are initiated at this level, and it should provide for individual
differences within the group. 7

In reviewing Our Washington 8 preparatory to using it as
a basic text for the fourth grade the organization of the materials
was found to be confusing. The authors of this report are supported
by Norton in their thinking that the study of the history of an area
should provide the background for the study of the geography of that
area so as to give a clearer understanding of both. 9 These authors
felt that Our Washington did not adequately provide a background of
history for the geography. The authors of this report felt, too, that
it (Our Washington) failed to provide for individual needs and abilities
within a group. They decided more materials were needed.

The problem then became one of finding, collecting, and
organizing new materials. The authors set forth their hypotheses

6 John K. Norton and Margaret Alltucker Norton, Foundations
of Curriculum Building (Boston: Ginn and Company, 1936).

7 Chester T. McNery, The Curriculum (New York: McGraw-

8 Jones, loc. cit.

9 Norton, loc. cit.
as follows: (1) that material on Washington was available, (2) that this material could be organized toward a unit study providing activities necessary for meaningful pupil development, (3) that a text could be so organized as to contribute to a child's growth of understanding of his particular environment, (4) that the text could be developed in a meaningful way, yet be within the grasp of fourth graders, (5) that there was a better way to organize the history and geography to provide for present generalizations through past experiences than that provided by any text reviewed.

The authors of this report selected the survey methods of interviews, questionnaires, observations, and appraisals to resolve their hypotheses. The full text prepared by the authors was organized as follows:

TABLE OF CONTENTS

I. Washington and Our Earth

This section of the text includes an introduction to map study, study of continents, oceans, hemispheres, directions, and world map. It shows Washington's relationship within a continent to the rest of the wide world.

II. History of Washington

This section of the text provides the historical background through a complete discussion of:

A. Indians of Washington
B. White Men Come to Washington
C. Land Expeditions
D. Fur Traders
E. Early Settlers or Early Transportation

III. Geography of Washington

This section of the text provides for an appreciation of present-day Washington through the study of its various parts or regions.

A. Olympic Peninsula
B. Willapa Hills
C. Puget Sound
D. Cascade Mountains
E. Okanogan Highlands
F. Columbia Basin
G. Blue Mountains

This report will be limited to show how material on the Cascade Region was gathered and how this variety of material was used to prepare a unit of study for the text at the fourth grade level. This region was chosen because there was less material available than for any of the other comparable regions.

The authors realized that it would be a tremendous task to collect, verify, organize, write, test, teach, and retest materials for the entire text on the State of Washington at the fourth grade level.
Therefore, this study was limited to gathering, organizing, and writing the material into a text. It was not the purpose of the authors to justify the use of this material. Considering these delimitations the study was organized into eight parts as previously stated in the introduction.

Before presenting the review of literature it is necessary to define certain terms which will be used in a particular way to fit in with the purposes of the study. These definitions will apply wherever these words are used throughout the report.

**Unit.** The term unit implies unity or a whole. There is a unifying force that binds together a phase of instruction to which reference is or can be made. There are degrees of difference in various units, but all units may be classified under one of two major headings. One type of unit concerns itself solely with subject matter; the other type is more concerned with the experience and interest of the learner. For the purpose of this study the unit is defined under the second major heading as a series of worthwhile experiences bound together around some central theme of child interest. The authors consider the text to be the central theme and suggested activities would emphasize child experience and interest. It would be relatively easy for any teacher to fit in the particular interests and experiences of his group into this central theme.

**Material.** In this report reference is made to both material and materials. For this report material is defined as "that from
which a thing is made." It refers to the substance from which the text was written. Material for this report includes such items as brochures (fishing, hunting, camping, ranching and resorts, industrial and agricultural reports, road maps, government pamphlets, and other incidental information.

Thus in each instance material refers to that which was collected, gathered, or needed for the writing of the subject-matter of the text.

**Materials.** The plural form of material is used to refer to published matters already in use, such as textbooks, encyclopedias, and library references.

**Concepts.** Concepts are defined as thoughts or ideas put into words to convey mental images or pictures of what is to be taught. Concepts are used to denote those ideas around which the text was organized. They are used to fulfill a need in the learning process. These concepts are the basis for further elaboration of this learning process.

"Glaciers are ice masses" is a concept upon which would be based a detailed description of glaciers, how they were built, and how they look. This preparation would give the child a vicarious experience with glaciers. It would provide him with a background for mentally seeing a glacier.

A single concept can be developed into a complete word picture of any subject to provide for the learning process.
Integrate. The term integrate, as used in this report, makes reference to the bringing together of parts into the whole.

The joining of words, concepts, and information gathered and collected in parts was reorganized and rewritten to form a complete text. Thus ideas and material were brought together to form a whole.

Visual Aids. Visual aids are instructional materials through which learning is made significant to the learner. They are a powerful means of communication for education, for propaganda or to sway the thoughts and acts of us all. The authors' definition concerns itself with the educational aspects only.

Visual aids used wisely help children learn quickly by showing the basic structure of an idea; by relating abstract ideas to concrete things; by bringing together scattered ideas to form new concepts; by turning ideas into words and by encouraging expression. Visual aids, to be of the greatest possible value to children and teachers, need to be planned carefully.

There are many kinds of visual aids. There are the pictures and illustrations of the textbook. Then there are, also, the charts, graphs, diagrams or maps often found in many textbooks. But there is still a wider field of visual aids. That is the field in which the child and teacher participate directly. This field includes such things as making models, using bulletin boards and chalkboards, slides, strip films, motion picture films, photographs, posters,
cartoons, exhibits, newspapers and dramatizations. These visual aids are not ends in themselves but the means toward achieving a particular learning goal.

Visual aids help children evaluate through better critical thinking. They give children a truer picture of the ideas which they present. They contribute meaningful content to the topic under study.

Activities. Activities are as much a part of the unit as is the subject-matter. The two should be integrated to develop each other. An activity is controlled by the dominant attitude of the child. It cannot go forward without the guidance and aid of subject-matter.

Activities in which children engage should be those that will help them achieve an end they desire to accomplish. They should contribute to the realization of the aims of education. Activities should be considered from the suitability to the physical, mental, and emotional characteristics of the individuals who engage in them. Before any activity is proposed the teacher needs to consider the attitudes children have developed toward activities. Activities should be so organized that children can succeed in them.

There are many kinds of activities to promote learning. Among these are resource people to be invited to a classroom, research, organization and oral reports, written reports and experiments. Visual activities could include field trips, observations, and collecting and identifying items. Creative activities which include modeling, drawing and dramatization work in very nicely
with the other activities mentioned here.

These activities may be engaged in for the purposes of securing information, or to organize and present information, or to facilitate mastery of skills, or to construct or produce material objects. The activities may be organized for creative expression or for recreation. These are all desirable objectives for the use of activities. The authors' definition of activities includes these aims as important to the better understanding and appreciation of the subject-matter materials.

The problem of "How to Develop Text Materials at a Fourth Grade Level for the State of Washington" and its hypotheses were an outgrowth of the lack of materials. In considering this problem the authors of this report were confident that there must be certain basic theories for writing a text. A review of literature was undertaken to find what had been written regarding these theories.
CHAPTER II

REVIEW OF LITERATURE

The literature concerning textbooks, as reviewed in this chapter, has been divided into four categories: first, the need for text materials in teaching; second, activities which enrich the text materials; criteria for selection of text books; and fourth, philosophy of textbook writing.

Need for Text Materials in Teaching

The authors of this report believed that an organized text was necessary for a unified teaching of a subject.

This belief was substantiated by Gwynn's summarization of two authors of recent texts on the teaching of social studies. He stated that the textbook reflects and establishes standards within the curriculum. Its teaching and learning aids affect methods and reflect standards of scholarship. To dispense with the textbook would be foolish. The textbook is necessary to organized teaching. ¹ Gwynn, himself, states that:

Textbooks should be used in the advance planning of curriculum work. Too many teachers rely upon the textbook to do the major part of their work, rather than employing it in the light of its true function—a guide to enrich the curriculum and to stimulate both teacher and

pupil to further exploration. The textbook can be made
the tool which it is intended to be only by means of
preparation in advance by the teacher.  

C. R. Maxwell also thinks that the textbook is an aid in
instruction because it is a convenient means for having at hand
necessary data. It is an aid in instruction because it presents a
definite organization of materials. The textbook should be an aid
in raising problems that supplement the pupils' own experiences.

There are other people responsible for education who
believe that the textbook plays a highly important and necessary part
in the program of all our schools. Modern textbooks are thought of
as a sound program of teaching. Textbooks are viewed as one of the
better ways of disseminating sounder and more effective teaching
procedures, and provide suitable opportunities for pupils to make
themselves increasingly responsible for their own learning.  

It is Caswell's feeling, too, that an important influence on
curriculum development is the textbook. He quotes Suzzalo as

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2Ibid., pp. 218-219.


reporting that the textbook determines the subject matter of the child's experience as well as teaching procedures. It is Caswell's belief that textbooks are the real course of study and that many curriculums are built around the text.

**Activities Enrich the Text Materials**

The authors of this report considered a textbook as extremely important to good teaching, but they felt that the text should suggest educational activities for the children, to enhance the text materials.

McNerney asserted that textbooks serve an important function in modern schools, but only as a source of information and experiences. Teachers today must enrich the curriculum by utilizing field trips and excursions, resource people, and visual aids of all kinds.  

The textbook is extremely valuable if it is used with intelligence to aid learning and teaching. In using the textbook the teacher should keep in mind that the result of learning is the use of knowledge and should plan specific activities and experiences utilizing opportunities and needs in the immediate community.

According to Caswell, education is achieved by participation

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in activities, but all activities are not intellectually desirable. The educational worth of activities is determined by the characteristics of the individual and the nature of the outcomes desired. Activities should be employed as teaching aids or for enrichment of text or a program. Activities should be employed toward the realization of the purposes of the child as well as to the aims of education.

Criteria for Selection of Textbooks

The authors of this report felt that the probability of finding basic criteria for the selection of textbooks would help them develop their own text materials. They assumed that there were certain criteria for the selection of textbooks.

In reporting on what to look for in choosing a textbook, Mellott\(^9\) reiterates that the textbook is an assistant teacher in print. He insists that the textbook, being so important, should certainly be chosen carefully to fulfill a need of the children, teacher, and community. In considering a new textbook these are important factors: (1) organization of materials, (2) content in relationship to children's needs and in relationship to children's growth, (3) a method that suits one's objectives, (4) provides for pupil planning and participation and correlates with other subject fields, (5) illustrations which are good teaching devices, suitable for pupils and plentiful enough so one does not need supplementary picture

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material, and (6) general appearance should be appealing and sturdy.

Contribution of a text depends largely upon teachers' analyzation and study of the textbook and upon the text's relationship to his own teaching problems, relates Alice W. Spieseke in her analyzation of a textbook. She believes it is imperative to know: first, how the book is organized and what it emphasizes; second, is the content alive and vital; fourth, the quantity and quality of the study aids; and fifth, the factual accuracy and reliability of interpretations given in the textbook. She further states that instructional materials should not be limited to a single textbook, but the teacher must know how to capitalize on the strengths of his particular text.

Many men and women interested in textbook selection for the public schools consider that to get a really authoritative evaluation of a textbook it needs to be tried out by the teacher, but it should be used in the manner it was intended to be used by the author. In selecting a book or books the teacher should look first for teaching aims that are in harmony with his own. Once the book is chosen the teacher may need to compromise his program to encompass many of the ideas of the book to help him do a really good teaching job.


Hall-Quest in his review of selecting and judging textbooks, brings to view these important points. Textbooks should have: (1) unity—definite relationship to the whole, (2) definiteness—purpose or problem stated at outset, (3) proportion—unit time allotments, (4) style—wholesome writing, (5) appeal to children—salient qualities, (6) illustrations—attention catching, (7) provisions for teaching—teacher's guide, and (8) mechanical make-up—typography, vocabulary, and design.

Following is a summary of John Clements outline for analyzing textbooks. It is his contention that one should be interested not only in the textbook itself but in items pertaining to the authorship. Such things as purpose for writing the textbook, aims of the text, education of authors, and methods employed by the authors, should be considered. The general nature and organization of the instructional material within the main body of the text should be considered in some length. One should consider aims and influences affecting the nature of the book, organization and arrangement of subject matter, accuracy, illustrative materials as they clarify content, and suitability. Other points to consider are instructional aids and helps included, such as supplementary materials to the text.


13 John A. Clement, Score Sheet for Analysis and Appraisal of Textbooks (Champaign: Garrard Press, 1942), pp. 3-7.
In a study of the readability of a book it was concluded by the authors of that study that there were three factors which affected the readability of any particular material. These factors were: (1) the make-up, organization, and subject matter; (2) the readers' general reading ability, interest and purpose in reading; and (3) the criteria and method used to estimate readability—whether a measure was used for interest, comprehension, or speed of reading.  

Philosophy of Textbook Writing

It was felt by the authors of this report that for a textbook to be an instrument of value to teachers it should be written by persons having both background knowledge of the material to be written and teaching experience within the level for which it is intended.

This opinion was upheld by Charters through his discussion of authorship. He emphasizes the importance of teaching experience with the grade for whom the writing is intended. Furthermore, he stresses the importance of a good background of the factual materials being written.

The American Textbook Publishers contend that a teacher—

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author is one who has a background of experience. He draws upon this teaching background to develop as clearly as possible aims of teaching whether they be to develop skill, understanding, or attitudes or a combination of all three. The teacher-author organizes the content of his textbook systematically according to child behavior, using his experience to determine the sequence of ideas or concepts and the order of skills that are needed for effective teaching. He watches for gaps that may produce misunderstanding. He thinks of his readers, their background and capacity for understanding. He worries about vocabulary and language as a form of communication of ideas between author and pupil. He attempts to make the subject or topic seem important to the pupil as a person. He considers pictures, charts, diagrams, and other visual aids a part of his text materials. Those materials and procedures not used in the book he includes in his suggestions and directions for class activities, additional reading, reports, discussions, field trips, exhibits, dramatizations, and research. The book he writes is a guide to detailed classroom procedures showing teacher and pupil alike what he believes should be done in addition to the reading and discussion of the text--and how it should be done. 16

In summarizing the review of the literature made by the authors for this study it was found that their theories were upheld

by many in the field of education. These basic theories provided the confidence needed by the authors to continue the development of the following investigation.
CHAPTER III

BASIC STEPS IN FORMULATING A TEXTBOOK

This chapter will set forth a discussion of how the authors of this report applied their conclusions drawn from the review of the literature to the development of a text. These are the conclusions which apply to this chapter: (1) text materials are needed in teaching, (2) a text should be built around unit teaching, (3) materials should have organization, and (4) concepts should be within the child's grasp.

