The purpose of this bulletin, one of a series designed to aid the social studies teacher, is to suggest methods for developing accurate concepts of time and chronology. The importance of these concepts and the instructional problems they present is discussed. A chart offers one basis for a program of grading the skills to be emphasized in time and chronology as part of a comprehensive study of skills in the social studies. Examples of paper and pencil exercises are presented for skills involved with words and phrases descriptive to time, arithmetical associations and dates, dates and their centuries, time lines, consistency in time judgment, personal-social time relationships, family tree, comparison of generations, temporal absurdities, comparative duration of historical periods, and historical periods and their characteristics. A bibliography is included. Related documents are SO 005 979 through SO 006 000. (KSM)
Importance of Time

Time governs everyday routine. One thinks of the present, the past, and the future. The interests and concerns of people in time vary according to their pursuits—the homemaker, the clergyman, the geologist, the anthropologist, the stenographer. Time is important to moderns: it was studied and used also by the ancients and primitives.

In school the student is concerned with schedules, days of the week, months of the year, and holidays and vacations. There is a vocabulary of time to be learned, including simple concepts such as "today" and "Monday" and more difficult ones such as "generation" and "biennial." There is the understanding to be acquired of our system of keeping track of time. In arithmetic there are problems dealing with time. In English, the stories often have a particular time setting. Time has its role in music, physical education, science, and typewriting.

Time and Chronology in the Social Studies

Time, like place, has a major role in the social studies. Investigations have shown that many students develop only fuzzy notions about commonly used time concepts; yet, without a well-developed sense of chronology, one can have only a shallow understanding of social studies. Events, movements, trends, and persons have their place in the stream of time. Here are a few examples of topics involving a concept of time in the main branches of the social studies: geography has seasons and weather, time zones, rotation and revolution of the Earth; history includes sequence of steps in man's progress, important dates, the social setting in different ages; economics deals with the change from barter to the use of money, business cycles, depreciation; sociology involves steps in various phases of social progress, the concept of the changing society, population trends; political science encompasses milestones in the development of government, election dates, the length of term of officials, and so on.

Time in the social studies on the elementary and secondary school levels can be viewed in a variety of respects, each of which has implications for instruction. Included would be the following: understanding the system of keeping track of time; understanding the vocabulary of time—such as "yesterday" and "yesterrday," and which is "indefinite," "a long time ago," developing a perspective of time past, present, and future both with regard to one's own lifetime and toward history; appreciating the factor of change over the years in history—sometimes abrupt, sometimes gradual, but nevertheless continual; observing trends of change, continuity, and development; using time-distance relationships in the use of the time line, the use of the clock, the timing of travel; observing durations in the time during which trends and movements last; visualizing historical settings in various past ages; associating events with either specific points of time, approximate, or general; and relating time with arithmetic as in number concepts and dates.

Frequency of Time Concepts

Wesley and Wronski state, "While the vocabulary of time concepts is not especially large it is in constant use." They list the following time concepts within the first 2,000 words of Thorndike and Lorge:

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Discounts: 2-9 copies, 10%; 10 or more copies, 20%.
TIME CONCEPTS

