1966

UTAH: A Guide for Teaching Social Studies, Fourth Grade

Della W. McClellan

Floyd Sucher

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UTAH
A Guide for Teaching
Social Studies
Fourth Grade
FOREWARD

Schools exist that boys and girls might learn, thus the concept of education must be broadened to include every boy and girl. The status of the individual child must be our primary concern as we enhance the dignity of each child, promote the maximal development of his capacities, stimulate his thinking and widen the range of opportunities for individual choice.

The great ideas that have grown from unshackled minds. We must teach our youngsters to believe in themselves and the individual and not act upon that belief and that the truth will emerge from free minds and the range of views.

Some of our citizens do not understand the constitution under which the constitution of this land was born and the Bill of Rights was framed. As we assume our responsibility for instructing the educational program of boys and girls we value most the critical thinking and the use of interesting and meaningful judgments.

This guide has been dreamed of for several years. By its coming into existence, it demonstrates the value we put upon educating the children of Nebo District School and upon children having a greater understanding of the state of Utah, its cultural heritage, its social development and its potential for future growth.

Children will be oriented to a study of their State as a part of the ever-expanding environment. Many comparisons will be made with other states of the United States and to the world at large.

Since the social studies deal with human relationships, emphasis is given to the study of people as they interact with the social and physical environment to meet basic human needs, customs, values, and language.

Written and Compiled by

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Fourth Grade Teachers, Nebo School District

Dr. Floyd Sucher - Consultant

1966

Nebo School District
Supt. Russell N. Stansfield

Russell N. Stansfield
Superintendent of Schools
Schools exist that boys and girls might learn, thus the concept of education must be broadened to include every boy and girl! The status of the individual child must be our primary concern as we enhance the dignity of each child, promote the maximum development of his capabilities, stimulate his thinking and widen the range of opportunities for individual choice.

The great ideas that have moved the world have sprung from unfettered minds. We must teach our youngsters to believe in themselves and the individual and to act upon that belief and that the truth will emerge from free inquiry and exchange of views.

There are powerful pressures being exerted upon the minds of men. Some of these pressures are of evil design and conflict with the ideology under which the constitution of this land was born and the Bill of Rights was framed. As we assume our responsibilities of guiding the educational program of boys and girls, high value is placed on critical thinking and the use of intelligence in making decisions and exercising judgments.

This guide has been dreamed of for several years. By its coming into existence, it demonstrates the value we put upon educating the children of Nebo District and particularly the importance we place on children having a greater knowledge and understanding of the State of Utah, its cultural heritage, resources, economic patterns and potential for future growth.

Children will be oriented to a study of their State as a part of the ever expanding environment. Many comparisons will be made with other states of the United States and to the world at large.

Since the social studies are concerned with human relationships, emphasis is given to the activities of Utah's people as they interact with the social and physical environment to meet basic human needs, customs, values, and life situations.

The Board of Education acknowledges with sincere appreciation the assistance of all who have contributed in the preparation and publication of this guide. Commendation is expressed to the non-teaching personnel, not directly associated in teaching, for the many hours they have worked in typing, printing and assembling this book.

As another volume is added to the many guides already in the hands of teachers, Nebo accepts a challenge of helping her children advance in culture and preservation of the democratic way of life.

Russell N. Stansfield
Superintendent of Schools
ACKNOWLEDGMENTS

The producers of this guide recognize the following sources of professional materials:


*Utah Resources and Activities*. Salt Lake City, Utah: Dept. of Public Instruction, 1933.


Roylance, Ward J. *Utah's Geography*. Salt Lake City, Utah.

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Prehistoric Life

The earth is very old. There was a time when there were no plants or animals or any people in the world. We do not know for sure how life began on the earth.

The first living things were very important. From the first living things have come all the plants and animals of yesterday and today.

Could the animals of yesterday live in our present time? What do animals need for survival? What do plants need for survival? Why did ancient animals become extinct? How do fossils help us learn about the history of prehistoric life?

Using the school library, let the pupils help locate information that are related to the story of prehistoric life.

The earth is always changing. Is its appearance changing? How are mountains formed? How are they changed? Volcanic action also changes the earth. Are any volcanoes in your area? How do they form?
The earth is very old. There was a time when there were no plants or animals of any kind in the world. We do not know for sure how or when life began on the earth.

The first living things were very important. From the first living things have come all the plants and animals of yesterday and today.

The earth is always slowly changing in its appearance.

A. Mountains are formed and are changed.

1. Volcanic action

CONCEPTS

EXPERIENCES

FUNCTIONAL
SKILLS INVOLVED

REFERENCES

The earth is very old. There was a time when there were no plants or animals of any kind in the world. We do not know for sure how or when life began on the earth.

The first living things were very important. From the first living things have come all the plants and animals of yesterday and today.

The earth is always slowly changing in its appearance.

A. Mountains are formed and are changed.

1. Volcanic action

Develop a concept of what we mean by "prehistoric".

Help pupils set purposes for individual and group reading:

1. How do we know what the earth looked like in prehistoric times?
2. Could the animals of yesterday live in our environment of today?
3. What do animals need for survival?
4. What do plants need for survival?
5. What do we mean by "balance in nature"?
6. Why did ancient animals become extinct?

Visit the school library. Let the pupils help locate materials that are related to the study of prehistoric life.

Use pictures and diagrams to show how land forms have changed.

Discuss the causes for these changes. Consider weather and climate.

Helping the students to develop an inquiring mind and a questioning attitude.

Letting the students help set the purposes for reading.

Using the following locational skills:

Use of card catalog.
Use of author cards.
Use of subject cards.

Referring to more than one book to check the validity of statements.

Acquiring information through observing for a purpose.

Nebo District I.M.C.

Kit Prehistoric Life. Contains models, realia, pictures, slides, overlays and books to be used with this unit.

Filmstrip (series of 6) "Prehistoric Life"
Discovering Fossils.
Story Fossils Tell Us.
The Coming of the Reptiles.
The Rise of the Dinosaur.
Triumph of the Dinosaurs.
Age of Mammals.
The Story of the Earth We Find In The Rocks.

Pough, Frederick H.-All About Volcanoes and Earthquakes.
### CONCEPTS

<table>
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### EXPERIENCES

- Make a model volcano.
- Observe the process of chemical reaction.
- Use a "cut-away" model to observe the inner action of a volcano.

**Directions for making a volcano:**

- Obtain some finely granulated ammonium dichromate from a drug store. Add a few match heads to the chemical to encourage burning.
- Fill the cone of the volcano with the mixture.
- Place the volcano on a pad of newspaper before lighting.
  - The action is better shown in a darkened room.

- Demonstrate how land formations are changed by such reaction.
- Discuss how dome mountains are the result of lava pushing underneath the earth's surface and filling in between the layers of rock.
- Examine the inside of a geode. Note the structure.

### FUNCTIONAL SKILLS INVOLVED

- Acquiring information through experimentation and observation.

### REFERENCES

- Acquiring information through observation for a purpose.
CONCEPTS

3. Erosion - wind, weather, glaciers

Valleys are formed and are changed.
1. Twisting and warping of the earth's surface
2. Rivers and water

EXPERIENCES

Discuss how mountains are changed through the different processes of erosion.
Note areas in Utah where the work of wind and rain is especially evident.
(Monument Valley)
Use pictures and slides to clarify understandings.

Show how valleys are formed in the folding and faulting of mountain formations.
Learn how channels are deepened and widened by rivers.
Examine some rocks from a stream. Note their smoothness from grinding and rubbing.

Note the processes of erosion at work after a rain storm.
Let some water from a faucet drip on a piece of rock salt.
Note the process of erosion.

Shake a bottle of muddy water. Allow it to settle.
Note the layers by coarseness of materials.
Discuss sedimentation of materials in river and stream beds.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observing for a purpose.
Locating information.
Evaluating information.
Organizing information.
Recalling information.

REFERENCES

CONCEPTS

Animals and plants that adapt to their environment are able to exist over a longer period of time.

Fossils are the remains or traces of plants and animals of long ago. Some fossils are found in rock or rock form, in frozen artic ice and in tar pits.

EXPERIENCES

Discuss with children how plants and animals adapt to their environment:

Animals
1. Color change.
2. Metabolism rate.
3. Protection against cold, heat, wind, etc., by fur covering, fat covering, mutations.
4. Through water capacity.

Plants
1. Water supply.
Make special reading assignments to strengthen the discussion.

Learn about the different kinds of fossils.

a. Complete preservation of an insect or animal.
b. Cast of a leaf.
c. Petrified bone or wood.
d. Footprint of an animal.

Take a field trip to a quarry or mountain to look for fossils.

Involve a resource visitor to discuss fossils.

Arrange an exhibit of fossils.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Organizing information.
Reporting information.

REFERENCES

Film Shell Oil Co. (16 mm) "The Fossil Story". 430 Penninsular Ave. San Mateo, California 94401


Dr. Keith Rigby-Geology Dept. of Brigham Young University.
CONCEPTS

The earth was once marked by lowlands and swamps. Water revealed the first simple forms of plant life. Algae (our seaweeds) Fungi (our yeasts, molds, toadstools) Bacteria

Scientists believe that liversort (a moss) was the first land plant.

EXPERIENCES

Arrange an exhibit of fossils.
Collect and mount pictures of fossils.
Have some of the pupils prepare a special report on something of particular interest.

Discuss how we know what the earth looked like by relating to fossil findings.
Discuss with the pupils how we know what the plant and animal life looked like by relating to fossil findings.

FUNCTIONAL SKILLS INVOLVED

Helping children to develop an inquiring mind and a questioning attitude.

Acquiring information from observing with a purpose.

REFERENCES

CONCEPTS

Water or the sea revealed the first simple forms of animal life.

Trilobites were the largest and most intelligent animals of this early age.

The cephalopods became master of the seas.

The fish were the first animals with backbones.

The first backboned animals to live on land were amphibians.

Amphibians were given their name because most of them could live both in water and on land.

Toads and frogs are among our amphibians of today.

EXPERIENCES

Sketch some simple life forms on the chalkboard:

- Algae
- Ameba

Discuss important things about early animal life forms.

Discuss how amphibians adapted to their environment because they could live both in water and on the land.

Make special reading assignments to strengthen the discussion.

Learn some of the important things to be found out about amphibians:
1. Amphibians breathe with gills when young and with lungs when grown.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Organizing information.
Reporting information.

Referring to more than one book to check the validity of statements.

REFERENCES


See plate #1.

Nebo District I.M.C. Kit Prehistoric Life. Pictures and overlays on "Early Life Forms"


Many amphibians lived on the swamp of the coal age. Discuss in detail:
1. The birth was moist.
2. Great forces caused the trees to become barren, and layers of sand were deposited.
3. Use the pictures to help develop this concept.

From the amphibians came the first truly land animals, the reptiles:

Modern day reptiles are lizards, crocodiles, snakes, and turtles.

Discuss the characteristics of reptiles:
1. Reptiles are covered with scales or scutes.
2. Reptiles have short legs or none.
3. Reptiles are cold-blooded.
4. Reptiles breathe with lungs.

Cambrian corals (Fig. 1), brachiopods (3-6), gastropods (9-14), and trilobites (15-23).

Early Life Forms

Plate #1
CONCEPTS

Many amphibians lived in the swamps of the Coal Age. From the amphibians came the first truly land animals, the reptiles.

Modern day reptiles are lizards, crocodiles, snakes and turtles.

FUNCTIONAL SKILLS INVOLVED

Learning to distinguish between conjecture and authenticity of pictures and reading materials.

REFERENCES


CONCEPTS

Dinosaurs were the largest of the reptiles.

Dinosaurs ruled the earth for many years.

The word "Dinosaur" means "terrible Lizard".

There were many kinds of dinosaurs. Each type had its own distinguishing characteristics:
- Allosaurus
- Brontosaurus
- Stegosaurus
- Tyrannosaurus
- Triceratops
- Trachodon

EXPERIENCES

1. Help pupils set purposes for individual reading.
   a. Has man ever seen a living dinosaur?
   b. How can we be sure what dinosaurs looked like?
   c. Would a full-sized brontosaurus be able to chew the flag off a school flag pole?
   d. Were all dinosaurs big?
   e. Were all dinosaurs here at the same time?

   Show pictures of dinosaurs. Discuss how they adapted to their environment.
   Discuss the characteristics of different dinosaurs.
   Make a mural showing dinosaurs in their natural environment.

   Make dioramas.

   Write an original play or skit about dinosaurs.

   Assign individual students to do further reading and made special reports on the different types of dinosaurs.

FUNCTIONAL SKILLS INVOLVED

Using the following locational skills:
- Use of the card catalog.
- Use of the author cards.
- Use of the subject cards.
- Use of an index.
- Evaluating information.
- Organizing information.
- Reporting information.
- Applying language skills.

REFERENCES


Nebo District I.M.C. Sound filmstrip "Utah—the Land of the Dinosaurs".


CONCEPTS EXPERIENCES

Make some dinosaur models:
1. Make a simple wire frame.
2. Fasten the frame to a board or card board.
3. Wrap the frame with newspaper to the desired thickness.
4. Cover the newspaper form with paper mache. Round out special features.
* For large class models, built to scale, use chicken wire for the frame.

Make dinosaur puppets:
1. Make heads of wheat paste mixed with sawdust or paper mache.
2. Make the body frame with spools.
3. Cover the frame with cloth.

Have some creative writing experiences. Some suggested topics might be:
1. The day I brought a dinosaur home from school.
2. My first ride on a dinosaur.
3. A dinosaur, the strangest pet on earth.

Have the pupils prepare a report about a kind of dinosaur. Use models or other aids to make the report more interesting.

FUNCTIONAL SKILLS INVOLVED

Grouping related ideas.
Organizing ideas according to logic.
Learning how to take notes.

REFERENCES

LaPrade, Kerby E. Dinosaurs

Nebo District I.M.C.
Era Prehistoric Life
Film: "Animals of Prehistoric America"
Filmstrips:
"Dinosaurs"
"Utah, the Land of the Dinosaurs"
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<td>Changes in the earth's surface, climatic changes and inability to adapt to the environment help to explain why the dinosaurs became extinct.</td>
<td>Discuss how we, today, have to learn to adapt to our environment if we are to survive.</td>
<td>Organizing a two-level outline. Writing summaries from an outline. Learning to give a report from an outline.</td>
<td>Smith, Nila Banton. &quot;In the Days of Dinosaurs&quot; Fun All Around. New York: Bobbs-Merrill Inc. 1960, p 154-160.</td>
</tr>
<tr>
<td>Mammals appeared during the age of reptiles.</td>
<td>Discuss the following information about mammals: The first mammals were small and could move very fast. Mammals take air into their bodies with lungs. Mammals are warm blooded animals. Mammals have hair or fur. Babies are fed with milk from their mother's bodies.</td>
<td>Reading with discrimination. Recording, summarizing and evaluation information gained.</td>
<td>Parker, Bertha Morris. Animals of Yesterday. Evanston, Ill.: Row Peterson. 1959.</td>
</tr>
</tbody>
</table>
Some of our modern mammals are very much like their ancestors of long ago.

Many of our common mammals look very different now from the way they looked when they first appeared on the earth.

Mammals are lords of the earth today.

Man is the highest order of mammals.

The early mammals had bigger brains in proportion to the size of their bodies than had other animals that lived before them.

Use pictures to show how modern day animals resemble animals of long ago.

Use the opossum as an example of one of these animals.

Use pictures to show how they have changed.

Sight elephants, camels and horses as examples of animals that have greatly changed in structure and size.

Discuss how thinking power, ability to communicate, and dexterity enable man to control his environment.

Applying critical thinking to social issues.


Film: Encyclopedia Britannica 7506 "Age of Mammals"

Nebo District I.M.C. Filmstrip "Animals of the World-Mammals and Reptiles"
BIBLIOGRAPHY

(Books)


Utah State Department of Public Instruction Utah's Land and Early People. Salt Lake City, Utah: 1947.


BIBLIOGRAPHY
(Children)


Ware, Kay. *Prehistoric Animals*. St. Lewis: Webster, 1957.


Many different people have inhabited Utah.

The Basket Makers were some of the earliest Indians to live in Utah.

The Basket Makers inhabited the Valley of the San Juan River, in what is now known as San Juan County.

Discuss the different ways people have of finding out about ancient culture.

1. Excavations of mounds and ruins.
2. Carbon-14 tests for dates.
3. Tree rings to determine age and weather cycles.
4. Photographs and pictographs.

Use pictures to help develop understandings.

Display a segment of a tree trunk to show growth rings.

Visit an excavation site to see for yourself how people lived in the past.

Discuss briefly the lives of people the Baskets lived in. What were their racial characteristics? What were their ways of making a living? What types of homes did they live in? What tools did they use? Discuss how they grew crops and began farming.
CONCEPTS

Many different people have inhabited Utah.

The Basket Makers were some of the earliest Indians to live in Utah.

The Basket Maker Indians settled in the Valley of the San Juan River, in what is now known as San Juan County.

EXPERIENCES

Discuss the different ways people have of finding out about ancient cultures:

1. Excavations of tools, utensils etc.
2. Carbon-fourteen testing for age.
3. Tree coring to determine age and weather cycles.
4. Pictographs and petroglyphs.

Use pictures to help develop understandings.

Display a segment of a tree trunk to show growth rings.

Visit an excavation to look for specimens or to see how the earth builds up.

Discuss briefly what type of people the Basket Makers were. (nomadic) Learn about their racial characteristics:

Ways of making a living
Types of homes
Use of Pictographs
Tools - Utensils
Discuss how they settled down and began to farm.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through listening and observing.

Recording, summarizing and evaluating information.

REFERENCES


Utah Resources and Activities. Salt Lake City, Utah: Dept. of Public Instruction, 1933. p. 161.

See plate #2.

Nebo District IMC Kit Utah's Heritage Transparency "Growth Rings of a Tree"
GROWTH RINGS OF A TREE

FIRE OCCURRED IN 14TH YEAR
Later, a new group of Indians called the Pueblos, moved into southwest Utah where the Basket Makers were living.
Basket Maker Indians
CONCEPTS

Pueblo culture developed where the Basket Makers left off.

EXPERIENCES

(The cemeteries contain equal numbers of both tribes, Many customs continued etc.)

- Read about the habits and customs of the Pueblos. Where were their houses built? How did the homes differ from one locality to another. Discuss how the Indians in Western Utah substituted adobe for stone since suitable stone was not available; and likewise how they adapted their construction in other areas. Talk about their agricultural practices. (Irrigation, methods of tilling the soil, crops etc.)

- Talk about their ceremonial life and their arts and crafts. (pottery and design, ornaments, carving in bone, stone, shells, wearing apparel, tools)

Write stories about Pueblo Culture. Illustrate.

View a film together to purpose a discussion on Pueblo culture.

FUNCTIONAL SKILLS INVOLVED


- Applying language skills.

- Acquiring information through observing for a purpose. Summarize and evaluate the information gained.

REFERENCES

Utah Resources and Activities. Salt Lake City, Utah: Dept. of Public Instruction, 1933.


Films: "Arts and Crafts of the South West Indians" "Indian Ceremonials" Santa Fe Film Bureau, Room 100 121 East 6th South, Los Angeles 14, California.
CONCEPTS

The Pueblo tribes spread northward as far as Great Salt Lake and into the Uinta Basin.

Mounds from these cultures have been excavated in such scattered places as Uinta, Willard, Provo, Nephi, Kanosh, Beaver, Parawan, and Paragonah.

EXPERIENCES

Continue developing the time line of Utah's early inhabitants.

Collect and display pictures of Pueblo culture.

Locate the places on a map where mounds have been found.

Note the distances between places and the starting place at San Juan Valley.

Note the direction these places are from each other.

Collect and display a collection of Indian artifacts.

Make a list of questions children raise concerning these articles.

Use the questions to purpose further reading and discussion.

FUNCTIONAL SKILLS INVOLVED

Understanding time and chronology.

Understanding differences in duration of various historical periods.

Determining the direction and position of places.

Determining relative distance by use of a map scale.

Locating information.

Evaluating information.

(Contd.)

REFERENCES

Film "Pueblo Boy"
Ford Motor Company
Film Library-Western Region
4316 Telegraph Ave.
Oakland 9, California


Hall, Ansel F. Mesa Verde. Mesa Verde National Park, Colorado: Mesa Verde Company.


See plate #4.

Nebo District I.M.C.
Kit Utah's Heritage
Map transparency - "Spread of the Pueblo Culture"


CONCEPTS

Only a few of the Pueblo Indians are living today. They are located in Arizona and New Mexico.

The Pueblos were driven back into the southern areas by the Navajo and Apache tribes who came into Utah from the north.

Some Navajo Indians live on a reservation today which covers the southernmost part of San Juan County.

EXPERIENCES

Locate the Pueblo Indian Reservation on a map.

Discuss how the Pueblo culture was suddenly threatened, not by pestilence, climatic change, or natural agency, but by human enemies. The Apaches and Navajos, moving down from Canada, exterminated or drove out the inhabitants of the thousands of tiny villages. Only a few Navajos remained in the state. The majority of these two tribes migrated on through the state.

Find out about modern day Indians and their reservations. Contact books, pictures, resource people for information.

Discuss their habits and customs. What changes are taking place? What are some of the problems of adjustment.

Show slides or pictures of the different Indian reservations as they appear today.

FUNCTIONAL SKILLS INVOLVED

Collecting and organizing.
Reporting information.
Applying language skills.

Determining direction and position of places.

Locating information.
Evaluating information.
Organizing information.
Reporting information.
Applying language skills.

Acquiring information.

REFERENCES

See plate #5.
Nebo District I.M.C.
Kit Utah's Heritage
Map transparency "Indian Reservations in Utah"
Slides "Modern Day Indian Reservations in Utah"

**CONCEPTS**

After the Pueblo Indians had been driven out, the Shoshonean tribes took possession of Utah:

- The **Utes** or **Utahs**, occupied the eastern and central parts of the state.
- The **Paiutes** roamed the southwestern part of Utah.
- The **Gosiute tribe** settled in the western part of Utah.
- The **Snakes** hunted and trapped in northern Utah.

**EXPERIENCES**

Locate the reservations on a map:

- Navajo
- Washakie
- Skull Valley
- Gosiute
- Kanosh
- Shivwits
- Uinta-Oouray

Locate on a map, the areas that were occupied by the different Shoshonean tribes.

Compare the physical features of the land in each area:

- Compare climatic conditions.
- Compare natural resources.
- Compare land elevations.

Learn how the physical environment influenced the life of a tribe.

Discuss briefly how the different tribes adapted to the different environments:

- Types of homes
- Clothing
- Arts and crafts
- Warfare
- Religious ceremonies
- Food etc.

Show pictures of the different tribes to help clarify concepts.

Continue developing the timeline of Utah's Early inhabitants.

Discuss how Piute County got its name - Utah Lake-

**FUNCTIONAL SKILLS INVOLVED**

Determining direction and position of places.

Map Study. Determining the direction and position of places. Interpreting and using a map key or legend.

Acquiring information through observing.

Understanding time and chronology.

**REFERENCES**


See plate #5.

Nebo District I.M.C. Kit Utah's Heritage Map Transparency "Indian Reserves in Utah"

Utah's Land and Early People. Salt Lake City, Utah: Dept. of Public Instruction, 1947. p. 45.

Some of the first white inhabitants to visit Utah were the explorers, trappers, mountain men and guides.

The real objective for early exploring in Utah was to find a new route into California.

CONCEPTS

EXPERIENCES

Timpanogas - Peteetnee Creek - Peteetnee School - etc.

Discuss why a shorter overland route to California was so important at this time.

Learn how the early trails were charted and marked.

Compare these early trails with travel routes today:
- highways
- air routes
- train routes

List the differences between modern travel routes and early routes.

Reinforce understandings of how modern methods and inventions have made traveling easier.

Note with the pupils, how maps are always being improved - errors are being corrected.

Compare an early map made by an explorer with a current map of the same area.

Discuss the necessity of using current maps for current information.

Site examples of how insufficient map information can cause problems:
- Donner-Reed Party.

FUNCTIONAL SKILLS INVOLVED

Determining direction and distance.

Recognizing and using map symbols.

Using keys or legends.

Evaluating, organizing, and summarizing ideas.

Comparing maps and drawing inferences.

Using more than one source to check accuracy of information.

Recognizing the importance of using current information.

REFERENCES

See plate #6.
Nebo District I.M.C.
Kit Utah's Heritage
Map transparency "Utah Historical Trails"

Map transparencies:
"Travel Routes in Utah Today"

See plate #7.
See plate #8.
See plate #9.

See plate #10 and plate #11.
Nebo District I.M.C.
Kit Utah's Heritage
Map transparencies "Mythical Rivers of the west"
"Utah's drainage Area"
MYTHICAL RIVERS OF THE WEST
CONCEPTS

Explorers:
In 1776, two Spanish Missionaries, Father Dominquez and Father Escalante were sent by the Mexican Government to find a direct route between Santa Fe, New Mexico and Monterey, California.

EXPERIENCES

Why are modern maps more reliable than early maps?

Discuss why Father Escalante and Father Dominquez were anxious to accept the assignment of finding a new route. (religious reasons and exploration)

Trace the Escalante-Dominquez route on a map.

Determine direction and position of places.

Point out where they entered into Utah.

Determine relative distance by use of a map scale.

Did they take the most direct route toward their destination from the starting place?

Recognizing and using map symbols.

How do physical features of the land influence a route?

FUNCTIONAL
SKILLS INVOLVED

Discuss how physical features of the land were obstacles to them?

Discuss how Indians served as both counselors and guides for the explorers.

Discuss the contributions made by Escalante and Dominquez:

They discovered and crossed the Green River near the present town of Jensen, went westward across the Wasatch Mountains, down Spanish Fork Canyon and into the Great Basin and Valley of Utah Lake.

REFERENCES

See plate #12.
Nebo District I.M.C.
Kit Utah's Heritage
Map transparency "Escalante Route"


Utah's Lands and Early People. Salt Lake City, Utah: Dept. of Public Instruction, 1947. p. 64.
In the early 19th century, while Spanish explorers were coming into southern Utah, American fur traders and trappers were entering the state at the north.