One intent of this chapter is to present the Ellensburg Course of Study for the fourth grade with its objectives to show the origin for the ideas upon which they molded their text. Another purpose of this chapter is to show the divisions of the authors' text according to the categories derived from the course of study, unit chosen for development, topic outline of this unit, concept development, and material used in developing the concepts.

To clarify the part that Ellensburg's Course of Study for the fourth grade executed in the development of the authors' text it is well to study the Course in its entirety. The Course of Study is as follows:

I. Early Washington
   A. Washington and the Indian People
      1. theory of Asiatic origin
      2. important tribes, etc.
B. Washington and the Early Explorers
   1. David Thompson
   2. Lewis and Clark, etc.

C. Washington and the Early Settlers

D. Geography of Washington
   1. geology
   2. petrified gingko, etc.

(Washington has every type of land form and climate)

II. Washington Today:

A. Man's ability to make use of the State's resource
   1. How man uses the wild life of the streams, forests, mountains, and plains for his use.
   2. How man has learned to domesticate animals for his use.
   3. How man has learned to cooperate with nature through use of the soil.
   4. How man has learned to use minerals.
   5. How man learned the control of fire.

B. Washington and the Pacific Northwest.

Careful analyzation of this course of study, as previously stated in the second chapter, showed that for this course of study to be meaningful to children it required a better basic text than the one available. The analysis revealed that no major objectives were established. Therefore, it was necessary to establish over-all or
major basic objectives for the course pertaining to the fourth grade before any further steps could be taken to develop text materials that would be meaningful to the children and still accomplish what the authors felt the course of study intended.

These are the major objectives that in the authors' opinion filled the need of the Course of Study: (1) To broaden the concept of distance to include the child's global relationship. (2) To understand their community and state from a historical point of view, and (3) To understand the effects of geography upon their lives and activities. Logically, these three basic objectives guided the authors of this report toward the division of their proposed outline into separate and distinct units within the whole framework.

The framework outline from which the authors worked, then, became: (1) the world, (2) the history, and (3) the geography as they applied it to the understanding and appreciation of Washington. Because of previous experience with the primary grades, as well as the fourth grade, the authors realized that the development of the world and historical understandings would not take as long as developing geographical conceptions. Basically, fourth graders would have some background of experiences in the study of the world through a continuation from the first grade and home to the fourth grade and the state's position with the global reaches. Historical conceptions would have their foundation in the third grade through their study of Pioneers and Indians. Materials were readily
available for the study of the global concepts. There was a wealth
of historical materials available at an adult or secondary level
which could be developed for use at a fourth grade reading level.

It was apparent to the authors that a great deal of time
would have to be devoted to the development of the geographic
concepts because there was a dearth of materials at anything but an
adult level. For this reason, the authors chose for this study to
demonstrate how to collect and develop text materials on the geography
of Washington.

In considering the geography of Washington the authors
studied many types of maps trying to find a desirable break-down of
the state to fit a unit-type text. Through their study of these maps
and the study of the geology of Washington they decided the most
logical development of the geographic concepts would be to divide the
geoGRAPHY of the state into its seven natural geographic regions.
These seven natural geographic regions are: (1) Olympic Peninsula,
(2) Willapa Hills, (3) Puget Sound, (4) Cascade Range, (5) Okanogan
Highlands, (6) Columbia Basin, and (7) Blue Mountains.

Considering these seven regions it was found that
material on all the geographic regions would be too cumbersome
to include in this report. Therefore, the decision was made to
develop in full only the Cascade region. This choice was made
because the Cascade region is comparable in size and in importance
to other regions, yet there was less material available. As the
study progressed it was felt that the usable literature did not right-
fully treat the Cascades as to their importance to the whole state.

The dissertation in Chapters four, five, and six establishes
the same general procedures followed in assembling the other
regions. The first step was to consider the question of what should
be taught to the children about these regions. This question was
given careful consideration.

Through previous teaching experience in the fourth grade
where climatic regions of the world were taught, the interest of the
children and topics considered important by social studies authorities
were understood by the authors of this report. In reviewing these
social studies books at the fourth grade level, the topics found occurring
most frequently were: (1) description of differences and similarities
of various climatic regions, (2) brief descriptions of people--their
life, work, play, and forms of transportation.

To help form a better understanding of how the basic
topics were formulated from the generalizations of all social studies
textbooks reviewed an example is cited from Friends Near and Far
by Meyer, Sorenson, and McIntire.¹ In their unit on the hot, wet
lands entitled "Pimwe, Jungle Boy" they covered the following
specific topics: (1) The Great Forest, (2) The River, (3) The Village,
(4) Pimwe's Family at Home, (5) Doing a Day's Work, (6) The

¹J. G. Meyer, Frank E. Sorenson, and Alta McIntire,
Weather, (7) Learning to Hunt (plants and animals), and (8) White Traders (trading with other people).  

This was the general format followed in the succeeding units of *Friends Near and Far*. Other social studies books follow a similar pattern of topic choices. For the purpose of the text on Washington like topics were adapted and applied to that text.

The decision was made that in the final analysis certain topics must be taught, through a central theme, if the children are to understand and appreciate their state and its relative position in the world. The topics listed are in specific reference to the Cascade Region, but the same general outline with the exception of number one was used for all other regions. The topics chosen for this outline are: (1) the Cascades as a watershed, (2) climate, (3) physical features, (4) animals, (5) plants, (6) ways people make a living, and (7) recreation. Further development of the outline became the logical organization of the major topics into a sequential order for a unit.

Before presenting the topic outline and concepts it is well to show here how the concepts were chosen to fit the various topics. Since the Cascade region is under consideration in this report the mountainous regions concepts will be discussed.

Under the topical outline of Physical Features the concept "A mountain range is different from a mountain peak" was established

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through a similar concept in *Living Together Around the World* by Cutright, Charters, and Clark. In their unit "Where Tall Mountains Tower" on page 54 they quote how "peaks were part of the great range of mountains called Andes."

This is only one sample out of one social studies text at the fourth grade level. Other texts had similar reference to mountain peaks being part of a range. There seemed to be an established acceptance of this concept, so the concept was used as part of the text on Washington in the Cascade region unit. The other concepts for the text were established through the same method.

The sequential order of the topic outline including the concepts chosen to be developed under each topic is as follows:

I. Physical Features
   A. A mountain range is different from a mountain peak.
   B. Mountain ranges are made up of many peaks.
   C. Mountains can be formed by uplifting.
   D. Mountains and peaks can be formed by volcanoes.
   E. Glaciers help form valleys of mountain ranges.
   F. Glaciers are ice masses.
   G. Rivers help form valleys.

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H. Peaks are of different heights.

II. Climate
   A. Altitudes affect temperature.
   B. Mountains affect climatic conditions on either side of the mountains.
   C. Mountains affect rainfall.

III. Ways People Earn a Living
   A. Natural resources provide a source of income.
   B. Valleys provide fertile lands for agriculture.
   C. Economy is affected by highways.

IV. The Cascades as a Watershed
   A. Mountains store snow.
   B. Snow provides water.
   C. Water run-off feeds streams.
   D. Streams become rivers.
   E. Balanced plant and animal life conserves water.
   F. Dams help conserve water.
   G. Lakes store water.
   H. Water is necessary to man's livelihood.

V. Plants
   A. Plants retain water.
   B. Plants provide food for animals.
   C. Plants add beauty.
   D. Plants are useful to man.
   E. Life zones determine plant life.
VI. Animals

A. Animals help control vegetation.
B. Animals provide a form of recreation.
C. Certain animals control animal population.
D. Life zones determine animal life.
E. Animals add beauty.
F. Animal life depends upon plant life.

VII. Recreation

A. Mountain recreation attracts tourists.
B. Natural resources of mountains provide many types of recreation.
C. Mountains provide for exploration of natural beauty.
D. Highway passes make mountain recreation accessible.

After the concepts were selected an intense search was made through libraries and references for material with which to build and expand these concepts. Except for common information on various animals there was no material readily accessible on any of the proposed concepts as they applied to Washington. It was quite evident that information would have to be obtained from new and different sources. But before any new material could be used it was necessary to verify concepts and word lists to be used in the text.
CHAPTER IV

VERIFICATION OF CONCEPTS AND WORDS

FOR THE FOURTH GRADE

Once the framework of the textbook was outlined the problem of "How to Verify Concepts and Word Lists for a Textbook at the Fourth Grade" confronted the authors of this report. This chapter will show how the need for concepts and word lists was established. It will further explain how these concepts and word lists were verified for their use at the fourth grade level. Through their verification they were developed into a sequential order for use in the text.

According to Wesley¹ each field and subject has need of concepts which differ from those of other fields and subjects; therefore, a large number of specialized vocabularies are needed. Because social studies is a separate and distinct field it needs its own vocabulary. In order for a social studies text to be meaningful, its reading vocabulary and concepts can be based on verified graded word lists and concepts only to a certain point. At this point a

diversion must be made to the words and concepts peculiar to the social studies field to make the material authentic and meaningful. Each word and concept is used for building a common basis for understanding between teacher, pupil, and community.

The authors of this report agree with Wesley\(^2\) that, when developing social concepts, there are certain principles which should be kept in mind. Each concept should be an identification of experience. The pupil should have some basic experiences with which to identify the concept. The concepts should always be used before being defined or explained. It needs to be used in context before it should be singled out for attention and study. Each concept should be developed in ascending levels of difficulty or widening areas of inclusiveness. The feeling was that in following these three principles in the text, with little difficulty children could build rich and significant concepts.

With the preceding principles in mind, the decision was made to review the outstanding social studies and science books at the fourth grade level to determine the validity of the extent of difficulty for the major concepts that were being considered. When considering the concepts for the Cascade Region, all materials pertaining to plants, animals, and mountainous regions of the world were carefully studied. Once the authors had a general knowledge of

\(^2\)Ibid.
what was covered by these social studies and science books they
took the concept outline and began a diligent search for verification
of the concepts. This search led to the discovery of the same or
similar concepts in at least one social studies or science book.
Many of these concepts were verified by two or more sources.
Those concepts which could not be verified by at least one source
were not developed as major concepts within the text.

These are the books that were used to verify the concepts:

1. Beauchamp, Wilbur L., *Discovering Our World*
2. Beauchamp, Wilbur L., *Science Stories*
3. Carpenter, Francis, *Children of Our World*
5. Cutright, Prudence, *Living Together Around the World*
6. McConnell, W. R., *Geography of Many Lands*
8. Schneider, Herman and Nina, *Science in Your Life*
10. Stull, De Forest, *Journeys Through Many Lands*

Following is an outline presenting the concepts as they
were verified. Notations state the number of verifications for
specific concepts. Those not verified are also listed and noted.

I. Physical Features

A. A mountain range is different from a mountain peak.
   (verified—2)

B. Mountain ranges are made up of many peaks.
   (verified—3)
C. Mountains can be formed by uplifting.  (verified−1)
D. Mountains and peaks can be formed by volcanoes.  (verified−2)
E. Glaciers help form valleys of mountain ranges.  (verified−1)
F. Glaciers are ice masses.  (verified−2)
G. Rivers help form valleys.  (verified−2)
H. Peaks are of different heights.  (verified−2)

II. Climate
A. Altitudes affect temperature.  (verified−2)
B. Mountains affect climatic conditions on either side.  (verified−3)
C. Mountains affect rainfall.  (verified−1)

III. Ways People Earn a Living
A. Natural resources provide a source of income.  (verified−2)
B. Valleys provide fertile lands for agriculture.  (verified−2)
C. Economy is affected by highways.  (verified−1)

IV. The Cascades as a Watershed
A. Mountains store snow.  (verified−2)
B. Snow provides water.  (verified−2)
C. Water run-off feeds streams.  (verified−1)
D. Streams become rivers.  (verified−0)
E. Balanced plant and animal life conserve water.  (verified−0)
F. Dams help conserve water.  (verified−1)
G. Lakes store water. (verified--1)
H. Water is necessary to man's livelihood. (verified--1)

V. Plants
A. Plants retain water. (verified--1)
B. Plants provide food for animals. (verified--1)
C. Plants add beauty. (verified--0)
D. Plants are useful to man. (verified--1)
E. Life zones determine plant life. (verified--2)

VI. Animals
A. Animals help control vegetation. (verified--1)
B. Animals provide a form of recreation. (verified--0)
C. Certain animals control animal population. (verified--1)
D. Life zones determine animal life. (verified--0)
E. Animals add beauty. (verified--0)
F. Animal life depends upon plant life. (verified--2)

VII. Recreation
A. Mountain recreation attracts tourists. (verified--2)
B. Natural resources of mountains provide many types
   of recreation. (verified--2)
C. Mountains provide for exploration of natural beauties. (verified--2)
D. Highway passes make mountain recreation accessible. (verified--2)

In considering the writing of text for the fourth grade the
authors of this report were aware of the necessity of the readability
of written material. An extended research revealed that most
authors agreed materials should be written at the child's level of
understanding whatever his grade. There was a great divergence
of opinion as to the extent of usage for a word list. From Dale’s book on
*Readability* the authors of this report gathered that a
vocabulary list was a necessary means used for determining
readability. However, Dolch emphasized that over and above the
word list special subjects have special vocabularies and these are
usually considered a matter of curriculum planning rather than a
matter of readability. He further states that there is an obvious need
for readable books in specialized fields, but that readable in a special
field must mean readable after some guided teaching.

The need for a word list was established before research
was instituted to determine an acceptable word list upon which to base
the material. To gain some knowledge as to the type of words used
and the average number of new words introduced in reading books over
and above a graded word list the authors of this report compared five
fourth grade readers whose authors are considered among the best
authorities on reading.

It was found that there was a great variance in the number

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of new words introduced per page as well as per book by each author. For example, Bond and Cuddy in Lyons and Carnahan's book *Meeting New Friends* introduced 645 new words while Gray and others in Scott Foresman's *The New Times and Places* introduced only 450. Hildreth and others in John C. Winston's book *Today and Tomorrow* with 535 new words and Russell and others in Ginn's book *Roads to Everywhere* with 694 new words presented quite a contrast to Yoakam and others in Laidlaw's book *On the Trail of Adventure* with only 272.