<table>
<thead>
<tr>
<th>t-500</th>
<th>long</th>
<th>when</th>
<th>till</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>after</td>
<td>moment</td>
<td>while</td>
<td>tomorrow</td>
<td>March</td>
</tr>
<tr>
<td>again</td>
<td>month</td>
<td>year</td>
<td>winter</td>
<td>May</td>
</tr>
<tr>
<td>ago</td>
<td>morning</td>
<td>yet</td>
<td></td>
<td>midnight</td>
</tr>
<tr>
<td>ago</td>
<td>never</td>
<td>1001-2000</td>
<td>noon</td>
<td></td>
</tr>
<tr>
<td>already</td>
<td>new</td>
<td>501-1000</td>
<td>ancient</td>
<td>November</td>
</tr>
<tr>
<td>always</td>
<td>next</td>
<td>afternoon</td>
<td>April</td>
<td>o'clock</td>
</tr>
<tr>
<td>before</td>
<td>night</td>
<td>century</td>
<td>August</td>
<td>October</td>
</tr>
<tr>
<td>day</td>
<td>now</td>
<td>date</td>
<td>current</td>
<td>presently</td>
</tr>
<tr>
<td>during</td>
<td>old</td>
<td>future</td>
<td>dawn</td>
<td>recent</td>
</tr>
<tr>
<td>early</td>
<td>once</td>
<td>minute</td>
<td>December</td>
<td>recently</td>
</tr>
<tr>
<td>evening</td>
<td>present</td>
<td>modern</td>
<td>February</td>
<td>Saturday</td>
</tr>
<tr>
<td>ever</td>
<td>second</td>
<td>past</td>
<td>forever</td>
<td>seldom</td>
</tr>
<tr>
<td>fall</td>
<td>since</td>
<td>quickly</td>
<td>immediate</td>
<td>September</td>
</tr>
<tr>
<td>first</td>
<td>soon</td>
<td>season</td>
<td>immediately</td>
<td>Sunday</td>
</tr>
<tr>
<td>four</td>
<td>then</td>
<td>sometimes</td>
<td>instant</td>
<td>tonight</td>
</tr>
<tr>
<td>last</td>
<td>today</td>
<td>spring</td>
<td>January</td>
<td>whenever</td>
</tr>
<tr>
<td>late</td>
<td>until</td>
<td>sudden</td>
<td>July</td>
<td>yesterday</td>
</tr>
</tbody>
</table>

The Instructional Problem

Young children display a meager sense of time, although research indicates that they have an understanding of simple everyday concepts by the time they reach the third grade. So far as their chronological perspective is concerned, that remains weak until they arrive at the secondary school, and even for many students at that level it would not be considered strong. Maturity, if whatever adult measurements exist can be used as criteria, is reached from age thirteen to sixteen.

Yet the appreciation of time and chronology in their many respects, as already indicated, is vital for a proper understanding of the social studies. Maturation is an important factor in the development of this appreciation, but there is evidence that systematic teaching of time and chronology can produce better results than haphazard learning. Instruction should start in the kindergarten and continue in every grade beyond that.

Granted that maturation plays a role in the appreciations and skills that children develop, it is reasonable to assume that guidance by the teacher should also play a major role. We do not wait for children to read; we teach them. We do not have to wait for an appreciation of good music or art to develop; we teach for it. Similarly, we do not have to wait until children reach the secondary grades before they develop a sense of time and chronology; we must start teaching for it from the early grades.

Just how much of this directed instruction is done by teachers in the secondary school is open to question. It might be helpful within a building or school system for teachers to develop a program of grading the skills to be emphasized in time and chronology. There is sufficient literature in the field which, combined with teachers’ experiences and judgments, can provide a basis for study. Illustrative of this effort is the chart on page 3 developed in one school system as a part of a comprehensive study of skills in the social studies.

A Sequence of Skills in Time and Chronology

It might be helpful within a building or school system for teachers to develop a program of grading the skills to be emphasized in time and chronology. There is sufficient literature in the field which, combined with teachers’ experiences and judgments, can provide a basis for study. Illustrative of this effort is the chart on page 3 developed in one school system as a part of a comprehensive study of skills in the social studies.

Kinds of Techniques

There are many different approaches toward teaching about time and chronology. Instruction need by no means be limited just to teaching dates. Many techniques involve simple devices such as are illustrated in this section, most of which can be constructed by teachers as needed. Elaborate or costly materials are not essential. Probably the most essential element is the resourcefulness of the teacher. The techniques involve mainly paper and pencil exercises which can be constructed by the teacher or by students or both. They may be used for diagnostic purposes, a part of the on-going learning activities, or for achievement testing. In each instance, it is imperative that directions be given in advance so that students will know what is expected. Wherever necessary, teachers should illustrate procedures by using examples.

The exercises are not organized by grade level. It is an accepted fact that the range of skills that pupils have varies from classroom to classroom. Also, what will work best for some teachers may not work best for others. It is intended that each teacher will decide which exercises can best be adapted for use in his own classroom.

