San Fernando Valley State College

A CRITICAL ANALYSIS OF INQUIRY AS A METHOD OF TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in Education, Elementary

by

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ABSTRACT

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The purpose of this study was to research and analyze the available literature, published since 1960, concerning the inquiry method of teaching the social studies in the elementary grades. The findings of the research were organized and presented to help the classroom teacher gain an overview and understanding of inquiry (especially important since the Social Sciences Education Framework for California Public Schools now being implemented is based on an inquiry-conceptual schema). In this thesis the background, definitions, and the goals and values of inquiry are delineated; and the various models, processes, and modes of inquiry are presented.

The methods of inquiry are usually based on a problem-solving model, which may be adapted to use by an individual, small
groups, or the whole class. The basic steps are: (1) forming hypotheses; (2) testing them by gathering and interpreting data; and (3) drawing inferences and conclusions. The processes of inquiry are the mental acts one performs, deliberately or intuitively, as one inquires. This may include any of the acts (not necessarily in sequence) of observing, defining, classifying, interpreting, comparing, contrasting, hypothesizing, generalizing, predicting, analyzing, synthesizing, evaluating, inferring, and communicating. The modes of inquiry refer to the kinds of intellectual activity involved. The highly interrelated modes are: (1) analytic—used for the scientific studies of economic, political, spatial, or social analysis; (2) integrative—used for the humanistic and particularizing aspects of events, individuals, groups, or geographic regions; (3) policy making or valuing—used for making decisions or judgments concerning issues or problems.

The compilation of findings in this study revealed one finding common to all aspects of inquiry; i.e., the choice of the method, process, or mode of inquiry to use depends on the purpose of the inquirer, the kinds of evidence and resources available to use, and the ability and experience of the inquirer. The major criticisms, disadvantages, problems, and limitations of inquiry were discussed in this thesis. Also, recommendations and conclusions based on the findings of this study were developed and presented.
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Chapter 1

INTRODUCTION

Statement of the Problem

The problem of this study was to analyze critically the various aspects of the inquiry mode of teaching the social studies in the elementary grades of one through six. The writer's purpose for this study was to gain an overview and understanding of the inquiry method of teaching in the area of the social studies.

Importance of the Study

As the new Social Sciences Education Framework for California Public Schools is an inquiry-conceptual mode, it is important for elementary classroom teachers in California to become knowledgeable concerning the theory, philosophy, structure and content of the inquiry method of teaching.
According to Goldmark, teaching children to use the inquiry method is necessary if the following three presuppositions of mankind are true:

1. that man acts reasonably when confronted with a problem requiring a judgment;
2. that man can control his society and deliberate change;
3. that man wants to reconstruct change in his society.

The inquiry method gives man a systematic method of making judgment, at arriving at public agreement of value and of evaluating the changes possible, all of which are the concerns of responsible citizens. (15:218, 219)

A teacher, sensitive to the needs of the children, should be an inquirer of all modes of teaching and use the inquiry method to decide the curriculum and methods to use in his classroom.

Procedure of the Study

This study was made by the writer's reviewing and analyzing the available literature and research studies which have been published since 1960 on the inquiry mode of teaching the social studies at the elementary-school level.

Definition of Terms

The definition of "inquiry method" of teaching as used in this study by the writer was compiled from sources of many recognized
authorities, including Charlotte Crabtree, Bernice Goldmark, John Michaelis, John Jarolimek, Byron Massialas, Benjamin Cox, Richard Suchman, Ben Strasser, and Edwin Fenton.

Inquiry method is a strategy of teaching in which a problem or discrepancy is noted and defined, then a scientific model of search is constructed by the group or individual. The progressive steps of procedure are: gathering pertinent and appropriate data, formulating probable answers or hypotheses, testing the hypotheses, verifying the knowledge, and relating the findings into a larger theory of structure as a concept or generalization. This may lead to the need of further inquiry.

The social studies are concerned with the study of man's relationship to his physical and social environment. In the elementary school curriculum, the social studies embody elements of knowledge from the disciplines of the social sciences: history, geography, anthropology, sociology, economics, political science, and social psychology. Knowledge included in the social studies is related to important human relationships, behavior patterns, institutions and social problems. Inquiry instruction in the social studies includes methods used by scientists seeking dependable knowledge, the skills needed to think critically and reflectively about data and then draw conclusions from such so that children can better understand and predict human behavior, thus, they will
participate as responsible citizens in their communities and societies.