The average number of words introduced in these five books was about 519 words per book. With such great deviation among basic reading series the authors of this report concluded that there was no real criteria for the number of new words that could be introduced. The decision was then made to keep the number of new words introduced to a minimum using words to communicate the concepts desirable to a social studies text.

Not only was there a wide variance in the number of words per book, but the new words listed were even more diversified. Perhaps all these books had a basic word list common to all for the context of their stories, but their new words were as diversified as the subject-matter in each reader.

The authors of this report felt that the body of the text on Washington should be based on a graded word list; that these new words could be introduced without the hindrance of a rigid listing. Therefore, since neither readers nor social studies books offered any logical solution toward the compilation of a basic word listing,
these authors decided that Durrell's list would more than fill their needs. Durrell's lists were supplemented with words common to Washington and with proper names needed for the text.

In using the Durrell list his method of compiling this list was given careful thought and consideration. Durrell's remedial-reading vocabulary for primary grades was based on the common frequency of usage in the Faucett-Maki list. He checked this against the International Kindergarten Union list and Fitzgerald list in order to make sure that the words in the final list were known and used by children. His lists for the fourth grade were not compiled in the same manner.

The Durrell-Sullivan reading vocabulary for the fourth grade was based on a study of some seventeen fourth grade books. They selected for their study reading series and social studies books, with a few books in natural science. Although basal readers predominated, social-studies books were included because Durrell-Sullivan felt that under the present curriculum, social-studies work provides a large part of the reading program.

When Durrell-Sullivan compiled their list for the fourth grade, only words which did not appear in the Gates Primary list were recorded. Their final list includes words which appeared in seven or more books in the fourth grade. Instead of using a total

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frequency count, they found it more desirable to use words on the basis of one or more appearances in each of seven books.

The word list to be used in writing the text on Washington at the fourth grade level, as taken from Durrell's book, can be found in Appendix A.

The concepts that were verified by one or more sources would be used as major concepts, whereas those not verified would be used as minor concepts. With the aid of the Durrell-Sullivan word lists and Durrell's primary word lists these concepts would be developed and amplified for the text on Washington. How thoroughly these concepts could be developed would depend on the collection of material on the State of Washington.
CHAPTER V

COLLECTING MATERIAL

In considering their problem on how to collect material in preparation for writing a unit of study on the State of Washington the authors of this report believed that (1) there was material available from many sources, and (2) that this material could be collected inexpensively. This chapter will develop in detail the processes used in obtaining the information pertaining to the geographic concept of the State of Washington and discuss the types and content of material collected. Because such a volume of material was collected for the entire state of Washington, the authors of this report thought it advisable to consider in detail only material pertinent to the Cascade Region. This region will be developed in detail throughout the report. References for material on all other regions can be obtained through the sources which will be discussed in this chapter.

In considering how to gather material and use this material to prepare a unit of study it was first necessary to set up some key concepts. The major concepts are divided into three categories: The World Concept; The Historical Concept; and the Geographic Concept.

In the World Concept the primary objective was to establish the relationship of the child and his immediate environment to the whole world. When the World Concept was established the historical background was provided through: (a) developing an understanding of
historical background of Washington; (b) developing appreciation for this early development of Washington; and (c) developing background of understanding of the people and their work in the State.

In establishing the geographic concept it was necessary to develop the following conceptions within the geographic regions of the state; (a) relationship of climate to industrial development; (b) relationship of population development to industry; and (c) relationship of geographical location to population.

These concepts, however, were all subordinated to the major concept of developing an attitude of appreciation and understanding for the whole State of Washington. Facts were considered important only in the manner in which they promoted a desirable attitude toward the state and its people.

As the research for detailed geographic facts on the State of Washington was instituted, it was found that there was a dearth of factual resource materials at either the adult or child's level to which reference could be made. The necessity to rely on a different type of material then became apparent.

The first technique employed in gathering materials for the unit on the State of Washington was that of writing a questionnaire type of letter which was informal enough to give the recipient freedom of reply. It was not deemed wise to expect direct answers to the questions asked, so this informal approach was used to encourage the forwarding of all types of material.
The following is a general format of the type of letter used. This letter form was varied to fit the type of information being requested and the source to which it was sent.

Ellensburg, Washington

Inside Address

Dear Sirs:

We are teaching fourth grade at Washington Elementary School in Ellensburg, Washington. We are preparing a unit of study on the State of Washington for the fourth grade children. We would like any information that you could forward to us about your city and the surrounding area.

We are particularly interested in having the following questions answered for us:

- In what geographic region do you consider your community?
- What type of climate is prevalent in your area?
- What industries do you consider important to your present and future development?
- How do these industries affect the population growth?
- What part does recreation play in attracting people to your community?

Any other information you feel is pertinent to a thorough understanding of your particular community would be appreciated.

We thank you for your prompt attention to this letter.
If there is any cost to the materials, please let us know and we will be happy to cover any of these costs.

Sincerely yours,

Signature

At this point it should be brought out that all letters were either typed or written in long hand. There were no form dittoed or mimeographed letters sent. Whenever material was received that involved a good deal of expense to the sender, thank you letters were written. The better responses came from letters typed on stationery with the official school letterhead.

The following are the addresses used to secure information on the Cascade Region:

Chambers of Commerce:

Cle Elum, Washington
Holden, Washington
Index, Washington
Morton, Washington
North Bend, Washington
Roslyn, Washington

Miscellaneous:

American Forest Products, Inc.
1816 North Street N.W.
Washington 6, D. C.

Crown Zellerbach
343 Sansome Street
San Francisco, California
While awaiting responses to letters sent to the aforementioned sources the authors began a search for other sources of material on the Cascade Region. As a result of the research, these are the things they found to be pertinent to the unit.
This material did not completely fill the needs so a third device was employed—that of interviews. Some of the interviews were by informal letter, some by telephone, and some through personal contact. For personal reasons the names of the people interviewed cannot be included here. Any of the addresses listed under the letter will provide names of qualified people for such interviews. The people contacted for the Cascade Region were forest rangers,
conservation personnel, cattle ranchers, and teachers familiar with characteristics of the region.

The authors conducted these informal interviews seeking answers to the following questions:

What is the value of the Cascade Range to the rest of the State?

Of what importance is the lumbering industry in the Cascade Range?

Is mining of great importance here? What kinds of mining are done in the Cascades? Where are these mines located?

Is there anything of importance here beside lumbering and mining?

What part does recreation play in the value of the Cascades to the rest of the State?

Describe the specific locale in which you have worked or lived.

After the interviews were recorded and written up, the statements made were verified through letters that came in from the Chambers of Commerce, news articles, and reference books that were available. Further verification came from all these materials, through a fourth device employed in the authors' research. This device of personal observation employed aerial trips over the Cascades, automobile trips through the Cascades, photographs and paintings of the Cascades. This device of personal observation from many angles aided in clarifying and crystallizing the many facts and material that were gleaned through the other devices.

Eighteen letters were sent to the various sections of the Cascades. All letters were acknowledged with the exception of two. Where there was no Chamber of Commerce, such as Index, Washington,
an interested individual answered the letter. In response to these letters, the following material was received:

**American Forest Products:**

1. "The Story of Lumber and Allied Products" (pamphlet)
2. "Products of American Forests" (wall chart)

**Cle Elum:**

1. Upper Kittitas County recreation brochure (fishing, hunting, camping, dude ranching, and resorts)
2. Cle Elum Recreation Center of Upper Kittitas County brochure (recreation of the area—industries of the area—culture and brief history of Cle Elum)

**Holden, Washington**

1. "Holden Mine, Largest Copper Producer in the Northwest." A Howe Sound Company, Chelan Division, booklet discusses the city of Holden and shows the mine.
2. "On Tour" booklet discusses all phases of copper mining.

**Index, Washington**

An interested resident (the City Recorder) wrote a very factual letter telling of the granite mined there—sent photographs of the area.

**Morton, Washington**

There was no Chamber of Commerce there. Lewis W. Thompson, an interested resident replied, giving mining, lumbering, and beef cattle ranch information. He gave addresses where further information on this area could be obtained.
North Bend, Washington

There was no response from North Bend at the time of the writing of this report.

Roslyn, Washington

Roslyn did not respond.

Crown Zellerbach

1. "Growing Paper on Tree Farms" booklet describes tree farming from beginning to the end product.

Rainier National Park Commission

1. "America's Mountain Glacier Wonderland" booklet of colored photographs of Mount Rainier National Park ($1.00)

2. National Park Map 22" x 35" showing glaciers ($0.75)

United States Department of Interior

1. "Mount Rainier National Park" booklet describing how the Cascades came into existence; life zones of Mount Rainier, naming plants and animals common to these life zones; recreation facilities in the park.

Advertising Commission

1. "Let's Go to Washington State" booklet included tourist information for the entire state.

Institute of Agricultural Sciences

1. "Trees of Washington" an extension bulletin #440 told all about trees and where they are found.

Parks Commission

1. Official guide maps

2. State Parks map
The first hypothesis stated earlier in this chapter was that there was material available from many sources. Although this area was found to have the least available sources to draw on, the material from the recipients of the letters were thorough in their coverage of this area.

The second hypothesis was that this material could be collected inexpensively. The only direct expense incurred was that
of mailing letters to the addresses listed in this chapter and the purchase of one map and booklet totalling $2.72. The expense of airplane and automobile trips was not figured in the cost of material because these were considered recreational as well as informative trips.

With this material a beginning could be made in developing a unit of study at the fourth grade level on the Cascade Mountains. Any new material that might be available after the completion of the unit would be used for supplementary material. Now began the tremendous task of integrating concepts and material.
CHAPTER VI

INTEGRATING MATERIAL WITH CONCEPTS

After the material was collected and the concepts were organized and verified, the problem arose as to the best method to use these materials to amplify the concepts. It will be shown here how materials and concepts were integrated, how the central theme was developed, how the factual material was integrated with the central theme, and how activities are used to enrich the text.

As the material arrived in answer to the letters sent out, it was carefully read to see if there was any information of value. The usable material was filed and that which did not pertain to any of the concepts was discarded. From the usable file, smaller files were set up according to the topic outline of: (a) physical features, (b) climate, (c) ways people earn a living, (d) Cascade as a watershed, (e) plants, (f) animals, and (g) recreation. A miscellaneous file was organized for material that could be used for possible reference but did not directly apply to any of the major topics. Beside the miscellaneous file, two others were considered important: (1) a question file, and (2) an activity file. The question file was to receive any and all questions which could not be answered by the material at hand. They were questions considered important by the authors—important enough for the answer to be sought out elsewhere. Here, too, were kept facts that were questionable as to validity. In
THE SWITZERLAND OF WASHINGTON

I. Physical Features

A. Cascade Range Formation

1. The range was formed by uplift out of the sea.

2. The range and peaks were formed by volcanoes.

3. Glaciers shaped the mountains through erosion.
   a. great ice mass
   b. moves slowly
   c. forms u-shaped valleys
   d. break-up rocks
   e. twenty-six active glaciers on Mount Rainier
   f. river sources

4. Rivers help shape mountains
   a. cut away rocks
   b. form v-shaped valleys
   c. carry away top soil

II. Climate

A. The western slopes are very wet and warm.
   1. Westerly winds bring in moisture from the ocean.
   2. Damp climate and vegetation keep climate warm.

B. The top of the mountains are cold with snow in the winter--cool with some snow in summer.
   1. High altitude affects the temperature.
2. The westerly winds carry moisture to this high altitude and it changes to snow in winter.

C. Eastern slopes of the Cascades are usually quite dry.

1. The mountains cut off the moisture-bearing winds.

III. Ways people earn a living.

A. Minerals are found in the mountains.

1. Roslyn--coal mining
2. Holden--copper mining
3. Index--granite quarrying
4. Morton--cinnabar mining

B. The forest provides logging and lumbering occupations.

C. Fertile valleys encourage farming and dairying.

1. Orchards
2. Potato raising
3. Cattle raising

D. Natural beauty attracts tourist income.

VI. The Cascades as a watershed.

A. The amount of snowfall determines the amount of water available for use by the people on either side of the Cascades.

1. The snow is valuable.

   a. It provides water.
   b. Water run-off feeds streams
   c. Streams become rivers.
2. Mountains store water to be released when needed.
   a. They store it through a balanced plant life.
   b. They store it through a balanced animal life.
   c. Natural lakes store water.
   d. Man helps to store water by building dams to form lakes.

V. Plants

A. Of the forest life zone
   1. Trillium
   2. Canadian Dogwood
   3. Sitka Spruce
   4. Western Red Cedar
   5. and others

B. Of the meadow life zone
   1. Indian paint brush
   2. Avalanche Lily
   3. Lupine
   4. Noble Fir
   5. and others

C. Of the ice and snow life zone
   1. Red and White Heather
   2. Alpine Fir
   3. and others
VI. Animals

A. Of the forest life zone

1. Raccoon
2. Porcupine
3. Beaver
4. Trout
5. Kingfisher
6. Oregon Jay (camp robber)
7. and others

B. Of the meadow life zone

1. Chipmunk
2. Cougar
3. White-headed woodpecker
4. Stellar Jay
5. and others

C. Of ice and snow life zone

1. Goat (mountain)
2. Eagle
3. and others

VIII. Recreation

A. Parks

1. National
   a. Mount Rainier
2. State
   a. Conconully
   b. Lake Chelan
   c. Brooks Memorial

B. Things people can do
   1. Sight-seeing
   2. Skiing
   3. Photography
   4. Mountain climbing
   5. Hiking
   6. Camping
   7. Fishing
   8. Hunting
   9. Swimming

The first draft of material written from this outline was written in adult language to systematize the factual material. Once the material was systematized a central theme of interest to fourth grade children was then developed.

Once the topic outline with the concepts was decided upon the authors of this report pulled from the physical feature file all material pertaining to the formation of the Cascades. Using this material, they amplified their concepts to form a basic idea. This idea was verified by one or two other recognized authorities. Herein is cited an example of this procedure.
In amplifying the concept "The Cascade range and peaks were formed by volcanoes" the National Park Service pamphlet *Mount Rainier--Washington* was used as one of the sources. This pamphlet stated:

After the Cascade Mountain Range was uplifted and considerably dissected, local eruption occurred, which resulted in the building of individual cones rising thousands of feet above it. Of these, Mount Rainier is the highest and grandest of the series which, within the United States, extends from Mount Baker in northern Washington to Lassen Peak in northern California.