- They made accurate maps of campsites and routes.
- They kept a descriptive journal. (Escalante is best known because of his diary.)
- Make a list of the kinds of things a person might keep in a diary.
- Observe one of their maps.
- Discuss how the Escalante-Dominguez party never did get to California but re-routed themselves at Beaver, Utah and returned to Santa Fe, New Mexico.
- Discuss why they turned back.
- Tell the story of "The Crossing of the Fathers". (This is a narration of their experiences crossing the Colorado River on their return trip to Santa Fe.)
- Show pictures or diagrams of this area to help develop an appreciation for cross-country travel.
- Arranged a display of relics related to fur trading and trapping activities. (snow shoes, hides, traps, guns, etc.)

FUNCTIONAL SKILLS INVOLVED
- Recognizing and using map symbols.
- Determining directions and position of places.
- Interpreting pictures and maps.
- Drawing inferences and interpreting relationships.
- Acquiring information through observing.
- Developing an understanding of time and chronology.

REFERENCES
- See plate #13.
- Nebo District I.M.C.
- Kit Utah's Heritage Map transparency "Miera's Map "
CONCEPTS

Rocky Mountain Fur Co.

1. Jim Bridger
2. Jedediah Smith
3. Etienne Provost

EXPERIENCES

Make a list of the questions children raise while exploring such articles.

Provide opportunity for pupils to locate reading materials in the library which will help them to find answers to their questions, and other — (How they traveled and how they provided for their needs, etc.)

Share information in a class discussion.

Continue developing the time line of Utah's early inhabitants.

Discuss how the Rocky Mountain Fur Co. was organized by General W.A. Ashley. Jim Bridger, Jedediah Smith, and Etienne Provost were trappers hired by the company.

Use maps and overlays to show their routes and the areas they visited.

Discuss how these mountain men took on the ways of the Indians, through intermarriage and learning to survive the trials of the wilderness through primitive woodlore.

Tell the story of how Cache Valley got its name.

Assign individual pupils to organize a report on a trapper

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Organizing and categorizing.
Summarizing information.
Reporting information.
Applying language skills.

Locating information.
Evaluating information.
Interpreting map symbols.
Determining location and direction.

REFERENCES

Utah's Lands and Early People. Salt Lake City, Utah: Dept. of Public Instruction, 1947, p. 64.

See plate #6.
"Utah Historical Trials"
Nebo District I.M.C.
Kit Utah's Heritage
Filmstrip—"The Mountain Men"

Jim Bridger was one of the first mountain men to visit Utah. Jedediah Smith explored the Sevier Lake region in 1827.

**CONCEPTS**

**EXPERIENCES**

Discuss the contributions Jim Bridger made to early explorations in Utah:
- He is given credit for discovering the Great Salt Lake in 1824.
- He built Fort Bridger.
- He advised the Mormons.

Tell the story of Fort Phil Kearney:
- Discuss some of the distinguishing characteristics of Jedediah Smith as a man.
- Mention such facts as:
  - He was a very religious man.
  - It is said that he carried his Bible in one hand and his rifle in the other.
  - While some trappers were interested only in the gain from furs, Smith saw the vision for exploration.
  - Smith and his party were first to find a route to California (1826) which is close to the present highway 91.
  - He was the first to cross the Sierra Nevada Mountains coming back into Utah in 1828.

**FUNCTIONAL SKILLS INVOLVED**

- Organizing and summarizing.
- Reporting information.
- Applying language skills.

**REFERENCES**

**CONCEPTS**

Etienne Provost trapped and explored in northern and north central Utah.

**EXPERIENCES**

He was the first explorer to circle the Great Basin (1828).

His records and maps were influential in arousing interest in the west.

Discuss the obstacles they encountered and how they overcame them. (deserts, mountains.)

Discuss how Provo City, Provo River and Provo Canyon were all named in honor of this courageous trapper and explorer.

Tell of some of his experiences.

Discuss how Provo City, Provo River and Provo Canyon were all named in honor of this courageous trapper and explorer.

Tell of some of his experiences.

Discuss the obstacles they encountered and how they overcame them. (deserts, mountains.)

Discuss some of the experiences of Peter Skeene Ogden, a famous trapper, pioneer, and explorer of the west.

Tell how the city of Ogden got its name.

**FUNCTIONAL SKILLS INVOLVED**

Referring to more than one source to check the accuracy of information.

Recognizing the importance of using current information.

**REFERENCES**


Utah's Lands and Early People. Salt Lake City, Utah: Dept. of Public Instruction, 1947. p. 80.


See plate #14.

Nebo District I.M.C. *Kit Utah Heritage Map transparency "Bonneville's Map 1837"*
BONNEVILLE'S MAP 1837

Plate #14

For teacher use only,
John C. Fremont was one of the most daring western explorers.

2. Fremont

John C. Fremont was one of the most daring western explorers.

Compare the shape of Great Salt Lake with a current map.

Note position of the islands of the Great Salt Lake.

Note position of Utah Lake.

Note how Utah Lake is spelled.

Note what lake was named after him.

Read to find out about Fremont and some of the people associated with him (Kit Carson.)

Discuss how cities have sprung up where Fremont's camp sites were. Mention the fact that Fremont established his camps in strategic places which were ideally suited for the settlements which came later.

Use a film or filmstrip as a basis for a discussion of early exploration.

Locating information.

Skimming to locate specific information.

Reading to find answers to questions.

Evaluating what is read.

Listening and observing with a purpose.

REFERENCES


Kit Utah's Heritage Sound-Filmstrip "The Trail Blazer" (Early explorers and settlers in Utah)
CONCEPTS
Fremont became known as "The Pathfinder" because of the accurate maps and blueprints he made of the country he explored.

EXPERIENCES
Discuss how Fremont made the first map showing the islands of the Great Salt Lake.

Show copies of Fremont's maps.

Tell of his ability and training to make better and more accurate maps.

Tell how Fremont published interesting descriptions of the things he saw from his notes.

The Mormons obtained valuable information for their trek from Fremont's maps and notes.

Discuss the kinds of needed information the Mormons obtained from Fremont.

Climate.

Topography of land.

Water supply.

Dangers.

Discuss how the Mormon Pioneers recruited 500 soldiers.

Read about some of their experiences until they joined the Saints in Salt Lake City.

FUNCTIONAL SKILLS INVOLVED
Referring to more than one source to check the accuracy of information.

Recognizing the importance of using current information.

Recognizing and using map symbols.

Acquiring information through observing.

REFERENCES
See plate #15.

Nebo District I.M.C.

Kit Utah's Heritage Map transparency "Fremont's Great Salt Lake Map 1843".


See plate #16.

Nebo District I.M.C.

Kit Utah's Heritage Map transparency "The Longest Infantry March in History"
In July, 1847, the first group of Mormon pioneers arrived in Salt Lake Valley.

**CONCEPTS**

Trace the route of the Mormon Battalion.

**EXPERIENCES**

Describe how the Salt Lake Valley looked at the time it was first settled.

Discuss what factors influenced the location of a settlement.

Re-trace the route of the Mormon pioneers on a map. Compare with Highway 30.

Discuss what obstacles had to be overcome. (rivers, mountain ranges, etc.)

Use a map key to estimate the length of the trek in miles.

Estimate the distance on the map that could be traveled per day.

Compare the time it took to make the trek with traveling the same route today.

Reinforce understandings of how modern methods and inventions have made traveling easier.

Discuss the problems of settling in a wilderness country.

**FUNCTIONAL SKILLS INVOLVED**

Determining direction and position of places.

Determining relative distance by use of a map scale.

Determining direction and position of places.

Determining relative distance by use of a map scale.

Recognizing and using map symbols.

**REFERENCES**


See Map plate #17.

Nebo District I.M.C. Kit Utah's Heritage Map transparency "Modern Highways and the Mormon Trail " Pictures.
THE LONGEST INFANTRY MARCH IN HISTORY

- Some men worked for Sutter. Gold discovered 1848.
- 3 men killed by Indians.
- Routes to Utah after discharge.
- Battalions discharged July 16, 1847. 85 men re-enlist.
- Battalions arrived Jan. 29, 1847.
- Pima Indians fed battalion.
- Battalion cut into stone to get wagons through.
- Battalion marched through without firing a shot.
- Battalion fought wild bulls.
- Traveled pioneer route from here to Salt Lake.
- Three groups returned to main pioneer route.
- Battalion equipped here.
- 15 families sent to Pueblo Sept. 16, 1846.
- Colonel Cooke took command Oct. 1846.
- Third sick group sent back via Santa Fe and Pueblo.
- Monument dedicated July 11, 1946.

Some men worked for Sutter. Gold discovered 1848.

Battalion discharged July 16, 1847. 85 men re-enlist.

Battalion arrived Jan. 29, 1847.

Pima Indians fed battalion.

Battalion cut into stone to get wagons through.

Battalion marched through without firing a shot.

Battalion fought wild bulls.

Traveled pioneer route from here to Salt Lake.

Three groups returned to main pioneer route.

Battalion equipped here.

15 families sent to Pueblo Sept. 16, 1846.

Colonel Cooke took command Oct. 1846.

Third sick group sent back via Santa Fe and Pueblo.

Found by John Brown and Mississippi Saints.

Colonel Cooke turned battalion toward California.

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Ivan J. Barrett, Brigham Young University.

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MODERN HIGHWAYS and the MORMON TRAIL

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<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within a few years, colonists had made settlements in all parts of the state.</td>
<td>Evaluate Brigham Young's Indian policy — &quot;It is better to feed them than to fight them&quot;. (Indians)</td>
<td>Applying problem-solving and critical thinking to social issues.</td>
<td>Hunter, Milton R. The Utah Story. Salt Lake City, Utah: Wheelwright Lithographing Co., 1960. p. 195.</td>
</tr>
</tbody>
</table>
After the discovery of gold in California, Salt Lake City became an important trade center between Missouri and the Pacific coast.

Utah was a part of Mexican territory at the time of its settlement.

By treaty, at the close of the Mexican war, a large part of western America (including Utah) was ceded to the United States.

In 1849, Utah applied for statehood under the name of "State of Deseret ".

Discuss early mining activities.

Use a map to locate some of the early mining areas in Utah.

Find out what kind of minerals were mined.

Discuss reasons why Salt Lake became a trade center. Include the fact that Salt Lake was the only city of any size in the area; stage lines connected Salt Lake City with the famous mining camps of Idaho, Nevada, and Montana; the overland telegraph connected Utah with the East (1861); the transcontinental railroad was completed. (1869)

Discuss the influence that the increased trade had on the standard of living in Utah.

Explain how a great part of Western U.S. was once a part of Mexican Territory.

Use a map to observe the size of the Mexican cession. Note the states that is included.

Discuss reasons why statehood was not granted to Utah at this time: Political differences Economic problems Religious beliefs

Determine direction and position of places.

Recognize and use map symbols.

Determining direction and location.

REFERENCES


See plate #20.

Nebo District I.M.C. Kit Utah's Heritage Map transparency "The Mexican Cession ".

SOME IMPORTANT MINING AREAS
Past and Present

Park Valley

Bingham X Park City

Ophir X

American Fork

Roosevelt X

Gold Hill X Clifton

Mercur X

Mammoth X Bureka

Bonanza X

Castlegate X Sunnyside X Hiwatha

Sigurd X Temple Mtn.

Sulphurdale X

Frisco X Marysvale

Lisbon X

Iron Mtn.

Silver Reef

Aneth

Plate #19

Printed by permission of:
Ward J. Roylance. Utah's Geography.

*For teacher use only.
The Mexican Cession

In 1846, Congress sold the territory of Texas for 18 million dollars. Initially, Utah was included in this territory. However, Congress later excluded Utah from the purchase. Utah was later admitted as a state in 1896.

Discuss how the Mexican Cession impacted the region.

Locate the Mexican Cession on the map. What are the dates associated with the Mexican Cession?
CONCEPTS

In 1850, Congress established the Territory of Utah.

Utah Remained a territory for 46 years.

Boundary changes were made which brought Utah down to its present size.

EXPERIENCES

Discuss how the "Provisional State of Deseret" was set up with Brigham Young as governor.

Observe a filmstrip together to purpose a discussion.

Observe a map to see the size of the "State of Desert" and what it included.

Discuss the Compromise of 1850 and the creating of the territory of Utah.

Observe a map that shows early organization of the counties.

Compare early county organization with present county organization.

Note the county names that have been retained.

Utah Remained a territory for 46 years.

Discuss some of the important events that took place while Utah was still a territory.

Contact, Books, pictures for information.

Discuss how Utah was cut down in size from time to time. Note which areas were lost to Nevada, which to Colorado and Wyoming until Utah was made its present size.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observing for a purpose.

Discussing and evaluating the information gained.

Recognizing and using map symbols.

Acquiring information through observing for a purpose.

Recognizing and using map symbols.

Acquiring information through observation for a purpose.

Locating information.

Evaluating Information.

Organizing and summarizing.

Reporting information.

Recognizing and using map symbols.

Acquiring information through observation for a purpose.

REFERENCES

Nebo District I.M.C.
Kit Utah's Heritage
Sound Filmstrip - "Utah Territory"

See plate #21.

Nebo District I.M.C.
Kit Utah's Heritage
Map transparency "State of Deseret"

See plates #22, #23, and #24.

Nebo District I.M.C.
Kit Utah's Heritage
Map overlay "Compromise of 1850"

Map transparency "Counties of Utah 1850-1860"

Map transparency "Counties of Utah 1870-1920"

"A Chronology of Dates in Utah's History"

See Appendix.

See plate #21.

Nebo District I.M.C.
Kit Utah's Heritage
Map transparency "State of Deseret"
STATE OF DESERET AND ITS REDUCTIONS

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Dr. Leland H. Creer.

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Printed by permission:

Miller, David E. *Utah History Atlas*
Salt Lake City, Utah: University of Utah Press, 1964

*These materials are for teacher use only.*
CONCEPTS
Utah became the forty-fifth state in the union in 1896.

EXPERIENCES
Discuss the kinds of activities that marked the celebration of statehood.
Contact books, pictures, resource people for information.

FUNCTIONAL SKILLS INVOLVED
Show a Utah State Flag and discuss its meaning.

REFERENCES


Hall, Ansel F. **Mesa Verde.** Mesa Verde Nat. Park, Colo.: Mesa Verde Co.,


Howells **The Mormon Story.** Salt Lake City, Utah: Bookcraft, 1957.


Hunter, Milton R. **Utah In Her Western Setting.** Salt Lake City, Utah: Deseret Book Co., 1958.


Watson, Don. **Cliff Dwellings of the Mesa Verde.** Mesa Verde National Park, Colorado: Mesa Verde Company, __________.


ARTICLES
(Teachers)


BIBLIOGRAPHY
UTAH'S HERITAGE
(Children)


REGIONS OF UTAH
### CONCEPTS
The United States is made up of several natural regions.

The surface of Utah is made up of parts of three of these natural regions:
1. The Rocky Mountains
2. The Basin and Range
3. The Colorado Plateau

### EXPERIENCES
- Locate the different natural regions of the United States on a map.
- Use an over-lay transparency to show how Utah lies in a part of three of these regions.
- Learn what the three natural regions of Utah are and where they are located.
- Make a class relief map of Utah. (Salt and flour dough.)
- Have the children make individual booklets about the regions of Utah.
  - Maps
  - Pictures
  - Newspaper clippings
  - Glossary of terms
  - Illustrations
- Develop a class chart of geographical terms. Illustrate.
- Have the class collect interesting pictures of the different regions.
  - Arrange the pictures and a map of Utah on a bulletin board.

### FUNCTIONAL SKILLS INVOLVED
- Determining direction and position of places.
- Recognizing and using map symbols.
- Interpreting relationships.
- Constructing a map for recording information.

### REFERENCES
- See plate #25.
- Nebo district I.M.C.
- Kit Regions of Utah
- Map Transparency "Regions of the U.S."
- Map overlay "Regions of Utah"
- Transparencies "Geographical Terms"
Natural Regions of the U.S.
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Ward J. Roylance. Utah's Geography.
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Plate No. 26
<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>In eastern Utah lies one section of Rocky Mountains which is sometimes called the Middle Rocky Mountains.</td>
<td>Relate the pictures to their actual location on the map.</td>
<td>Acquiring information through observing for a purpose.</td>
<td>Nebo District I.M.C. Kit Regions of Utah Slides and pictures of mountain ranges.</td>
</tr>
<tr>
<td></td>
<td>Discuss interesting and important facts about the Rocky Mountains such as: They are young, rugged mountains gashed by deep canyons.</td>
<td></td>
<td>See plate #26. &quot;Natural Regions of Utah &quot;</td>
</tr>
<tr>
<td></td>
<td>Many of the mountain peaks are more than 11,000 feet above sea level.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>The Wasatch and Uinta ranges are a part of the Middle Rocky Mountains.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>The Wasatch Mountains, with the High Plateaus, form the eastern boundary of the Basin and Range Province.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Uinta Mountains form the northern boundary of the Uinta Basin.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>There are more than 1,000 lakes in the Uinta's.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Use pictures, maps, graphs, resource people and personal experiences to aid the discussion.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Great Basin is one of the driest parts of the United States.</td>
<td></td>
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</tr>
</tbody>
</table>
Western Utah is a part of a greater region known as the Basin and Range Province.

The Great American desert is a part of the Basin and Range Province.

Use a map to observe that the Uinta Mountain range is the only mountain range running east and west in the U.S. Try to find out if there is an explanation for this.

Use a map key to identify the high elevations.

Use a map to locate and show that the Basin and Range Province, which is sometimes called "The Great Basin," extends westward across Nevada and into California, northwestward into Oregon and northward into Idaho.

Organize a panel of students to discuss interesting and distinguishing features of the Great Basin:

- It has many small mountain ranges which run in a north-south direction.
- The mountains are separated by wide, nearly level, valleys.
- Many of the low-lying valleys are classed as deserts.
- The higher adjoining areas furnish winter grazing.
- The Great Basin is one of the driest parts of the United States.

Determining direction and location of places.

Acquiring information through observation for a purpose.

Relating and evaluating information gained.

Recognizing and using map symbols.

Determining direction and location of places.

Recognizing and using map symbols.

Using a map scale to compute relative size.

Relating, comparing and evaluating information gained through observation with that from other sources.

Locating information.

Note Taking.

Evaluating information.

Organizing and categorizing information.

Applying language skills.

REFERENCES

Laidlaw Pub.: On the Trail to Adventure Gr. 4

D.C. Heath Co.: Luck and Pluck Gr. 4
<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Great American Ripsert is a part of the Basin and Range Province.</td>
<td>Acquiring information through observing for a purpose. Relating and evaluating information gained.</td>
<td>Nebo District I.M.C. Kit Regions of Utah Pictures and Slides of the Great Basin.</td>
<td></td>
</tr>
<tr>
<td>The Basin and Range Province has no outlet to the sea.</td>
<td>Determining direction and position of places. Recognizing and using map symbols. Using a map scale to compute relative size.</td>
<td>See plate #18.</td>
<td></td>
</tr>
<tr>
<td>Continue to develop the bulletin board idea started on The &quot;Regions of Utah&quot;.</td>
<td></td>
<td>See plate #25.</td>
<td></td>
</tr>
<tr>
<td>Use a map to show where the people live in the great basin. Discuss, briefly, how people make a living and the factors that influence them.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use a map to locate the Great American Desert. Explain that this desert is the largest desert in the U.S. and comprises approximately 5,000,000 acres.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Use an atlas to find out how Utah County compares with the great desert in size. Provide the class with a map of Utah County. Use the same scale to plot a 5,000,000 acre area. Compare.</td>
<td></td>
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</tr>
<tr>
<td>Discuss what a desert is and what factors contribute to making a desert land.</td>
<td></td>
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</tbody>
</table>
CONCEPTS

Compare the Great American Desert with the Sahara:
In what ways are all deserts the same?
In what ways do they differ?
Compare climates, travel and life found on the desert.

FUNCTIONAL

SKILLS INVOLVED

Locating information.
Evaluating information.
Organizing and collecting.
Reporting information.
Applying language skills.
Comparing information drawn from several sources to recognize agreement and contradiction.
Considering which sources are more acceptable and why.

REFERENCES


Basal and Supplementary.
Readers containing desert stories:
American Book Co.:
Beyond Treasure Valley Gr. 3
Along Friendly Roads Gr. 3
Open Roads Gr. 3
American Adventures Gr. 4
Ginn and Co.:
Trails to Treasure Gr. 5
Roads to Everywhere Gr. 4
Children's Own Readers Gr. 4
University Press:
Under the Sun Gr. 3
Winston Pub.:
Far Away Parts Gr. 3
The Great Basin of Utah was once covered by ancient Lake Bonneville, in Utah.

**CONCEPTS**

- Use a map or a transparency to show the boundaries of ancient Lake Bonneville.
- Note that this lake extended into Nevada and Idaho and that it had an outlet into the Snake River in Idaho.
- Assign a student or students to make a report on ancient Lake Bonneville.
- Use pictures, maps, graphs or charts to aid the report.
- Tell how Lake Bonneville at this time was a freshwater lake and that its level was more than a thousand feet higher than Great Salt Lake.
- Tell how its waves cut terraces in the sides of the mountains above the 5,000 foot level.
- Use pictures to show the shore line of the old lake which can still be seen on the slopes of the Wasatch and Oquirrh Mountains.
- Discuss how the lake fell slowly and continuously.

**FUNCTIONAL SKILLS INVOLVED**

- Recognizing and using map symbols.
- Determining direction and location.
- Acquiring information through observation for a purpose.
- Locating information.
- Note taking.
- Evaluating information.
- Organizing information.
- Reporting information.
- Applying language skills.

**REFERENCES**

Laidlaw Pub.:  
On the Trail to Adventure.  
D.C. Heath Co.:  
Luck and Pluck  
See plate #27.

Nebo District I.M.C.  
Kit Regions of Utah  
Map transparency "Lake Bonneville"
LAKE BONNEVILLE

Showing its relation to present cities, counties, and towns in Utah, Idaho, and Nevada.

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Summertime evaporation from the lake's surface was greater than the supply of water brought in by the rivers.

The lake level fell below its outlet.

The water became very salty.

Discuss how the salt content builds up in a body of water that has no outlet and the fact that Great Salt Lake is about four times as salty as the ocean.

Show how salty Great Salt Lake is by taking 3 parts of water and mixing it with 1 part of salt.

Let children experiment with things that will float in this mixture.

Note the amount of salt that is left when the water evaporates.

If possible, get samples of water from the Great Salt Lake.

Make a simple drawing to show how great terraces or deltas formed around the edges of Lake Bonneville.

Learn how these deltas became the sites for cities and towns later.

Acquiring information through observation and experimentation for a purpose.

Recording, summarizing and evaluating the information gained.
As Lake Bonneville disappeared it separated into several lakes:
Great Salt Lake
Utah Lake
Sevier Lake

Southeastern Utah is a part of the Colorado Plateau.

CONCEPTS

As Lake Bonneville disappeared it separated into several lakes:
Great Salt Lake
Utah Lake
Sevier Lake

Southeastern Utah is a part of the Colorado Plateau.

EXPERIENCES

Point out the interesting fact that each of Utah's major universities is built on one of the benches.

Use a map to show the three present lakes that are remnants of Lake Bonneville.

Discuss the reasons for Utah Lake being a fresh water lake.

Discuss reasons for Sevier Lake now being a dry lake bed.

Use a map to compare the topography of this region with the Great Basin.

Use pictures to show that instead of narrow mountain ranges sticking up from wastefilled plains, we have broad, flat uplands cut by deep canyons.

Use an overlay or diagram to develop understandings of what a plateau is.

Use pictures and slides to show how the Sky Line Drive in Spanish Fork Canyon is the beginning of the plateau region.

Use pictures and slides to show how the Green and Colorado Rivers have carved deep canyons.

FUNCTIONAL SKILLS INVOLVED

Recognizing and using map symbols.
Determining direction and location of places.
Interpreting relationships.

Acquiring information through observing for a purpose.

Interpreting charts or diagrams for information.

Acquiring information through observing for a purpose.

REFERENCES

See plate #28.
Nebo District I.M.C.
Kit Regions of Utah
Map transparency "Ancient Lake Bonneville and its Remnants"

Bailey, Bernadine. Utah.

See plate #29.
Nebo District I.M.C.
Kit Regions of Utah
Map transparency "Physiographic Map of Utah"
Pictures and slides.
Transparencies "Geographical Terms"
PHYSIOGRAPHIC MAP OF UTAH
By ERWIN J. RAISZ, Harvard University
In Utah, the Colorado Plateau is divided into three parts:
1. High Plateaus
2. Uinta Basin
3. Canyon Lands

Yongs which run in all directions in the Colorado plateau.

See a film together to purpose a discussion.

Use a map to show the parts of the Colorado Plateau.

Show how the High Plateaus region, which lies south of the Wasatch Mountains, forms part of the eastern boundary of the Basin and Range Province.

Show pictures and slides of the High Plateau region.

View a film together to purpose a discussion.

Continue to develop the bulletin board idea started on the "Regions of Utah".

FUNCTIONAL
SKILLS INVOLVED

Acquiring information through listening and observing for a purpose.

Recognizing and using map symbols.

Determine the direction and location of places.

Acquiring information through observing for a purpose.

Acquiring information through listening and observing for a purpose.

Relating, comparing, and evaluating the information gained.

REFERENCES

Film-Standard Oil Co.
"Through the Grand Canyon By Boat"

See plate #26.

Nebo District I.M.C.
Kit Regions of Utah
Map transparency "Natural Regions of Utah" Outline overlay of Individual Regions of Utah.

Nebo District I.M.C.
Kit Regions of Utah
Pictures and Slide of the Colorado Plateau Region.