Organization of the Remainder of this Thesis

In Chapter 2, the literature concerning inquiry as a teaching method is reviewed. This review includes a historical background on inquiry, definitions by various authorities, the goals and values of inquiry, and descriptions of classroom procedure using the inquiry method.

A review of the literature on the processes of inquiry is covered in Chapter 3. This review is concerned with: objectives of inquiry process, the skills used in inquiry process, the levels of inquiry, and the kinds of questions used by both teacher and pupil.

The literature on the three modes of inquiry and some of the major criticisms leveled at inquiry process are reviewed in Chapter 4. A summary of the findings is presented in Chapter 5, and conclusions and recommendations are given in Chapter 6.
Chapter 2

REVIEW OF THE LITERATURE ON INQUIRY AS A METHOD OF TEACHING

Historical Background

Although the term "inquiry method" is intended to signify a popular teaching mode of the past decade, it certainly is not an innovation in educational thought. Even the ancient Greek scholar Socrates used an inquiry method to lead his students to inevitable conclusions by means of questions and logic or inductive reasoning.

During the 1900's educators have used other terms correlative to inquiry such as problem solving, scientific investigation, techniques of the scholar, reflective thinking, critical thinking, discovery learning, and creative thinking. John Dewey, in his book *How We Think* (1933), describes "reflective thinking" as a model of inquiry which should be used as a classroom method and serve as a goal of education. He stressed that a student should develop the ability to deal with problems by inquiring constantly in the classroom. The five steps in the process of "reflective thinking" he described closely resemble the steps of present day inquiry. (9:61) Glaser was concerned with research studies in the area of teaching critical thinking in 1942. During the 1940's many
other studies were made on teaching specific skills of critical thinking. (30:248, 249) During the past decade there has been a trend by educators to place more emphasis on the thinking process, on "learning how to learn." Thus, the advocates of "inquiry method" of teaching stress that inquiry should be a goal of education and that using inquiry as a mode of teaching best fits into the social studies area of the school curriculum.

**Definition of Inquiry**

Even the proponents of inquiry were unable to establish a mutually accepted capsule definition of the term "inquiry" as the very nature of the term itself suggests continual redefining. Many did regard inquiry as both a powerful means of instruction and an important competency to be learned by pupils.

Inquiry in general education was aptly described by Suchman:

Learning that is initiated and controlled by the learner himself as a means of expanding his own understanding is inquiry. (33:56)

Inquiry is an attitude toward learning and a philosophy of education. The central values are the open mind and the autonomous probing of the learner. (33:57)

The teacher provides the child with problems to focus upon, opportunities to theorize and test his theories, and suggestions of better theories and strategies of investigation.

Skeel has described inquiry as an organized, directed search for facts in which hypotheses or hunches have directed its activities
and helped determine which facts are selected as relevant. It is a part of a problem-solving process. (31:42)

Estvan, in relating to teaching young children, described inquiry method as a program to help children to develop power to think critically, to solve problems, and to learn how to learn. It is a way to satisfy curiosities. The method is essentially one of raising questions and seeking answers. (44:389)

In reference more to the social studies, Goldmark stated that:

... social studies inquiry begins when there is a doubt or dissatisfaction in a social situation and a need to resolve a problem and ends with a proposed resolution to the problem. In order to arrive at a chosen resolution, the inquirer must analyze and evaluate all alternative possible resolutions and either select one or reconstruct to build a new alternative. (15:90)

Another authority in the social studies field, Charlotte Crabtree, stated that inquiry methods are channels of interaction which involve processes of search and critical, reflective thinking. These processes require skills in defining problems, categorizing data, hunching and hypothesizing, of specifying criteria, and of testing, validating, and synthesizing evidence. The elementary child uses inquiry in the process of decision making and debate concerning real issues to children in which value assumptions and anticipated outcomes to the situation are brought to light. (41:408)

Edwin Fenton, an early pioneer advocate of using inquiry in social studies said simply, "Inquiry is a process by which students,
social scientists, and historians interpret the past and investigate both personal problems and contemporary public issues." (14:90)

All of the authorities expressed agreement with Beyer's concept that inquiry teaching means putting students in the position of having to engage in the major operations which constitute rational inquiry. These revolve around four basic steps: defining a problem for investigation, hypothesizing answers to this problem, testing the hypotheses against evidence, and drawing conclusions about validity of the hypotheses and information learned in the process. (36:147) The conclusions reached must be held as tentative and often generate further inquiry. Inquiry is usually taken to imply the intellectual activity by learners in seeking and transforming knowledge, and the instructional conditions created by the teacher.