Fuller in his book, *A History of the Pacific Northwest*, 1 was one of the authorities used to verify this concept with the use of his statement:

The Cascades extend from Mount Lassen in northern California (an active volcano) to the Frazer river. In Washington, there are four volcanic peaks, Ranier (14,408 feet), Adams (12,307), St. Helens (9,697), and Baker (10,730), which have risen high above an elevated mass of older rocks. This plateau has an average elevation of five thousand feet.

The concept was further verified through Freeman's book, *The Pacific Northwest*. 2 He stated that:

Above their undulating surface the Cascades are surmounted by a line of young volcanic peaks, the highest of which are Rainier (14,420) and Adams (12,307), with several others that exceed 10,000 feet in elevation. The Pacific Coast Range of Canada is essentially an extension northward into Alaska of the Cascade Range.

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but these mountains consist mainly of granite and other old rocks throughout their extent in British Columbia, except for some recent volcanoes north of Vancouver. Not until Alaska is reached do volcanic peaks again become numerous.

Volcanic cones in all stages of dissection can be seen in the Cascade Range from the nearly perfect and young cones of Mt. St. Helens and the South Sister to the completely beheaded one of Mt. Mazama (Crater Lake).

When the fact that volcanoes were responsible for the latter stages of the formation of the Cascades was verified, the following material was written:

The Cascades look so rugged because of the line of young volcanic peaks, which rise above them. Mount Rainier rising 14,408 feet above sea level is one of these volcanic peaks. There are a whole string of them in Washington stretching from Mount Baker in the north to Mount St. Helens in the south.

According to geologists the Cascades were first uplifted. The uplifted plateau was covered by lava flows that came from fissures in the ground. This was dissected and eroded by wind, water from many rivers. Above this dissected plateau the violent explosions of many volcanoes formed or built up peaks. These peaks form the backbone of the Cascades. Not all the peaks of the Cascades are volcanic.

This first draft was rewritten after the central theme and the vehicle for carrying through the central theme were decided upon. The following is the same concept written for the fourth grade text:

Mr. Brown is explaining to his young son Tommy how the Cascades were formed. He has already told him the first part and is now telling him about the volcanoes:

"The rivers had cut up much of this land when suddenly volcanoes blew lava, dust, and rocks out of the earth. These volcanoes built high cones. Smaller cones
were built inside the larger cones. Some smaller cones erupted on the outside of larger cones, thus causing more peaks. These volcanoes built up the main peaks in the Cascade Range," said Mr. Brown.

"How long did it take for Mount Rainier to be built?" asked Anne.

"It took all the mountain peaks thousands of years to build up. Mount Rainier is the tallest volcanic peak in this mountain range. It must have taken it a long time to grow to 14,408 feet," answered Mr. Brown.

"Are there other volcanic peaks in the Cascades, Dad?" asked Tommy.

"If you and Anne will come over to this wall map I'll answer your question and then we will have to go if we are going to see any of this from the air. You see on this map that the Cascade Range of Mountains stretches from north to south. It even goes into Oregon. These mountains are wider at the northern end and slowly get very narrow toward the southern end. Here in the south we have two volcanic peaks, Mount St. Helens (9,697 feet) and Mount Adams (12,470 feet). As we move northward we find our own Mount Rainier (14,408 feet), the tallest of them all. Still further north Glacier Peak (10,436 feet) and Mount Baker (10,827 feet) finish the chain of volcanic peaks in the Washington Cascades," replied Mr. Brown.

To find a central theme of interest at the maturity level of fourth graders a thorough investigation was made of fourth grade readers and social studies books to verify the frequency of a particular theme. Two interesting facts were discovered. One fact was that the theme of conservation centered around Smokey, the bear, or around a junior or senior forest ranger was sufficiently frequent to warrant a use of this theme in a textbook. It was further noted that most of these books included adults as well as two or more boys and girls of fourth grade age to carry the theme through the story or unit. Merry and Merry further substantiated these ideas when they discussed the
maturity interest of children as being centered around the more social and outdoor type of activity. The children still need the assurance of the presence of an adult, but wish the freedom of exploration and of discovering new ideas with each other. 3

With these facts to give basis to a choice of a central theme a family whose father was a forest ranger was chosen to carry out the thread of the story. The story was to be based on conservation throughout the state. Once the central theme and the vehicle for carrying through this central theme were decided upon, the authors of this report drew upon their classroom experience with fourth graders to furnish them the inspiration for writing for this grade level.

Dale feels that far the better method of approach to the writing of any material for any grade level is for the author to become acquainted with his audience first to gain a feeling for their language, and their interests. Several visits to the classroom are necessary until he acquires this feeling. The author then writes for this audience. When his story is completed he checks his story with a word list at the grade level for which he has written. 4


The authors of this report wrote their material to interest the fourth grade children. They then checked the word list, but tried not to sacrifice important factual material to word listing. In an instructional program at the fourth grade level it is wise to encourage the child to use a dictionary or other reference to define unknown words. This was the intent on the part of the authors that children should be encouraged to use the glossary, dictionary, or other sources to aid in understanding words which are common to a social studies field, but not always common to a straight reading program. At the end of the Cascade region unit the new words introduced in that chapter which were not on the word list but were vital to the better understanding of geographic learnings were counted and enumerated. These words can be found in Appendix F.

In order to fully complete the unit, activities were included within the text of the material wherever they applied or could be suggested, but there were many other activities that the authors felt would help the child and teacher substantiate the knowledge gained from the subject-matter. Careful investigation of social studies books used to verify the concepts showed that activity was a necessary part of a unit. Most social studies books limited the number of activities and kept them at the child's interest and maturity level.

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The authors did not agree entirely as to the purpose of the activities included in most of the social studies books which were investigated. The disagreement with these books arose because through the authors' interpretation of the activities in the social studies books it was found that these activities for the most part referred the child directly back to the subject-matter within the text. This prevalent use of activity did not coincide with the authors' definition of activity. Therefore, in the authors' text material, activities were suggested which would encourage the child to draw upon other sources to contribute to the realization of their aims.

Although in most social studies books all of the activities were included at the end of units there is a feeling among teachers that further suggestions could be made briefly in another part of the text.

Since Wesley\(^6\) questions whether some of the teaching aids are used extensively enough to justify their inclusion in the body of the text, the authors decided to add a preface to their text. This preface contains additional activities, film strips, and educational films, teacher reference books and further reference books for children. The preface excerpt on the Cascade region is included in this report in Appendix E.

When the concepts and word lists were verified, the

concepts and collected material integrated, the central theme and carrying vehicle decided upon, the actual writing then took place with the fourth grade child in mind. Upon the completion of the writing the authors carefully checked the manuscript against the graded word list to insure the minimum use of unfamiliar words. The following chapter contains the outcome of this procedure with the sample unit of the Cascade Region entitled "The Switzerland of Washington."
CHAPTER VII

COMPLETE UNIT STUDY OF THE CASCADE MOUNTAINS

The whole unit on the Cascade Mountains, which is taken from the total text, is included as part of this report. This unit is included here to establish the premise that the methods, as discussed in the previous chapters and as proposed by the authors of this report, for the writing of a text on the State of Washington at the fourth grade level could produce a text. It would have been too cumbersome to produce the complete text on the State of Washington in this report.

In presenting this unit on the Cascade Mountains it was not possible to include actual photographs and maps which will be included in the final publication. The placement of these will be indicated by captioned spaces.

Where line drawn diagrams could be used they were inserted.

Before the Cascade Mountains unit was written the central theme of conservation in the State of Washington was established. Around this theme live the Brown family consisting of Mr. and Mrs. Brown and their two children, Tommy and Anne. They have lived at a ranger station in the Mount Rainier area for several years. The family own a helicopter they affectionately call "Whirly." The children like to communicate with their grandmother to tell her of their many experiences.
Previous units written around the theme of conservation with the Brown family as the main characters were about the Olympic Peninsula Region, the Willapa Hills Region, and the Puget Sound Region. Those units following the Cascade Mountain Region and using the same theme and main characters are the Okanogan Highlands Region, the Columbia Basin Region, and the Blue Mountains Region.
THE SWITZERLAND OF WASHINGTON

HOW THE MOUNTAINS WERE FORMED

The early morning sunlight touched the snow-clad peak of Mount Rainier before Tommy woke up to find his sister Anne all dressed standing by his bed shaking him.

"What's the matter?" asked Tommy.

"Don't you remember?" said Anne. "Daddy is going to take us in the helicopter to see Mount Rainier and parts of the rest of the Cascades today."

"How could I have forgotten?" shouted nine-year-old Tommy as he jumped out of bed. "I've been waiting a long time for today."

"Hurry and get dressed. I'm going downstairs to eat. We are leaving in half an hour," said Anne, leaving the room.

At breakfast Mrs. Brown, their mother, told them about the lunch she had packed for them. She asked if they had any idea what they were going to see.

"Sure we do," said Tommy. "Haven't we lived at this Ranger Station long enough to know how Mount Rainier and the Cascades look?"

"I am sure Tommy is going to be quite surprised to see how these mountains look from the air," said Mrs. Brown smiling. "I think you should tell them a little about how they were formed before you
take them up, John. We haven't told them very much about these mountains."

"You are right, Mother. Tommy, do you know how mountains are formed or built up?" asked Mr. Brown.

"Well, I know how the Olympic Mountains were made. You told us about them last summer when we flew over them to see the Williams family. I know they are different from the way the Willapa Hills were formed. Are the Cascades different from those?" said Tommy.

"The Cascades, like the Olympics and the Willapas were first uplifted. Like the Olympics and the Willapas there was a long, long time when the whole land was flat and part of the sea. For many, many thousands of years the ocean brought in sand. This sand was built up into many layers. These layers spread over a large area.

"In the southern part of the Cascades, the layers of sand were covered by lava that flowed over this area as well as over the land east of the Cascades. In the north, the sand layers were not covered by flowing lava. These layers of sand in the north, and the sand and lava in the south, built up a thickness of earth thousands of feet deep. Over millions of years these layers slowly turned to rock.

"Many more thousands of years passed and the earth was slowly pushed upward out of the sea. Slowly the sea was pushed back, and the land rose higher."
"After the Cascade Mountain Range was lifted above sea level, rivers flowed down the sides of the mountain and cut deep canyons and valleys. These river canyons and river valleys left peaks and ridges.

"The rivers had cut up much of this land when suddenly volcanoes blew lava, dust, and rocks out of the earth. These volcanoes built high cones. Smaller cones were built inside the larger cones. Some smaller cones erupted on the outside of larger cones thus causing more peaks. These volcanoes built up the main peaks in the Cascade Range." said Mr. Brown.

"How long did it take for Mount Rainier to be built?" asked Anne.

Diagram of how a volcano is formed.
"It took all the mountain peaks thousands of years to build up. Mount Rainier is the tallest volcanic peak in this mountain range. It must have taken it a long time to grow to 14,408 feet," answered Mr. Brown.

"Are there other volcanic peaks in the Cascades, Dad?" asked Tommy.

"If you and Anne will come over to this wall map, I'll answer your question and then we will have to go if we are going to see any of this from the air. You see on this map that the Cascade Range of mountains stretches from north to south. It even goes into Oregon. These mountains are wider at the northern end and slowly get very narrow toward the southern end. Here in the south we have two volcanic peaks, Mount Saint Helens (9,697 feet) and Mount Adams (12,470). As we move northward we find our own Mount Rainier

Map of the State of Washington
(14,408 feet), the tallest of them all. Still further north Glacier Peak (10,436 feet) and Mount Baker (10,827 feet) finish the chain of volcanic peaks in the Washington Cascades," replied Mr. Brown.

"Now that we know how these mountains were built, let's go see them," said Anne.

"Just a minute, young lady. That wasn't all that went into the building of these rugged mountains. Besides, the breaking up and falling down of parts of these mountains, glaciers had a lot to do with their present shape. But I'll tell you about the glaciers when we are above them," said Mr. Brown. "Now let's go. Good-bye, Mother."

Tommy and Anne kissed their mother and ran after their father who was getting into the helicopter. They always enjoyed their trips in "Whirly" as they called their helicopter. They could both sit near their father. It made it easier for him to talk to them.

Very soon they were off the ground and approaching the peak of Mount Rainier. As they looked down they could see many ridges and smaller peaks with a lot of snow still in the valleys and on the higher peaks. The top of Mount Rainier certainly had a deep covering of snow. But then Mount Rainier was expected to have snow on it the year around.

"Dad, why does Mount Rainier have snow on it the year around?" asked Anne.

"Mount Rainier has snow on it the year around because the
sun is not hot enough this high in the mountains to melt the snow," replied Mr. Brown.

"But some of the snow does leave the mountain because you can see some of the ridges," said Anne.

"That is true, Anne. Some of those ridges are so steep that the snow slides off them into the valleys below. Much of the snow you see below us has been changed into glaciers," Mr. Brown said.

"What is a glacier?" asked Anne.

"A glacier is a slow moving sheet of ice," replied Mr. Brown.
"How does snow become a glacier?" asked Tommy.

"Each winter many, many feet of snow fall. The summer sun is not warm enough to melt very much of this snow. Each winter more is piled on top of the unmelted snow. Each year as the snow piles up, the top snow becomes very heavy and pushes down on the snow below. As it pushes down, ice is formed. This huge mass of ice is called a glacier," answered Mr. Brown.

"When so much snow has piled on top that the bottom cannot hold it, the glacier begins to move. Very, very slowly it moves down the slope. Sometimes it moves so slowly that its movement cannot be seen, but it does move. As it moves it pushes away the earth and forms a valley. As it moves down the mountainside the glacier gets into an area of warmer weather and part of it melts.

Diagram of how a glacier is formed.
The water from the melting glacier keeps going down the slope, cutting more valleys or canyons," said Mr. Brown as he pointed downward. "There is Emmons Glacier to our right. There are about twenty-six moving glaciers on Mount Rainier. Most people who come to visit Mount Rainier can see these glaciers. Do you see that U-shaped valley below us? It was formed by a glacier."

"Our teacher told us that less snow fell on the top of Mount Rainier than falls further down the mountain," said Tommy.