Elementary Concepts of Time

1. How old are you?
2. Is this morning or afternoon?
3. Is this day or night?
4. Is this more like winter or summer?
5. What day of the week is today?
6. What month is this?
7. What day of the month is this?
8. What year is this?
9. Which is longer - a minute or an hour?
10. Which is longer - a week or a day?

Material taken from A Guide for Teaching Social Studies, Grades 9-12, Minneapolis (Minneapolis Public Schools, 1957, p. 1047.}
<table>
<thead>
<tr>
<th>Skills in Developing a Sense of Time and Chronology</th>
<th>EARLY ELEMENTARY PUPILS BEGIN TO:</th>
<th>LATER ELEMENTARY PUPILS BEGIN TO:</th>
<th>SECONDARY PUPILS BEGIN TO:</th>
</tr>
</thead>
<tbody>
<tr>
<td>to tell time by the clock</td>
<td>tell time of regular daily activities of the school program</td>
<td>tell time to minutes</td>
<td>familiarize themselves with time zones, daylight time</td>
</tr>
<tr>
<td></td>
<td>tell the hours, half-hours, quarter-hours, and five-minute intervals</td>
<td>figure time allotments for specific jobs</td>
<td></td>
</tr>
<tr>
<td>to use the vocabulary of time</td>
<td>use simple definite terms e.g., hour, minute, day, week, month, today, yesterday, tomorrow</td>
<td>use more advanced definite terms e.g., decade, annual, generation, a.m., p.m.</td>
<td>use terms of historical implication e.g., ancient, era, modern, medieval, dynasty</td>
</tr>
<tr>
<td></td>
<td>use simple indefinite terms e.g., a long time ago, later, a few years ago</td>
<td>use more advanced indefinite terms e.g., presently, shortly, recently</td>
<td></td>
</tr>
<tr>
<td>to use the calendar in reckoning time</td>
<td>find the current day or week on the calendar</td>
<td>distinguish between B.C. and A.D.</td>
<td>express centuries as dates</td>
</tr>
<tr>
<td></td>
<td>find dates on the calendar e.g., holidays, birthdays</td>
<td>familiarize themselves with the effect of the rotation of the earth on day and night</td>
<td>express dates in centuries</td>
</tr>
<tr>
<td></td>
<td>use the names of the months</td>
<td>familiarize themselves with the effect of the revolution of the earth around the sun on the seasons of the year</td>
<td></td>
</tr>
<tr>
<td></td>
<td>know the current year</td>
<td>regard certain dates as milestones in history</td>
<td></td>
</tr>
<tr>
<td></td>
<td>associate seasons with the calendar</td>
<td>associate the cultures of peoples with different historical periods</td>
<td></td>
</tr>
<tr>
<td>to acquire a chronological perspective of history</td>
<td>sense the passing of time e.g., since school started, when I went away</td>
<td>figure the number of years between two given dates</td>
<td>perceive sequence, duration, and change in the development of social institutions and movements</td>
</tr>
<tr>
<td></td>
<td>recognize sequence of regular daily activities</td>
<td>interpret a time line</td>
<td>understand the place of the present era in the history of mankind</td>
</tr>
<tr>
<td></td>
<td>distinguish between experiences of the past and events of the future</td>
<td>construct a time line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>arrange a list of events in sequence according to time</td>
<td>relate dates and periods of time with more familiar historical happenings</td>
<td></td>
</tr>
</tbody>
</table>

*Some of the skills listed will not be introduced until the third grade.

*Skills which were introduced in earlier grades will continue to be developed.
11. Which is longer: a month or a year?
12. What was the last holiday that passed the Fourth of July, Easter, or Christmas?
13. Name the days of the week, in order.
14. Name the months of the year, in order.
15. What time is it now? (Pupil look at the clock or watch.)
16. Tell me something that happened a long time ago. (When?)
17. Tell me something that happened a short while ago. (When?)