According to Massialas and Cox, the inquiry-centered approach in social studies emphasizes concepts and generalizations which explain human interaction and problems of mankind; it incorporates models of search, verification, and invention in which the learner employs in his quest to find dependable knowledge. (22:53)

Goals of Inquiry

The long-range goal of teaching inquiry method is to provide the child with the skills to enable him to construct his own schema for problem inquiry and discovery to use in his everyday living and during the rest of his life in formal education and as an inquiring
adult. He will be cognitive of the process by which ideas and concepts are developed, verified, and reconstructed. By using rational inquiry, he will be a decision-making citizen responsible for that decision and thus participate actively in a democratic community. The inquiry method is designed to help students learn to formulate and test their own theories and to become aware of their own learning processes. Being an inquirer helps students deal with tomorrow's problems and changes. Suchman said, "It is the goal of inquiry development to produce an autonomous student whose inquiry is directed largely by the motivation of curiosity." (32:72)

Another goal of inquiry is to help break down prejudices by providing the generalizations or concepts which can explain behavioral or societal phenomena. Crabtree stated that the goal of inquiry is to provide children the experiences that build cumulatively emotional and intellectual capacities for dealing rationally with the affairs of man. (41:407)

**Values of Inquiry**

A very important value of inquiry as claimed by all its advocates is that an active, reflective, inquiry approach improves learning and thinking. (24:97) In inquiry, the children are not told the facts but taught how to pursue answers to their own questions. Children tend to retain the knowledge longer when they discover it for themselves and the discovered knowledge has greater transfer
value. (18:185) The motivation for learning is greatly increased as the problems are related to the learner's experience. (31:52) This knowledge, actively sought, is more meaningful. Learning by inquiry offers a giant step forward in helping children as individual learners and effectively combats boredom with studies. (65:72) Inquiry keeps aroused the natural curiosity of children.

Building lessons around inquiry teaching enables the student to use the information to accomplish more than just searching for and learning facts. It helps the learner to conceptualize and generalize, to refine their skills of analytical thinking, and even to clarify their own and others' attitudes and values. (36:153)

Crabtree agreed with that idea when she said that the inquiry approach is especially appropriate for elementary school students. She encourages open-ended inquiry which in turn enables the child to synthesize data as well as open the doors to new and continuing inquiry. Inquiry method gives the means of providing the child with a method of ordering his knowledge and of developing his cognitive skills. (41:408) Learning is a continuous process, requiring both assimilation of new data and the accommodation of past conceptual systems to the demands of the new. It has been demonstrated there is a positive transfer from early sub-tasks in learning to the children's later formulation. (41:411) Inquiry in the social studies engages a student in investigating social phenomena in a way that
challenges his capacity to observe, his imagination, and his ability to think. (8:Preface)

Another main value of inquiry is that it helps one to develop a rational decision-making process and to substantiate that decision. Children need to learn how to be decisive as today there are many forces demanding their time, money and allegiance. The many conflicting demands and points of view stimulate an impact on children. Schools need to help the child sort out the forces operating on his life and to guide him to use critical thinking when making choices and decisions. The social studies program using inquiry methodology offers experiences through which children inform themselves about the world and society, begin to find answers to questions, formulate positions on problems, and in some cases do something about the problems. (12:188)

A major problem today is the inability to exercise effective choice because there is such a range of conflicting alternatives. Today's people are bombarded with propaganda and mass persuasion techniques due to the sales force of mass media and so need "to be taught to think critically, to make up own minds intelligently, and to avoid being misled or fooled into precipitant reactions, later to be regretted." (42:337) In the inquiry method children are led to think critically, define a problem into manageable parts, and search for logical solutions. This continuing experience should enable a child
to cope with finding solutions to tomorrow's problems as an adult. (18:185) It is a basic assumption underlying the democratic idea that people can and will exercise their rational powers to solve problems and not rely only on an elite group to do so. Effective thinking is basic to living in a democracy. (24:24) The idea that inquiry method develops better citizens for the future was also shared by Thomas and Brubaker:

... we believe that children and youth who are skilled as inquirers and investigators are in a much sounder position to deal with the puzzles of the future than those who possess only concepts or, even more limiting, know only a series of facts whose applicability to problems of the future may be highly questionable. (34:51-52)

In reference to how important inquiry training will be for the future, Gies and Leonard remarked that educators, to cope with the needs of learners in an increasingly complex and changing world, need to focus on the learner and the processes involved in teaching the learner how to quest for knowledge in a self-directed way. Inquiry is a key method of teaching for the development of autonomous individuals who are capable of pursuing the unknown until they are satisfied. (45:8, 35)

Kaltsounis also expressed the idea that inquiry develops better citizens for tomorrow. An importance of teaching inquiry in the social studies stems from the fact that the content of social studies deals with human relationships that are in a constant, rapid change. As such changes are inevitable, students should learn to
look for the reasons that caused the changes. Then, as adults, they will be willing to accept changes more readily and so lessen the cultural lag. Human relationships also involve conflict. If people are to survive and live together in groups, they must be able to look at conflicts with open minds and arrive at decisions which will motivate them to act in behalf of the group's general welfare. Thus, citizens of tomorrow will seek peaceful solutions to conflicts.