"That is right, Tommy, because quite often the peak of Mount Rainier is above the storm clouds," Mr. Brown added as they left the beautiful snow-clad mountain behind.

"Look!" exclaimed Anne. "Tommy, we can see how these mountain folds look like the folds in a blanket."

"O! Anne, look, one of the folds looks like a deep ditch," said Tommy. "It looks almost like that place that Daddy said was a valley."

"That is a valley," said Mr. Brown. "It is a different shape because it was cut or eroded by a river. If you remember, the glacier left a smooth, rounded valley. If you look closely, you will see that this valley is very steep and is more V-shaped."

As the helicopter flew on northward, Mr. Brown explained to Tommy and Anne that mountains were not only formed by uplifting and volcanoes but that glaciers and rivers had a great deal to do with the shaping of them. The heat of the sun also helped in forming
Cross-section map of mountains, valleys, and hills. This is what the Cascades would look like if you could slice across them from west to east.

these mountains. The glaciers through freezing and thawing break rocks from the mountainside. The rocks roll down the mountains and break into small pieces. The sun heats the rock of a mountain and then the rock cools and breaks into many smaller pieces.

As the mountains break up, water from either glaciers or rainfall or lakes finds its way down the mountainside and carries along grains of sand and little rocks and stones. This water can slowly cut down the highest, hardest mountain. Even a tiny stream or brook can cut away at the rock underneath and over many years can wear the rock away.

As a stream joins another stream, it makes a large river. The river rushes very fast down the mountain rolling big rocks along. The rocks bang and smash against each other as they go. Sand and top soil are taken from the river banks. A bit at a time, taking a grain here and a stone there, this flowing water will cut
Rain and glacier water from little streams drains into small rivers, then large rivers, and on to the ocean.

deeper and deeper into the earth. After a long, long time the river cuts a deep, steep-walled valley. These V-shaped valleys are found in the mountains where the river flows fast. The water slows down as it reaches flatter land. The valleys here become wider and not so deep because the water has more room in which to spread. The river drops its bits of rock and top soil in these valleys.

**WHAT DO YOU THINK?**

1. What do you think forms glaciers?

2. What are the things that help shape mountains?

3. What makes the difference between a U-shaped valley and a V-shaped valley?

4. Why might a mountain have snow everywhere but at the peak?
CLIMATE OF THE CASCADE MOUNTAINS

As the sun began to warm the helicopter, Anne asked, "Daddy, may we take off our coats?"

"Anne, your mother and I had you and Tommy put on warm clothes because we knew it would be colder up here than it is on the ground. I don't want you to take off your coat just because the sun is shining and it looks warm. Really it is quite cold up here. Do you know why it is cooler up here than it was on the ground?" asked Mr. Brown.

"Well," said Anne, "I remember something the teacher told us in science class about a thick blanket of air that covers the entire earth and helps to keep it warm. She said that higher up the mountain the blanket of air became thinner. Because this blanket of air is thinner, the mountain top is colder."

"I remember something, too," said Tommy. "We talked about the sun shining through this blanket of air. The sun does not heat the air but it does heat the earth. The heat from the earth warms the air around it. So the air near the earth would be warmer than the air higher up. That's why they say that the Cascade Mountains are cooler than the lowlands on either side of them."

"You children surely remembered the two most important reasons why high places have a cooler climate," remarked Mr. Brown. "It is true that because the blanket of air is thinner this high the air is cooler. And because we are farther away from the sun-warmed
earth we are not as warm. Did you also learn that mountains make a
difference in the climate of the land on either side of them?"

"Why, yes, we did," answered Anne. "You see when we
learned about the blanket of air we also talked about altitude. We
found out that the temperature of any place depends somewhat on its
altitude. Altitude, you know, is the height above the level of the sea."

"But, I don't see what all this talk about altitude has to do
with the climate on either side of the Cascades," said Tommy.

"As I understand it, Tommy," continued Anne. "The
higher the mountains the more they can affect other parts of the land.
For instance, the Cascades are just high enough to cut off a lot of
rainfall from the east side. Because the wind cannot blow the rain-
bearing clouds over the mountain, most of the rain falls on the west
side of the mountains. The east side gets very little rainfall.

"The high altitude and thinner air affect the moisture-
bearing clouds. You see the colder air of the very high mountains
turns the rain into snow which falls on the tops of the mountains.
Further down the mountain the clouds drop rain.

"Because the east side of the mountain gets very little rain
it is somewhat cooler than the warmer, damper climate west of the
Cascades. The east side also gets more snow than the western side."

"Where does all this water come from?" asked Tommy.

"Don't the westerly winds bring most of it in from the Pacific
Ocean and the Puget Sound, Dad?" asked Anne.
"Yes," replied Mr. Brown. "Our wind does blow from the west coming in off the Pacific Ocean. It blows the moisture-bearing clouds up the west side of the mountains. The cooling air of the mountains cause the moisture in the clouds to condense and drop their moisture. When it is very cold in the mountains, this moisture turns into snow."

![Diagram showing how the climate of the land on either side of the Cascade Mountains is affected by the westerly winds and the high mountains.](image)

Tommy saw many snow patches in the higher mountains as they flew over them. He thought about these snow patches and wondered how much longer it would be before they melted and made water for the rivers. Tommy thought about all the ways in which people could use the water that would come from these snow patches. He wondered if other people ever thought about where their water came from.
WHAT DO YOU THINK?

1. Why do you think the air is cooler high in the mountains?

2. What covers the earth?

3. How can you show that a blanket of air is like the blankets on your bed?

4. What causes moisture to fall from the clouds?

WAYS PEOPLE OF THE CASCADE MOUNTAINS EARN A LIVING

Below the helicopter the children could see green trees covering the mountains and mountain slopes. They caught glimpses of the water of the rivers and lakes. Sometimes they could see bare mountain tops.

"Father, do many people live in the Cascade Mountains," asked Tommy. "I haven't seen any cities."

"We have flown over Roslyn and Cle Elum. They are not big towns, but they are important because of the coal mining that is done there. North Bend and Enumclaw on the western slopes of the Cascades are larger. Some people might consider Ellensburg, Wenatchee, and Yakima as belonging to the Cascade region. There are other people who like to think of them as belonging to the Columbia Basin region. I, too, think of them as part of the Columbia Basin region."

"But, Daddy, what do these mountains have to help people make a living?" asked Anne.
"You know that many parts of the earth have many natural resources," replied Mr. Brown. "Natural resources are the useful things that nature furnishes. This really means that the land of the water or the air has many things that men can use. These natural resources are used for making a living or for pleasure. We know that a good climate is a natural resource because it is easier to make a living where the weather is neither too hot nor too cold, nor too dry nor too wet. There are other natural resources such as water.

"The Cascade Mountains offer many natural resources. Some of these natural resources are trees for lumber, coal, copper, granite, cinnabar (from which mercury is taken), and other minerals. Water and snow are natural resources that are of great value to the whole state. The wild plants and animals of these mountains are also gifts of nature."

"Say, Dad, we are almost at Twisp, aren't we?" asked Tommy excitedly. "That's where we are going to land, isn't it?"

Before Mr. Brown could answer, Anne interrupted by saying, "I remember hearing about the Methow Valley with its rich farm lands. Twisp is one of the small towns in this valley. You know cattle raising was the most important way of making a living here, but now they are putting in many fruit orchards and are beginning to raise many potatoes. Do you suppose Jack and Kay will have an apple to give us when we land?"

Mr. Brown laughed as he said, "I see you are beginning to get hungry. We'll land in about fifteen minutes. Before we land, I'd
like to tell you that we passed Holden while Anne was talking. Holden, at one time, was the leading copper mining area of the State."

"What other mining is done in the Cascades besides coal mining and copper mining, Dad?" questioned Tommy.

"There is some cinnabar mining taking place in Morton. Mercury is taken out of the cinnabar ore. Index, Washington, quarries granite. Granite is used as a building material.

"Another building material that is found in the Cascades is the forest. We find many logging and lumbering mills all over the Cascade region. The trees of this region give the people a way to make a living.

"When you told us about the natural resources you said that some of them were given to us for pleasure. I have enjoyed this ride in "Old Whirly" because I have had fun seeing the beauty and hearing all about the Cascade Mountains from you, Dad," said Anne. "Many people must come to these mountains to enjoy their beauty. I know some people could make a living by showing these visitors the natural resources of the mountains."

"Oh, look, there are Kay and Jack Wheeler with their Dad waving to us," exclaimed Tommy.

Mr. Brown landed the helicopter on the smooth ground near the Wheeler family. The two families were very happy to see each other again. Everyone talked excitedly as they left the helicopter and climbed into the Wheeler jeep. Mr. Wheeler told them that Mrs. Wheeler was waiting with lunch for them.
WHAT DO YOU THINK?

1. How do the people of the Roslyn-Cle Elum area earn a living?

2. What are natural resources?

3. What natural resources are in your community that people can use?

CASCADE MOUNTAINS AS A WATERSHED

Jack and Tommy wandered down to the banks of the Methow River after they had eaten their lunch. They sat there in the warm sunlight throwing stones into the rushing blue water. Tommy looked at the water and wondered where all this water was coming from, so he asked Jack.

Jack, who was a few years older than Tommy, pointed toward the mountains as he replied, "The source of this river is up near Mount Logan. There are some smaller creeks that flow into this river from other parts of the mountains. This river is part of a watershed."

"What do you mean by a watershed?" asked Tommy.

"A watershed is all the land and water of an area which drains into a river, a lake or an ocean," said Jack. "You were telling me, Tommy, that your Dad told you about natural resources before you got here. A watershed is a natural resource. It is a very important natural resource because all the water that is used by people has to come out of some watershed."
"A watershed may be large enough to cover many states or even countries. More of them are small enough to be covered in a short walk. These watersheds may be drained by a big river system or they can be drained by a gully that runs only during rain storms. There are many of these smaller watersheds throughout the Cascade region. They supply water to people who live in the Cascades and those living on either the east or west sides of the mountains."

"Are glaciers a part of the watershed system?" asked Tommy.

"Yes, Tommy, glaciers quite often form a watershed. They are an important source of water," replied Jack. "You know Dad thinks that the large amount of snow that the Cascades store for us are good natural reservoirs of water. By the amount of snow that falls and stays on the Cascades, forest rangers can tell how much water people of the state will have for use from spring to winter.

"Tommy, while we are sitting here would you like to hear a story of the life of a little raindrop?" asked Jack.

"Oh, yes! That story would be very interesting," replied Tommy.

LIFE OF A LITTLE RAINDROP

The story of the little raindrop begins at the ocean. He is one of the many millions of raindrops that make up the big ocean. Every day other little raindrops come to play with him. Every day some of the little raindrops disappear. This little raindrop often
wondered what happened to the other raindrops.

One bright day a sunbeam came down to pick up the little raindrop. She took him for a ride high in the sky. Soon he joined some other raindrops. They were pushed and crowded together until they made up a nice fat cloud. The breezes pushed them, in the clouds, away from their ocean home. They were pushed toward the land. They went up and up.

How high they were flying! Soon they began to feel very cold and very, very heavy. They felt so heavy that they could not hang together very much longer. They crowded closer, but nothing could keep them from slipping out of the cloud. Down, down they fell.

There were millions and millions of raindrops falling with him. Faster and faster they fell. Until—bump! They hit the earth. They all went rolling down the mountainside.

Something very strange was happening here. There were pieces of rock and dirt flowing down the mountain with him. It seemed to him that there were raindrops here that had't been in his cloud. There were so many and they were rushing so fast that they made a new loud noise he had never heard before.

As more and more raindrops joined him from secret places in the earth he felt as though they were making an ocean of their own. But people called it a river.

As this river rushed along, it lost some of its raindrops into the soil. Some of the raindrops stayed to water the plants on the land. Some of the raindrops watered the animals that came down to
see the river. Some of the raindrops stayed in a wide, wide place that people called a lake. And all this time the little raindrop wondered what would happen to him.

On and on rushed the river carrying rocks, and soil, and all the little raindrops. It rushed past a farm. The farmer took some of the raindrops to water his fields. It rushed past the factory. The factory took some raindrops to run its machinery. It rushed past the big, big city. Many, many raindrops stayed here to help in all the ways people needed them.

The little raindrop began to feel that he was moving slower. The river was not rushing any more. All the little raindrops were helping to push the rocks and soil. This was hard, hard work. They moved slower and slower.

Suddenly the dirt and rocks seemed to disappear. The little raindrop felt free again. He was back in his ocean home.

And that is the life story of the little, little raindrop that helps to make the big, big ocean.

"Thank you for the story, Jack!" cried Tommy excitedly. "I enjoyed it very much. You know it helps me to understand how the water moves from the ocean and gets back to the ocean. It is so simple to see how the sun draws up the water from the ocean into the air where the clouds are formed. I can see now how the wind blows these clouds toward the mountains. As the clouds get cooler the moisture turns into rain or snow."
"As the water falls to the earth as rain or snow its travels begin. It flows down the mountain. Some of the water seeps into underground streams. Some of it is caught up in plants and plant roots. Some of it goes to form a river. The river carries the water toward the ocean, leaving some in lake beds. All of this shows me why the Cascades are such a wonderful watershed."

Jack was very proud that his story of the little raindrop could show Tommy how the water cycle was formed. While they were walking to the house Jack further explained to Tommy the things that were needed to help store the water in the watershed. He told Tommy that the plant and animal life in a watershed had to be controlled by forest rangers so that there would not be too many of either.

Jack explained that natural lakes did store water in the watershed, but often this was not enough. Man quite often built dams to store water.

"You know, Tommy, we could all help in keeping our watershed in good condition if we all took care not to set forest fires," said Jack.

"I know," said Tommy. "Dad says if campers were more careful with fires and picking up garbage and trash after themselves our forest recreation areas would be much nicer places for everyone to enjoy."

Tommy and Jack were quiet as they walked toward a wooded area away from the rushing river.
WHAT DO YOU THINK?

1. What is a watershed?
2. How would you draw a picture to show the cycle of water?
3. Is a watershed important to your community? How?
4. How is a watershed important to you?

PLANTS OF THE CASCADE MOUNTAINS

Tommy asked Jack if they could walk up the trail into the woods to see what the girls were doing. Anne and Kay had gone up the trail earlier in search of wildflowers. Just as they started up the trail, they met the girls returning home.