**Words Descriptive of Time**

Each underlined word below is followed by four words or phrases which are preceded by letters. From these four, select the one that is the best answer and most nearly means the same as the underlined word in terms of time. In the blank at the left place its letter:

1. Future:  a. once  b. time ahead  c. time before d. soon
2. Recent:  a. lately  b. now  c. long ago d. pretty soon
3. Current: a. long ago  b. time to come c. not very long ago  d. now
4. Present:  a. all the time  b. time ahead c. here d. now
5. A.M.:  a. noon  b. afternoon  c. before noon d. night
6. P.M.:  a. night  b. tomorrow  c. afternoon d. morning
7. Decade:  a. one-half year  b. 10 years c. 25 years d. 50 years
8. Daily:  a. every day  b. today  c. daytime d. week days
9. Annual:  a. yearly  b. always  c. this year d. anniversary
10. Eternal: a. gone by  b. right now  c. everlasting  d. for 1000 years
11. Prehistoric: a. ancient  b. time of large animals  c. before written records d. very old
12. Ancient:  a. before the fall of the Roman Empire  b. when the Pilgrims lived c. time long past  d. the Elizabethan Age
13. Biennial: a. taking place once in two years b. twice a year c. every year d. every fourth year
14. Generation: a. period between grandparent and grandchild b. about 33 years c. a person's ancestors d. from the oldest child to the youngest
15. Centennial: a. pertaining to 100 years b. eternal c. historic d. a period of 10 years
16. Era:  a. a century  b. a stage of history c. a decade  d. the date of an event
17. Medieval: a. 500 years b. ancient c. Middle Ages d. primitive
18. Dark Ages:  a. the days of cavemen  b. the age of discovery c. around 500 A.D. d. the time following the American Revolution

**Phrases Descriptive of Time**

Write a specific date that shows the meaning that each of the following phrases indicates to you in terms of time.

- The Nineteenth Century
- The Victorian Age
- The Elizabethan Age
- The Jacksonian period
- When grandfather was born
- When great grandfather was born
- Days of chivalry
- In medieval times
- In the days of cavemen
- Before the time of Christ
- Pre-war days
- In colonial days
- The foreseeable future
- When I shall become an adult
- In the next decade
- A century ago

The distribution of responses that pupils give to a test of this type will indicate the variances of these expressions in many cases.

**Arithmetical Associations and Dates**

The teacher may make use of certain arithmetical associations:
- 60 minutes in an hour (the school bell rings 3 minutes before the hour)
- two 12-hour periods in the day (divided at noon)
- 7 days in the week (Wednesday is the middle of the week)

For further information, see Wesley and Wronski, op. cit., p. 430-41.
• 30, 31, or 28 days in the month (hills arrive at home around the first day of the month)
• 12 months in the year (a new season begins every third month)
• the arrangement of days in a calendar (week by week, month by month)
• the arrangement of figures on a clock (hour by hour)
• the time to travel from the United States to England
  ... by the Pilgrims
  ... in the Nineteenth Century
  ... by ship (today)
  ... by airplane in the 1950’s
  ... by jet (today)
• the time to travel from St. Louis to San Francisco
  ... by covered wagon
  ... by Pony Express
  ... by automobile (today)
  ... by train (today)
  ... by airplane (today)
• There are many ways to describe when William conquered England:
  ... in 1066
  ... during the Eleventh Century
  ... 9 centuries ago
  ... shortly before the Crusades started
  ... in the Middle Ages
  ... a long time ago

Each of these time concepts should be evaluated with the class, one at a time, to determine which are the most and which the least meaningful.

Knowledge of dates in itself is not a major objective in the teaching of history. The dates to be learned might well be selected through pupil-teacher planning. They should have significance with regard to the content of history, and not merely because they are used by the author of the textbook. Dates may be picked because they represent turning points in history or mark the beginning or end of a movement or era.

**Dates and Their Centuries**

Number these dates from 1 to 4 in order, from the earliest date to the latest:

A. 1702  B. 1042 A.D.
  1889  1042 B.C.
  981  1648 A.D.
  1941  32 B.C.

In what century does the year 1091 fall?

1041

The year 1882 refers to 1882 years since: 1. the creation of the Earth 2. the first calendar was devised 3. the birth of Christ 4. the beginning of time.

A.D. refers to the time: 1. since the Egyptian calendar was invented 2. after Darius became ruler of the Persian empire 3. after the birth of Christ 4. of the recent centuries.