(50:218)

The values of inquiry in the social studies as expressed by Michaelis are as follows:

Curiosity about the causes and consequences of human behavior and ways of studying human relationships

Definition of terms in precise language so that the meaning is clear to others as well as to the inquirer

Awareness of the effects of one's own background, views, feelings, position, and values on the way problems are viewed, how they are studied, and how findings are interpreted

Objectivity in the study of human problems as well as other problems so that findings will be reliable and can be readily checked by others

Skepticism marked by thoughtful questioning and critical review of methods of study, findings, interpretations, and conclusions.

Demand for evidence to test hypotheses, to answer questions, to support conclusions, and to weigh alternatives

Respect for differing views based on evidence gathered through systematic study and through critical analysis of causes and consequences of human events
Regard for logical thinking in defining problems, framing questions and hypotheses, making plans for study, classifying data, interpreting data, and drawing conclusions

Analysis of assumptions, premises, biases, possible errors, and special meanings, ideas behind interpretations, and other subjective aspects of inquiry

Identification of multiple causes of human events, or all of the factors or variables relevant to the study of a problem

Discovery of new and better ideas that can be used to explain and predict human behavior in different situations and under varying conditions

Corroboration or double-checking of findings by repeating studies and making comparisons with the findings of others (24:124)

Inquiry Methods in the Classroom

Purposes. Inquiry may be conducted specifically for the purposes of generating knowledge, verifying a knowledge claim, criticizing value assumptions, or resolving observed discrepancies between earlier found knowledge and some new information challenging the old. (41:408) A student, in everyday life, might engage in inquiry for the purpose of finding a solution to a problem, answering a question, satisfying a curiosity, resolving a value conflict, or determining the validity of a generalization.

Sequence of steps. A strategy of inquiry appears to be a series or sets of acts, varying in complexity. The scheme will vary also with the purposes of the inquirer, the kinds of evidence and
resources he works with, and the extent of ability and experience the inquirer has. Inquiry methods differ if conducted by a group or on an individual basis. Despite all these varieties, three basic steps are common to inquiry:

- forming a hypothesis
- testing the hypothesis
- drawing conclusions

The general pattern of all models of inquiry, according to Michaelis, begins with the identification of a problem and ends with some conclusion or interpretations and suggestions for further study. It is as important to be on the lookout for what to study next as it is to be able to identify the problem.

Fenton views the structure of inquiry as a body of concepts implying analytical questions combined with a proof process. He reported that at the Carnegie Tech's Social Studies Curriculum Development Center inquiry was organized into six major steps as follows:

1. Recognizing a problem from data
2. Formulating hypotheses -- ask questions, state hypothesis, be aware of tentative nature of hypotheses
3. Recognizing the logical implications of hypotheses
4. Gathering data -- decide what data and sources are needed
5. Analyzing, evaluating and interpreting data -- select relevant data and evaluate its source.
6. Evaluating the hypothesis in light of the data -- modify, reject, or restate the hypothesis, and state a generalization (14:90, 91, 93)

There is widespread agreement about the nature of inquiry being a system of problem solving. Goldmark (15:116-119) has explained the steps of developing inquiry method in the classroom as a seven-step program. In order for inquiry to begin, there has to be a problem situation. This antecedent condition is pre-cognitive. It is an affective state or attitude of concern or doubt about the situation.

**Step 1: "Recognition that inquiry is required."** The inquirer acknowledges that there is a problem and decides to resolve it.

**Step 2: "Abduction of Alternative Hypotheses."** The range of possible alternative hypotheses depends upon the context of the situation and the previous concepts of the inquirer. Those hypotheses are held as ideas while further symbolic relations, or predictions, are made. A hypothesis is accepted or rejected on the basis of the probability of the prediction. The conjectured idea operates as an instigator and director of further operations of observation, organization and prediction.

**Step 3: "Gathering Data."** The search for data is directed by the idea or hypothesis as only relevant evidence is useful to the investigator.