Films:
"Canyon Country"
Ford Motor Co.
"Painted Canyons"
Union Pacific R.R.
1416 Dodge Street
Omaha, Nebraska

CONCEPTS

The Uinta Basin is a large valley bordered by the Uinta Mountains on the north and a strip of high plateaus on the south.

The Mountains in Utah were formed in various ways:
1. Folding (Uinta)
2. Faulting (Wasatch)

The Canyon Lands, which comprises the southeastern quarter of Utah, is located in Grand and San Juan Counties.

The Colorado River and its many tributaries have cut deep narrow channels in the bare rocks which face the land.

EXPERIENCES

Locate the Uinta Basin on a map.

Show pictures and slides of scenic and recreational attractions.

Discuss, briefly, what people do to make a living in the Uinta Basin and the factors that influence them.

Use pictures and slides to show how canyon rims and the country in between have been eroded into a panorama of beautiful standing rocks, spires, arches, and bridges of many descriptions.

Talk about the work of wind and weather.

FUNCTIONAL SKILLS INVOLVED

Determining direction and position of places.

Recognizing and using map symbols.

Acquiring information through observation for a purpose.

REFERENCE


See plate #26. "Natural Regions of Utah "


CONCEPTS

MOUNTAIN FORMATION

The Mountains in Utah were formed in various ways:
1. Folding (Uinta)
2. Faulting (Wasatch)
3. Dome - hot rock formations (LaSalle, Henry, San Rafael, Navajo, Obojo.)

EXPERIENCES

View a film together to purpose a discussion.

Talk about how cross-country travel is still impossible in much of this region.

Compare transportation and settlement of the three major regions of Utah.

Use transportation maps (highways, railroads, air travel) to help with the comparisons.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through listening and observing for a purpose.
Relating, comparing and evaluating the information gained.

Recognizing and using map symbols.
Determining direction and location of places.
Comparing maps and drawing inferences.

FORMATIONS OF REGIONS

1. Demonstrate with layers of foam rubber to show how the earth's pressures are able to cause folding and faulting in mountain formation.
2. Tell how dome mountains are the result of lava pushing underneath the earth's surface and filling in between the layers of rock instead of breaking its way to the surface.

REFERENCES

Film: "Painted Canyons"
Union Pacific Railroad
1416 Dodge Street
Omaha, Nebraska

See plate #30.

Nebo District I.M.C.
Kit Regions of Utah
Pictures, slides, transparencies on mountain formations in Utah.
Foam rubber for demonstration purpose.

Milne, Lorus J. and Margery.
CONCEPTS

Valley Formation

Valleys and canyons are formed through the work of rivers.

EXPERIENCES

Show pictures and slides of the various types of mountains to help clarify understandings.

Assign a student or students to report on the work of rivers. Use books, pictures, films, interview people to strengthen the report.

Stress such points as:

- Rivers are the greatest earth changers we have.
- Channels are deepened, widened and gouged out by young rivers.
- Valley floors are built up and flattened out by the work of old rivers.
- It takes many, many years for rivers to do their work.

Use pictures or diagrams to help develop understandings of the terms "Old rivers" and "Young rivers".

Discuss how rivers work with the tools that they have.

Examine some rocks from a stream - note smoothness from grinding and rubbing.

Collect some river water in a jar. Note the sand sediment.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observing for a purpose.


REFERENCES

Nebo District I.M.C.
Kit Regions of Utah Transparencies "Physical Geographical Terms"

See Appendix.
Charts: "Geographical Terms"

CONCEPTS

Valleys are formed by glaciers.

EXPERIENCES

Collect samples of different colors of earth.
Add the samples one at a time to a jar of water.
Let the water clear each time a layer is added.
Observe the process of sedimentation.
Allow the sediments to dry.
Observe what happens.
Relate this process to rock formation.

Use a dictionary, glossary or encyclopedia to find the definition of a glacier.

(A glacier is a huge mass of snow and ice found in the valleys and ravines of high mountains which moves slowly down the slopes until it melts.)

Use a chart or diagram to show how "U" shaped valleys were formed by glaciers.

Show pictures and slides to develop understandings about the work of glaciers:
Note that the canyon where Alta is located is made by glacial action.
Discuss what a terminal moraine is.
Note that the bench at mouth of the Big Cottonwood Canyon is a terminal moraine.
Use pictures to help clarify understandings.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Interpreting charts pictures or diagrams for information.

REFERENCES

Lauber, Patricia. All About The Ice Age. Eau Claire, Wisconsin: E.M. Hale, 1959.


Nebo District I.M.C. Kit Regions of Utah Slides and pictures of glaciers and valleys formed by glaciers. See appendix. Charts: "Geographical Terms "
CONCEPTS

Pressures cause the earth strata to twist, warp and readjust, forming valleys and mountains.

Utah has some interesting and beautiful valleys.

EXPERIENCES

Show pictures or slides of Mt. Timpanogos glacier.

Demonstrate and explain how valleys that are formed by pressures and readjusting of the Earth's strata are called diastrophic or structural and that most of the valleys in Utah were formed in this way.

Discuss the difference between a young valley and an old valley:

Use a diagram to help develop understandings.

Review folding and faulting of mountains in valley formation.

Use pictures or slides to show how part of the present mountain valleys (the great basin) have been filled with sediment until they are now flat-bottomed structural valleys.

Use a map to show that many of Utah's widest valleys are located in the area that was once covered by Lake Bonneville.

Display pictures of the different valleys in Utah.

Discuss the characteristics of the different valleys and the interesting things associated with them.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observation for a purpose.

Interpreting processes and relationships.

Acquiring information through observing for a purpose.

Applying information for retention and recall.

Determining position of places.

Using a map scale.

Interpreting map symbols.

Determining direction and location of places.

REFERENCES

See appendix Charts: "Geographical Terms"

Nebo District I.M.C.

Kit Regions of Utah

Foam rubber for demonstration purposes.

See plate #26. "Natural Regions of Utah"

Nebo District I.M.C.

Kit Regions of Utah

Slides and pictures of Utah's Valleys.
CONCEPTS

Use a map to locate where these valleys are.

Assign students to organize reports on the various valleys.

Write letters to Chambers of Commerce, or friends for information.

Use pictures, slides, realia, to strengthen the reports.

Pine Valley is located in the southwestern corner of Utah. It is completely surrounded by mountains. A special tree grown here was used to make the Tabernacle Organ.

Bear River Valley, one of the most picturesque and fertile valleys of Utah, is a center for farming and livestock raising. The Bear River is said to be the largest stream in the western hemisphere that does not reach the sea. This river passes through 3 states, crosses the state line 5 times and travels about 500 miles before emptying into the Great Salt Lake.

Monument Valley is one of the most scenic and most photographed areas in the entire country. "From an unparalleled mountain plateau, brilliantly colored monoliths rise to provide a scenic thrill. From broad,
vertically-scored cliffs
to slender needies of rock,
a constantly changing spec-
tacle is unfolded. So level
is the Valley floor that the
evening sun casts the shadow
of 'The Totem Pole' 35 miles
over the desert". This area
is often used as a site for
western movies.

Skull Valley is located 45
miles southwest of Grants-
ville. This is the location
of the Deep Creek-Skull Val-
ley Reservation, a tract of
34,500 acres of land that was
set aside by the federal
government for the Indians
who lived there. Today about
176 Gosiute-Shoshone Indians
practice farming and live in
this valley.

Utah Valley is a beautiful and
productive agricultural area.
It ranks first in the state in
production of apples, pears,
plums, strawberries, cherries,
and apricots. It also leads
the state in production of
Grade A milk. Along with ag-
riculture, industry and edu-
cation play vital roles in the
economy. Utah Valley has many
beautiful scenic attractions
in its lakes, mountain peaks,
canyons and croplands. Geneva
Steel, one of the west's larg-
est steel mills, is located
here.

"Greater Utah Valley"
This pamphlet is available
through the Chamber of Commerce,
Provo, Utah.
CONCEPTS

Utah's drainage system is comprised of several well-defined river systems.

EXPERIENCES

Great Salt Lake Valley is comprised of Salt Lake and Davis Counties. It is often called the Wasatch Oasis. Since the pioneers came in 1847, it has remained the hub of western colonization, industrial growth and culture. Its rich heritage is well preserved in its many shrines. The Great Salt Lake and Bonneville Salt Flats are attractions to many visitors each year.

Cache Valley, for its size, is one of the state's most productive agricultural valleys. It has unusually rich soil and is well watered by the Bear River and its tributaries. Cache Valley is a small valley completely surrounded by impressive mountains. The Amalga cheese factory is said to be the largest producer of Swiss Cheese in the world in terms of total production.

Heber Valley is a beautiful agricultural valley of the Wasatch mountains. Among its scenic and recreational attractions are the Hot Pots.

FUNCTIONAL SKILLS INVOLVED

RIVER DRAINAGE SYSTEMS

- Discuss what a river drainage system is.
- Use a map of the U.S. to show the major drainage systems.
- Recognizing and using map symbols.

REFERENCES

See plate #31.
CONCEPTS

The Green River with its set of tributaries is the principal tributary of the Colorado River.

The Colorado River rises in the Rocky Mountains west of the Continental Divide. It meets the Green River in eastern Utah, flows southwestward through the state and finally empties into the Gulf of California.

The Bear River system rises in the Uinta Mountains and flows into the Great Salt Lake.

EXPERIENCES

Discuss the part the Continental Divide plays in the drainage systems of the United States.

Note from a map which drainage area, in Utah, has the largest streams.

Learn why these streams are the largest.

Locate the Colorado River on a map. Show where it rises and finally terminates.

Discuss its length (1,700 miles long and the fifth longest river in our nation).

Discuss how it falls about 10,000 feet in its course. Relate this to the river work that is taking place.

Make a chart, drawn to scale, which shows the relationship of the fall of the river to its length.

Show pictures and slides to help develop understandings.

Observe the distance, on a map, that the Bear River flows before entering the Great Salt Lake. (500 miles and across a state line five times)

FUNCTIONAL SKILLS INVOLVED

Determining location and direction of places.

Interpreting relationships.

Determining direction and size.

Using a map scale to compute relative distance.

Making and interpreting charts or diagrams for information.

Acquiring information through observation for a purpose.

Determining relative distance by use of a map scale.

REFERENCES

Nebo District I.M.C.
Kit Regions of Utah
Transparencies:
"Drainage Systems of the U.S."
"Drainage Systems of Utah"
See plate #11.
### CONCEPTS

The Jordan River system includes those streams which flow directly into Utah Lake. (Provo River, Hobble Creek, Spanish Fork River.)

The Weber River system rises in the Uinta Mountains and flows into the Great Salt Lake.

The Sevier River system rises mostly in the Panguitch Plateau, flows northeasterly until it joins its main tributary, the Sanpitch, thence southwest to Servier Lake.

### EXPERIENCES

Observe a map to see what happens to water entering Utah Lake.

Trace the Jordan River System from the rise of its contributing streams to its emptying place.

Discuss what happens to some water along the way.

Use a map to show how the Weber River's Main tributary, the Ogden River, rises in the Wasatch Mountains and contributes its water through the Weber into the Great Salt Lake.

Use a map to show how the Bear, Weber, Provo and Duchesne Rivers all rise within one half mile of each other (in the High Uintas) yet represent four different river drainage systems.

Discuss how nearly all the water of the Sevier River system is used up for irrigation purposes before it gets to the lake bed.

Use a map to show the great length and directions of the Sevier River system.

Recall reasons discussed earlier for Sevier being a dry lake bed.

### FUNCTIONAL SKILLS INVOLVED

Recognizing and using map symbols.

Determining direction and location.

Interpreting relationships.

Recognizing and using map symbols.

Determining direction and location.

Acquiring information through observation for a purpose.

Determining relative distance by use of a map scale.

### REFERENCES

[61]


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WEATHER AND CLIMATE

Within the temperate zone there is much variation in climatic and weather conditions of the various countries.
### WEATHER AND CLIMATE

#### CONCEPTS

Climate is the more stable average of all weather conditions over a long period of time.

The earth is divided into five climatic zones.

- North Frigid
- North Temperate
- Torrid
- South Temperate
- South Frigid

Within the temperate zone there is much variation in climatic and weather conditions of the various countries.

#### EXPERIENCES

Develop an understanding of what is meant by the term "climate," and of the fact that different areas of the earth have different climates.

Talk about the different climatic regions and the characteristics of each.

- North Frigid
- North Temperate
- Torrid
- South Temperate
- South Frigid

Note

Be brief - Do not go into great depth in discussing world climates.

Use a globe to demonstrate action of the sun's rays on the earth.

Locate the different zones on the globe.

Discuss reasons for difference in climate in the different zones.

Discuss reasons why the temperate climate is the most favorable region to live in.

Let the pupils apply their understandings about climatic zones to a flat map of the world.

#### FUNCTIONAL SKILLS INVOLVED

- Determining direction and position of place on a globe:
  - Using the equator
  - Using latitude
  - Using north and south poles.

- Applying critical thinking skills and making inferences.

- Determining direction and position of places on a flat map:
  (Contd.)

#### REFERENCES


See plate #32.

Nebo District I.M.C.
Kit Weather and Climate Filmstrip. "Climate" Transparency "Climatic Zones" (Western Hemisphere)


See plate #33.
CLIMATIC ZONES - WESTERN HEMISPHERE (GLOBE)
Climatic Zones - Western Hemisphere (flat map)
Use a map to show that the United States lies in the north temperate zone.

Start to develop a list of geographical terms.
List the terms on a chart.
Define and illustrate.
1. Latitude
2. Longitude
3. Equator
4. Sphere
5. Hemisphere
6. Elevation

Compare the climatic conditions of different world areas that are within the same parallel.

With the students, note on a map that the 40th parallel goes through the countries - Greece, Turkey, Japan, Sardinia, Spain, Portugal, and the U.S.

Allow the pupils to conjecture as to similarity or differences in climate of these countries.

Assign students to make special reports on the climatic conditions of each of these countries.

FUNCTIONAL SKILLS INVOLVED

- Using the equator
- Using latitude
- Using north and south poles.
- Determining direction and position of places.
- Applying problem solving and critical thinking.
- Locating information.
- Evaluating information.
- Collecting and organizing information.
- Reporting information.
- Applying language skills.

REFERENCES

Nebo District I.M.C. Kit Weather and Climate Map of the "Western Hemisphere Showing the Climatic Zones".

See plate #34.


CONCEPTS

The principal factors which control the climate of an area are latitude, elevation, topographical features, and location in relation to the prevailing winds.

EXPERIENCES

Have the reporter discuss how climate affects the kinds of houses people build and may affect the kinds of clothes they wear.

Mention influences on other types of habits and activities.

Use pictures or slides to help develop understandings.

Record an interview with a person who has lived abroad for use with the report.

Write letters to schools in other countries for first-hand information.

Discuss the climate of the various areas in relation to the factors which control climate. For example in Japan--The winter Monsoon Winds sweep down from northern Asia bringing much cold. The warm Japan ocean currents flow in from tropical waters bringing warmth. The summer Monsoons blow in from the warm ocean laden with much moisture.

FUNCTIONAL

SKILLS INVOLVED

Applying problem-solving and critical thinking skills.

Acquiring information through listening and observing.

Applying language skills.

Determining position of places in relation to prevailing winds, ocean currents, elevation.

Locating information.

1. Use of card catalog.


3. Use of table of contents.

Evaluating information. Collecting and organizing.

Reporting information.

REFERENCES

Nebo District I.M.C.
Kit Weather and Climate Slides and pictures showing how climate affects people and their activities.
### CONCEPTS

Climates differ in the U.S. within the same parallel.

### EXPERIENCES

- Organize a series of charts to show differences and influences of climatic conditions:
  - Growing Season
  - Industry
  - Etc.

- Review the principal factors which control climate.

- Observe the length of time snow stays on the top of various mountains.

- Relate observations to differences in elevation.

- Use a map to show elevations of the U.S.
  - Note the high areas.
  - Note the low areas.

- Observe where lines of latitude cut across.

- Let the pupils conjecture as to how latitude and elevation may affect climate in the U.S.

- Have the students use atlases and maps to make interesting comparisons of states within the U.S.
  - For example: Utah and Missouri are in the same latitude. (37° to 42°)

### FUNCTIONAL SKILLS INVOLVED

- Using a chart to record information.
- Interpreting relationships and making generalizations.
- Acquiring information through observation.
- Relating, comparing, and evaluating information gained through observing with that from other sources.
- Interpreting and using map symbols.
- Locating information.
- Interpreting information.
- Organizing information.
- Recording information.

### REFERENCES

- See plate #35.
- Nebo District I.M.C.
  - Kit Weather and Climate Transparency—'Elevations of the U.S.'
- Utah Resources and Activities. Salt Lake City, Utah: Dept. of Public Instruction, 1933. p. 25-26.
- Nebo District I.M.C.
  - Kit Weather and Climate
  - Map of the U.S.
  - Overlay map of Utah.
Missouri has an average annual temperature of 54°F, while Utah, because of its elevations, has an average of 48°F.

Observe that each 1,000 feet of elevation makes a difference of about 3°F in average annual temperature.

Use a map to show that 2,500 feet of altitude in Utah produces as great a difference in annual temperatures as does 500 miles of latitude in the Mississippi Valley.

Point out the following comparisons:
Utah's Dixie, which has the same latitude as Kentucky, (above the 37th parallel) has about the same annual temperatures as extreme northern Georgia and Alabama. (below the 35th parallel)

Iron County, adjoining Utah's Dixie on the north, with an altitude of 5,000 to 6,000 feet, has an average annual temperature of 48°F which is about the same as Central Iowa. Iron county lies between the 37th and 38th parallel. Central Iowa is above the 42nd parallel.

Compare the climate of the following cities which all have the same latitude.
Eureka, California

FUNCTIONAL SKILLS INVOLVED
Interpreting relationships.
Determining relative distance by use of a map scale.
Interpreting relationships.
Determining direction and position of places.
Relating and evaluating information gained.
Locating information.
Organizing and recording information.

REFERENCES
Consider such factors as:
Prevailing winds
Ocean currents
Nearness or distance from the ocean
Elevation

The following information may be helpful:
New York City
Latitude - 40° 45' 06"
Elevation 410'
Annual rainfall-average 32-45 1/2 per yr.
Normal Temperatures:
Jan. Max. 40-Min. 27
July Max. 85-Min. 68
Humidity - Jan. 60 July 56

Ocean breezes help to moderate summer temperatures.
The state is subject to sudden changes in temperature.
Extreme changes do not last long.

Salt Lake City
Latitude - 40° 45' 26"
Elevation 4,390'
Annual rainfall-av. 14.74
(5" on desert to 40" in the high mountains)
Normal temperatures
Jan. max. 36 min. 17
July max. 92 min. 61
Humidity January 75 July 40
Utah has a dry continental climate with warm summers and cold winters.
Utah has many varied climatic conditions because of the varied topography.

Eureka, California  
Latitude - 34°  
Elevation - 69'  
Annual rainfall - 38.43" per year.

Normal temperatures
Jan. max. 53.6 min. 41.1
July max. 69.7 min. 52.0
Humidity-Jan. 82 July 86

Eureka is a bay area, having a marine climate with cool summers and mild winters.

Use a map to show Utah's varied elevations.
Point out the area of lowest elevation.
Point out the highest elevations.

Use an overlay of the climatic regions of Utah, to show the relationship of climatic regions to the topography of the state.

Discuss interesting facts regarding the relationship of latitude and elevation in Utah:
Washington County, the extreme southern part of the state, has an average of as much as 8° higher temperature than other counties of similar elevation located in the northernmost part of the state.

The average temperature below 4,000 feet is 59°F.

FUNCTIONAL SKILLS INVOLVED

Recognizing and using map symbols.  
Acquiring information through observation for a purpose.  
Interpreting relationships and making generalizations.

REFERENCES

See plate #36.
Nebo District I.M.C.  
Kit Climate and Weather Map, "Utah Elevations" Overlay, "Utah's Climatic Regions"
**CONCEPTS**

Utah has a dry continental climate with hot summers and cold winters.

**EXPERIENCES**

The average temperature above 6,000 feet is 44°F. Weather stations north of the 40th parallel (Payson) report an average of 3°F cooler temperatures than those south of that parallel.

Note that most of the cities in Utah are located at 4,000 to 7,000 feet.

Use a map to show that Utah is located in the middle of a great land mass which is far distant from the ocean. Discuss how the difference between winter and summer temperatures are more extreme in the locations far from the ocean. Why?

Use the scale of miles to estimate about how far Utah is from the Pacific Ocean, the Atlantic Ocean, and the Gulf of Mexico.

Discuss what the term "dry continental climate" means.

Use a chart or transparency to explain "Winds and Rainfall in Utah".

**FUNCTIONAL SKILLS INVOLVED**

- Acquiring information through observing.
- Interpreting relationships and making generalizations.
- Recognizing and using map symbols.
- Determining relative distance by use of a map scale.
- Acquiring information through observation for a purpose.
- Interpreting relationships and making generalizations.

**REFERENCES**

- See plate #25.
- Nebo District I.M.C.
- Kit Weather and Climate Map "Topographical U.S."
- Overlay-"Map of Utah"
- Filmstrip-"Winds Around the World"
- Transparency "Winds and Rainfall in Utah"

See plate #37
Utah - Annual Rainfall
Plate #37
The westerly winds gather much moisture as they cross the Pacific Ocean. Unfortunate for Utah, these winds are robbed of most of their moisture before they get to Utah.

Locate, on a map, the mountain ranges that the winds must cross before reaching Utah.

As the winds rise to cross the Coastal, Sierra Nevada and other mountain ranges, moisture in the form of rain or snow, falls on the westward slopes of the mountains.

As the winds move across the Great Basin they are warmed and gather moisture instead of bringing it.

Learn that it is this gathering of moisture that makes the land a desert. Note from a map that the Great Basin extends completely across the State of Nevada.

As the winds again rise to cross the Wasatch and other mountain ranges in Utah, they again lose much of their moisture on the mountain tops and western slopes. This is why there are large areas of the Colorado Plateau which are as dry as the Great Basin.
Use a map to show that the precipitation in Utah varies from an average of less than 5 inches over the Great Salt Lake Desert to more than 40 inches in the high north central region.

The average precipitation in rain and snow for the state as a whole is 13 inches.

Ask a student to make a report on how precipitation is measured.

Mid summer temperatures occasionally rise to 100° in most areas of the state. Low humidity makes these high temperatures bearable. Temperatures below zero during the winter and early spring are common in the inhabited areas of the state. Prolonged periods of extremely cold weather are rare.

Because of the dry atmosphere, there is strong insolation of heat during the day and rapid cooling at night.

Summarize how the above conditions combine to produce a "dry continental climate".

Recognizing and using map symbols.

Acquiring information through observing for a purpose.

Relating and evaluating information gained.

Locating information.

Evaluating information.

Collecting and organizing.

Reporting information.

Applying language skills.
CONCEPTS

Weather is defined as the current conditions of the atmosphere from day to day. It includes - Wind, Temperature, Pressure, Moisture. Weather varies from season to season.

EXPERIENCES

Have the pupils make individual booklets on Utah's interesting weather and climatic conditions. Include maps, diagrams, graphs, pictures. Note - "Prong Fasteners "#50-CIA-1, (2 3/4" Centers-1" capacity) make a very good book binding.

Make special reading assignments on:
- What is weather?
- Causes of Weather.
- Unusual facts about weather.

Let the information acquired serve as the basis for a group discussion.

Discuss how the different seasons generally have characteristic weather conditions.
- Spring
- Summer
- Winter
- Autumn

Make a list of characteristics for each season.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Outlining topics to be discussed.
Reporting information.
Applying language skills.

REFERENCES


Nebo District I.M.C. Kit Weather and Climate Filmstrip "Weather Changes and Their Causes" Transparency "Weather"

Nebo District I.M.C. Kit Weather and Climate Filmstrips:
- "The Sun and Our Seasons"
- "Moisture and Precipitation In The Air"
- "Humidity and How It affects Us"
<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather varies within a season.</td>
<td>Discuss why we have seasons.</td>
<td>Acquiring information through observing.</td>
<td>Gallant, Roy A. Exploring the Weather. N.Y.: Garden City Pub., 1957.</td>
</tr>
<tr>
<td></td>
<td>At the same time each day mark where the shadow falls on a piece of paper, that has been placed in a stationary position.</td>
<td>Relating and comparing information gained through observation with that from other sources.</td>
<td>Schneider, Herman, Everyday Weather and How It Works. N.Y.: Whittlesey House, 1961.</td>
</tr>
<tr>
<td>Weather changes from day to day.</td>
<td>Discuss how temperatures, amounts of rainfall, wind, and sunshine vary within a season.</td>
<td></td>
<td>Tannehill, Ivan Ray. All About the Weather. N.Y.: Random House, 1953.</td>
</tr>
</tbody>
</table>
CONCEPTS

Read to find out why information regarding air pressure, temperature and humidity is important in weather prediction.

Compare the recordings from some self-made weather instruments with the recordings from scientific weather instruments.

Learn that the barometer measures the pressure of air around us. The thermometer measures temperature. The psychrometer measures humidity.

Show pictures or diagrams and discuss the three basic types of clouds:

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observation for a purpose.

Comparing information to recognize agreement or contradiction.

Evaluating information gained with that of other sources.

REFERENCES


Nebo District I.M.C. Kit Weather and Climate Science Kit for demonstration "Air and Air Pressure"


CONCEPTS

Weather forecasting is for our protection and benefit.

EXPERIENCES

Stratus
Cumulus

Use a chart, diagram or transparency to demonstrate the water cycle. Demonstrate evaporation and condensation of water. Discuss how weather can be predicted from cloud formation. Predict the weather and write reports for the school newspaper or a news bulletin board. Make a dictionary of weather words. Make a chart of weather symbols.

FUNCTIONAL SKILLS INVOLVED

Interpreting charts or diagrams for information.

LISTEN TO RADIO BROADCASTS TO NOTE THE WARNINGS TO SHEEP AND CATTLE MEN, TO FRUIT GROWERS, TO TRAVELERS ON THE HIGHWAYS ETC.