**Time Lines**

Geologists estimate that the age of the earth is at the very least two billion to three billion years old. To show students how very brief is the period of recorded history a calendar or time line can be constructed wherein all geological time is compared with an ordinary calendar year. Based on one calendar year being equal to 3,162.240,000 years of geological time, one minute is equivalent to 6,000 years and each second marks the lapse of 100 years. On this calendar the Cro-Magnon man, first of present species, will not appear on the scene until about 11:57 p.m. on December 31!

Time lines, which can be arranged vertically or horizontally, are one of the best ways of teaching appreciation of the concept of chronology. It is helpful to have students themselves construct time lines illustrating each period of history as they study it. To illustrate the relative brief length of all United States history, for example, the following time line will be helpful:

```
| 1452 | 1492 | 1945 |
```

Suppose the line below indicates the life span in years for a boy who is ten years old. The line is marked in years as a ruler is marked in inches.

<table>
<thead>
<tr>
<th>Born</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Following are some events in the boy’s life. On the line place the number of each event at the point which you think indicates when the event happened.

1. Fell down the stairs when he was one year old
2. Started Kindergarten when he was five
3. Had his tonsils out when he was four
4. Rode a bicycle when he was nine
5. Started fifth grade when he was ten.

Consider the following time line:

```
| 1000 | 1500 | 2000 |
```

A.D.  A.D.  A.D.
Suppose we wish to locate the point of time along this scale when the Spanish-American War was fought. Its date, 1898, is close to 1900; in terms of the line above this would be spaced at 1/10 of the distance moving from the right end of the scale. You will notice an “x” marked there.

Locate the following events on the same line, marking the location of each event by its number:

1. Signing of the Magna Charta
2. Eisenhower elected President
3. Jamestown founded
4. Beginning of the French Revolution
5. Columbus discovered America

Sometimes the time line can be presented as a series of drawings placed at proper locations on a time line. These can vary; for example, simple presentations involving events in a child’s day or life, the sequence of development of one theme in history (stages of transportation), or more complex arrangements showing many different events in the stream of history.*

**Consistency in Time Judgment**

A number of events are listed below. By using the letters a, b, c, and d tell whether, in your judgment, each one occurred: (a) long time ago, (b) short time ago; or whether each one will occur: (c) in a long time to come, or (d) in a short time to come.

1. The beginning of the Twentieth Century
2. The day I started Kindergarten
3. The first day of this school year
4. When I shall graduate from high school
5. When Abraham Lincoln was president
6. The presidential election of 1964
7. The presidential election of 1960
8. Next summer’s vacation
9. The second World War
10. Yesterday
11. When I shall be old enough to vote
12. Last Christmas
13. 1950
14. Last summer’s vacation
15. When I shall be grown up
16. When the Pilgrims came to America
17. Tomorrow

This exercise attempts to give insight into time perspective in looking backward or ahead. Probably it has most value for upper elementary pupils. Whether the pupil believes that 1950 seems like a long time ago or a short time ago is his privilege. When he assigns events to the future that belong in the past, or vice versa, he is factually incorrect.

Contrasts can be observed in the responses of individual pupils or from the tabulations for groups of pupils for such items as numbers 10 and 17. If pupils indicate that item number 10 is a long time ago, any historical items preceding that ought to be marked as long ago also. Yet caution is indicated if we permit judgments in terms of what may only seem to be a long or short time ago.

**Personal-Social Time Relationships**

*Family tree:*

Fill in as many of the names of your ancestors and their dates of birth and death as you can on a chart similar to the one on the next page (allow more space).

*Information about your ancestors:*

Where did they live?
What occupations did they have?
What events in history were occurring when they were young?
How many of them lived in America?
Which ones of them, if any, were immigrants to the United States?
Where did they settle when they arrived here?
Can you visualize life for one of your ancestors if he had lived in New York in colonial days, in France in feudal times, in ancient Greece?

Which ones of your ancestors on the chart did you know personally?