"Hello, boys. Where have you been?" asked Kay, who was the youngest of the group.

"Oh! Anne and Kay, Jack just told me the most exciting story about a little raindrop," exclaimed Tommy. "He also explained to me what an important watershed the Cascades are to the State of Washington. Anne, do you know what a watershed is?"

"Yes, Tommy, I believe I know what a watershed is. It is an area where land, streams, lakes, and rivers store water for people to use. It has to have plants and animals to help store the water. And talking about plants we saw a trillium, or as some people call it, a wakerobin."

"Did you only see one trillium blooming?" asked Jack.

"Yes," replied Anne. "That's why I was so excited when
I saw this one. It was turning brown around the edges and will probably die very soon. We found it way back in the woods where it is cool and damp and shady."

"How did you know it was a trillium?" asked Tommy.

"Tommy, don't you remember Mother telling us that the trillium plant has its leaves and blossoms divided into three parts?" asked Anne. "You know they have three large leaves and their three petals are pointed. They are white and have no sweet smell.

![Trillium in blossom](image1)

![Trillium with seed pod](image2)

Jack asked if they had seen one of his favorite flowers.

"No, Jack, I didn't get a chance to take Anne up to our favorite spot," remarked Kay. "Mother told us not to leave the main trail without you boys."

"Come along with me and I'll take you all to see my favorite flower. We'll probably see many other flowers on our way if we look carefully," suggested Jack.
While following Jack up the new trail the children were very interested in the different kinds of grasses and trees they saw along the way. Jack explained to the children that plants were not only beautiful to look at but that they were useful to both man and animals. The grass and tree roots help to store water for the watershed. Men cut down the trees to use for paper making and building material. Many people come to the woods to pick wild berries, mushrooms, and herbs. Jack told them that many animals depended upon plants for their food.

Along the way Jack pointed out many kinds of flowers. Tommy and Anne knew most of them because they were the kinds of flowers that they found on Mount Rainier near their home. They saw the alpine beauty, the spring beauty, and mountain buttercup.

The trail grew steeper and soon they found themselves on a ledge from where they could see down into the valley. The valley seemed a long way from them because of the many trees that grew on the mountainside.

"Jack, would you say that these mountains have different life zones like those we find on Mount Rainier?" asked Anne.

"The life zones of all mountains are very much alike. On some mountains they may cover a larger area than on others. Most high mountains can divide their life zones into three areas. As you know these life zones are the forest life zone; that is the one we are in now. The zone right above us is the meadow zone. This is a zone of fewer trees and more wide open spaces. Above the meadow zone
is the zone of ice and snow. This zone has almost no plant or animal life. The ice and snow zone is too cold and the blanket of air is too thin for plants and animals to live well," replied Jack.

"What do you mean by a life zone?" asked Tommy.

"Well, Tommy," answered Jack. "A life zone is an area

A diagram of the three life zones of a high mountain.
in which the plant and animal life is controlled by the temperature and
the blanket of air around the earth. You see, in the forest zone, the
temperature is warmer and the blanket of air is heavier. This makes
it easy for plants and animals to live and grow. The meadow zone is
cooler and the air is thinner. Here it is harder for plants and animals
to live. In the ice and snow zone the temperature is very cold and the
air very thin. Very few plants and animals are able to live there.
And because of the plants and animals that are able to live in each of
these areas we call them life zones."

"Come on, Jack," urged Kay. "Let's go around this bend
and find your favorite flower."

They raced around the bend in the trail. Suddenly they all
stopped. Before them grew quite a tall tree with greenish-yellow
flowers and there were some pure white blossoms. The flowers had
six white petals.

"There it is," exclaimed Jack. "That is the dogwood tree.
It is my favorite blossoming tree. I guess I like it because the white
blossoms make a red fruit. Sometimes this tree blooms again in the
fall. When it blooms in the fall you can see the fruit, the blossom, and
the little buds that will form next year's flowers."

"It is a nice tree," said Anne. "But if someone were to
ask me about my favorite tree I would say it was the Sitka spruce."

"I know that tree," interrupted Kay. "The Sitka spruce is
an evergreen tree. Its leaves are flat with very sharp points. Mother
told me that these little leaves grow all by themselves along the branch. Their color is yellow-green on top with white underneath."

"My, Kay, you are learning about the trees of this region very fast," said Jack. "Do you know why the Sitka spruce is important to man?"

"I know," answered Tommy. "It is used for lumber, airplane making, musical instruments, and papermaking."

The children turned back down the trail, after Tommy had told them how the Sitka spruce was used by men. They wanted to see who could be the first to see and name the Sitka spruce. Walking along the trail they had fun taking turns naming trees they knew. They saw the western hemlock, Douglas fir, and the western red cedar. They all spotted the beautiful Sitka spruce near the end of the trail. They knew all these trees were coniferous or cone-bearing trees.

Here and there among the coniferous trees they saw some trees that lose their leaves every fall. Those were trees that they knew as deciduous trees. There was the familiar vine maple and aspen. There were even a few birch.

Soon the tree-naming game was over and the children raced down the mountainside trail toward the house. When they got to the house they could see that their fathers were still very busy, so Kay asked her mother if she would show them a few slides. Mrs. Wheeler said she would be glad to show them slides of the flowers and trees that could be found in the meadow and ice and snow zones since they couldn’t go up to these zones to see the flowers and other plants.
The first slide Mrs. Wheeler showed them was a meadow zone picture of flowers surrounded by evergreen trees. One of the flowers was very bright red. Mrs. Wheeler told them that she would show that flower to them first. It was the Indian Paint Brush. She told them that the Indian Paint Brush was one of the most common flowers of the State of Washington. It could be found in bloom from very early spring until quite late in the fall. It could be found in colors from light orange to a very bright red as the one shown in this slide.

The next picture showed an avalanche lily pushing its head up through the snow. If it had not been for its green leaves you could hardly have seen its white petaled flower. These flowers can be found in other places besides the high mountains. They are a great favorite of the meadow zone.

Among the many other flowers that Mrs. Wheeler showed the children was the blue lupine. Its bright blue color gave a special beauty to its corner of the meadow. Mrs. Wheeler explained that this flower was almost as common as the Indian Paint Brush, but it does not bloom as long nor in as many colors as the Indian Paint Brush.

Mrs. Wheeler showed many pictures of trees that grew in the meadow life zone. There was the western white pine, Alaska yellow cedar, some mountain hemlock, and the noble fir. The noble fir, she told them, could be found on both slopes of the Cascade and Olympic mountains. Its needles are four-sided with a groove on top. They are blue-green with white strips on all sides. They have pointed tips but are not as sharp as those of the Sitka spruce. Some loggers
call it a larch but it is one of the largest true firs in the State.

The picture of the ice and snow zone was so rocky and barren looking that the children could not believe that anything would grow there. There were surprised to see pictures of red and white heather, another kind of lupine, phlox, and a beautiful red flower that grew very close to the rocky cliffs. There were even pictures of trees but they did not grow in thick forests.

The trees grew so that they looked like tree islands in the ice and snow. Among the pictures of the trees were the mountain hemlock, Alaska yellow cedar, and the alpine fir. Here in this high zone the alpine fir was just a little shrub. But this fir could be found in the other mountain zones. The lower down the mountain it grew, the taller it became. Its top is very sharp and spear-like so that it can shed the snow more easily. Jack told the children that this was one of the very important trees used as a cover for watersheds.

Mrs. Wheeler finished showing the slides and then she told them that they could have an apple while they waited for their fathers to finish their work.

WHAT DO YOU THINK?

1. What are life zones?

2. Why is there a difference in plant life in life zones?

3. How does man use the plant life found in these zones?
ANIMALS OF THE CASCADES

They were just finishing their apples when Mrs. Wheeler suggested, "Jack, why don't you take Tommy and Anne outside to see your pet raccoon?"

"Do you really have a pet raccoon?" asked Tommy.

"Yes, I do," replied Jack. "Come on and I will tell you about him."

"You know that a raccoon has a great deal of curiosity. He is always trying to find out what is going on around him. He likes food and bright shiny things so much that it was easy to get him to go into our box trap.

"Raccoons live in trees and sleep all day. They come out in the evening to look for food. The raccoons' home is somewhere near the water so that they can wash their food before they eat it.

Kay laughed as she said, "Jack, remember how funny your raccoon looked when we gave him a piece of cake and he washed and washed it. He looked so funny when it all disappeared before he could eat it."

They came to the penned-in yard where the little raccoon made his home with a chipmunk that ran in and out. Tommy laughed when he saw the two of them. He thought the raccoon looked like the "Lone Ranger" with his black mask over his eyes. His fluffy fur was a dark silvery gray. He had a small pointed face with large ears. His claws looked like fingers on his flat feet. His long yellowish tail
had seven rings of black that matched his mask.

The little chipmunk, that was first in one place and then another, seemed to be very busy. When the chipmunk saw the children he ran up to Jack. He seated himself on his hind legs and begged for food. Jack leaned over and petted his light brown fur coat before he gave him a nut. The chipmunk grabbed the nut and ran to a hole which was in the middle of the pen. As he ran, the white and dark stripes down his back shone in the sunlight. His long tail waved happily.

While the children watched the two pets move around, Jack explained that the raccoon lived mostly in the forest life zone. He said that the chipmunks were found most often in the meadow life zone. He told them that the chipmunk was a kind of ground squirrel.

"Did you know that beavers belong in the squirrel family, too?" asked Jack. "They are known as water squirrels because they live in the water. The beaver is a very smart animal. Many people call him the engineer of the animal world. He is a good logger, too. He can build dams and builds a very strong lodge for his home."

"Jack, I remember reading about the beaver at school," said Anne. "There are so many good books about beavers that I became very interested in them. I learned that beavers work for the forest service. The beavers are caught by the rangers and moved high up into the mountains. Here they go to work building their dams. Their dams slow down the water during flood time and make ponds that help store water in the watersheds. These ponds also make a good home
for fish, and a good drinking place for the other animals of the forest."

"That's right, Anne," said Jack. "You really did learn a lot about beavers. The many books on beavers make good reading, and you can learn all about how the beaver makes his home. That is a very interesting story because the beaver is such a smart animal about building his home. The beaver is another animal of the forest zone."

Turning to go home, the children were surprised by a big old porcupine lumbering across the path. They all stood very still and waited for this large animal to go his way. The children knew that if they stood still and did not excite him, the porcupine would not bother them.

The porcupine's slow steps across the path gave the children a chance to get a close look at his thick coat of blackish fur. They could hardly see his soft, furry nose, and his small black eyes. They saw no ears at all. The children knew that in his thick fur were long, sharp quills. These quills are the porcupine's way of protecting himself from other animals. Since he cannot see very well, he depends upon his good sense of smell to help him find his food. He depends upon his quills to protect him.

The children all knew that the porcupine was an animal of the forest life zone because his favorite food was the yellow pine. He likes to eat the soft inner layer of bark from many other trees, too. In the winter he sometimes has to eat the needles of the evergreen trees. He doesn't like them.
When the porcupine had disappeared into the brush on the other side of the path, the children continued on their way. They talked about the other animals that could be found in the forest life zone. They were surprised to find out how many animals they all had seen. They had all seen the bear from a distance. They had all seen the black-tailed and the mule deer. Even the wapati or elk was common to them. They had all been fishing for different kinds of trout in the mountain streams.

"You know I think that knowing the animals of the Cascade Mountains is fun, because so many of them seem like old friends," said Tommy. "The one that I really call my friend is the little gray robber. He is just a friendly bird who isn't afraid of anyone. The Oregon jay likes to come down and pick things off of your table. They are so funny, because they seem to know when you are going to open your picnic basket."

"Yes, they do," said Kay, laughing. "When one sees you come to a picnic area he whistles for the rest of his friends to come and help you enjoy your picnic. I think the camp robber is cute, but I like the kingfisher much better. He is such a beautiful bird with his blue cape and white vest and his crown sticking up."

"Kay certainly does like the kingfisher," said Jack. "She can sit as quiet as a mouse for hours watching the kingfishers get their food out of some lake or river."

"We have talked about the Oregon jay who makes his home in the forest life zone. There is another jay who likes the meadow life
zone better. The Stellar jay is a handsome bird who is as fearless as the camp robber. He is full of mischief and makes smaller birds leave their feeding areas when he appears.

"The blue of the noisy Stellar jay's wings and tail are bright, even in the winter. His head, neck, and back are a sooty black. On top of his head he has a sooty black crest. If you watch his crest, you can tell whether danger is near or whether he is enjoying himself," said Jack.

They were already in the yard when Jack told them that in the Cascade Mountains there were over one hundred and thirty kinds of birds. He said that the meadow life zone was the favorite spot of many of these birds.

Mrs. Wheeler told the children to wash their hands and come to the table for a light lunch. Seated at the table, Mr. Brown asked the children if they were enjoying themselves.

"We are not only enjoying ourselves, but we are learning a great deal," answered Anne. "We have found that there are many animals in these mountains that we find around Mount Rainier."

"Of course, Anne," said Mr. Brown. "The life zones of the Cascades are very much alike whether you live in the northern Cascades or in the southern Cascades. Have you decided why animals are necessary?"

"All we know is that they are interesting to watch," said Tommy.
"There are other things that animals do to be helpful," said Mr. Brown. "Some animals help keep plants under control because they eat them. Other animals, like the cougar, help control animal herds by killing, hurt, sick, or old animals for their food. There are animals that help keep the forest clean by eating the dead animals. One of these animals is the coyote.

"Many people hunt animals for their meat or their furs. More people hunt them just for the fun of it."

"There are some animals that the forest service protects from hunters by letting the hunters shoot only a certain number of them," said Mr. Wheeler. "Among these are the cougar, which is found in the meadow life zone, and the mountain goat, which is found among the rocks in the ice and snow zone."

"Dad, are there very many animals in the ice and snow life zone?" asked Jack.

"There are not very many," answered Mr. Wheeler, "Because there is not very much food in that zone. The mountain goat is the most common. For company he has the bald-headed eagle who builds his nest among the rocks. He lives at this high altitude for protection. It is easy for him to come to the forest and meadows to get his food. Sometimes elk wander that high in the early spring, but they do not stay long."

Everyone finished eating. Jack and Kay invited Tommy and Anne to come back as they were saying good-bye. Mr. Wheeler took the Brown family back to their helicopter in his jeep. They thanked
him for the nice time they had and climbed into their helicopter.