REFERENCES

Nebo District I.M.C. Kit Weather and Climate Transparency "Weather: The Water Cycle"


CONCEPTS

Weather forecasting is dependent upon the forecaster having a great deal of information.

FUNCTIONAL SKILLS INVOLVED

- Recording, summarizing and evaluating information.
- Locating information.
- Evaluating information.
- Collecting and organizing.
- Reporting information.
- Applying language skills.

EXPERIENCES

Discuss how weather forecasting is for our benefit.

Relate personal experiences.

Make a list of people who might be especially concerned with weather forecasting from day to day.

How does weather forecasting affect you and your family?

Have a student prepare a report on the Weather Bureau.

What is the Weather Bureau?

Why was it organized?

What are some of the services it offers?

Select a film about weather forecasting. View it together. Use the children's questions and discussion to pursue further reading on the subject.

Use a forecaster's map to show the kinds of information that is recorded by the forecasters.

Discuss the various symbols used and their meanings.

List on a chart the five steps for the preparation of a forecast:

REFERENCES

- Nebo District I.M.C. Kit Weather and Climate Filmstrip "How to Forecast the Weather" Weather Map
CONCEPTS

1. Observation.
2. Collection.
3. Plotting data on maps.
4. Analysis of data.
5. Forecast.

EXPERIENCES

Use maps and charts to show how weather affecting the U.S. a week or more ahead of time, is being born in air masses over other countries and in the ocean.

Discuss the use of weather planes, radar, satellites, electronic computers.

Make a list of the kinds of information that are necessary for weather forecasting and the ways of collecting that information.

Use a map, diagram or pictures to help develop understandings about "fronts and the meaning of the terms "lows" and "highs".

Learn how lows and highs are formed, and why a knowledge of the upper air patterns is important to accuracy in forecasting.

Use pictures and discussion to show how pilot balloons from some 125 stations are sent up four times a day to measure the upper air winds.

FUNCTIONAL SKILLS INVOLVED

Recognizing and using map symbols.
Acquiring information through observation.
Interpreting relationships and making generalizations.

REFERENCES


See plate #38.


CONCEPTS

The U.S. Weather Bureau operates a large network of stations which collect information and speedily send it to forecasting centers.

The U.S. Weather Bureau is able to achieve better than 85% accuracy in its 24 hour to 36 hour forecasts.

EXPERIENCES

Tell how the upper air elements are sampled by radiosonde twice daily by some fifty different stations across the U.S.

Point out the importance of observations being taken hourly day and night at some stations.

Observe a map which shows the location and the extensiveness of the network of weather stations.

Show how weather maps are used to record all the information that is sent to the central forecasting stations.

Note that two kinds of maps are made:
- Surface charts
- Upper air charts
From these charts the forecasters prepare forecasts and weather bulletins.

Discuss the accuracy of weather prediction by signs.

What old-time weather sayings do you know about?
Which ones are true?
How do scientists find out which sayings are true?

FUNCTIONAL SKILLS INVOLVED

Recognizing and using map symbols.
Determining direction and position of places.
Acquiring information through observation.
Interpreting relationships.

REFERENCES

Film—"Unchained Goddess"
Mt. States Telephone Co.
Nebo District I.M.C.
Kit Weather and Climate
Filmstrip—"Air Masses and Weather Fronts"
See plate #39.
Nebo District I.M.C.
Kit Weather and Climate
Map Transparency: "Network of Weather Stations"
"Weather Maps"
NETWORK OF WEATHER STATIONS

Plate #39.
CONCEPTS

We can get weather information from many sources.

EXPERIENCES

No dew on the grass before a rain.
Sounds travel farther before it rains.
Tilt of the moon to hold water means no rain.
Ring around the Moon means storm.
Red sky in the morning take warning.
Frequency of sounds made by crickets and katydids indicate temperature.
Rainbow at night, sailors delight.
Rainbow in the morning, take warning.
Aching bones means storm.
Animal behavior indicates storm.

Listen to weather predictions

Keep a record of the forecasts for a short time and check them for accuracy.

Discuss why weather forecasting can't be 100% accurate.

Discuss the possibilities of weather forecasting being more accurate in the future.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observation for a purpose.

Applying critical thinking skills.

Applying critical thinking skills.

REFERENCES

See Appendix:
"Rainproof" a story of Weather signs.
CONCEPTS

Newspapers
Radio Broadcasts
T.V. Broadcasts
High-way Patrol Cars

EXPERIENCES

Assign students to collect weather information from various sources.

FUNCTIONAL SKILLS INVOLVED

Compare the reports for uniformity of information.

REFERENCES


BIBLIOGRAPHY
WEATHER AND CLIMATE
(Teachers)


Utah Resources and Activities. Salt Lake City Utah: Dept. of Public Instruction, 1933.


CONCEPTS

People have basic human needs that must be satisfied.

People have wants.
People must make choices as to which of their wants will be satisfied first.

EXPERIENCES

Discuss what our basic needs are.
Write, on a chalkboard, a list of things that the pupils consider to be basic human needs.
Discuss what we mean by the term "wants".
Discuss the difference between needs and wants.
1. Organize a family budget.
   Use toy money to help clarify concepts concerning income, expenses, basic needs, wants, savings, etc.
   Fill in a blank check to represent a family's monthly income.
   Demonstrate the portion of money that goes for various expenditures by folding over a part of the check as different items are considered:
   _% for rent or house payment
   _% for food
   _% for utilities etc.
   Note with the pupils the small part that is left to be spent for wants after the needs have been taken out.
   Help children to understand why all our wants cannot be satisfied and why we have to learn to make choices.

FUNCTIONAL SKILLS INVOLVED


University of Utah Film "From This Earth" Audio Visual Dept. (free)

CONCEPTS

As needs and wants are satisfied, people become consumers and producers of goods and services.

EXPERIENCES

Have the pupils reconsider their list of basic needs in light of a family budget.

Note with pupils that some "needs" become "wants".

Collect pictures to represent "needs" and "wants". Arrange them on a bulletin board or in a scrap book.

Discuss how people are interdependent in that they do not produce for themselves all the things they need.

Have each child write a short report about his fathers work and tell whether he is a producer of goods or services.

Illustrate the report with pictures and make a class booklet.

Start developing a dictionary of economic terms:

- Capital
- Company
- Conservation
- Consumer
- Corporation
- Distribution
- Economics
- Free enterprise
- Goods
- Human resources
- Natural resources
- Partnership

(Contd.)

FUNCTIONAL SKILLS INVOLVED

- Applying critical thinking skills.

- Locating information.
- Evaluating information.
- Collecting and organizing.
- Reporting information.
- Applying language skills.

REFERENCES

Film
First Security Bank
"A Documentary Film of the Intermountain West"
CONCEPTS

Economics is a study of how we produce, distribute, exchange, and consume goods and services for the satisfaction of our needs and wants.

EXPERIENCES

Producers
Services

Illustrate the economic cycle of how producers and consumers interact with each other.

For example, industries pay wages to employees, from the sale of goods, to produce more goods. The employees pay the money received in wages to other businesses for needed services and products, which they in turn, use to produce more of their goods and services.

Help the pupils to understand how food, shelter, and clothing, (basic needs) and our wants are provided for us in a complex economic system:

1. Make a list of the various occupations represented by the parents of the class.

2. Discuss how many of these products or services are used locally.

3. Decide what things are needed that are not produced locally?

4. Find out where we get these things from? (Use books - resource people)

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Relating and comparing information.

REFERENCES
<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Find out how many fathers are in business for themselves? How many work for some one else? How many are a part of a company or corporation.</td>
<td>Gathering facts from an interview. Reporting information. Relating information.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discuss what private and corporate business enterprises are.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Write, on the chalkboard, a list of goods and services that can best be produced by companies or corporations. Why?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make another list of those goods and services that can be produced by an individual.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recall, how at first, the pioneers produced most of the things they needed and how standard of living changed as they were able to exchange goods and specialize in goods and services.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discuss with the pupils what factors influenced their fathers to choose the type of work they do.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CONCEPTS

1. Why couldn't everyone be a doctor? engineer? service station attendant? grocer? etc.

2. Talk about supply and demand, markets, sources of raw materials, transportation etc.

Discuss how changing employment affects families.

 Invite a resource visitor to discuss business enterprises.

 - Cannery supervisor
 - County agent
 - Local farmer
 - Orchard owner
 - Doctor
 - Merchant

FUNCTIONAL SKILLS INVOLVED

Gathering facts from an interview.
Recording, summarizing, and evaluating information gained.
Relating and comparing information gained with that from others.
Applying language skills.

EXPERIENCES

9. Mr. Clean and Mr. Professor. May 1965. p. 54-55.
### CONCEPTS

The U.S. Government makes some of our economic decisions.

Since more of our decisions are made by individuals and companies than by government, we have what is called a "free enterprise" system.

The production of goods and services that we need and want depends upon:
- Natural resources
- Human resources
- Capital resources

### EXPERIENCES

- Discuss how government owns and operates postal services, land and school programs, defense projects, reclamation projects.
- Discuss the values of government being able to plan, and make some of our economic decisions in regulating these projects.
- Ask the pupils to find out as much as they can about our free enterprise system.
  - (Contact books, people.)
  - Have a class discussion on what is meant by "free enterprise".
  - Find out how many occupations represented by their fathers fall into this category.
  - Set up and carry for a short duration, a class business as an illustration of our "free enterprise system".
  - Discuss what our natural resources are. (land, minerals, water, timber)
  - Let each child decide and tell how his father's work is related to our natural resources.
  - Discuss briefly, the importance of conservation of our natural resources. (Some are expendable.)

### FUNCTIONAL SKILLS INVOLVED

- Gathering information from interviews.
- Locating information in books.
- Evaluating information.
- Organizing information.
- Reporting information.
- Relating and comparing information.

### REFERENCES

See Appendix Teaching Free Enterprise in the classroom.
CONCEPTS

Discuss the fact that people are resources and that many of them are required to have special training for their jobs.

Let each child find out how his father was trained for his work and report to the class where he received his training, and how much training was required. (Be sure to include on the job training.)

Discuss the importance of being skilled for a job.

Secure a list of job openings from the employment office or a newspaper. Discuss the skills that are required to fill these positions.

Discuss the importance of conserving human resources.

Develop an understanding of what is meant by the term "capital resources". Fixed capital includes investments in:
- factories
- machines
- tools
- raw materials
- finished goods etc.

Working capital is the money on hand to buy raw materials, wages etc.

FUNCTIONAL SKILLS INVOLVED

- Acquiring information from an interview.
- Evaluating information.
- Organizing information.
- Reporting information.
- Applying language skills.

REFERENCES

See Second Grade Books on "Community Helpers", "I Want to Be" series, "About" series.
### CONCEPTS
People in the United States enjoy many kinds of goods and services.

### EXPERIENCES
Discuss briefly the following points:
- Profits and losses in business.
- Quality and quantity in production of goods.
- Efficiency in production and management.
- Stock investments in businesses.

Discuss the importance of conserving capital resources.

Discuss the high economic standard of living in the United States.

Make comparisons with living conditions in other countries.

Ask a resource person who has lived in a foreign country to visit the classroom and tell about living conditions there.

Make charts and graphs to record important facts learned.

Display pictures of other cultures on a bulletin board. (See National Geographics)

### FUNCTIONAL SKILLS INVOLVED
- Applying problem solving and critical thinking skills.
- Acquiring information from interviews.
- Recording, summarizing and evaluating information gained.
- Relating and comparing information gained with that from other sources.
- Applying language skills.
- Constructing simple graphs and charts for recording information.
- Relating the information gained with that of other sources.

### REFERENCES
See plate #40.
Only 1 person out of every 17 people of the world lives in the U.S.

**BUT...**

- The U.S. has nearly 7 out of every 10 of the world's automobiles.
- The U.S. has over 7 out of every 10 of the world's television sets.
- The U.S. has over half of the world's telephones.
- The U.S. has nearly half of the world's radios.
- The U.S. has 3 out of every 10 miles of the world's railroads.

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**THE U.S. ECONOMIC STANDARD OF LIVING**

**THE UNITED STATES**

**THE REST OF THE WORLD**

| Plate No. 40 |
CONCEPTS

Utah produces a variety of goods and services.

EXPERIENCES

Start to collect and display pictures and samples of products produced in Utah.

Note the location of where they are produced by map.

Note where they are consumed.

Observe and discuss maps of Utah which show:
1. Utah natural resources
2. Utah industries
3. Utah minerals
4. Utah agricultural crops

Point out the inter-relationships.

With the arrival of the first settlers, agriculture became the economic base.

Discuss why Brigham Young urged his people to plow the land and plant crops. (They had to have food and they could not get it unless they raised it.)

Discuss how, in spite of little rainfall and undesirable ground conditions, farming became an important industry.

Use pictures, graphs, and comparisons to help develop understanding about the relationship of rainfall to production in agriculture.

FUNCTIONAL SKILLS INVOLVED

Determining direction and location of places.

Using a scale to compute distances.

Comparing maps and drawing inferences.

REFERENCES

McDonald, Maurine S. Green Treasure in Utah. Salt Lake City, Utah: Salt Lake City Board of Education, 1955.

See plates #41, #42, #43, and #44 "The Utah Story-Parts I, II, III" Denver & Rio Grande R.R. Salt Lake City, Utah.

Nebo District I.M.C.
Kit Agriculture Map Transparencies
Utah Natural Resources
Utah Industries
Utah Minerals
Utah Agricultural Crops

Interpreting charts, graphs, tables for information.

Drawing inferences and making generalizations.

Relating information derived from pictures, charts, graphs with that gained from other sources.
Corn
Wheat
Oats
Barley
Alfalfa & Seed
Potatoes
Sugar beets
Apples
Peaches
Pears

*Others

Peaches
Pears
Apricots
Peas
Beans
Sweet corn
Others *

Corn
Wheat
Oats
Barley
Alfalfa & Seed
Potatoes
Sugar beets
Apples
Peaches
Pears
Apricots
Peas
Beans
*Others

* Less than 500 bushels
Alunite
Aragonite
Arsenic
Barite
Calcite
Clay
Cement rock
Diatomite
Dolomite
Fluorspar
Gypsum
Halloysite Clay
Obsidian
Limonite

GREAT BASIN

Pumice
Potash
Silica
Sulphur
Volcanic ash
Stone
Salt
Limestone

Alumite
Aragonite
Bentonite
Carbon Dioxide
Diatomite
Dolomite
Emery
Fluorspar
Fuller's earth
Gypsum
Helium
Limestone
Rock asphalt
Quartzite
Salt
Silica
Sulphur
Volcanic ash

MOUNTAIN REGION

Jasper
Copper
Gold
Iron
Lead
Manganese
Uranium
Molybdenum
Silver
Tungsten
Zinc

Plate No. 44
Add to the list of economic terms:
- home industry
- economic independence
- isolated
- irrigation

Conduct an experiment with plants to show the effect of too much water, too little water and just enough water. Relate the experiment to agricultural practices.

Read about how irrigation began in Utah.

Have a class discussion on irrigation practices.

Discuss how most of what was raised by pioneer families was used by the family; how they gradually improved their level of living by trading their surplus for desirable items they could not produce.

Collect and write-up personal experiences of early settlers.

Acquiring information through observing for a purpose.
Recording information.
Relating, comparing and evaluating the information gained with that of other sources.
Locating information.
Evaluating information.
Collecting and organizing information.
Reporting information.
Applying language skills.
Applying problem solving and critical thinking skills.
Locating information.
Evaluating information.
Collecting and organizing.
Recording information.
Applying language skills.


CONCEPTS

As the population grew it became more concentrated in the cities.

As the population "urbanized", the role of agriculture changed.

Since Utah has been able to develop its soil and water resources, it now produces a large variety of farm products:

EXPERIENCES

Observe some population statistics. Note how the rural population decreased from 100% in 1850 to 25% in 1960.

Note the growth of the cities along the Wasatch Front.

Make a population map of Utah. Place a dot in the appropriate county for each 1000 population. Note the concentration of dots along the Wasatch front.

Use a population map to compare the concentration of population 1880 and 1960.

Discuss briefly how, as farming methods became more efficient, it took less farmers to produce more products. More people became involved in other work.

Discuss briefly how manufacturing industries developed and how agricultural products became the raw materials for many of them.

Discuss how Utah's varied soil makes it possible to produce a large variety of farm products.

FUNCTIONAL SKILLS INVOLVED

Recording information on a map.

Interpreting the relationships shown.

Relating, comparing and evaluating information gained.

REFERENCES

Utah Tourist and Publicity "Population By Counties"

See plate #45.

Filmstrips
"Occupation Related to Farming"
"Farming in the Modern Age"

Nebo District I.M.C.
UTAH'S POPULATION GROWTH

1850 - 1965

1850... 11,380
1860... 40,273
1870... 86,786
1880... 143,963
1890... 210,779

1900... 276,749
1910... 373,951
1920... 449,396
1930... 507,847
1940... 550,310

1950... 688,862
1960... 890,627
1965... 1,000,000 (est)

Plate No. 45
CONCEPTS

A. Sugar beets
B. Potatoes
C. Dry beans

EXPERIENCES

Discuss how crops grown in Utah vary in different parts of the state because of differences in the amount of rain that falls and differences in altitude or the growing season.

Make a year clock to show the growing season of various parts of Utah.

Discuss the length of the growing season and the products grown.

Have a panel discussion on "Why these products are grown in Utah.

A. Sugar beets
B. Potatoes
C. Dry beans

Make a products map of Utah.

Organize the class into committees to locate materials and make reports and displays on the various agricultural products.

Invite resource visitors to the classroom to share information about different products.

Have a telephone interview with a resource person. (Be sure questions are prepared beforehand.)

FUNCTIONAL SKILLS INVOLVED

Gathering information.
Recording information.
Interpreting relationships.
Locating information.
Evaluating information.
Collecting and Organizing.
Reporting information.
Applying language skills.
Gathering Information.
Recording information.
Interpreting relationships.
Acquiring information through listening and observing.
Summarizing and evaluating information.
Comparing information gained with that from other sources.

REFERENCES


See Appendix. "Year Clock"
### CONCEPTS

<table>
<thead>
<tr>
<th>D. Truck Crops</th>
<th>E. Fruit Crops</th>
<th>F. Wheat and Hay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh Market</td>
<td></td>
<td>Dry farming is practical in some parts of Utah where irrigation is impossible.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>irrigation is impossible.</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Apples</td>
<td>Invade a resource visitor to discuss how dry farming is carried on in Utah. When? Why? Also, find out about the kinds of crops that can be grown on a dry farm.</td>
</tr>
<tr>
<td>Cantaloupe</td>
<td>Apricots</td>
<td>Find out how extensive dry farming is practiced.</td>
</tr>
<tr>
<td>Carrots</td>
<td>Sweet Cherries</td>
<td></td>
</tr>
<tr>
<td>Celery</td>
<td>Peaches</td>
<td></td>
</tr>
<tr>
<td>Onions</td>
<td>Pears</td>
<td></td>
</tr>
<tr>
<td>Lettuce</td>
<td>Strawberries</td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canning Crops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet Corn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green and Lima Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beets etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### EXPERIENCES

- Arrange a class display of products.
- Make a chart of the products
- Utah is best known for:
  - Celery
  - Apples
  - Honey
  - Cherries
  - Turkeys
  - Cheese
- Note: The Amalga factory, located in Cache Valley, is listed as the largest producer of Swiss Cheese in the world in terms of total production.
- Use a map to show where these products are produced.
- Try to find out where they are consumed.
- Invite a resource visitor to discuss how dry farming is carried on in Utah. When? Why? Also, find out about the kinds of crops that can be grown on a dry farm.
- Find out how extensive dry farming is practiced.

### FUNCTIONAL SKILLS INVOLVED

- Determining location and direction of places.
- Acquiring information through listening and observing.
- Recording, summarizing and evaluating information gained.
- Relating and comparing information gained with that from other sources.

### REFERENCES

- Nebo District I.M.C. *Kit Agriculture Leaflet "Field Crop Varieties for Utah"
- Film B.Y.U. "The Wheat Farmer"
- McDonald, Maurine S. *Green Treasures in Utah*. Salt Lake City, Utah: Salt Lake City Board of Education, 1955, p. 49.
## CONCEPTS

Some of Utah's most fertile lands were brought under cultivation after irrigation systems were developed.

## EXPERIENCES

- Display pictures of machinery and dry farm activities.
- Locate the dry farming areas on a map. Review why there is insufficient water for agriculture in these areas.
- Discuss briefly how the Federal Government, the State and some private companies have developed water resources.
- Use a map of Utah to locate some of these projects.
- Show pictures and slides to help develop understandings.
- Show pictures of before and after a project has been developed.
- Discuss and show pictures of the various kinds of irrigation systems:
  - Sprinkling
  - Flood irrigation
  - Corrugated irrigation.
- Point out how the water available, often determines the amount of production.
- Discuss the relationship of production to water resources and conservation.

## FUNCTIONAL SKILLS INVOLVED

- Determining direction and location.
- Interpreting map symbols.
- Reviewing for retention and recall.

## REFERENCES

- See plate #46.
- Film: "Glen Canyon Dam"
  U.S. Dept. of Interior
  Bureau of Reclamation
  Denver Federal Center Bldg., 53
  Denver, 25, Colo.
Reproduced from Utah Agricultural Experiment Station Special Report No. 4, 1951.
CONCEPTS
Utah is not a large agricultural state when compared to other states.

Utah's livestock industry is a most important part of its agriculture.

EXPERIENCES
Use a map to show how Utah has only about 4% of its total land area in crops.
Discuss why this small percent.
Compare size of farms in Utah with the midwest.

Use pictures, slides, books, and films to help develop understandings.
Correspond with children in the mid-west to learn more about farm crops and farm procedures.

Write letters to Chambers of Commerce and other business establishments.

Make a list of livestock products that are consumed in the home.
Discuss various ways of consuming - (food to eat, clothes to wear)
Discuss how some products are changed before they are consumed.
Learn how new products are created. (ice cream)
Find out where they are processed.

Learn why livestock products are essential in a good diet.
(Contact books-people.)
Correlate this unit with a health study.

Make a basic food chart.

FUNCTIONAL SKILLS INVOLVED
Applying language skills.
Locating information.
Evaluating information.
Collecting and organizing information.
Reporting information.
Applying language skills.

REFERENCES
See map plates #46, #47.
Nebo District I.M.C.
Kit Agriculture Transparencies - "Utah's Agricultural Lands "
"Location of the Farms "

Chamber of Commerce
Topeka, Kansas
Sperry Mills

LOCATION OF FARMS - 1950

Each dot represents 10 farms

Reproduced from Utah Agricultural Experiment Station Special Report No. 4 1941

Plate No. 47
Discuss why Utah's livestock industry is a most important part of agriculture.

(Utah's livestock industry consumes most of the feed grains that are produced.)

Make a list of the kinds of livestock that are produced in Utah.

Discuss how different lands are suitable for the raising of different kinds of livestock.

Learn about summer and winter grazing.
Discuss how each animal requires a good many acres of pasture land. The drier the land is, the more acres an animal must roam over to find forage.
Some livestock ranches in Utah cover thousands of acres. Discuss how the large grazing lands and comparatively cheap feeds make it possible to produce a high quality of beef.

Show pictures of the grazing lands. Note amounts, kinds and condition of the forage.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observing for a purpose. Relating, comparing and evaluating information gained through observing with that from other sources.

REFERENCES

Ogden Live Stock Yards
Salt Lake City Stock Yards


CONCEPTS

Mink and beaver livestock industries are rapidly becoming of economic importance.

EXPERIENCES

Make a map of Utah. Use symbols to show the kinds of agricultural products Utah exports and where they go.

Discuss the reasons for competition of meat and poultry products from other states:
- Production of cheaper feeds.
- Production on a larger scale.
- Weather and climate.
- Location to a large marketing population.
- Transportation facilities.

Visit a meat market.
Learn where some of the meat products have come from.

Make a chart of interesting facts acquired.

FUNCTIONAL SKILLS INVOLVED

Recording information on a map.
Interpreting relationships using map symbols and legends to show what different things are.

Applying problem solving and critical thinking skills to economic issues.

Visit a mink or beaver farm.

Discuss interesting things about raising mink, and beaver.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through interviewing.
Recording, summarizing information.
Relating and comparing information with that gained from other sources.

Summarizing and recording information.
Relating information.

REFERENCES

Film
"From Trap to Wrap"
Fish and Game, Provo, Utah

Pamphlet - Exports of Utah.
Annual Utah Workshop on Economic Education, Brigham Young University, 1963.
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BIBLIOGRAPHY

AGRICULTURE

(Teachers and Children)


McDonald, Maurine S. *Green Treasures of Utah*. Salt Lake City, Utah: Salt Lake City Board of Education, 1955. (children)


UTAH'S MINING INDUSTRY
CONCEPTS

Mining is one of Utah's three basic industries.

Next to human resources, Utah's mineral resources are among its most essential and prized possessions.

Mining in Utah was greatly stimulated with the completion of the transcontinental railroad.

EXPERIENCES

Discuss the following points:
Manufacturing, Mining, and Agriculture are Utah's three basic industries.

While manufacturing rates highest when measured by employment and wages paid, manufacturing is dependent upon these other two basic industries for materials.

Discuss what is meant by "Interdependence" of industries.

Talk about how man uses minerals to produce items which he needs and uses every day. (tools, and equipment in agriculture, in industry, in transportation and communications, and in the ordinary household)

Make charts to show what products are made from various minerals.

Arrange a display of items made from metals that are found in Utah.

Talk about how coal, iron, lead, copper, zinc and other highly productive mining areas had been discovered by the time the railroad reached Utah in 1869.

These mining projects were pushed as transportation and markets became a reality.

FUNCTIONAL SKILLS INVOLVED

Applying critical thinking skills to economic issues.

Using a chart to record information.
Interpreting relationships.

REFERENCES


CONCEPTS

Utah produces a greater variety of minerals than any other area of similar size in the world.