Family Tree

Your Great-Great Grandparents

Your Paternal Grandparents

Your Father

You

Your Maternal Grandparents

Comparison of Generations:

Year:

Who was President of the U.S.?
Who was Vice President?
Name leader of each of three foreign countries
Name a present-day country that did not exist then
Name a war that occurred in this year (or close to it)
Had the airplane been invented?
Had the United States purchased Alaska?
Had the cotton gin been invented?
Name a composer of music who lived then
Name an author who lived then
What was the population of the United States (approximately)?
Had the radio been invented?

Temporal Absurdities

The following story has numbers which follow words or phrases. If you consider certain of these words or phrases possible or true for the time setting in which the story took place, circle the "T" for them in the answer list at the end. For those that you consider improbable or false, circle the "F."

In the year 1500, a certain scholar of Naples wrote a book for university students on life in his times. The book was later printed by machine and many people purchased it. Since this period was the Dark Ages, people did not know of such a thing as money. They sometimes bought his book by giving him goods in exchange. This book described the fine goods which came from other parts of the world. It told about the silks and spices that Europeans bought from merchants. It discussed the startling events caused when Martin Luther posted his famous ninety-five theses on the church door at Wittenberg. The establishment of the first university in North America was praised as an educational achievement. A strange new food called the egg was introduced to the Europeans only recently. Fighting in wars was mainly by spears and bows and arrows, since gunpowder had not yet been invented. Some people were wondering about new ways to go to the Far East since the Turks had captured Constantinople. Columbus had discovered America. Magellan’s expedition resulted in its survivors being the first men to sail around the world. In the field of literature, Dante’s "Divine Comedy" was contem-
Comparative Duration of Historical Periods

Each pair of items contains two historical periods of varying lengths of time. Check the items in each pair that lasted longer in time than the other.:

1. Ancient times
2. Medieval times
3. Modern times

Answers:

Comparative Duration of Historical Periods

Comparative Duration of Historical Periods

Historical Periods and Their Characteristics

Match the items on the right with the items on the left.

1. Ancient times
   - Beginnings were made in science
   - People learned about the existence of germs
   - Leonardo da Vinci painted "Mona Lisa"
   - The chief source of labor in Europe was slaves
   - The first written code of laws was produced
   - Matches were invented
   - Architecture of great buildings was characterized by massive stone structure, thick walls, narrow windows, roofs supported by arches
   - People learned to tell time
   - The printing press was invented
   - Public education for girls was encouraged
   - The first great universities were founded
   - Man reached the South Pole

2. Medieval times
   - Time since grandfather was born
   - Age of feudalism
   - Machine age
   - Dark Ages
   - Stone Age

3. Modern times
   - Time since Lincoln was born
   - Time since Shakespeare lived
   - Time since the items in each pair that lasted longer in time than the other.
   - 'Romeo and Juliet' (16)
   - 'Macbeth' (16)

Conclusion

The illustrations in this pamphlet are merely suggestive of the rich variety of devices which can be used by the alert teacher to help his students develop reasonably accurate concepts of time and chronology. Without such understandings students cannot truly understand the other concepts and generalizations which are the objectives of social studies education. Creative teachers will expand these brief suggestions into many activities especially adapted to a particular class and to the topic currently being studied.

Selected Bibliography


NOTE: This How To Do It notebook series, designed for a loose leaf binder, provides a practical and useful source of classroom techniques for social studies teachers. Elementary and secondary teachers alike will find them helpful. The titles now available in this series are: How To Use a Motion Picture, How To Use a Textbook, How To Use Local History, How To Use a Bulletin Board, How To Use Daily Newspapers, How To Use Group Discussion, How To Use Recordings, How To Locate Useful Government Publications, How To Conduct a Field Trip, How To Utilize Community Resources, How To Handle Controversial Issues, How To Introduce Maps and Globes, How To Use Multiple Books, How To Plan for Student Teaching, How To Study a Class, How To Use Sociodrama, How To Work with the Academically Talented in the Social Studies, and How To Develop Time and Chronological Concepts.

Dr. Jack Miller, George Peabody College for Teachers, is editor of this series. Dr. Miller welcomes comments about the items now in print and suggestions for new titles.