**WHAT DO YOU THINK?**

1. What is the value of the animals in the mountain regions?
2. How can you tell a raccoon from other animals?
3. Why do animals live in different life zones?
4. Name some animals of the Cascades and tell what they look like and what they like to eat.

**HAVING FUN IN THE MOUNTAINS**

Soon the Browns had taken off in their helicopter and were heading for home. The Cascade Mountains looked very lovely in the late afternoon light.

"You know, Dad, there are times when I look at the Cascade Mountains and wish that all the people in the world could see and enjoy them," said Anne.

"Your wish might just come true," remarked Mr. Brown. "There are a lot of people who come to the State of Washington each year. Many of these people enjoy having fun in the mountain areas. Since the Cascades are so easy to reach by good highways or trains, many of these people come here to spend their vacations."

"There surely are a lot of people that come because we have seen many of them around our park at Mount Rainier," interrupted Tommy. "Maybe so many of them come to Mount Rainier because it is a National Park."
'Well, that could be one of the reasons," said Mr. Brown. "But many people come to enjoy the natural beauty of Mount Rainier. There are a great number of ways in which they can enjoy themselves. Besides sight-seeing they can go skiing, mountain climbing or for short hikes. People seem to like camping and fishing in our park. We even have places where they can go swimming. You know by the number of pictures that can be found in magazines and newspapers of Mount Rainier, that people like to take pictures of our mountain peaks. About the only thing that we don't let anyone do in our National Park is to hunt."

"I guess people could do all these things in almost any part of the Cascades," said Anne. "I know we have at least three State Parks in this region where people can have fun. We also have the beautiful Lake Chelan where people can enjoy all kinds of boating. Some day I'd like to take the pleasure trip up that long lake. It is one of the longest and deepest lakes in the state. There are so many places in our own Cascades where I would like to spend a vacation."

Before they landed on the landing strip outside their yard, they had talked about the many places where people could hunt in the Cascade Mountains. Mr. Brown explained that most people seemed to enjoy taking their vacations near the main peaks of the Cascades. The people go there because they can find lakes and rivers and many other natural resources which will give them all kinds of fun. The helicopter landed just as the sun set behind the Cascade Mountains. It had been a long day of fun.
WHAT DO YOU THINK?

1. How do people enjoy the Cascade Mountains?

2. Why do so many people come to the Cascade Mountains?

A LETTER TO GRANDMOTHER

Dear Grandmother,

Today we have had a wonderful trip over the Cascade Mountains in "Old Whirly." It was such fun seeing the glaciers and the smooth U-shaped valleys they formed.

Did you know that rivers shaped valleys in a different shape than do glaciers? I'll bet you did.

We had fun talking to Jack and Kay about the different plants and animals that we find in the Cascades. We found out that the plants and animals in the northern Cascades were very much like those around home. You told us about the three life zones on Mount Rainier and about the plants and animals that live there. Jack told us that they have the same life zones in other high mountains.

Tommy thinks he is smarter than I am now because Jack explained watershed to him. He doesn't know that I found out in school how important the Cascade Mountains are as a watershed.

I know you would have enjoyed Jack's story about the little raindrop. Tommy told it to Mother. She thought it showed very well how the water left the ocean, fell on our mountains in the form of rain or snow and after much traveling went back to the ocean. It
was a nice story.

If I had more time I would like to tell you about all the plants and animals that we saw and talked about. I'll save them to tell you about when I visit you this summer.

Daddy says that we may be able to go to a place called the Okanogan Highlands in a few weeks. That trip will take us longer because it is farther away.

Mother is calling me to bed now, so I must say goodbye for this evening.

Your granddaughter,
Anne
THINGS YOU CAN DO

1. Find out what family the beaver, chipmunk, and porcupine belong to and make a report to the class.

2. Write a story telling how important water is to your family.

3. Add pictures of the animals of the Cascades to your picture book of Washington.

4. To your large map of Washington, add the recreation areas and main products of the Cascade Mountains.

DO YOU REMEMBER

1. The Cascade Mountains stretch ____________ and ____________.

2. How were the Cascades formed?

3. Name three mountain peaks of the Cascades.

4. Glaciers form a ____________ valley.

5. Rivers form a ____________ valley.

6. Which side of the Cascade Mountains has the most rainfall?

7. Name the three life zones. Name one plant and one animal from each.

8. Name several reasons for people coming to the Cascade Mountains for fun.

9. What is a watershed?

10. In a water cycle the water comes from ____________ and returns to the ____________.

WORDS TO THINK ABOUT

natural resources  condense  lava
climate           volcano   erupt
In completing this unit the authors used verified concepts which they integrated with their collected material. The concepts and material were kept within the children's grasp through the use of the graded word lists. The unit was made interesting through the use of central figures in story form. Checks on factual materials were provided through thought questions at the end of each section. The sections were kept small for ease of teaching.

In organizing and writing the unit in this manner the authors of this report feel that they have kept within the precepts of textbook writing as discovered through their review of literature.
CHAPTER VIII

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

I. SUMMARY

The purpose of this study was to develop a means for preparing text materials on the State of Washington for the fourth grade, with the thought in mind that a worthwhile contribution would be made to the curricular area dealing with the study of Washington. At the time this study was undertaken there was an urgent need for new and current materials on Washington.

In developing this study the survey methods of interviews, questionnaire, observations, and appraisals were used to resolve the problem. In considering this problem of developing a textbook it was first necessary to establish whether an organized text was desirable for the unified teaching of a subject. Since so many social studies texts included suggestions for activities it was felt important to find out how vital these suggested activities were to a textbook.

With the necessity of a textbook established and the importance of activities in a text understood, a research was undertaken to locate literature which would help in setting up rules for organization and writing of a textbook. Little literature could be found dealing with the organization and writing of a textbook. Literature was then reviewed in reference to the criteria for the selection of a text. This review of the literature was executed to determine what administrators,
classroom teachers, and publishers thought was important in a textbook. A general philosophy for guiding writing was obtained in the review of the literature.

Through the review of literature these were the conclusions that were drawn and applied to developing the text: (1) text materials were needed in teaching, (2) a textbook should be built around unit teaching, (3) materials should have systematic organization, and (4) concepts should be written within the child's grasp.

A careful analysis of the available text materials at the fourth grade level on the State of Washington determined the extent of the need for another text in this area. When the desirability and need of text materials was established the problem became one of how to develop and organize a text on the State of Washington.

Early in the approach to the problem, the objectives of the Ellensburg Course of Study for the fourth grade were determined. During this stage the major topic outline was developed and concepts were selected and put into a sequential order within the topic outline. Once the concept outline was completed, the concepts were verified and a word list was chosen. The word list chosen was Durrell's for the Primary level and Durrell-Sullivan for the fourth grade level.¹

¹Donald D. Durrell, Improving Reading Instruction (New York: World Book Company, 1956).
Relevant material was obtained from many sources to assist in developing the text. With the material collected and organized, the concepts organized and verified, and the word list selected, a complete unit outline was derived. From this outline the text materials were written in story form around the central theme of conservation, with a forest ranger and his family as the main characters.

However, the specific problem was one of "How to Develop Text Materials at the Fourth Grade Level for the State of Washington." The problem was attacked with guidance of several major hypotheses.

The first hypothesis was that material on Washington was available. This hypothesis was divided into two parts: (1) there was material available from many sources, and (2) this material could be collected inexpensively.

In gathering the material, four techniques were employed: (1) written questionnaire-type letters, (2) research, (3) interviews, and (4) personal observations.

The questionnaire-type letter was written in an informal manner to give the recipient freedom of reply and encourage the forwarding of all types of material. Eighteen letters were sent to the various sections of the Cascades with sixteen responses. These letters produced a variety of material with information that could not have been obtained in any other way. For the most part, recipients of the letters were anxious to promote an interest in their community. The responses produced further sources of information which led to
the use of research.

Research resulted in the obtaining of various materials from books to current newspaper and magazine articles. These materials were found to be very helpful in substantiating or disproving material received through the letters. Because this did not completely fill the need of verifying the material received through the letters and obtained from the newspapers, interviews of qualified persons were conducted for further verification.

Through these interviews many facts were verified and even more new material and sources were obtained. Many of these people suggested that trips be taken to any area for which more facts and material were deemed necessary.

Although automobile and airplane trips were taken as part of this study detailed observations were made through the use of motion pictures, paintings, and photographs.

The devices, excluding personal observation, employed in gathering material revealed thirty-five sources from which material was obtained or obtainable on the Cascade Mountain Region. Considering the sparse population of this mountainous region and the relative unimportance placed on it by those who have written about Washington it was edifying to discover so much good material from such a variety of sources.

The cost of material for the region, to the authors, was two dollars and seventy-two cents, excluding automobile and airplane trips. In obtaining material for the other six regions of Washington
the cost of obtaining material was comparable. It is, therefore, concluded that much material is available about the State of Washington, from many sources, at a very low cost.

The second hypothesis was that this material could be organized toward a unit study providing activities necessary for meaningful pupil development.

According to Wesley a unit is an organized body of content and activities arranged in such a manner as to facilitate pupil learning. To be well organized the unit should contain significant content focused upon a purpose. The unit should provide excursions, projects, activities, and other direct experiences.²

A unit should place emphasis on purpose rather than means, related Wesley. It should sustain motivation and indicate clearly to the child where he is going. The organized unit completes the learning process rather than isolating information. It demands that the teacher acquire intensive and significantly focused information. The child, through the unit, is provided with varying rates of progress and recognition of individual differences. The child is procided with a large measure of responsibility through the development of study skills.

Through the unit the child can reach a high standard of achievement.\(^3\)

Essentially, the unit is based on factual content, which is indispensable for the understandings sought. But both factual content and activities contribute to the main purpose of developing new skills, new interests, new ideas, and a new way of reacting and behaving.\(^4\)

This study offers evidence that ideas gleaned from authorities were helpful in organizing material toward a unit study providing activities necessary for meaningful pupil development. This was done when the material collected on Washington was organized into seven geographic regions within the total geographic unit. The material was so organized that it provided a meaningful text for the children at a fourth grade level. The purpose of these units was further developed by the addition of suggested activities which could be adapted to children's abilities and interests. It is, therefore, concluded that the material collected can be organized into a unit study text, providing for suggested activities to further pupil development.

The third hypothesis stated that a text could be so organized as to contribute to a child's growth of understanding of his particular environment.

The necessity for careful organization of a text was brought


\(^4\)Wesley, *op. cit.*, p. 222.
to full view in the review of the literature on "Criteria of the Selection of a Text." In this review of literature, Hall-Quest brought forth the need for unity within a text. This referred to a definite relationship to the whole.

In order for a child to find a definite relationship between his environment and his surroundings he must first understand his immediate environment.

This study substantiates the above hypothesis through the development of the text from the immediate environment to an expanding environment. This growth from the known to the unknown was provided for in the text through the development of world concepts from the home, to the community, to the state, to the nation, to the continent, and then to the rest of the world. Further provision for this learning from the nearby to the remote was made in the historical concept through units on Indians who were first in the State, to white men who discovered and settled the State, and on to the present community. The theory of introducing the familiar quantity was further emphasized through the division of the geographic concept into seven geographical regional units. Through this method the teacher, living in any one of the regions, could begin his unit in that region and expand the child's environment. The teacher can provide the child with understandings of the immediate environment and easily expand these perceptions toward an understanding of the relationship between the child's environment to the rest of the State, nation, and world. It is, therefore, concluded that this text through its organiza-
tion provides a background for relationship of a child to his environment.

The fourth hypothesis stated that the text could be developed in a meaningful way, yet be within the grasp of the fourth grader.

The conclusion of the third hypothesis was partially relevant to the concluding of the fourth hypothesis. The text was developed in such a way as to provide the teacher with an organized means by which to relate the child's present interest and environment to future expansions and skills. The text through the use of verified factual material so relates this material to many parts of Washington that it can be made meaningful to a child in every section of the State. Because of the natural interest of children in travel and adventure, accounts of imaginary trips through the central theme are included. Throughout the text the central theme is developed around factual material.

Verified material was brought within the grasp of the fourth grader through the use of a graded vocabulary list. This vocabulary list was made up of remedial fourth grade words so as to make the text reading at least one-half grade lower than the reading level of the average fourth grader.

But in any social studies text there is a necessity to include new geographic and historic terms because of the nature of the subject. These terms were carefully selected for this text on Washington and a minimum of new terms was used.
Variations of a word were considered a new word, except when formed by the adding of these endings: s, 's, s', es, d, ed, r, er, est, ly, y, n, en, ing, and ful. Words that were formed by the doubling of the final e or changing the y to i were not considered as new words. A compound word formed by combining two known words was not considered a new word; nor is a part of a known compound word when used alone.

A total of sixty-five new words were introduced into the Cascade Region. The rate of introduction of new words is 1.6 words per page. Of these sixty-five new words, twenty-four were proper names, leaving a total of forty-one new words for the region. This dropped the rate of introduction of new words to 1.0 words per page.

Through careful verification of factual material and thorough word control the study gives evidence that the text has meaning and is within the grasp of an average fourth grader. (It was not feasible, at this time, to test the material for actual validity of meaningfulness.) It is, therefore, concluded that, as far as the authors of this report were able to judge from other widely used and accepted texts, the authors' text was organized in a meaningful way within the grasp of the fourth grader.

The fifth and last hypothesis was that there was a better way to organize the history and geography to provide generalizations through past experiences than that provided by any text reviewed.

The present study evolved from a careful analysis of the
two available textbooks on Washington. Eva Greenslit Anderson's *A Child's Story of Washington* presented only a historical background of Washington at the third grade level. It presented past experiences without providing for present generalizations. On the other hand, *Our Washington*, the only available fourth grade text, presented geographical and historical facts so interwoven that it was difficult to develop present generalizations through past experiences. Neither of these texts follows the accepted pattern of presenting text materials.

Caswell states that in order for a child to make present generalizations he must have a thorough background of past experiences. Much of this background experience is provided through a social studies program.

This study reveals that the authors of this report organized their text by developing a background of past experiences through their world and historic concepts. Once these were presented, the geographic concepts were then organized around the region as it is today allowing teachers and pupils to draw upon the historic and world background, already established, to enrich the present. It is, therefore, concluded that this method of organization was more logical

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than the organization presented by the other fourth grade texts because it provided for present generalizations through past experiences.