EXPERIENCES

Up until this time, mining for gold, which could be shipped economically by wagon or saddle bags, was most prominent.

Mining for silver was also of some importance.

Make a mineral map of Utah. Locate the various mineral deposits. Note the great variety of minerals produced in Utah.

Let the pupils tell what they know about how the various minerals are used.

Make a list of questions children might have regarding some of the minerals.

Use the questions to purpose reading on the subject.

Collect pictures of minerals and their uses and display on a bulletin board.

Write letters to Utah’s mining counties for information on mining and minerals:
- Tooele--Copper
- Uinta--Oil
- Carbon and Emery--Coal
- Utah--Steel
- San Juan--Uranium
- Juab--Lead and Zinc
- Salt Lake--Salt

FUNCTIONAL SKILLS INVOLVED

Using a map to show location of places.

Acquiring and recording information on a map.

Locating information.

Evaluating information.

Collecting and organizing information.

Reporting information.

Applying language skills.

REFERENCES

See plate #44.

Nebo District I.M.C. Kit Mining Map transparency "Utah Minerals"


Nebo District I.M.C. Kit Mining Leaflet "Class Report-Coal" Leaflet "The Everlasting Metal. The Story of a Utah Natural Resource"


CONCEPTS

Utah still has numerous minerals in its soil which are recognized but undeveloped.

Mineral resources are grouped as metals and nonmetals.

Metals
The major non-ferrous metals mined in Utah are:
- Copper
- Lead and Zinc
- Gold and Silver
- Uranium

Minerals are grouped as metals and nonmetals.

Metals
Nonferrous
- Copper
- Lead and Zinc
- Gold and Silver
- Uranium

EXPERIENCES

Compare Utah as a mineral producing center with some typical world regions:
- Steel making-Pennsylvania
- Copper Mining-Chili, Alaska
- Coal Mining-Pennsylvania

Discuss why some areas are able to mine at lower costs and with greater profits than others.

Talk about how some minerals are left undeveloped because at that particular time they have no economic value.
Example: Uranium was once largely a by-product and was sold for use in the manufacture of paint until the scientists discovered that uranium was the most important metal in the process of splitting the atom.
Example: At the present time there is big potential in the oil shale of Eastern Utah but it is not economically feasible to extract it at this time.

Develop a list of terms related to mining:
- Metals
- Nonmetals
- Ferrous
- Non-ferrous
- Minerals
- Prospect
- Prospector

FUNCTIONAL SKILLS INVOLVED

Applying critical thinking skills to economic issues.

REFERENCES

Nebo District I.M.C.
Kit-Mining Pamphlets:
"A mine and the Story Behind It. What does it mean to you?"
"The Copper Story"
"Historical Development of Utah's Mining Industry"
Sample of ore minerals.
CONCEPTS

Copper is an old metal. It was used by some of the earliest men of history.

Copper became especially valuable to men when they discovered the value of copper wire in conducting electricity.

Copper is Utah's largest mineral industry.

EXPERIENCES

Make reading assignments to find out how long copper has been in use, what some of its early uses were, and how it is being used today.

View a film on copper as the basis for a group discussion.

Experiment with several materials to see which are conductors of electricity and which are insulators.

Examine the wires of some electrical appliances to note what they are made of.

Learn about the properties of copper.

Collect and display pictures and articles made of copper.

Discuss the importance of copper and its uses. (electrical wiring, painting, special equipment, diesel engines, shell cases in times of war, household articles, in electronics for space instruments.)

Plan an experience with copper tooling. (book ends, plaques, etc.)

Use a film to introduce a discussion on copper mining and processing in Utah.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Collecting and organizing information.
Reporting information.
Applying language skills.

Acquiring information through observing for a purpose.
Relating and evaluating information gained.

REFERENCES


Fenton, Carroll Lane and Mildred Riches From The Earth. New York: John Day Co, 1953.


Film - "The Utah Copper Story" Utah Copper Division Kennecott Copper Corp. p.o. Box 1650, S.L.C., Utah.
CONCEPTS

Nearly all of Utah’s copper comes from one world-famous open pit copper mine.

EXPERIENCES

Note to teacher.
Use the pamphlet “The Everlasting Metal”, to emphasize points brought out in the film.

Show pictures of the Kennecott Bingham Mine.

Note the vastness of this great ampitheater.

Discuss the processes of milling, smelting, refining.

Give a demonstration of the electrolysis of copper:
Put a paper clip in copper sulfate. The copper will cling to the paper clip as it collects in electrolysis.

Explain how the ore averages less than 1% copper at the Bingham mine.
Discuss how great amounts of material must be moved to get little ore (99% waste).

Let the students use sand or soil to demonstrate what a ratio of 1 to 99 by spoonfuls means.

When traveling to Salt Lake City, note how the excavations show on the east side of the Oquirrh Mountains.

FUNCTIONAL SKILLS INVOLVED

Relating, comparing and evaluating the information gained with that from other sources.

Acquiring information through observation and experimentation.
Interpreting processes.
Relating and evaluating information gained.

Acquiring information through observation and experimentation.
Interpreting and relating processes involved.

REFERENCES

Nebo District I.M.C.
Kit Mining
Pamphlet “The Everlasting Metal”
Filmstrip “Mining Part I”

Nelson, Elroy. Utah’s Economic Patterns. Salt Lake City, Utah: University of Utah Press, 1953. (Gray book prepared for use as supplemental material for Junior and Senior High School Social Science.)
### Concepts

For the most part, zinc and lead are mined together in Utah.

Use a chart or graph to compare production of copper in Utah with Arizona, the U.S., other countries.

Compare open-pit mining with underground mining processes.

Make a mural on the copper industry.

Start developing a display of mineral products and their ores.

Assign a student to report on zinc and lead mining in Utah.

Talk about some of the uses for lead and zinc.

- **Lead**: Because of its properties and relatively low cost, lead is used for many consumer and industrial products such as tubes for paste products, tetraethyl lead, X-Ray protection, storage batteries, paints, cable covering, household plumbing, solder, bearings, ammunition, insecticides.

- **Zinc**: Zinc is used for galvanized pipes, tanks, wire, sheet steel and other articles subject to rusting.

### Experiences

Compare Utah's copper mine with Chili's chuquicamata mine.

Use a chart or graph to compare production of copper in Utah with Arizona, the U.S., other countries.

Compare open-pit mining with underground mining processes.

Make a mural on the copper industry.

Start developing a display of mineral products and their ores.

Assign a student to report on zinc and lead mining in Utah.

Talk about some of the uses for lead and zinc.

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- **Zinc**: Zinc is used for galvanized pipes, tanks, wire, sheet steel and other articles subject to rusting.

### Functional Skills Involved

- Interpreting charts or graphs for information.
- Locating information.
- Evaluating information.
- Collecting and organizing.
- Reporting information.
- Applying language skills.

### References

- Nebo District I.M.C. Kit Mining Picture—"Underground Mine" Slides and Pictures of the "Bingham Kennecott Copper Mine"
- Film: "Lead From Mine to Metal" U.S. Dept. of Interior Washington D.C.
- Film: "Zinc, It's Mining Milling and Smelting" U.S. Dept. of Interior Washington, D.C.
In Utah, gold and silver are produced almost exclusively through refining and smelting processes which separate them from other basic metals—copper, zinc, and lead.

**CONCEPTS**

Locate the zinc and lead mining areas on a map.

Discuss how zinc is never formed in its pure state.
Over 90% of the zinc and lead mined come from ores that contain both minerals.

Show samples of ore that contains these minerals.

Discuss the properties of each.

**EXPERIENCES**

Assign a student or students to report on gold and silver mining in Utah.
(Contact books-and-resource people)

Compare mining for gold in Utah with placer mining in California and Alaska.

Compare early gold mining activities in Utah with the way gold is mined today.

Discuss why there is no gold and silver mining as such in Utah today. (Gold and silver are by-products of other metals.)

Discuss the effects of increased mining costs and low prices of the metals.

Use a graph to show that Utah still ranks high in the nation for production of these metals.

**FUNCTIONAL SKILLS INVOLVED**

Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.

**REFERENCES**

See plate #44.


CONCEPTS

Uranium is one of our nation's most important industrial metals.

EXPERIENCES

Display gold and silver ores and products.

Talk about the properties of gold and silver and how they can be reprocessed.

Talk about the commercial uses for gold and silver and the fact that the main market for gold is the U.S. Mint.

Tell how silver is sold occasionally to industrial users. (jewelry, silverware, medical and dental uses.)

Assign a student or students to report on uranium mining.

Tell about the history of uranium mining in Utah.

Use a map to locate the uranium mining areas.

Show pictures of mining activities.

Display samples of ore.

Tell how the Atomic Energy Commission needed uranium as a basic fissionable material during the war years.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.
Determining direction and location of places.

REFERENCES


See plate #48.
Counties of Utah

Plate #48
CONCEPTS

Utah's iron and steel industry is a close second to the non-ferrous metals industry in terms of economic importance.

EXPERIENCES

Discuss the possibilities of uranium as a source of power to be used for peacetime application in a new age of physics.

Read "The Voyage of the Nautilus". Set purposes for reading. Follow up with a class discussion.

Assign a student or students to report on Utah's iron and steel industry.

Tell about the history of iron mining in Utah.

Mention the fact that iron is one of the earth's most abundant metals.

Let the pupils have an experiences of dragging a magnet through some dirt on the school yard. Note the iron filings collected on the magnet.

View a film together to aid a discussion on iron uses and mining processes.

Learn where Utah's iron and steel exports go.

Learn that the major use of iron ore is in the making of steel.

Talk about the great numbers of people who are employed by iron and coal mining and steel industries.

FUNCTIONAL SKILLS INVOLVED

Reading with discrimination for a purpose.


Acquiring information through observation for a purpose. Relating and evaluating information gained.

Acquiring information through listening and observing for a purpose. Comparing and evaluating the information gained.

REFERENCES


Film: "Cast Iron-The Biography of a metal" U.S. Dept. of Interior. (Available through KOET)


CONCEPTS

The Geneva steel plant is a large modern steel plant located in Utah County.

EXPERIENCES

Discuss the many uses for iron and steel.

Use a graph to show how Utah ranks fourth in the nation in the production of iron ore and tenth in production of steel.

Discuss how, although iron is not renewable, the fact that it can be used over and over again, increases its usefulness.

Display samples of iron ores.

Discuss the properties and uses of iron.

Discuss how the U.S. Government decided to create a large steel plant in Utah to help meet the nations need for expanded steel production during World War II. (especially in ship building) Point out the dangers that West Coast shipyards faced in being deprived of their steel requirements from other sources, should the Panama Canal be blocked or damaged.

Use a filmstrip or film to show how steel is produced. Follow up with a class discussion.

FUNCTIONAL SKILLS INVOLVED

Interpreting graphs for information.

Acquiring information through observing for a purpose.

Relating and evaluating information gained.

REFERENCES


Nebo District I.M.C. Kit Mining. Pictures—"Geneva Steel Corp."


Nebo District I.M.C. Kit Mining Filmstrip—tape—"Mining Part 2" Filmstrip—"How Steel Is Made" Flowchart—Ore samples—Pictures "Iron and Steel Industry"
CONCEPTS

Non-metals
Utah has a large share of our nation's non-metallic minerals.

A. Coal.

EXPERIENCES

Display pictures of steel making activities.

Arrange for a resource visitor to come to the class and talk about steel-production.

Talk about the terms: hydrocarbon and non-metal.

Add these words to the list of "Mining Words".

Assign a student or students to report on coal mining in Utah.

Use a map to locate the coal mining areas in Utah.

Discuss the influence of the railroad and the development of coal mining in Utah.

Mention the following facts:
Utah is the largest coal producing state west of the Mississippi River.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through interviews.
Making notes.
Organizing notes.
Applying language skills.
Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.
Determining direction and location of places.

REFERENCES


Utah has over fifty coal mines which produce from 5 to 7 million tons of coal each year.

The major coal producing area in Utah is located in Carbon and Emery Counties. (Use a map)

Utah Coal is marketed chiefly in Utah, Idaho, Montana, Nevada, Washington, Oregon and California.

Utah’s coal mines are mechanized with the most modern machinery and equipment available.

Show pictures or a filmstrip and discuss how coal is mined, hauled and prepared for market.

Discuss safety procedures in mining.

Talk about ways that the coal industry in Utah is basic to other industries: For example, discuss the part coal plays in the production of steel.

Discuss the number of by-products that come from coal and the new industries that are being created. (plastic, nylon, fertilizers, insecticides)

Learn about the uses of benzene, toluene, xylene, creosote, coal tar coke.

Determining location and direction of places.

Determining direction and location of places.

Acquiring information through listening and observing for a purpose. Relating, comparing and evaluating the information gained with other sources.

See plate #48.

See plate #51.


PETROLEUM AND NATURAL GAS DEPOSITS

Manilla • Gas

- Oil gas
- Shale gas
- Oil gas
- Duchesne gas

- Nephi gas

- Oil gas
- Cisco

- Oil gas
- Moab

- Oil gas
- Monticello

- Bluff

Plate No. 49
CONCEPTS

B. Petroleum and Natural Gas.

EXPERIENCES

 Discuss the relationship of coal to modern industry.

 Discuss the fact that whether it is for comfort, for transportation or for industry, coal is our largest source of heat and energy.

 Use a map to locate where petroleum and natural gas reservoirs have been found in Utah.

 Learn how these underground reservoirs were formed.

 Use pictures or slides to show drilling processes.

 Discuss how petroleum and natural gas daily effect the lives of many people.

 Learn about the products of oil refining:
 gasoline
diesel oil
jet engine fuel
liquid petroleum gas
kerosene
lubricating oils
greases
wax
asphalt and road oil
solvent
cleaners

FUNCTIONAL SKILLS INVOLVED

Determining direction and location.

Acquiring information through observing for a purpose.

REFERENCES


See map plate #49.

Nebo District I.M.C. Kit Mining
Transparencies: "Petroleum and Natural Gas Deposits"
"Drilling for Oil"
"Products of Oil Refining"
Pictures:
"The Story of Petroleum"
"Petroleum in Our Lives"
Filmstrip "Mining Part II"
Charts: "The Story of Oil"
"Science In the Search of Oil"
Pamphlet: "Facts About Oil"


Films: "Born in Freedom"
"Barrel Number One"
"Pipeline In the Rockies"

Utah Petroleum Council
10 West 3rd South
Salt Lake City, Utah, Room 306
CONCEPTS

C. Gilsonite.

EXPERIENCES

Use pictures and charts to show how natural gas and petroleum are transported to the refineries.

Discuss the costs of pipeline transportation versus trucking.

Use a map to show the distances covered by such transportation.

Write letters to Standard Oil Co. of California for the following current materials: "F4 Bulletin" "F5 Annual Report"

Discuss how natural gas, besides being a source of fuel, is used as a source of chemicals in the manufacture of synthetic fibers, plastics and other chemical products.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observation for a purpose.

Determining location and direction. Using a map scale to determine relative distance.

Applying language skills.


REFERENCES

See plate #54.


Parker, Bertha M. A Great Storehouse. Evanston, Ill.: Row Peterson, 1941.


CONCEPTS EXPERIENCES

Discuss how gilsonite has contributed to other industries:
Covering for under sea cables
High grade gasoline
Asphalt tile
Building paper
Storage battery cases
Paint, varnish, lacquers
Asphalt for roads
Ink
Sound-deadening material

Use a map to locate where the gilsonite deposits are located.

Explain the fact that the only known commercial deposits in the world lie in a belt 60 miles long and 30 miles wide starting in Utah's Duchesne County and running southeast into Colorado.

Display samples of gilsonite and gilsonite products.

Talk about how considerable research is being carried on to find new ways to use the vast stores of gilsonite.

Learn that gilsulate was developed for use as insulation for underground steam and hot water pipes.
CONCEPTS
D. Other Minerals

EXPERIENCES

Make a list of other mineral deposits in Utah that are necessary and important:
Salt  Gypsum
Soda Ash  Cement
Sulphur  Limestone and Lime
Phosphates  Sandstone and gravel
Potash  el
Nitrogen  Pumice
Clay  Vermiculite

Display samples of these minerals.

Discuss briefly the economic importance of each.

Let a student or students report on the salt industry in Utah.

Include such points as:
Salt has been used longer by man than any other mineral
The pioneers established Utah's salt industry.

Tell how salt was recovered by the pioneers and used as a needed food condiment and preservative.

Talk about modern ways of recovering salt.

Tell how salt is a specialized product, ground, sized, pressed into blocks, or packaged to meet individual and industrial needs.

FUNCTIONAL SKILLS INVOLVED
Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.

REFERENCES
Fenton, Carroll Lane and Mildred Riches From The Earth. New York: John Day Co., 1933.

Film "Mountain of Life" Western Phophates Inc. P.O. Box 893 Salt Lake City, Utah (Shows origin of phosphate rock, how it is mined, processed and used.)


Nebo District I.M.C. Kit - Mining Pamphlet on Salt.


CONCEPTS

Discuss various salt forms and salt products and their uses:
- Iodized salt
- Regular table salt
- Ice cream salt
- Rock salt
- Mineralized salt
- Road salt
- Water softener salt
- Popcorn salt
- Powdered salt

Collect and examine samples of the various kinds of salt.

Mention such facts as:
1. Utah salt is marketed primarily in the western states.
2. Much of the salt marketed in Utah is used by the livestock industry.
3. Block or rock salt is used on the range or pasture lands.
   It is also mixed with various stock and poultry feeds.
BIBLIOGRAPHY
MINING
(Teachers)


BIBLIOGRAPHY
MINING
(Children)


MANUFACTURING IN UTAH
CONCEPTS

Manufacturers use natural resources to produce commodities people want and need.

EXPERIENCES

Define manufacturing.

Recall what our natural resources are.

Discuss how manufacturers depend on the market or demand for a finished product, on labor supply, availability of raw materials, facilities for distribution and economical production.

Discuss how demand comes from meeting the needs and desires of people.

Discuss the influence of advertising in creating a market.

Manufacturing in Utah depends largely upon agriculture and mining for raw materials.

Discuss how Utah's manufacturing industries depend on the farms, ranches and mines of the state for much of their raw materials.

Bring out the fact that without locally produced raw materials, Utah's manufacturing would be small; without manufacturing the value of mineral and agricultural products would be less.

FUNCTIONAL SKILLS INVOLVED

Reviewing information for retention and recall.

Applying critical thinking skills.

Applying problem solving and critical thinking skills.

REFERENCES


Filmstrip tape "Manufacturing in Utah Part I" Nebo District I.M.C.
CONCEPTS

Show how the three together form our economic base.

Explain what is meant by "economic base".

Let the pupils tell how some products must be changed before they can be consumed.

Make a list of the many products and secondary products that are made available through, for example, the meat processing industry.

Use pictures or a filmstrip to tell the story of a product from a raw material to a packaged product. (sugar beet to a bag of sugar, etc.)

Help the children to develop the understanding that some manufacturing is done with raw materials and some with processed materials.

Develop an appreciation for the high standard of living we enjoy.

Talk about how, since the coming of the industrial age, machines are constantly being developed to take the place of manual labor. It is estimated that in a modern

FUNCTIONAL

SKILLS INVOLVED

Acquiring information through observation of charts and graphs.

Interpreting relationships and making generalizations.

REFERENCES

See plate #50.

Nebo District I.M.C.

Kit Manufacturing Transparency - "Utah's Economic Base"
Manufacturing is Utah's largest industry:

home in the U.S. there are at the command of the housekeeper, 9 or 10 mechanical slaves which do the work formerly done by men or women or was not done at all.

Make a list of the modern home machines that we have working for us.

List other modern conveniences that contribute to pleasure and richness of life.

Discuss the statement - "At least one out of every three children in the world go to bed hungry at night".

Find out where most of the manufacturing centers are located. Discuss the relationship of where raw materials are produced and where they are processed.

Use plates #41 and #44 to show that Utah is fundamentally a producer of raw materials. Discuss the growth of manufacturing in Utah and its relationship to the availability of such an abundance of natural resources.

Use diagrams or charts to compare manufacturing, mining and agriculture in Utah in terms of wages paid, number employed, and total income.

Applying problem solving and critical thinking skills to social issues.

Determining location direction.

Interpreting information through observation for a purpose.

Interpreting relationships and making generalizations.

Interpreting diagrams and charts for information. Relating information gained through charts with that from other sources.
THE STRUCTURE OF UTAH'S ECONOMIC CHANGES

1940

Agriculture 49.5%
Manufacturing 27.1%
Mining 17.2%

* Federal Defense 1.2%

1959

Manufacturing 41.7%
Agriculture 17.9%
Mining 11.0%
Other 14.5%

Federal Defense 14.9%

1970

Manufacturing 34.0%
Agriculture 24.2%
Mining 12.2%
Other 14.5%
Federal Defense 15.1%

From: "Dynamics of Economic Growth in Utah" Tenth Annual Utah Workshop on Economic Education 1962
B. Y. U. Provo, Utah
page 21

Plate No. 50
### CONCEPTS

Utah has the necessary conditions favorable for continued growth as a manufacturing state.

Most of the manufacturing that is done in the world today is done by the use of machinery.

### EXPERIENCES

Discuss the importance of increased population, good and stable labor supply, abundance of raw materials, new and increasing markets, excellent transportation facilities, adequate fuel and power, good living conditions, good climate (low humidity and abundant sunshine), and favorable public sentiment in relationship to growth in manufacturing.

Develop an understanding of what a machine is and how it serves people.

Point out the fact that machines may be simple or complex.

Make reading assignments on different types of machines and their uses. Report back to the class.

Collect and display pictures of machines.

Compare the time it would take to dig a basement by hand with the time taken to do the same work by machine.

See a film or visit a manufacturing establishment as a basis for a group discussion on machines and their uses.

### FUNCTIONAL SKILLS INVOLVED

Locating information.

Evaluating information.

Collecting and organizing.

Reporting information.

Applying language skills.

Acquiring information through observing for a purpose.

### REFERENCES


CONCEPTS

Machines for manufacturing cannot run without power.

EXPERIENCES

Discuss the effect of more and better machines on:
employment of people
production of better goods
greater supply of goods
more economical costs

Compare modern and early manufacturing in Utah.

Take a field trip:
- Foundry
- Clothing factory
- Cannery
- Meat processing and packing
- Printing office

Contact books or people to find out the different ways power is produced.

Follow up with a discussion on the kinds of fuel used to produce power for modern machines; on the kinds of fuel used in Utah's manufacturing; on possible future sources of power.

Invite a resource visitor to share information about power projects.

FUNCTIONAL SKILLS INVOLVED

Applying problem solving and critical thinking skills to social issues.

Acquiring information through listening and observing.
- Recording, summarizing information.
- Relating, comparing and evaluating information gained through listening and observing with that of other sources.

Locating information.
- Evaluating information.
- Collecting and organizing.
- Reporting information.
- Applying language skills.

REFERENCES


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<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Food and food products.</td>
<td>View a film or a filmstrip to show how harnessed water is used as a source of power.</td>
<td>Reading and collecting with discrimination.</td>
<td>Film: &quot;Key to the Future&quot; U.S. Bureau of Reclamation.</td>
</tr>
<tr>
<td></td>
<td>Discuss Utah's wide variety of manufacturing firms. Learn that they range from the newest space age and electronic plants to the type of plants that started in the early history of the state.</td>
<td>Acquiring information through listening and observing for a purpose. Discussing and evaluating the information gained. Relating and comparing the information gained with that from other sources.</td>
<td>Nelson, Elroy. Utah's Economic Patterns. Salt Lake City, Utah: University of Utah Press, 1953. (Gray book)</td>
</tr>
<tr>
<td></td>
<td>Assign a student or students to report on the major food processing industries: Meat Packing</td>
<td>Locating information. Evaluating information. Collecting and organizing. (Contd.)</td>
<td></td>
</tr>
</tbody>
</table>
CONCEPTS
Dairy products
Canning and preserving
Grain milling
Sugar

EXPERIENCES
Discuss what makes food products spoil and the need for methods of preserving.
Use pictures or slides to develop understandings about equipment and processes involved in these major types of food processing industries.
Discuss what raw materials and what finished products are involved.
Learn about Utah County's contribution in both raw materials and finished products, to food processing in Utah.

Note to Teachers:
Utah's dry climate, lacking in humidity, is ideal for candy making. In areas of high humidity, candy and raw materials rapidly deteriorate. Find out about Utah's candy making industries.

Take a field trip to a food processing plant:
- Cannery
- Meat packing plant
- Other

Observe the processes involved.

FUNCTIONAL SKILLS INVOLVED
Reporting information.
Applying language skills.

REFERENCES
Film: "Why Foods Spoil"
Encyclopedia Britannica.


### CONCEPTS

<table>
<thead>
<tr>
<th>B. Apparel and other fabric products.</th>
</tr>
</thead>
</table>

### EXPERIENCES

<table>
<thead>
<tr>
<th>Follow up with a class discussion.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assign a student or students to report on Utah's apparel and fabric manufacturing.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Discuss the kinds of apparel and fabric products that are produced in Utah.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Include the following: men and boys suits, overalls, uniforms, women's and girls suits and knit goods, housedresses, blouses, ladies lingerie, shirts, sportswear, bonnets, hats, children's dresses, draperies, canvas goods, foundation garments, filter cloth, bags, auto tops and covers.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Find out how many fabric and apparel industries are located in Utah County.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>If possible, plan a field trip to see the types of machinery used and the processes involved.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Discuss the demand for these products in our everyday life.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ask a student or students to report on the textile industry in Utah. Contact books or a resource person for information.</th>
</tr>
</thead>
</table>

### FUNCTIONAL SKILLS INVOLVED

<table>
<thead>
<tr>
<th>Relating and comparing information gained with that from other sources.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Locating information.</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Evaluating information.</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Collecting and organizing.</th>
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<table>
<thead>
<tr>
<th>Reporting information.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Applying language skills.</th>
</tr>
</thead>
</table>

### REFERENCES

|-------------------------------------------------------------------------------------------------|
CONCEPTS

D. Lumber and wood products.

EXPERIENCES

Discuss the kinds of goods produced and where they are marketed.

- Note of interest.
  For the most part, wool is the material used in Utah's textile industry. Knitting and broad woven fabrics are produced in the production of blankets, sweaters, underwear and socks, made almost entirely of wool.
  During the war the Murray Woolen Mills made blankets for the army and navy—"Jack Frost Blankets".

- Have a resource visitor come to the classroom and demonstrate knitting.

- Write original stories and illustrate:
  "From Sheep to Sweater"
  "A Blanket for Jimmy"

- Have some weaving experiences on a loom.

D. Lumber and wood products.

- Assign a student or committee to report on the lumber and wood industries of Utah. (Contact books, resource people, other)
  Tell about the kinds of products produced. (boards, excelsior, poles, fuel, wood, posts, farm timber, wooden containers)

- Tell where these products are made.

FUNCTIONAL SKILLS INVOLVED

- Acquiring information through listening and observing for a purpose.
- Relating and evaluating information gained.
- Applying language skills.
- Locating information.
- Evaluating information collecting and organizing.
- Reporting information.
- Applying language skills.

REFERENCES


E. Furniture and fixtures.

Discuss the importance of lumber and wood product industries in Utah.

Compare lumbering in Utah with the northwest.

Write letters for pictures and products to be used to support the reports.

Assign a student or committee to report on furniture and fixtures manufacturing in Utah.

Tell about the kinds of furniture and fixtures that Utah firms produce which include such items as shelving, office furniture, venetian blinds, cabinets for home and industry, upholstered furniture and other.

Try to find where the raw materials come from.

Note how much is produced in Utah.

Discuss the importance of furniture and fixture manufacturing industries in Utah.

Write a letter to a firm in Grand Rapids Michigan for pictures and information on large scale furniture production. (Contact a local furniture dealer for the address of a Company.)

Nebo District I.M.C.
Kit Manufacturing Pamphlets on the lumber industry.
Chart "What We Get From Trees"


CONCEPTS

F. Paper bags and allied products.

EXPERIENCES

Assign a student or students to report on paper bags and allied products.

Mention the fact that the manufacture of paper began soon after the arrival of the pioneers. Paper was a necessity so that printing could be made possible. The high cost of paper shipped overland was prohibitive.

Tell about the kinds of paper products that are produced today--paper bags, paper or cardboard boxes, cartons, laminated paper and cardboard.

Find out where these products are produced and how they are consumed.

Note how many are produced in our own locality.

Make a collection of paper bags, discuss size, shape, material made of -- and purposes designed for.

G. Printing, publication, and allied products.

Assign a student or students to report on printing, publication, and allied products. (Use books, resource people, and other)

Discuss the development of newspaper printing and publishing in Utah.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.

REFERENCES

CONCEPTS

Tell about other publications and products such as books and magazines, job printing, book binding services, engraving.

Discuss the importance of newspapers as a means of communication.

Compare modern methods of printing with early methods in Utah.

Visit a printing office or have a resource visitor come to the school.

H. Chemicals and allied products.

Assign a student or students to report on chemical and allied products.

Tell about the exciting development of Utah's organic chemical industries. (plastics, synthetic fibers, medicinals, detergents, insecticides, dyes.)

Show a film or filmstrip describing how plastics are made.

Discuss the importance of these products in our lives.

Tell about how other industries have been affected by their use.

EXPERIENCES

FUNCTIONAL

Acquiring information through listening and observing for a purpose.


Reporting information. Applying language skills.

Acquiring information through listening and observing for a purpose.

Relating, comparing and evaluating the information gained through listening and observing with that from other sources.

SKILLS INVOLVED

REFERENCES


<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Products of Petroleum and coal.</td>
<td>Arrive a display of articles made of plastic and synthetic fibers.</td>
<td>Applying language skills.</td>
<td>E. I. DuPont De Nemours &amp; Co. 1007 Market Street Wilmington, Delaware 19898</td>
</tr>
<tr>
<td>Write letters to the Du Pont Company for literature and samples of plastics.</td>
<td></td>
<td>Acquiring information through observation and experimentation.</td>
<td></td>
</tr>
<tr>
<td>Demonstrate, with actual materials, the making of a simple article.</td>
<td></td>
<td>Evaluating information, Collecting and organizing.</td>
<td></td>
</tr>
<tr>
<td>Liquid plastic can be obtained from a novelty supply house.</td>
<td></td>
<td>Reporting information. Applying language skills.</td>
<td></td>
</tr>
<tr>
<td>Assign a student or students to report on petroleum and coal products. (contact books, resource people, and other)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tell where petroleum and coal products are produced in Utah.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make a list showing what petroleum products include: gasoline, diesel oil, jet engine fuel, liquid petroleum gas, heating oils, kerosine, lubricating oils and greases, wax, asphalt and road oil, solvent and cleaners.</td>
<td></td>
<td></td>
<td>Nelson, Elroy. Utah's Economic Patterns. Salt Lake City, Utah: University of Utah Press, 1956.</td>
</tr>
<tr>
<td>Discuss the importance of these products in our lives and in industry.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show pictures of the activities and processes of an oil refinery.</td>
<td></td>
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</tr>
</tbody>
</table>
CONCEPTS

J. Leather and leather products.

EXPERIENCES

Discuss the different ways coal is being used in industry today.

Assign a student or students to report on Utah's leather industries.

Discuss early tanning industries in Utah.

Use charts or graphs to show that while Utah has a large livestock industry, only a few leather products are manufactured.

Tell what kinds of leather products are made in Utah.

Use a map to show where Utah hides are shipped and where the large leather industries are located in the U.S.

Discuss which industries are the greatest consumers of leather.

Write letters for pictures and other materials on the shoe industry to strengthen the report.

Find out from local merchants where their leather products come from.

Discuss substitutes for leather.

Display samples of leather and leather substitute products.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.

Determining direction and location.
Using map scale to compute relative distance.

Applying language skills.

REFERENCES


See plate #51.

Nebo District I.M.C. Kit Manufacturing Transparency—"Political Map of the U.S."

United Shoe Machinery Corp.
140 Federal St.
Boston, Mass.
"How Shoes Are Made" (free)
K. Stone, clay and glass products.

Compare the two kinds of products as to:
- Cost
- Quality
- Production and consumption.

Invite a resource person to visit the class and share hobbies with leather tooling or to talk about leather products.

Assign a student of students to report on stone, clay and glass products.

List on a chart the kinds of stone, clay and glass products that are produced in Utah: pottery products (decorative pottery, earthenware figures, marble bases), concrete and concrete products, (sewer and culvert pipes, pumice blocks), gypsum and plaster products, hydraulic cement, cut-stone and stone products, asbestos, abrasives, and bricks.

Tell where these industries are located.

Discuss the uses of some of these products.

Show a film, "Story of Brick-making".

Visit a brick kiln or a refractory.

FUNCTIONAL SKILLS INVOLVED
- Acquiring information through listening and observing for a purpose.
- Relating and evaluating information gained.
- Locating information.
- Evaluating information.
- Collecting and organizing.
- Reporting information.
- Applying language skills.

REFERENCES
- Film "Making Bricks for Houses"
- Encyclopedia Britannica
CONCEPTS

L. Fabricated metal products.

EXPERIENCES

Arrange a display of different kinds of brick.

Compare brick making today with adobe making by the pioneers.

Assign a student or students to report on the fabricated metal industries.

Discuss how the processing of minerals into usable goods is the most important part of manufacturing in Utah. (iron and steel)

Consider the affects of the following factors on the economy of the state:

- employment
- wages
- utilization of electricity and fuels
- utilization of transportation.

List the variety of iron and steel products that are manufactured or fabricated in Utah.

Make a collection of things or pictures of things that have iron in them.

Discuss the importance of iron and steel in our everyday lives.

Use a film to show some of the final uses of metals.

FUNCTIONAL SKILLS INVOLVED

Applying language skills.

Locating information.

Evaluating information.

Collecting and organizing.

Reporting information.

Applying language skills.

Applying critical thinking skills to economic issues.

REFERENCES


Film: "Iron Ore to Motive Power" Ford Motor Co.
CONCEPTS

M. Machinery and equipment.

EXPERIENCES

Tell where the fabricating industries are located in Utah.

Discuss how the availability of the principal raw material, steel, influences the development of these firms.

Use a map to check the location of these industries in relation to raw materials.

Discuss how iron is mined near Cedar City and is sent by railroad to Geneva Steel Mills to be made into steel.

Show how other materials, coke, comes from Ohio, Michigan, Alabama, and Missouri; dolomite, a fluxing agent, comes from Leamington, in Millard County.

Discuss how the availability of raw materials eliminates the necessity for extensive shipping of raw materials to the manufacturing plants and lowers the cost of these raw materials.

Compare costs of steel making in Utah with other areas.

Assign a student or students to report on the manufacture of machinery and equipment in Utah.

FUNCTIONAL SKILLS INVOLVED

Evaluating and comparing information.

Determining direction and location.

Using a map scale to compute relative distance.

Locating information.

Evaluating information.

Collecting and organizing. (Contd.)

REFERENCES

See plates #48, #51.

<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
</table>
| N. Transportation equipment | List the different kinds of machinery and equipment that are manufactured in Utah:  
Agricultural machinery  
Mining machinery  
Service equipment  
Household machines  
Transmitters  
Communication equipment | Reporting information.  
|                          | Recall the importance of machines in our lives.                              | Recalling information for retention.                                                      |                                   |
|                          | Collect and display pictures of the kinds of machines and equipment that are manufactured in Utah. | Applying language skills.                                                               |                                   |
|                          | Note how many of these products are used locally or by the families of the pupils. |                                             |                                   |
|                          | Write letters to different firms for information to strengthen the report. |                                             |                                   |
|                          | Discuss the importance of these products in our lives.                       |                                             |                                   |
|                          | Assign a student or students to report on the manufacture of transportation equipment. | Locating information.  
Evaluating information.  
Collecting and organizing.  
Reporting information.  
Applying language skills. |                                   |
|                          | List the kinds of transportation equipment that are manufactured in Utah: |                                             |                                   |
CONCEPTS

0. Professional and scientific instruments.

EXPERIENCES

Display pictures of transportation equipment.

Tell where these products are manufactured.

Make a graph or chart to show the extent of production.

Assign a student or students to report on the manufacture of professional and scientific instruments in Utah.

List the kinds of professional and scientific instruments that are produced in Utah:
- Grinding eye glasses
- Glasses for scientific instruments
- Photographic equipment
- Dental equipment

Use a graph or chart to show the importance of this industry in Utah.

Invite a resource visitor to come to the class and tell about the importance of some of these products in their work.

FUNCTIONAL SKILLS INVOLVED

Using a chart or graph to record information.
Drawing inferences and making generalizations.
Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.

Using a chart or graph for recording information.
Drawing inferences and making generalizations.
Acquiring information through listening and observing for a purpose.
Evaluating information gained.

REFERENCES

CONCEPTS

Today, the missile industry is Utah's largest manufacturing industry in terms of employment, wages and salaries. Defense activities and federal military installations have become an important part of Utah's economy.

EXPERIENCES

Arrange a display of some of the products.

Assign a student or students to report on manufacturing and the missile industry.

Make a list of the new government installations in Utah:
- Hill Field
- Clearfield Naval Supply Depot
- Utah Army Service Forces Depot
- Ogden Arsenal
- Tooele Ordinance Depot
- Deseret Chemical Warfare Depot
- Dugway Proving Grounds
- Tooele Engineering and Redistribution Center
- Greenriver Missile Project

Discuss how the defense industries have contributed to Utah's economy.

Discuss reasons for placement of these installations in Utah.

Locate the various industries on a map.

Show pictures or slides of these various industries.

Invite a resource visitor to come to the class to share information on the projects.

FUNCTIONAL SKILLS INVOLVED

Locating information.
Evaluating information.
Collecting and organizing.
Reporting information.
Applying language skills.

REFERENCES


See plate #48.
BIBLIOGRAPHY
MANUFACTURING (Teachers)


BIBLIOGRAPHY
MANUFACTURING (Children)


RECREATION IN UTAH
**CONCEPTS**

Recreation has become a big business in Utah.

Because of its climate and topography, Utah offers a great variety of outdoor types of recreation.

**EXPERIENCES**

Define recreation.

Discuss man's need for recreating experiences.

Talk about the relationship of automation to the amount of leisure time man enjoys for recreation.

Develop understandings of how different services help to satisfy man's need for recreation.

Learn about the size of the tourist trade in Utah.

Learn what things are being done to promote more trade.

Let the pupils help develop a list of the various types of recreation in Utah.

- Hunting
- Fishing
- Camping
- Boating
- Skiing
- Hiking
- Rock hounding
- Exploring
- Sightseeing
- Racing
- Photography
- Botany, biology,
  (Contd.)

**FUNCTIONAL SKILLS INVOLVED**

**REFERENCES**

Utah Tourist and Publicity Council.

Chambers of Commerce.


CONCEPTS

Utah's scenery, parks and monuments make it a place of unsurpassed beauty.

EXPERIENCES

geology, archeology, paleontology.
Tennis, swimming, golfing, foot ball, base ball - other sports.

Discuss personal recreational experiences.

- Make a pictorial map of Utah's recreation areas.
- Make original posters and slogans to advertise Utah recreation.
- Write letters to Park Services, Chambers of Commerce, etc. for advertising materials.

A. Mountain peaks

FUNCTIONAL SKILLS INVOLVED

Determining the direction and location of places.
Recording and relating information.
Applying language skills.

Utah's recreational experiences.

- Use a film or filmstrip to point out the many scenic attractions in Utah.

Let the film purpose a discussion on the many attractions Utah has to offer and the uniqueness of many of them.

- Collect and display pictures of scenic attractions.

- Make a list of Utah's different mountain peaks:
  - Kings Peak
  - Mt. Timpanogas
  - Mt. Nebo
  - Other

REFERENCES

Nebo District I.M.C.
Kit Recreation
Filmstrip-tape "Utah In Color"
Pictures "Scenic Utah" Pamphlets.
CONCEPTS

B. Lakes

EXPERIENCES

Locate these different mountain peaks on a map.

Show slides and pictures of beautiful mountain scenery.

Discuss interesting things about some of these mountain peaks. For Ex., tell the legend of Mt. Timpanogas.

Have some creative writing experiences:
Write poems
Create captions for pictures.

Make a list of Utah’s lakes. Designate which are natural lakes and which are man-made.
- Great Salt Lake
- Bear Lake
- Utah Lake
- Mirror Lake
- Fish Lake
- Lake Powell
- Flaming Gorge
- Others

Locate the natural lakes of Utah on a map.

Locate the man-made lakes on a map.

Discuss the difference between a natural lake and a man-made lake.

FUNCTIONAL SKILLS INVOLVED

Determining direction and location of places.

Using map symbols to determine what different things are.

Applying language skills.

REFERENCES

See plate #29.

See plate #52.
NATURAL AND MAN-MADE LAKES IN UTAH

- Man-made lakes

Plate No. 52
CONCEPTS

Show pictures, or slides to point out the distinguishing characteristics of each.

Discuss interesting things about some of Utah's lakes such as:
- The water of Great Salt Lake is about one-fourth salt.
- Bear Lake is partly in Utah and partly in Idaho.
- Fish Lake is surrounded by volcanic material and is extremely deep.

Discuss recreational opportunities and personal experiences.

Let the pupils help develop a list of Utah's rivers.
- Weber River
- Ogden River
- Provo River
- Green and Colorado Rivers
- Bear River
- Others

Use a map to show where they are located.

Note the direction and length of their courses.

Discuss interesting things about some of these rivers.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observing for a purpose.

Determine the direction and location of places.

Using map symbols to determine what different things are.

Using a map scale to compute relative distances.

REFERENCES

See plate #31.

Film—"Through the Grand Canyon By Boat" - Standard Oil Co. of California.
18 Post Office Place
Salt Lake City, Utah.
### CONCEPTS

**D. Deserts**

- Note how many times the Bear River crosses the state line before it empties into Bear Lake.
- Note which rivers were named after people.
- Note how many originate in the Uinta mountains.
- Note how many originate outside the state.
- Discuss recreational opportunities and personal experiences.
- Use slides and pictures to point out interesting attractions.

**FUNCTIONAL SKILLS INVOLVED**

- Acquiring information through observing for a purpose.
- Relating and evaluating information gained.

**REFERENCES**

- See plate #26.
- See plate #25.

<table>
<thead>
<tr>
<th>EXPERIENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a map to locate Utah's desert areas.</td>
</tr>
<tr>
<td>Use slides and pictures to reinforce understandings of desert country.</td>
</tr>
<tr>
<td>Discuss recreational opportunities in desert country.</td>
</tr>
<tr>
<td>Salt Flats</td>
</tr>
<tr>
<td>Sand Dunes</td>
</tr>
</tbody>
</table>
E. Canyons

The Federal Government has preserved many of the most remarkable natural and historical features in Utah.

Mention the fact that Utah possesses so many beautiful canyons that they could not all be enumerated.

Show pictures or slides of beautiful attractions. Include local scenes.

Discuss recreational opportunities and personal experiences.

Let the pupils help develop a list of federally preserved areas:

- Bryce Canyon National Park
- Zion National Park
- Arches National Monument
- Capital Reef National Monument
- Cedar Breaks National Monument
- Dinosaur National Monument
- Hovenweep National Monument
- Natural Bridge National Monument
- Rainbow National Monument
- Timpanogos Cave National Monument
- Golden Spike National Historical Site
- High Uinta Wilderness Area
- Bear River Migratory Bird Refuge
- National Forests
- Canyonlands National Parks

REFERENCES

Film—"Painted Canyons"
Union Pacific Railroad
1406 Dodge Street
Omaha, Nebraska.

Film—"The Sculptured Earth"
Still and Motion Picture Branch, National Park Service
Dept. of Interior, Wash., D.C.
<table>
<thead>
<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discuss recreational opportunities and personal experiences.</td>
<td>Reporting information.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applying language skills.</td>
<td></td>
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</tbody>
</table>

<table>
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<tr>
<th>REFERENCES</th>
</tr>
</thead>
</table>
UTAH'S TRANSPORTATION
CONCEPTS

Good transportation facilities are very important in Utah's economic development.

EXPERIENCES

List the types of transportation observed in Utah.

Discuss why the same modes of transportation are not used everywhere.

Consider:
- Topography of the land
- Distribution of population
- Location of raw materials
- Nature of raw materials.

Note the amount and kinds of local transportation used.

Develop a series of maps to show the various means of transportation used to transport different products from the place of origin, to the consuming areas.

Note that for many products there is a great distance between the place of production and the market.

Discuss the importance of being able to transport goods freely and easily.

Contact different transportation agencies for pictures of equipment used and for information regarding shipping rates.

Compare differences in costs, time and facility.

FUNCTIONAL
SKILLS INVOLVED

Applying critical thinking skills.

Interpreting pictures, charts and maps for information.

Drawing inferences and making generalizations.

Gathering facts, summarizing and recording.

APPLICATIONS

Applying problem solving and critical thinking skills to economic issues.

Collecting and organizing information.

Recording and summarizing information.

Relating, Comparing and evaluating information gained with that from other sources.

REFERENCES


CONCEPTS

There are four major types of transportation in Utah.

A. Rail

EXPERIENCES

Review the importance of the coming of the railroad to Utah.

Discuss how Salt Lake City, because of its unique situation at that time, (a city of over 40,000 population, located nearly a thousand miles from navigable water, surrounded by deserts and mountains) was dependent upon wagon hauls for every article they needed that was not produced locally.

Discuss how costs of many goods were prohibitive. Transportation charges ranged from $150.00 to $200.00 per ton from Missouri to Salt Lake City.

Discuss the effect the coming of the railroad on Utah's economy.

Mention such facts as:
1. Cost of manufactured products from the east was reduced.
2. The mining industry was stimulated.
3. Markets were produced for Utah's goods.
4. It meant unemployment for Utah's teamsters.
5. Many small manufacturers in Utah went out of business.

Let a pupil or pupils report on rail transportation, in Utah.

FUNCTIONAL SKILLS INVOLVED

Applying information for retention and recall.

Determining location and position.

Using a map scale to compute relative distance.

Applying problem solving and critical thinking skills to economic issues.

REFERENCES


Nebo District I.M.C. Kit Transportation Charts on Freight rates.


CONCEPTS

Discuss the names of the various railroads, their routes, and kinds of products that are shipped by rail today.

Talk about the different types of cars and the facilities for moving various types of freight.

Discuss how the railroads are a key to production of some products. (For example, in the iron and steel industry at Geneva, coke is shipped from Ohio, Michigan, Alabama, Missouri; dolomite, a fluxing agent, is obtained from Leamington, Utah. Ferro-silicon, used for alloy treatment is obtained in the Northwest.)

Use a map to pin-point the location of these raw materials and the distance to be hauled.

Display pictures to show the development of locomotives from the wood burners to the diesel-electric.

Discuss how rail transportation has been facilitated through the development of modern locomotives.

View a film together as a basis for discussion on rail transportation.

FUNCTIONAL SKILLS INVOLVED

Determining location and position of places.
Computing distance by use of a map scale.
Acquiring information through observing for a purpose.
Acquiring information through listening and observing for a purpose. (Contd.)

REFERENCES


See plate #51.

Nebo District I.M.C. Kit Transportation Pictures "Railroads" Charts Filmstrip-"Transportation #1"

Films "The Last of the Giants"
Union Pacific Railroad
1416 Dodge Street
Omaha, Nebraska
CONCEPTS

B. Motor Transportation

EXPERIENCES

Observe a map to see the areas served by a railroad in Utah.

Observe the areas not served by a railroad. Discuss why?

Discuss the statement, "The United States is a nation on wheels".

Collect and display pictures on a bulletin board to go with this statement.

Discuss the importance of vehicles in our lives as a means of passenger transporting, as a means of trucking and hauling.

Have the pupils help take a survey of the types of vehicles observed transporting goods.

FUNCTIONAL SKILLS INVOLVED

Relating, comparing and evaluating information gained with that from other sources.

Acquiring information through observing for a purpose.

Determining location and direction of places.

Using a map scale to show relative distance between places.

Interpreting map symbols.

Relating, comparing and evaluating information.

Applying critical thinking skills.

Relating information derived from pictures, charts, graphs with that gained from other sources.

Acquiring information through observing with a purpose.

Recording, evaluating and summarizing information gained.

REFERENCES

"Wheels A' Rolling"
Santa Fe Film Bureau
Room 100 121 East 6th St.
Los Angeles 14, California

See plate #8.

Nebo District I.M.C.
Kit Transportation
Map Transparency:
"Travel Routes in Utah-The Railroad"

"America's Products & the Trucks That Carry Them"


McIntire, Alta. "Story about automobiles" Working Together.

<table>
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<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
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</thead>
</table>
| 1. Try to determine which are company vehicles and which are independent vehicles. | 1. Acquiring information from interviews.  
2. Recording and summarizing information.  
3. Relating, comparing, and evaluating information gained with that from other sources. | Acquiring information from interviews.  
Recording and summarizing information.  
Relating, comparing, and evaluating information gained with that from other sources. | See plate #7. |
| 2. Record the names of transporting agencies. | 2. Determining direction and location.  
Using and interpreting map symbols.  
Acquiring information through observing. | Determining direction and location.  
Using and interpreting map symbols.  
p. 249 (red book)  
p. 188 (gray book) |
| 3. Contact a trucker to find out the kinds of products different agencies transport. | 3. Discuss the advantages of motor transportation. |  |  |
| 4. If possible, make arrangements for a transporting company to stop at the school. Observe the physical and operational features of the vehicle. Observe the products being transported. | Discuss how many smaller communities throughout the state are dependent upon trucking as their only means of distributing goods to and from their area. |  |  |
CONCEPTS

C. Air Transportation

EXPERIENCES

Discuss the improvement of highways for safety in motor transportation.

Use a map to show how Utah is well connected with air lines travel.

Make a list of the prominent airlines.

Discuss the advantages of air transportation. Show, for example, how, in many oil and uranium mining areas, the airline can deliver equipment in hours as compared with days by other means. Discuss quick delivery of medicines and hospital cases etc.

Discuss the use of helicopters and small airplanes as a means of transportation.

Tell about personal experiences and air travel.

Have the pupils write letters for information of the kinds of products transported by air.

FUNCTIONAL SKILLS INVOLVED

Determining direction and location.

Interpreting map symbols.

Acquiring information through observing for a purpose.

Drawing inferences and making generalizations.

Applying problem solving and critical thinking skills.

Applying language skills.

REFERENCES

"Highway Construction Methods-Design-Projects"
Utah State Dept. of Highways 442 State Capitol Bldg.
Salt Lake City, Utah

See plate #9.

Nebo District I.M.C.
Kit Transportation
Map Transparency "Travel Routes In Utah-Airlines" Pictures.

Sutherland, Lucille. Airplanes.

Tannenbaum, Harold E. We Read About Airplanes and How They Fly.


McCall, Edith S. How Airplanes Help Us.


McIntire, Alta, "Airplanes and Airports" Working Together.
CONCEPTS

Display pictures of air transportation on a bulletin board.

Compare the network of airlines with rail lines and highways. Use maps, time tables and other information for making interesting comparisons between these three methods of transportation.

Discuss how each method has its advantages and its limitations.

D. Pipeline Transportation.

Talk about how pipelines are Utah's newest facilities for transportation.

Discuss the kinds of products that are carried by pipeline: oil, natural gas, water, gilsonite.

View a film together as a basis for discussion.

EXPERIENCES

Comparing maps and drawing inferences.

Relating information derived through observing with that gained from other sources.

FUNCTIONAL

SKILLS INVOLVED

Comparing maps and drawing inferences.

Relating information derived through observing with that gained from other sources.

Determining direction and location.

Interpreting map symbols.

Using a map scale to show relative distance.

REFERENCES

See maps #7, #8, & #9.

Nebo District I.M.C.