II. CONCLUSIONS

The following conclusions seem justifiable:

1. That material is available from many sources at a very low cost.

2. That the material collected on Washington was organized into a unit study suggesting activities necessary for meaningful pupil development.

3. That the text does contribute through its organization to the child's understanding of his own environment.

4. That the text was developed in such a way as to be within the grasp of fourth graders.

5. That this particular organization of text material provided a better organization of historical and geographical facts than the other texts available.

6. That it is possible to find, collect, organize, and write text material within the grasp of children at a fourth grade.

III. EDUCATIONAL IMPLICATIONS

While doing research work for this study, the authors of this report found that the majority of readability formulas were set up primarily for reading rather than for social studies. This created the problem of adapting reading words to a social studies text. It is
the feeling of these authors that a worthwhile contribution could be made if a study were undertaken to develop a formula for social studies readability. Such a formula would also help classroom teachers in choosing a social studies text for their particular grade level.

This study further revealed that factual material was difficult to verify because of the lack of authoritative references on Washington. Too much material is assumed to be factual without complete verification from other sources. A recommendation for consideration of a study would be to develop sources and a formula by which factual material could be verified. Such a study could be so organized as to be a practical aid in writing materials or in choosing texts.

It was found difficult to collect, organize, and write materials due to the lack of released school time. The feeling is that more teachers would be willing to develop practical materials if released school time were provided. In this manner curriculums could be kept up with current trends. This would, also, encourage experienced teachers to write and rewrite needed materials at particular grade levels.

Since it was not feasible for the authors of this report to test the validity of the text materials written, it is recommended that a study be made testing the authors' text material. Such a study could be so organized that it would help others in testing newly
written materials. A study of this type could further substantiate the methods used by the authors of this report in developing text materials, thereby encouraging or discouraging other classroom teachers to develop or not to develop similar materials.

Although the authors of this report suggested many activities for the enrichment of their text material they feel that there is a wide field for graded activities and visual aids which could be developed toward the growth of a better understanding of the State of Washington. The development of such materials could be organized in such a manner as to be utilized with any text materials written on the State of Washington. These materials could be further sources of verification of factual material. Such activities as formats for well-organized field trips giving time schedules, outcomes to be expected, persons to be contacted for arrangements, and limitations could be valuable to many teachers. An authentic documentary motion picture on Washington would be an aid many people could use.

While writing their text materials, the authors of this report found that there was a dearth of factual short stories for children on the State of Washington or stories using the State as a setting. It is their recommendation that a variety of factual short stories in a wide range of subjects on the State of Washington be developed to supplement social studies text materials. Such stories would help in enriching text materials, building background experiences, and in motivating children to further study of their state.
It was with many misgivings that the authors undertook this study. Not only were they aware of the lack of material, aids in textbook writing, and lack of time; they often wondered whether the contribution they were making would be worthwhile. As the study developed, a feeling of accomplishment replaced one of frustration. Many learnings and understandings that were gained through this study could not be recorded here. This report is brought to a finale with the feeling on the part of its authors that it was worthwhile to themselves. They can even see possibilities of its worth to others.
BIBLIOGRAPHY


Durrell, Donald D., "What are Textbooks For?" The Phi Delta Kappan, XXXIII, Number 5 (January, 1952).


APPENDIX A

WORD LISTS

These word lists, constituting the remedial-reading vocabularies for the primary grades and the fourth grade, are presented as taken from Donald Durrell's *Improving Reading Instruction* (New York: World Book Company, 1956).

The first list, a remedial-reading vocabulary for primary grades, contains 90 per cent of the words ordinarily used in the written compositions of children in the intermediate grades.
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bed  boat  busy
been  body  but
before  book  button
beg  born  buy
began  both  by
begin  bother  call
behind  bottom  came
ing  bought  can
believe  box  candy
bell  boy  can't
belong  bread  cap
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several  six  spoil
sew  size  spring
shake  skin  stamp
shall  sleep  stand
she  slip  star
shine  slow  start
ship  small  state
shoe  smoke  station
shoot  snow  stay
short  so  steal
shot  soft  step
should  sold  still
show  some  stitch
shut  something  stone
sick  sometime  stop
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sign  song  story
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SELECTED VOCABULARY FOR GRADE FOUR

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ablaze   appetite   behave
abode   appoint   bellows
absent   arch   bewilder
abuse   arctic   blade
acre   army   blast
action   arrest   bleach
actor   artist   blinds
addition   attire   blinker
adopt   attract   blister
adore   avoid   blizzard
adventure   awe   blood
advertise   awl   bluff
agent   bacon   blunt
agree   badge   bolt
airship   balcony   bomb
alien   balk   boost
almond   banister   bore
alter   banquet   boss
alternate   bargain   bound
anger   barren   brace
annoy   baste   bracket
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APPENDIX B

TEACHER REFERENCE BOOKS

This list of reference books for teachers will aid the teacher in finding materials on the Cascade Region specifically. They can be used as references for other sections of Washington as they apply.
REFERENCE BOOKS FOR TEACHERS ON CASCADE UNIT


APPENDIX C

BOOKS FOR CHILDREN TO ENJOY

Although these books do not pertain directly to the Cascades, they are suggested as pleasure reading to give children a background of understanding and appreciation of mountain living and mountain fun.
BOOKS FOR CHILDREN TO READ WITH THE CASCADE UNIT


APPENDIX D

CONCEPT VERIFICATIONS

Verifications of the concepts used to write the unit on the Cascade Region are listed here with sources and page numbers.
VERIFICATION OF CONCEPTS


The purpose of this book is to give the pupil a clear understanding of the nature of the great world in which he lives, and of his own relationship to the persons with whom he shares it.

1. Peaks are of different heights--p. 113.
2. Valleys provide fertile lands for agriculture--p. 220.
5. Streams become rivers--p. 113.
8. Plants are useful to man--p. 121.


The purpose of this book is to present a well-balanced program, which develops elementary meanings derived from major scientific fields--astronomy, biology, chemistry, geology, and physics.

1. Water is necessary to man's livelihood--p. 238.


The purpose of this book is to present the essential values and principles of geography, history, and the
other social studies by using each of the subject-matter areas in helping pupils learn about the peoples, resources, traditions, and customs of the different regions of the world.

1. Mountain ranges are made up of many peaks—p. 154.
3. Mountains affect climatic conditions on either side—p. 151.
5. Natural resources provide a source of income—p. 158.
6. Economy is affected by highways—p. 175.
8. Snow provides water—p. 152.


The purpose of this book is to present to the child the how and why of many fields of science.

2. Plants provide food for animals—pp. 78-86.
3. Animals help control vegetation—pp. 73-77.


The purpose of this book is to present to the child an understanding of how people of different parts of our great world live in their parts of the world. It helps
them understand some of the reasons why they live as they do.

1. A mountain range is different from a mountain peak--p. 231.

2. Mountain ranges are made up of many peaks--p. 221.

3. Mountains and peaks can be formed by volcanoes--p. 97.


5. Glaciers are ice masses--pp. 126-127.


7. Peaks are of different heights--p. 221.

8. Altitudes affect temperature--p. 121.

9. Natural resources provide a source of income--pp. 124-125.

10. Valleys provide fertile lands for agriculture--p. 121.


14. Natural resources of mountains provide many types of recreation--p. 128.

15. Mountains provide for exploration of natural beauties--p. 128.


The purpose of this book is to present to the child a study of the different people of the world in a full year study of each. This gives the child a chance to see how these people live through the different seasons as the child himself does.
1. A mountain range is different from a mountain peak--p. 85.

2. Mountain ranges are made up of many peaks--p. 85.

3. Mountains can be formed by uplifting--p. 75.

4. Mountains and peaks can be formed by volcanoes--p. 75.

5. Glaciers are ice masses--p. 85.

6. Mountains affect climatic conditions on either side--p. 86.

7. Mountain recreation attracts tourists--p. 89.

8. Natural resources of mountains provide many types of recreation--p. 89.

9. Mountains provide for exploration of natural beauties--p. 89.


The purpose of this book is to present to the child a program geared to the child's developmental needs. Growth is a three-way process--physical, mental, and emotional. The science areas are geared toward this.

1. Mountains affect climatic conditions on either side--pp. 171-173.

APPENDIX E

EXCERPT OF TEACHER PREFACE

The Teacher Preface, as presented here and taken from the larger Preface of the text, pertains to the Cascade Region unit only.
TEACHER PREFACE--CASCADE UNIT

This is an excerpt on the Cascade Mountain Region from the entire preface which precedes the text materials of the book. This preface was organized to present further activities, ideas, and references that a teacher could use in addition or in place of the suggestions at the end of each chapter. It was felt that units could be more easily organized and taught with these aids.

How the Mountains were Formed

1. Building a Volcano

Prepare a mound of damp newspaper about six inches high and ten inches in diameter. This is to be the core of the model. To about six cupfuls of dry plaster of Paris add quickly enough water to make a thin paste. Stir well, but do not take more than two minutes to add the water and stir, or the plaster will begin to harden. After mixing, wait until plaster shows signs of thickening, then cover the core of paper with a layer of plaster about one inch thick.

While the plaster is still soft, press a small can into the top. The smaller the can the better. Mix and apply a second layer of plaster building up a mound around the can. The can will serve as the "crater" of the volcano.
When the plaster is hard, fill the crater nearly full with small crystals of ammonium dichromate, which may be ordered through a druggist or secured from your local high school science department. Drop a match into the can on top of the crystals. The crystals will burn, giving off sparks and a great deal of a greenish powder which rolls down the mountain to represent lava.

The demonstration is more spectacular in a darkened room.

2. Experiment to show how glaciers can break up rocks and mountains.

Fill a glass jar full of water. Place a tight lid upon the jar. Freeze either out of doors or in a refrigerator. The expansion of the water from freezing will break the jar just as glaciers break up rocks.

3. Addition to Rock Collection

To your class rock collection add the following types of rocks: granite, obsidian, basalt, gneiss, and pumice.

Discuss their origin in the Cascades.

4. Make a relief map of paper mache showing the formation of the Cascade Mountains and the major peaks.

Cascade Mountains as a Watershed

1. Watershed study
Make a class study of the watershed for your area.

Invite a forest ranger to your classroom to explain watersheds and forest service conservation.

Following these two projects with a relief map of the watershed for your area. Study how you can help the forest service conserve your water.

Plants of the Cascade Mountains

1. Plant life study

Make a further study of plants of the Cascades through the use of

   a. Richfield Wildflower booklets
   b. National Audubon Wildflower Picture Cards
   c. Library reference books
   d. Encyclopedia

Animals of the Cascade Mountains

1. Beaver

Have the children do a research on beavers and write the life story of the beaver. Draw a cross-section of a beaver dam.

2. Mural

Have the children study and develop a mural of animals within their life zones. Include animals, food, and home.

Plants and Animals of the Cascade Mountains

1. Slides
A further study of the plants and animals of the Cascade life zones can be made through the use of life zone slides by J. W. Thompson, Seattle, Washington.

Having Fun in the Mountains

1. Conservation

Develop a forest conservation unit. Make a trip into the Cascade mountains to begin or culminate your unit. Study the trees, plants, and animals of the area and how you can conserve each of these.

Visual Aids

1. Film strips

   Our Earth Series--Jam Handy
   Science Adventure Film #3
   "How Rocks are Formed"
   Encyclopedia Britannica Films, Inc.
   Earth and Its Wonders
   "Story of Volcanoes"--7486
   "Story of Ice and Glaciers"--7485
   Eye Gate House, Inc.
   Earth, Home of Man
   "Mountains"

2. Motion Pictures

   "Mount Rainier" (color) E. B. F.
   Shows life zones with vegetation of mountains
"Adventures of Junior Raindrop" (color)
Animated Cartoon of a raindrop's visit to earth

Books for Information

A simple but interesting child's book telling about the formation of the planet earth from the beginning to the present. (authentic)

This book tells about many baby animals which are common to the world.

A book which is easy reading. It tells how to become a rock collector and identify simpler stones. This book gives details on how rocks are formed.

This book gives a general good background on conservation. The book is easily read.
APPENDIX F

NEW WORDS INTRODUCED

These are the new words introduced in the unit on the Cascade Mountains. These are words used over and above the word list of Appendix A. Many of them are geographical terms typical of this region.
NEW WORDS INTRODUCED INTO THE CASCADE UNIT

A total of sixty-five new words were introduced into the Cascade Mountain unit. This list has been divided into two groups—common names and running words.

### Common Names

<table>
<thead>
<tr>
<th>Columbia Basin</th>
<th>Twisp</th>
<th>Methow</th>
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<tbody>
<tr>
<td>Holden</td>
<td>Morton</td>
<td>Wheeler</td>
</tr>
<tr>
<td>Sitka</td>
<td>Douglas</td>
<td>Alaska</td>
</tr>
<tr>
<td>Stellar</td>
<td>Mount Rainier</td>
<td>Cascades</td>
</tr>
<tr>
<td>Williams</td>
<td>Saint Helens</td>
<td>Adams</td>
</tr>
<tr>
<td>Emmons</td>
<td>Roslyn</td>
<td>Cle Elum</td>
</tr>
<tr>
<td>North Bend</td>
<td>Enumclaw</td>
<td>Ellensburg</td>
</tr>
<tr>
<td>Wenatchee</td>
<td>Yakima</td>
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</tbody>
</table>

### Running Words

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<th>lava</th>
<th>canyon</th>
<th>volcanoes</th>
<th>stretch</th>
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</thead>
<tbody>
<tr>
<td>erupt</td>
<td>glacier</td>
<td>approach</td>
<td>melt</td>
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<tr>
<td>erode</td>
<td>freeze</td>
<td>thaw</td>
<td>climate</td>
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<td>effect</td>
<td>condense</td>
<td>interrupted</td>
<td>copper</td>
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<tr>
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<td>cinnabar</td>
<td>minerals</td>
<td>orchard</td>
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<tr>
<td>potatoes</td>
<td>source</td>
<td>system</td>
<td>gully</td>
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<tr>
<td>reservoir</td>
<td>factory</td>
<td>trillium</td>
<td>herb</td>
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<td>spruce</td>
<td>hemlock</td>
<td>cedar</td>
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<td>avalanche</td>
<td>lily</td>
<td>lupine</td>
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<tr>
<td>raccoon</td>
<td>porcupine</td>
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