Kit Transportation

Transparency-"A Comparison of Highways, Rail Lines and Air Lines"

Transparencies-"Time Tables- for Rail, Air and Highway Travel"

Film: "Pipeline In the Rockies"

Utah Petroleum Council

10 West 3rd South

Salt Lake City, Utah 84101.

See plate #53.

See plate #54.

Nebo District I.M.C.

Kit Transportation

Transparency-"Pipeline Transportation in Utah."
SOURCE, TRANSPORTATION & DISTRIBUTION POINTS
OF UTAH'S NATURAL GAS SUPPLY. 1953

IDaho

WYSOMING

NORTH BAXTER
MIDDLE BAXTER
SOUTH BAXTER

SALT WELLS
WEST HIAWATHA
POWDER WASH

COLOradO

CLEAR CREEK

UTAH

COLORADO

GAS FIELD
DISTRIBUTION CENTER
MOUNTAIN FUEL SUPPLY PIPELINE
UTAH NATURAL GAS PIPELINE

Plate #53
SOURCE OF OIL REFINED IN UTAH AND PIPELINE FACILITIES SERVING UTAH REFINERIES, 1953
<table>
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<tr>
<th>CONCEPTS</th>
<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
</tr>
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<tbody>
<tr>
<td>Continuous planning for transportation improvement is necessary</td>
<td>Construct a model city.</td>
<td>Applying problem solving</td>
<td>166</td>
</tr>
<tr>
<td>to solve Utah's increasing transportation problems.</td>
<td>Set up residential districts, business districts, agricultural areas, mining</td>
<td>and critical thinking</td>
<td></td>
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<td></td>
<td>centers.</td>
<td>skills.</td>
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<td></td>
<td>Show how the different areas are served with transportation facilities.</td>
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<td></td>
<td>Make informational charts to explain the concepts being developed.</td>
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<td></td>
<td>Chart transportation problems that are observed.</td>
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<td></td>
<td>Offer suggestions and plans for solving such transportation problems.</td>
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<td></td>
<td>Try to find out about the transportation problems in various parts of the</td>
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<td></td>
<td>state.</td>
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<td></td>
<td>What is being done to solve them?</td>
<td></td>
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<td></td>
<td>Collect newspaper articles and pictures of transportation activities.</td>
<td></td>
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</tbody>
</table>
TRANSPORTATION

(Children)


CONCEPTS

Conservation is the wise use of resources.
1. Natural resources
2. Human resources
3. Capital resources

EXPERIENCES

Review the definition of what is meant by:
- Natural resources (land, water, minerals, timber)
- Human resources (labor)
- Capital resources (fixed capital which includes factories, machines, tools, raw materials, finished products etc.)
- Working capital which is money on hand to buy raw materials, wages, etc.

Briefly discuss why these resources should be conserved.

Discuss the meaning of "a renewable resource". Give examples of resources that can be replaced (timber).

Discuss how some resources (minerals) cannot be replaced, but can be used wisely.

Discuss how, as the standard of living is raised, demands on the natural resources are increased:
1. More oil is needed for industry, transportation, fuel, etc.
2. More water is needed for culinary use, in industry, and for irrigation.

FUNCTIONAL SKILLS INVOLVED

Applying information for retention and recall.
Applying critical thinking skills.

REFERENCES

Nebo District I.M.C. Kit - Conservation Picture Discussion Portfolio.


In Utah, water is considered the most significant of all resources. Recall and list facts about Utah's dry continental climate and the vast areas of land that depend upon irrigation for productivity.

Discuss the demand for water in Utah in relation to the supply. Discuss reasons why considerably more water will be needed in the future:

1. More land will be brought under cultivation.
2. More water will be made available to partially irrigated areas and to areas presently receiving no water at all.

Note to teachers: Most row crops require an average of 2.5 acre feet of water. 1 Bu. corn requires 6,250 gal. of water. 1 Bu. wheat requires 7,500 gal. of water. 1 ton alfalfa hay requires 200,000 gal. of water.

Applying problem solving and critical thinking skills to social issues:

3. More and new machines are needed in an age of automation.

Applying information for retention and recall:

CONCEPTS

National i'orp::;:; watersheds are scientifically cared for in order to provide continuous water supplies.

Government agencies work to protect the forests and watersheds.

EXPERIENCES

2. There will be greater use of water by industry as coal, chemical and other water-using industries are developed.

3. Increase in population.
(Nationally the average citizen, in 1955, utilized approximately 1,500 tons of fresh water per person.)

Let the students experiment and keep a record of the ways and amounts of water they use each day; ways and amounts of water they waste each day.

Discuss the need for good and adequate culinary water systems.

Define what is meant by a watershed.

Invite a resource visitor to tell about the different watersheds in your locality.

Learn about how your water supply depends on them.

Take a field trip to see the local watersheds or invite a resource visitor (forest ranger or a soil conservation agent) to come to the class to discuss watersheds and answer questions.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observation.

Recording, summarizing and evaluating information gained.

Relating and comparing information gained with that from other sources.

Acquiring information through listening and observing for a purpose.

Summarizing and recording information.

Relating and evaluating information gained.

Acquiring information through listening and observing.

Recording and summarizing information.

Relating, comparing and evaluating information gained through listening and observing with that from other sources.

REFERENCES


Xebo District I.M.C. Kit Conservation.

Filmstrips-
"Forest Conservation Today"
"Water Conservation Today"

Map Transparency-
"Local Watersheds"

Transparency-
"Conditions of A Watershed"

Pamphlets:
"Know Your Watersheds"
"Forest Insects and Diseases"
"Enemies of the Forest"

Chart:
"What We Get From Our Forests"
CONCEPTS

Use pictures and slides to strengthen concepts.

Find out about the measuring of snow for water content and the estimating of water supply.

Find out about the many activities that the forest service performs in order to conserve water supplies, conserve soil, conserve vegetation, etc.

Find out about multiple land usage:
- Trees
- Forage
- Water
- Wildlife
- Recreation

Discuss the need for preventing and controlling forest fires as a conservation measure.

Learn how forest fires are detected.
- Discuss the kinds of fire fighting equipment.

Discuss forest conservation and problems with insects and disease.

Discuss what responsibilities we have for protecting our forests.

Write essays and make posters on forest conservation.

FUNCTIONAL SKILLS INVOLVED

Applying problem solving and critical thinking skills.

Applying language skills.

REFERENCES


Film "The Life Blood of the Land"
U.S. Dept. of Agriculture District Ranger Uinta National Forest P.O. Box 186, Heber, Utah.


See Appendix.

Playlet "The Big Tree"
**CONCEPTS**

Government and other projects are being developed to increase Utah's water supply.

**EXPERIENCES**

- Help the children to expand their abilities to locate materials.
- Write individual letters and receive a forest ranger kit.
- Invite a resource visitor to come to the classroom and tell about local water projects:
  - Reservoirs (Deer Creek, Payson, Strawberry.)
  - Flood control (American Fork Project.)
  - Reseeding (Diamond Fork, Santaquin.)
- Use a map to show where the different Colorado River projects are located.
- Discuss how scientific projects, with huge dams and their hydro-electric energy, have been developed to provide water for industrial power and irrigation.
- Discuss the contribution of the Flaming Gorge and Central Utah Projects to Utah's economy.
- Use slides, pictures or a film to help develop concepts of the purposes and functions of these projects.

**FUNCTIONAL SKILLS INVOLVED**

- Using the card catalog.
- Using an index.
- Cross-referencing.
- Applying language skills.
- Acquiring information through listening and observing.
- Relating, comparing and evaluating information gained.
- Applying language skills.
- Determining direction and location.
- Applying problem solving skills to economic issues.
- Acquiring information through observing for a purpose.
- Relating, comparing, and evaluating information gained.
- Applying language skills.

**REFERENCES**

- Dept. of Forestry and Fire Control.
  525 West 13th South
  Salt Lake City, Utah.
- See plate #55.
- Nebo District I.M.C. Kit Conservation Filmstrip - "Water Projects in Utah" Pictures.
- Films "Flaming Gorge" "Glen Canyon"
  Dept. of Interior Bureau of Reclamation.
  Building 53, Denver Federal Center Denver, Colorado. 80225
<table>
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<th>EXPERIENCES</th>
<th>FUNCTIONAL SKILLS INVOLVED</th>
<th>REFERENCES</th>
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<tbody>
<tr>
<td>Soil is usually considered a renewable resource.</td>
<td>Discuss how renewal of the soil is often a slow and tedious process. Use books, people to find out how soil can be maintained. Discuss why conservation practices are necessary. Discuss the two major tasks of soil conservation: 1. To keep the soil from being blown or wasted away. 2. To keep nutrient materials in the soil. Use pictures, slides or first hand experiences to show damaged soil.</td>
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<tr>
<td>CONCEPTS</td>
<td>EXPERIENCES</td>
<td>FUNCTIONAL SKILLS INVOLVED</td>
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<tr>
<td>Minerals are non-renewable resources.</td>
<td>Discuss what has happened and the resulting effects.</td>
<td>Acquiring information from other sources.</td>
<td>Nebo District I.M.C. Kit Conservation Filmstrip - &quot;Mineral Conservation Today&quot;</td>
</tr>
<tr>
<td>Prevention of waste in the processing and use of minerals is important.</td>
<td>Invite a soil conservation agent to visit the classroom.</td>
<td>Acquiring information through listening and observing.</td>
<td>Nebo District I.M.C. Kit Conservation Filmstrip - &quot;Mineral Conservation Today&quot;</td>
</tr>
<tr>
<td></td>
<td>Learn about the activities of the Soil Conservation Service in giving expert advice and technical assistance to farmers and ranchers. Learn what is being done to solve soil conservation problems today: Strip-cropping methods. Contour farming. Crop rotation. Utilizing underground water seepage in the form of stock ponds. Planting wind breaks to prevent blowing away of valuable top soil. Increased use of fertilizers and soil conditioners. Re-seeding range lands which have been over-grazed. Controlling grazing areas. Using good management and farm plan programs. Constructing water reservoirs. Regaining land lost through misuse. Reclaiming land that has never been productive.</td>
<td>Recording, summarizing and evaluating the information gained. Applying language skills. Applying problem solving and critical thinking skills to economic issues.</td>
<td>Nebo District I.M.C. Kit Conservation Filmstrip - &quot;Mineral Conservation Today&quot;</td>
</tr>
</tbody>
</table>
CONCEPTS

Human resources should be conserved just as natural resources should be conserved.

EXPERIENCES

Discuss the importance of the different minerals in our lives. (metals and non-metals)

Discuss ways that mineral resources can be conserved:
1. Reprocessing.
2. Greater and new usage of by-products.
3. Improved methods of processing and refining.

Discuss ways that minerals are wasted in our everyday lives:
1. Allowing machinery or other articles made of iron to rust away.
2. Neglecting to turn unused items in for reprocessing.
3. Over production of items made of minerals.
4. Other

Take a trip to a foundry to see the reprocessing of iron.

FUNCTIONAL SKILLS INVOLVED

Applying critical thinking skills.

Acquiring information through listening and observing.
Recording and summarizing information.
Relating, comparing and evaluating the information gained with that from other sources.
Applying language skills.

REFERENCES

CONCEPTS

that we need and enjoy.

Discuss how people become more interdependent of others as more people specialize in a particular trade.

Discuss the need for specialization in modern day industry and the fact that the need for unskilled labor is decreasing.

Use modern highway construction as an example of shift in type of labor supply required.

Discuss how failure to train for needed employment can be a waste of human resources.

Set up an activity using assembly line production.

Show how production can be facilitated by the training of individuals for a specific task.

Discuss how human resources can be conserved. (Remember that we are conserving human resources when we use them to produce the things they can do best and easiest, and when they can fill the kinds of jobs there is a need for.

FUNCTIONAL SKILLS INVOLVED

Acquiring information through observation and experimentation.

Recording, summarizing and evaluating the information gained.

Applying critical thinking skills.

REFERENCES
BIBLIOGRAPHY

CONSERVATION

(Teachers)


BIBLIOGRAPHY

CONSERVATION

(Children)


Note to Users of This Unit


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AN OUTLINE OF SKILLS AND UNDERSTANDINGS
TO BE DEVELOPED IN GRADE IV.

"A program of map-using and map-making skills needs to be an integral part of any program of study in geography".

Certain skills are basic to effective map reading. These skills must be taught. To be taught effectively, carefully graded materials are necessary.

Maps are an essential tool of today's world. In every line of business and government, maps are needed. Learning to read maps is as essential as learning to read words.

Maps are written in a unique language. Facts are shown by symbols - demonstrating a kind of language that is as strange as a foreign language. Everyone must learn to read map language, to recognize and visualize the facts map symbols represent. Also, everyone must learn to understand relationships between different facts that maps show.

The following skills and understandings need to be developed in a good map study program:

I. Understanding the globe.

II. Understanding maps.

III. Determining position on maps and globes.
    Using the equator
    Using relative location
    Using cardinal and intermediate directions
    Using hemisphere
    Using latitude, longitude

IV. Determining directions.
    Using North and South poles
    Using the equator
    Using cardinal and intermediate directions
    Using river direction - upstream, downstream, mouth, source,
V. Determining distances.
   Using a map scale
   Using relative distance

VI. Determining relative size.

VII. Recognizing map symbols.

   Landforms
   Continents
   Islands
   Mountains, peaks, ranges, plains, valleys
   Coasts
   Deltas
   Peninsulas

   Water forms
   Oceans
   Rivers, creeks
   Lakes, ponds
   Bays, inlets
   Gulfs
   Harbors, ports
   Tributaries
   Channels, sounds, straits
   Seas

   Man-made features
   Bridges, dams, tunnels
   Highways, streets, roads
   Highway route markers
   Boundary lines
   Cities, towns
   Capitols
   Railroads
   Airports
   Canals
   County seats

VIII. Using map keys, legends

IX. Comparing Maps and making inferences
The Earth and the Globe

A globe is a model of the earth. A globe is a ball, or sphere, because the earth's shape is almost exactly like a ball.

Two points are marked on the globe. The North Pole marks the place on earth the mapyers call the point farthest north. The South Pole marks the point farthest south.

An imaginary line called the equator circles the earth. The equator is halfway between the North and South poles. The equator divides the earth into half spheres. Each half sphere is called a hemisphere. The Northern Hemisphere is between the equator and North Pole. The Southern Hemisphere is between the equator and South Pole.

The earth's seven largest land areas are continents. The earth's four largest water areas are oceans.

Globe Facts. Complete the following sentences:
1. The point farthest north on the earth is called the _________________.
2. The point farthest south on the earth is called the _________________.
3. The earth is divided into half spheres by an imaginary line called the _________________.
4. The Northern Hemisphere is between the equator and the _________________.
5. The Southern Hemisphere is between the equator and the _________________.

Oceans and Continents. Complete the following sentences:
1. The four oceans are _________________.
2. The seven continents are _________________.
3. The three continents located completely or almost completely in the Northern Hemisphere are _________________.
4. The two continents located completely within the Southern Hemisphere are _________________.
5. The hemisphere with more land areas than water areas is the _________________.
6. The South Pole is found in the continent of _________________.
7. The three continents nearest the North Pole are _________________.

The Earth and the Globe

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Increase Your Globe Knowledge

From anywhere on the earth and the globe, north is the direction toward the North Pole. South is the direction toward the South Pole. As you face the North Pole, the direction east is to your right, and the direction west is to your left.

The equator divides the earth into the Northern and Southern hemispheres. The earth can also be divided into the Eastern and Western hemispheres. Africa, Europe, Australia, most of Asia, and part of Antarctica are in the Eastern Hemisphere. North and South America and part of Antarctica are in the Western Hemisphere.

Locating Oceans and Continents. Use the drawings on this page and your classroom globe to help you answer the following questions:

Which ocean is completely within the Eastern Hemisphere?
Which two oceans are in four different hemispheres?
Which continent is completely within the Northern and Western hemispheres?

Which two oceans are in three different hemispheres?
Which continent is in the Northern, Southern, and Western hemispheres?
Which continent is completely within the Eastern and Southern hemispheres?

Directions on a Globe. Use your classroom globe to help you complete each of the following sentences with the name of a direction: north, south, east, or west.

1. Europe is _______ _______ _______ _______ of Africa.
2. North America is _______ _______ _______ _______ of the Arctic Ocean.
3. Asia is _______ _______ _______ _______ of Europe.
4. The Indian Ocean is _______ _______ _______ _______ of Asia.
5. The Pacific Ocean is _______ _______ _______ _______ of North and South America.
6. The Atlantic Ocean is _______ _______ _______ _______ of North and South America.
7. Australia is _______ _______ _______ _______ of Antarctica.

7. Through which continent in the Western Hemisphere does the equator pass?
8. Africa is in which three hemispheres?
Increase Your Globe Knowledge

The earth has two sets of imaginary lines that are shown on the globe. Lines that go east and west across the globe are east-west lines. The equator is an east-west line. Lines that go north and south, from the North Pole to the South Pole, are north-south lines.

East-west lines help to locate places from the equator. East-west lines between the equator and the North Pole are north of the equator. East-west lines between the equator and the South Pole are south of the equator.

There are some special east-west lines on the globe. The Tropic of Cancer is north of the equator. The Tropic of Capricorn is south of the equator. The Arctic Circle is between the Tropic of Cancer and the North Pole. The Antarctic Circle is between the Tropic of Capricorn and the South Pole. Locate these special east-west lines on the map and on your classroom globe.

Globe Lines. Complete each sentence with the letter of the best answer. Use your classroom globe if necessary.
1. North-south lines meet at the _______. (a) equator, (b) poles, (c) Tropic of Cancer
2. The Arctic and Antarctic circles are _______ lines. (a) east-west, (b) north-south
3. The lines that are always the same distance apart on the globe are the _______ lines. (a) north-south, (b) east-west
4. The Tropic of Cancer is in the _______ Hemisphere. (a) Southern, (b) Northern
5. The Arctic Circle is _______ of the equator. (a) south, (b) west, (c) north
6. The Antarctic Circle is in the _______ Hemisphere. (a) Southern, (b) Northern

Using Your Globe Knowledge. Underline each true sentence below. Use your classroom globe if necessary.
1. The Tropic of Capricorn passes through three continents.
2. Part of the United States is north of the Arctic Circle.
3. Europe is south of the Tropic of Cancer.
4. Australia is north of the equator.
5. The Antarctic Circle goes through the tip of South America.
6. Africa is both north and south of the equator.
7. The Tropic of Capricorn passes through oceans.
8. Africa reaches farther north than Asia.
Using Maps

A globe gives us an accurate idea of the shape, size, and location of oceans and continents. Flat maps do not show large areas of the earth so accurately. However, a map can usually show us more about a small part of the earth. A map would be better to locate the cities, rivers, and lakes of your state.

Directions are the same on both maps and globes. North is toward the North Pole. South is toward the South Pole. Notice how directions are shown on the map of Georgia.

The area shown by a map may be many times larger than the map itself. To find distances between points shown on a map, we use a map scale. Most map scales are in feet or miles. What scale is used on the map of Georgia?

Map Directions. Complete each sentence with the name of a direction: north, south, east, west.

1. Augusta is ___________ of Waycross.
2. Albany is ___________ of Atlanta.
3. Georgia is ___________ of the Atlantic Ocean.
4. Rome is ___________ of Columbus.
5. Georgia is ___________ of Alabama.

Finding Distances. To find the distance between two points on the map of Georgia, place the edge of a piece of paper between the two points. Mark the paper at each point. Then, measure the paper along the map scale to find the distance in miles. Use this method to complete each sentence below.

1. Athens is about _____ miles from Augusta.
   (a) 20, (b) 85, (c) 150
2. Waycross is about _____ miles from Valdosta.
   (a) 60, (b) 30, (c) 90
3. Atlanta is about _____ miles from Macon.
   (a) 50, (b) 100, (c) 75
4. Savannah is about _____ miles from Waycross.
   (a) 40, (b) 130, (c) 95
5. Atlanta is about _____ miles from Augusta.
   (a) 80, (b) 140, (c) 200
6. Rome is about _____ miles from Albany.
   (a) 200, (b) 100, (c) 150
**Map Symbols**

**Review Map Symbols.** Find on Map 1 each map symbol listed below. Study each symbol carefully.

- A. a state boundary
- B. a state capital
- C. a bay
- D. mountains
- E. a lake
- F. a river
- G. an airport
- H. a railroad
- I. part of a coastline
- J. a city that is not a state capital

**Finding Map Symbols.** Find on Map 2 each map symbol listed below. Write the letter of the symbol on the line.

- a lake
- an airport
- a railroad
- a state capital
- a bay
- mountains
- a river
- a state boundary
- part of a coastline
- a city that is not a state capital

**Highway Symbols.** Route markers with different shapes are used to show main or primary roads on maps. These roads may or may not be divided highways. Secondary roads are shown by black lines.

Use Map 3 to complete the sentences below.

1. A north-south state route is
2. East-west U.S. routes are
3. The interstate highway connecting Toledo and Cincinnati is Route
4. Interstate 71 connects Columbus with

<table>
<thead>
<tr>
<th>Interstate Highway</th>
<th>U.S. Highway</th>
<th>State Highway</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>20</td>
<td>21</td>
</tr>
</tbody>
</table>
Map Symbols

Review Map Symbols. The following map symbols appear on Map 1. Find each symbol and study it carefully.

A. an island
B. a harbor
C. a tunnel
D. buildings
E. a street
F. a bridge
G. a canal
H. a dam
I. a school
J. a church
K. trees
L. a pond

Finding Map Symbols. Find each symbol on Map 2 listed below. Write the letter of the symbol on the line.

____ a bridge
____ buildings
____ a school
____ a church
____ a canal
____ a dam
____ a tunnel
____ trees
____ a street
____ a harbor
____ an island
____ a pond

Routes. When a primary highway is part of two or more routes, all the route numbers are shown. Sometimes a route number is given to two highways until they meet again. One road is shown by the route number alone. The other road is shown by the number and an A (for alternate route). See Map 3.

Underline each true sentence.
1. Route 75A goes through Topeka.
2. U.S. Routes 70 and 24 are parts of the same highway.
3. Interstate Route 470 goes around the south side of Topeka.
4. Tecumseh is north of an interstate highway.
At the Edge of the Great Ocean

New Terms

Source and Mouth. The beginning of a stream is its source. The part of a stream where it empties into another body of water is its mouth.

Upstream. The direction toward the source of a stream is called upstream.

Downstream. The direction in which a stream flows, toward its mouth, is downstream.

Sea. A body of water, smaller than an ocean, usually salty, and partly or completely enclosed by land, is a sea.

Gulf. An arm of an ocean or sea, usually larger than a bay, is called a gulf.

Using Terms. Write the letter of the word that correctly completes each sentence. a) sea, b) bay, c) mouth, d) source(s), e) upstream, f) downstream, g) ocean, h) gulf.

1. High Village is near the _______ of Quick River.
2. If you trace Silent River to the mountains, you follow the _______ direction of the river.
3. Slow River empties into a _______.
4. The large body of water that is nearest to High Village is a _________________.
5. Many rivers have their _____________ in the Snowy Mountains.
6. Sailing from Safe Harbor to Seaside, you would cross a _________________.
7. Seaside is near the _______ of Slow River.

Underline each true sentence.

1. Silent River flows east into the ocean.
2. Winding Creek flows into Silent River.
3. The downstream direction of Cold River is east.
4. Midway is upstream from River City.
5. Slow and Quick rivers are closer together at their sources than at their mouths.
6. Gulf of Peace is larger than Dark Bay.
7. Bright Sea is completely enclosed by land.
8. The distance from Seaside to Stony Beach is longer by land than by water.
9. Light Bay is larger than Chilly Sea.
10. Safe Harbor is on the south shore of Bright Sea.
11. Stony Beach is on an island.
New Map Symbols. Underline each true sentence.

1. A river delta is fan-shaped.
2. A peninsula extends out into the water.
3. An inlet connects two larger water bodies.
4. A tributary flows into another river.
5. Channels, sounds, and straits are bodies of land.
Know Your Map Scales

The three maps on this page are about the same in size. Yet if you look at each map scale, you will see that these maps are quite different in the way they show distances in miles. On the map of Utah, one inch is equal to 142 miles. On the map of the Salt Lake City area of Utah, one inch is equal to 16 miles. Each map has a different map scale. Why must you always measure distances with the map scale that belongs to the map you are using?

Using Map Scales Correctly. Use the map scales on this page to help you complete each sentence with the letter of the best answer.

1. On the map of the 48 connected states, 3 inches is equal to ________ miles. (a) 100, (b) 300, (c) 3,000
2. On the map of Utah, 2 inches is equal to ________ miles. (a) 142, (b) 284, (c) 71
3. On the map of the Salt Lake City area, one-half inch is equal to ________ miles. (a) 32, (b) 12, (c) 8
4. On the map of Utah, one-half inch is equal to ________ miles. (a) 71, (b) 142, (c) 284
5. One inch is most likely to equal 2 miles on a map of a ________. (a) city, (b) large country, (c) continent
6. A map of the 48 connected states would be too large to fit this page if one inch on the map equaled ________ miles. (a) 5,000, (b) 50, (c) 1,500

Distances and Directions. Use the map of the Salt Lake City area to help you complete each sentence with the letter of the best answer.

1. Antelope Island is located ________ of Salt Lake City. (a) northeast, (b) northwest, (c) southeast
2. Railroads enter Salt Lake City from every direction except the ________. (a) north, (b) west, (c) east
3. The airports shown on the map are about ________ miles apart. (a) 6, (b) 60, (c) 16
The largest range or row of mountains in North America is the Rocky Mountains. Part of the range lies in the section of the United States shown above.

The highest points of land are shown on the map by the twisting black line. Rivers on one side of this high ridge flow in the opposite direction from rivers on the other side. Why is this line of high points called the Great Divide?

**Map Reading**

Underline each true sentence.

1. The Great Divide is a ridge of high points running mostly east and west.
2. The rivers west of the Great Divide flow toward the Pacific Ocean.
3. Rivers east of the Great Divide flow south or east.
4. Five states border the Pacific Ocean.
5. Kansas is farther north than Idaho.
6. Colorado has four straight borders.
7. The Sacramento and San Joaquin rivers flow into the same bay.
8. The Great Divide goes through the northeastern part of Montana.
9. The Colorado River forms the boundary between Arizona and California.
10. The South Platte and North Platte rivers join in Colorado.
Crowing about—

"MORE OF A GOOD THING!"

APPENDIX
A CHRONOLOGY OF DATES IN UTAH'S HISTORY

1776 Fathers Escalante and Dominguez were the first white men to explore Utah.
1819 Trappers of the British North West Company entered Utah down Bear River.
1824 American trappers entered Utah from South Pass in Wyoming and Santa Fe in New Mexico.
1824 Great Salt Lake discovered by James Bridger and Etienne Provost.
1826 Jedediah S. Smith traversed Utah from north to south.
1827 Jedediah S. Smith traversed Utah from west to east across the Salt Desert.
1843 Captain John Charles Fremont explored northern Great Salt Lake.
1845 Captain Fremont returned west, traveling through the Uinta Basin, to Great Salt Lake Valley, and across the Salt Desert.
1846 Bryant-Russell party, Harlan-Young party, and Donner party crossed Salt Desert. They broke the first wagon roads through the Wasatch.
1846 Miles Goodyear founded Fort Buenaventura on site of Ogden.
1847 Mormon pioneers under Brigham Young settled Salt Lake Valley.
1849 Provisional State of Deseret was established, with Brigham Young as governor.
1850 Territory of Utah created by Congress; Brigham Young appointed governor.
1853 Walker Indian War began.
1855 Grasshoppers destroyed crops.
1856 Handcart migrations to Utah began.
1857 Utah Expedition of federal troops ordered to Utah; forced to spend winter at Fort Bridger, Wyoming.
1857 Mountain Meadows Massacre in southwestern Utah.
1858 Federal troops entered Utah and founded Camp Floyd west of Utah Lake.
1860 Pony Express commenced operations through Utah.
1861 Overland Telegraph connected Utah with the East.
1862 Camp Douglas (later Fort Douglas) established by Colonel Patrick E. Connor and his "California volunteers."
1865 Black Hawk War began in central Utah; continued until 1868.
1869 Transcontinental railroad completed at Promontory, Utah.

(Contd.)
1869 Intensive mining operations began, mainly by non-Mormons.
1872 First smelting and refining company began operations in Salt Lake Valley.
1876 Carbon-Emery coal field operations began on large scale.
1877 Brigham Young died.
1882 Congress passed the first anti-polygamy law.
1883 Denver & Rio Grande Western Railroad completed between Utah and Colorado.
1890 Manifesto issued by Wilford Woodruff, President of L.D.S. Church, suspending practice of polygamy.
1891 Democratic and Republican parties organized in Utah.
1896 Utah admitted to Union as 45th State—on January 4.
1903 Lucin Cutoff (railroad) completed across Great Salt Lake.
1903 Utah Copper Company organized.
1906 Open-cut mining began at Bingham.
1906 Construction began on mills at Magna and Arthur.
1908 Natural Bridges National Monument established.
1909 Utah Oil Refining Company organized.
1910 Completion of Western Pacific Railroad.
1910 Rainbow Bridge National Monument established.
1911 Strawberry Reservoir completed by U.S. Reclamation Service.
1915 Dinosaur National Monument established.
1915 State Capitol completed.
1917 United States entered World War I.
1919 Zion National Park established (first established as national monument in 1909).
1920 Ogden Arsenal activated (later, in 1950's, merged with Hill Air Force Base).
1921 KSL radio station began broadcasting.
1922 Timpanogos Cave National Monument established.
1923 Hovenweep National Monument established.
1926 Commercial airlines began operations in Utah.
1926 Columbia Steel Company opened steel plant at Ironton in Utah Valley.
1928 Bryce Canyon National Park established.
1929 Arches National Monument established.
1931 High Uintas wilderness area established.
1933 Cedar Breaks National Monument established.
1937 Capitol Reef National Monument established.
1940 World War II and growth of federal government installations in Utah:

1945 Bushnell General Hospital, Brigham City (now Intermountain Indian School)
Clearfield Naval Supply Depot, Clearfield
Dugway Proving Grounds, Tooele County
Fort Douglas (Headquarters Ninth Service Command)
(Contd.)
Geneva Steel Plant, Orem
Hill Air Force Base, Weber County
Kearns Air Force Base, Kearns
Monticello Vanadium Mill, Monticello
Tooele Ordinance Depot, Tooele
Utah General Depot, Ogden
Wendover Air Force Base, Tooele County
Deseret Chemical Depot, Tooele County

1947 Centennial celebration commemorating first arrival of Mormon pioneers.
1950 Kennecott electrolytic refinery completed.
1950's-Major discoveries and expansion in uranium mining industry.
1950's-Major discoveries and expansion in oil production.
1956 Aneth oil discoveries in San Juan County.
1956 Upper Colorado River Storage Project authorized.
1957 Glen Canyon Dam prime contract awarded; construction began.
1958 Flaming Gorge Dam construction began.
1959 Work began on Central Utah Reclamation Project.
1959 Southern Pacific Railroad completed new earth-fill dike across Great Salt Lake.

1959 Utah became an important missile producing state.
1961 Flaming Gorge and Glen Canyon Dams were completed.
1964 Canyon Lands National Park was established in southeastern Utah.
1965 World's land speed record was broken on the Bonneville Speedway.
GEOGRAPHICAL TERMS

3. In the picture below, tell what is shown where each of the numbers is. Write the names here.

1. Mountain
2. Channel
3. Cliff
4. Island
5. Hill
6. Harbor
7. River Basin
8. Reservoir
9. Lake
10. River
PLATEAUS
RIVER

Upstream

Current

Downstream

Mouth of River
UNUSUAL FACTS ABOUT THE WEATHER

Driest Place on earth is Arica, Chile. Average annual rainfall is 2/100 of an inch. At Iquique, Chile, no rain fell in 14 years of the period from 1899 to 1913.

Foggiest Place in the United States is Cape Disappointment at the mouth of the Columbia River in Washington. It has about 2,552 hours (105 days) of fog a year.

Heaviest Rainfall recorded in a 24-hour period was 46 inches at Baguio in the Philippines in July, 1911. Heaviest rainfall in one year was recorded at Cherrapunji, India, where 1,041 inches of rain fell between August, 1860, and July, 1861.

Heaviest Snowfall recorded in the United States during a 24-hour period, 76 inches occurred at Silver Lake; Colo., in 1921. The most snow recorded in the United States during one winter fell at Rainier Paradise Rangers Station in the state of Washington. A total of 1,000.3 inches of snow fell during the winter of 1955-56.

Highest Temperature recorded was 136 degrees F., at Azizia, Libya, in northern Africa, on Sept. 13, 1922. Highest recorded temperature in the United States was 134 degrees F., in Death Valley, Calif., on July 10, 1913.

Highest Air Pressure was recorded at Irkutsk, Siberia, in 1893, when the sea-level barometric pressure reached 31.75 inches.

Lowest Air Pressure was recorded during a typhoon on the Pacific Ocean in 1958, when the sea-level barometric pressure fell to 25.90 inches. The lowest sea-level barometric pressure recorded on land was 26.35 inches at the Florida Keys during a hurricane in 1935.

Lowest Temperature observed on the earth's surface was -126.9 degrees F., in Antarctica on Aug. 25, 1950. The lowest temperature recorded in the United States was -76 degrees F., at Tanana, Alaska, in January, 1886.

Strongest Winds measured near the earth's surface were recorded at Mount Washington, N. H., on April 12, 1934. For five minutes the wind blew at a speed of 189 miles an hour. One gust reached 231 miles an hour.

Weather Disasters. Great storms may take a heavy toll of life and property. In 1900, for example, the storm tide of a hurricane killed 6,000 persons in Galveston, Texas. In 1935, Hurricane Diane killed almost 200 persons and caused $750,000,000 in damage along the Atlantic Coast.
AN INTERVIEW WITH FRANK J. NUNLIST

The Water Crisis

We'll be needing 1,000,000,000,000 gallons a day by the year 2000 — but there doesn't have to be a shortage

Q. A trillion! That's a thousand billion. How many are we using now?
A. "We are using about 350 billion gallons a day now. In fifteen years we will probably need 600 billion gallons a day — which is 40 billion more than currently exists in available streamflow and groundwater."

Q. You are saying, in other words, that we are faced with a catastrophic water shortage which makes today's crises look mild?
A. "No. I confidently predict that there will be no water shortage by the year 2000."

Q. How can you say that?
A. "Because I am confident that the resources of this country can be marshaled to lick the problem. But I will be wrong if we fail to recognize that the answer lies not in finding new sources of water — but in applying our scientific know-how to let us use the limited amount of water we have more than once. The heart of our water shortage problem is really water pollution."

Q. Could you explain that?
A. "The trillion gallons a day the experts predict we will need breaks down to 3,000 gallons per person. We are currently using 1,850 gallons a day per person. (The average individual actually uses only 60 gallons at home, the rest is consumed by offices and factories.) Most of the 1,850 gallons we use now is not re-used. It flows into rivers and seas as polluted water. As you can see, with a little second-grade arithmetic, if we reused all this water only once, we would solve our problem of a water shortage."

Q. Mr. Nunlist, how much water will we need in the United States within the next 25 or 35 years?
A. "Some experts are predicting the use of as much as a trillion gallons a day."

Q. Can you re-use water?
A. "Of course. Two-thirds of the municipal water supplied to 150 million Americans comes from polluted sources and is made safe and potable by treatment. Most of these municipalities are on rivers such as the Ohio and Mississippi. The water they take from the river has already been used by the towns above them. But drinking and washing are by no means the only uses we have for water. Industry uses vast amounts in factories. Already in some places a factory will re-use the same water four and five times. A city of the future, as far as water is concerned, may well be Santee, a water-short town near San Diego, California. Santee treats its 1,000,000 gallons a day of sewage water and filters it out at drinking quality to a series of five man-made lakes. These are used enthusiastically for boating, sports, fishing, and by youngsters who wait in line for swimming. Soon the outflow of these lakes will be sold to industrial and farm users for 12 cents a thousand gallons, against the 50 cents per thousand they pay for municipal water. Finally this re-used water will be collected in a natural basin, treated, demineralized and pumped back into the municipal system. We can do the same thing on a larger scale throughout the United States. We have the technology, the scientific know-how. All we need is the money to build the facilities. But we had better hurry."

Q. Why?
A. "Because our pollution problems are getting worse by the day and hour. Almost every major river in the United States is polluted. Ocean waters around our shores are going the same way. The more polluted water gets, the more difficult and expensive it will be to purify. If we are not careful we may join the ranks of those countries around the world where one out of every four hospital cases can be traced to water pollution."

Q. Appalling. What should we do?
A. "Spend our money intelligently. Individual towns and cities cannot solve the problem of pollution. It requires statewide and regional approaches. All the cities in a river valley must join in a project to purify a river. The people in the Ohio River Valley have made great progress by this kind of cooperation. An 8-state control commission began work in 1948. At a cost of only $100 per person, 1,000 miles of the Ohio have been converted into one of our cleanest major waterways. Its waters average about four uses before they flow into the Mississippi. New York State recently took a great stride forward by voting a $1,000,000,000 bond issue to launch a statewide program. St. Louis is spending $95,000,000 to divert its sewage from the Mississippi, thereby making an immense contribution to lessening pollution problems on that major artery."

Q. Is the federal government helping?
A. "There are several bills pending, but thus far federal help has been meager. It is absolutely essential if we are to achieve a truly comprehensive nationwide program. Probably it will be on a participating basis with local communities and regions matching government grants. This is all to the good. As never before, we need to educate our people on how to use our abundant water resources more intelligently. We must stop thinking of water that is used once as consumed. Water is like land — the supply is limited, and we cannot produce more of it. But just as we have created abundance by farming our land scientifically, we can create a water surplus by reclaiming water from rivers and streams, and even from the sea by desalination. All we need to do is roll up our sleeves and start tackling the job."

(The End)
All the animals on the farm acted crazy this morning. The pigs ran all over the lot, squealing their heads off. The calves, their tails high in the air, kicked up their heels and raced around the yard. Even the chickens spread their wings, lowered their heads, and ran at each other. I looked at them and laughed.

"Oo! Hoo!" called Mother. "Breakfast is ready. It's time to eat." I could hear her voice way out at the barn. She sounded very close.

I was off like a shot. How hungry I was! It had been real work to get the cows this morning. They were crowded together at the far end of the pasture and didn't want to move. I had to work hard to get them started.

Dad was slower than I in coming. I was sitting at the table before he came.

"Come out here a minute," he called from the door. "I want you to look at something."

"Oh, my back!" Grandpa groaned, as he got up. "It is bad this morning. I'll bet it's going to rain."

Mother limped to the door. "And my corn hurts. I know it's going to rain."
When we got to the door, we saw a beautiful big rainbow in the west.

"Rainbow at night,
Sailors' delight;
Rainbow in the morning,
Sailors take warning,"
said Dad. "That rainbow is a sure sign of rain."

"So is my sore back," said Grandpa.

"And my corn," Mother said.

When we sat down to eat, we kept on talking about signs of rain. Dad said, "A weatherman told me that a rainbow in the morning really does mean rain. The sky in the east is clear and the sun is shining. There are clouds in the west and rain is falling nearby. The sun's rays then make a rainbow on the clouds."

"Oh, I see!" I exclaimed. "The clouds are in the west and rains come from the west. A storm is coming. But why does a rainbow in the evening mean clear weather?"

"That's easy, Bill," Dad answered. "The sun in the west is shining on clouds in the east. The clouds have already passed. The storm is gone."

"Do animals know when it is going to rain?" I asked. "They acted so funny this morning. The pigs were running all over and squealing. The calves and hens acted crazy."

"Yes, they seem to, Bill," said Grandfather. "Animals seem
to know when the weather is going to change. And I saw another
sign of rain when I looked out the window. There was no dew to
sparkle in the sunshine, and I could see no cobwebs. I know the
grass was dry."

"Is that a sign of rain?" I asked. "When I went for the cows,
I saw that there was no dew."

"A sure sign of rain," Dad said. "There is usually a wind just
before a rain. The wind keeps the dew from forming."

"Yes," said Grandpa, "and the air stays warm. Things have
to cool off if dew is to form.

Just then Mother spoke up. "I beat all of you. Before I got
up I know it was going to rain."

"You did?" I asked. "How did you know?"

"It was the train whistles. I could hear them so clearly.

There is an old saying:

Sound traveling far and wide
A stormy day will betide."

"Well! Well!" I exclaimed. "So that is why I heard you so
clearly down by the barn."

"Yes," said Dad, "sound travels a long way just before a rain.
The low clouds and damp air keep the sound from going off into
the sky. It comes along the ground to us."

"Oh, here comes the rain!" I called out.
"Yes, and it's only 6:30," Grandpa said. "Now I know that we can go fishing this afternoon. It will clear by noon."

"How do you know?" I asked.

"Rain before seven,
Stop before eleven,"
he said. "Most rains last no more than four or five hours. So it will be clear by noon."

And it was. Grandpa and I went fishing. Yes, we had good luck!
TEACHING FREE ENTERPRISE IN THE CLASSROOM

(The following suggestions on teaching free enterprise in the classroom, were submitted by Ila Peterson and Kenneth Twede, fourth grade teachers at the Wilson School.)

EXPERIENCES FOR CHILDREN

I. Visit with a business man and a banker to learn about business in your own local area and to get ideas about starting a business. Help the students to understand how a banking institution can assist people in establishing a business.

II. Set up a business in the classroom.
   A. Choose a product to market. (candy, cupcakes, popcorn)
   B. Organize Committees.
      1. Advertising.
      2. Production.
         buyers of materials
         producers of product
         selling
      4. Treasury
         sell stock
         pay bills
         prepare financial statement
         declare dividends

III. Formulate letters to parents to inform them of the project and solicit their support. (see sample)
IV. Sell stock and issue stock certificates.

V. Correlate subject matter.
   A. Arithmetic
       following recipes
       enlarging recipes
       counting money
       making change
       figuring expenses
   B. Language
       making posters
       writing letters
       making announcements
       developing new vocabulary
   C. Social Living
       planning and working together
       buying and selling
       meeting production and
       marketing problems
       using effective group processes

VI. Vocabulary development.
Dear Parents,

As teachers of the fourth grade we are interested in having our students learn some basic facts concerning our free enterprise system in a democracy.

In order to teach the values of a free enterprise system, we feel it best to give our students an actual experience in a business. We plan to make a product and to market it. We will sell stock to raise enough capital to produce a product to sell. The company will sell stock to the students at 50¢ a share. Each may buy up to two shares. This will provide sufficient capital for operation purposes.

Each child will be able to participate regardless of whether or not he becomes a stockholder. However, we feel that this experience will become a more valuable learning situation if he is able to participate as a share holder.

At the end of this unit of study each shareholder shall receive, together with a financial statement, a return on his original stock investment and will share in the profit or loss, whichever the case may be. Each shareholder shall also be granted voting privileges.

We would hope to have a profit from our business but this is not the important thing. Even if our business operates at a loss we feel that the learning that will have taken place will have been well worth any loss that may result.

Sincerely,

Ila Peterson
Kenneth V. Twede
## Financial Statement

**April 30, 1966**

### Assets

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<th>Value</th>
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### Liabilities & Net Worth

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<tr>
<td>Total liabilities &amp; net worth</td>
<td>$96.42</td>
</tr>
</tbody>
</table>

\[
\frac{29.93}{76} = 36\text{¢ per share}
\]
YEAR CLOCK - UTAH'S GROWING SEASON

- High Uintas: 3 months (91 days)
- Utah County: 4½ to 5 months (136 to 150 days)
- Utah's Dixie: 200 days
Scene I

School Yard
Susie and Tommy talking

SUSIE  Do you believe in pixies?
TOMMY  Naw, that's girls' stuff.
SUSIE  Well, I do. I've seen them.

(Enter Paul)

TOMMY  Hi, Paul. Susie has seen pixies.
PAUL   No - where?
SUSIE  I have too seen them. Meet me at the brook in the park and I'll show you.

(All exit)

Scene 2

By the brook - in a grassy dell.
Tall Tree, Green Grass, Pure Water standing to one side in back.

(Enter Susie and Pam)

PAM   Here's a brook and some grass and a tree. Is this the place?
SUSIE  Here's where I saw her. She came out of the water and waved her arms at me. She kept saying: "Keep me clean, little girl, keep me clean."

(Enter boys. Tommy with long stick and Paul with a Scout knife)
TOMMY Hi, girls! Talking with your pixies? (Laughs)
(Paul waves his stick at girls and then starts poking stick into ground)

GREEN GRASS (In small indignant voice) Stop, stop - you're hurting me. (Children look around and discover a person their size - dressed in grass green)

ALL Who are you? How did you get here?

GREEN GRASS I am the spirit of Green Grass. I help to make the earth beautiful. I grow in many places.

PAUL I wish there weren't so much of you. I have to help mow our lawn.

GREEN GRASS There you go. That shows how little humans know about me. Cows eat me. You know that; otherwise you wouldn't have milk to drink - or beef to eat.

PAM I never thought of that. What else do you do?

GREEN GRASS My roots are important too. They help hold the soil down so that the heavy rains and floods cannot wash it away. (Pure Water moves forward)

PURE WATER (In a sing-song voice) You couldn't live without me. Neither you, nor the fish, nor any living creatures, nor the grass, nor the trees, nor the woodland flowers.

PAM (Puzzled) You aren't always helpful though. You fill the streams too full sometimes and the big rivers run all over the fields and the roads.

TOMMY Yes, once I saw a movie where the streets in a town were like rivers and people were on the roofs of their houses to keep dry.

PAUL (Interrupting) Yes, and autos in the streets were covered with water and mud, and people were going around in row boats.

PAM (Shocked) Why are you so wicked, Pure Water?
PURE WATER Yes, I know I don't always stay where I belong. That's because Man forgets to help me. Sometimes, he cuts away the trees and shrubs along the banks of my streams so that strong roots are no longer there to hold the soil together. And the hundreds of fine roots that once drank water and carried it up to the very topmost leaves of the trees are gone. When the sun shines hot on them, some of the water in the leaves is evaporated and the air is made cooler.

GREEN GRASS And I come into the picture too. If I am growing on the land, my roots help keep the soil soft so that the rain and snow water can sink down, down to the hidden springs and water tables which are like ponds under the ground.

SUSIE Sometimes we can't go swimming at the beach because mother says the water is too dirty. How did this happen to you, Pure Water?

PURE WATER Because waste is dumped into the streams. Some sewers empty into the water, too. How can I be clean if people treat me that way?

(Tommy advances as if to carve his initials on tree trunk)

TALL TREE Don't do that, don't cut me! That hurts and might make me sick.

PAUL So what? There are lots more trees.

TALL TREE Don't forget, I do lots for you and it takes many of me to make your baseball bats, your homes and furniture, your sleds, some of your clothes, and lots of your toys.

SUSIE Yes, and Christmas trees. Don't forget them. Apples and nuts and maple syrup all come from trees too.

TALL TREE Do you know how long it takes a tree to get big enough to make lumber? It takes from 30 to 180 years, depending on the kind of tree.
PAM If trees are cut down for all these things, how do we get more?

TALL TREE If the trees are cut carefully, young, healthy trees are left in the forest to grow into big trees. At the same time, little trees start growing from their seed.

TOMMY How does that help?

TALL TREE You know every year boys and girls, after they've finished school, go to work in factories and businesses to take the place of other people who leave. So it is with trees. When the ripe ones are cut down carefully, the younger, healthy ones, and little trees growing from seed, take their places. In this way, the forest keeps on giving crops of wood.

GREEN GRASS I have to be cared for and replanted too, in many places besides your lawns. For I am food for many animals. You like juicy steaks and lamb chops. To have them, cattle and sheep must have plenty of green grass.

PURE WATER Don't forget to keep me clean if you boys want to fish, because fish will not live in dirty water.

(Exit Water, Grass and Tall Tree waving to the children as they go)

PAM (Turning to other children) I wonder how many other girls and boys know what the pixies have told us?

PAUL I'm going to start taking care of all kinds of grass.

TOMMY Well, I'm sure not going to hurt any more trees.

SUSIE I'm certainly not going to throw things into any water any more. Come on, it's late. We'd better be getting home.

(Exit all children pell mell)
EFFECT OF WATERSHED CONDITIONS ON RAINSTORM RUNOFF & EROSION
SUB-ALPINE RANGE - EPHRAIM WATERSHED, UTAH

2.44 INCHES OF RAIN IN ONE HOUR

GOOD
GROUND COVER
60-75% of ground covered with/plants & litter
SURFACE RUNOFF
2% OF RAINFALL
EQUIVALENT
SOIL LOSS
0.05 TONS PER ACRE

FAIR
GROUND COVER
37% of ground covered with/plants & litter
SURFACE RUNOFF
14% OF RAINFALL
EQUIVALENT
SOIL LOSS
0.5 TONS PER ACRE

POOR
GROUND COVER
10% of ground covered with/plants & litter
SURFACE RUNOFF
73% OF RAINFALL
EQUIVALENT
SOIL LOSS
5.55 TONS PER ACRE

DATA FROM INFILTROMETER TESTS OF WATERSHED CONDITIONS
INTERMOUNTAIN FOREST & RANGE EXPERIMENT STATION
CLASS REPORTS AND DISCUSSIONS

All teachers will attest to the fact that when a child thinks best of himself he learns better and that we help children build a self-concept by how we work with them.

This guide affords and directs the teacher to give the pupils many opportunities for reporting and discussing in the belief that through these types of experiences children grow and reinforce each other in gaining self-concept.

The following charts should be helpful in making reporting and discussing periods more effective.

Introducing A Unit

1. We stimulate and arouse children's thinking to the point of raising many questions.

2. We use these questions to purpose research.

3. We provide the opportunity for children to apply what they know about locating materials; evaluating, collecting and organizing materials; making notes, and reporting.

Evaluating A Report

1. Was it interesting?

2. Did we learn something that we didn't know before?

3. Did the reporter use maps, models or other aids to help us understand?

4. Did the reporter stick to the point?

5. Did we find answers to our problems?

6. Did the reporter give sources for his information?

7. Are there other things we want to find out?
Guides For The Speaker

1. Speak loudly enough to be heard.
2. Speak clearly so that you will be understood.
3. Stop at the end of each sentence.
4. Avoid the unnecessary use of and, but, and so in your sentences.
5. Show by your voice and face that you are interested in what you are saying.
6. Use visual materials to help convey your ideas.
7. Avoid reading a report. Learn to use note cards.

Guides For The Listener

1. Clear your desk of distracting objects.
2. Look at the person who is speaking. Formulate questions you want answered.
3. Give close attention to what the speaker is saying.
4. Avoid interrupting the speaker. Note any questions you may have.
5. Avoid making noises that will interfere with the listening of others.
6. If you have questions, ask them after the person has finished speaking.

Guides For The Teacher

1. Create a climate and readiness for listening.
   a. Check room temperature.
   b. Free room of noise and distractions.
   c. Arrange a face to face contact between speaker and audience.
d. Arouse interest and establish background ac-
cording to adequacy or inadequacy of pupil experiences.
e. Help the pupils recognize purposes for listening.

2. Be an active listener yourself.

3. Be on the alert to recognize meaningful relation-
ships and opportunities for application of information.

4. Interact with the reporter after the report is
finished.
   a. Ask questions.
   b. Give additional information that will strengthen
      or clarify a point.

5. Solicit class participation with such questions as--
   a. Do you have any additional information?
   b. Are there any questions?
   c. Is there anything you would like to say about
      the report?
   d. Are there other things we might want to find
      out?

6. Evaluate the growth of individuals as well as the
group in terms of a set of well defined goals and objectives
which considers:
   a. Individual growth
   b. Group processes
   c. Development of concepts