**Step 4: "Analyzing Alternative Hypotheses."** The data, after it is gathered, is "organized so that systematic analysis and judgments can be brought to bear on it." This is done in the form of a means-ends analysis, and an "If -- then --" prediction is made with each hypothesis. This way, the data become the means to a predicted end.
Step 5: "Identifying the Criteria." The inquirer must have some reasons that are the criteria for his judgment.

Step 6: "Identifying the Values and Assumptions." The value of the judgment may be made on the basis of evidence, an intuition, or an authority. The inquirer must also determine his assumptions he used to make the judgment. The conclusion to an inquiry is the outcome of one's assumptions and conceptual scheme.

Step 7: "Inquiry Into Inquiry." (Revisiting the Assumptions of the Method) The inquiry into the inquiry is reflexive, that is, turned back on itself. There are: reappraisal of assumptions, new questions formulated, and a continuation of new inquiry (thus a retroduction). "Awareness of, and inquiry into, methods are essential if the methods are to be applied again or if they are to be reconstructed. It is only when we question what we did, how we did it, why we did it this way, and if we should do it this way, that inquiry is continually expanded." (15:119)

Models of Inquiry. Various types of models of inquiry are used in the social studies so that children can learn effective ways to investigate topics and problems as well as concepts and generalizations. The models function to bring together the concepts, related questions, and procedures of study in a form that can be used to investigate a problem, analyze an issue or to involve aspects of critical thinking. Creative thinking and the cognitive processes are involved. The models need to be used flexibly and adapted to the various situations that arise in the social studies. Each discipline has its model, but for most purposes in the elementary social studies a generalized model that incorporates the basic features common to all the models is most widely used. Michaelis presented charts of the models of inquiry for the various disciplines and found
the following are common phases of inquiry:

Define the problem
Clarify objectives
Relate the study to what is known
Consider related factors
State questions or hypotheses
Make a plan to gather data
Have an adequate sample
Use appropriate data-gathering techniques
Use reliable sources
Evaluate and organize data
Interpret findings
Draw and check conclusions
Suggest further studies.

One way to think about the activity of inquiry is represented in the "data-theory loop" model as proposed by Strasser et al. The products of inquiry, data and theory, are but different abstractions of the same "reality." Data are the best descriptive statements of selected particulars of that reality at any given time. Theory is the explanation of that "reality." The reality can be objects, system of objects, conditions, people, events, places, or feelings. One moves from data to theory to data to theory when inquiring, hence its name, "data-theory loop."
Whether data are "good" or not depends on the means by which they were produced; whether theory is "good" or not depends on the data which are consistent or inconsistent with it. Whether data are useful or not depends on the theory being tested; and whether theory is "powerful" or not depends on the data it serves to explain or predict. Data are bases from which theories evolve, and theory is a base from which decisions about the data to be sought are made. Data are the reality base against which theories are tested, and in turn theory is a base from which predictions about data are made. Data create the necessity for theory, and theory creates the necessity for data. These two, data and theory, are functionally interdependent and have a dynamic relationship which is why the processes of inquiry are necessary.

In moving from data to theory, "data organizing" and "data using" are the processes. "Data-organizing" activities are: writing, listing, drawing, taking pictures, graphing, classifying, enumerating, labeling, and computing. "Data using" means: inferring, theorizing, generalizing, abstracting, concluding, and explaining. In moving from theory to data the processes used are "theory using" and "data generating." "Theory using" is doing such things as identifying the assumptions of the theory, hypothesizing, predicting, interpolating, or extrapolating. The activities of "data generating" include: observing, counting, interviewing, voting,
measuring, experimenting, and using resources of secondary sources. As the inquirer moves about the "data-theory loop" he gets an idea in relation to the problem situation and then tests it by validating the data and checking the data and theories with others. The inquiry does not stop once around the "data-theory loop," since the theory probably is no longer the same or the data did not fit the theory, so the theory and data may need some rethinking or modification. (This is similar to Goldmark's reproduction.)

The "data-theory loop" is intended as a generic concept of inquiry and not as a set or positive model one must follow. Each inquirer does what seems most sensible in his particular situation as different problems and disciplines use different ways. The loop, used in its generic model, does serve for individual or group, formal or informal inquiry. (68:21-103)

The basic points of agreement concerning what inquiry is refer to terms which are teaching methods or the intellectual processes. To better understand the implications of inquiry, one must distinguish the way in which a person learns from the ways one causes another to learn. Inquiry may mean the intellectual activity of the inquirer or the instructional conditions created by the teacher. Even in an inquiry method of teaching there is a wide range in the degree of teacher-authority figure as shown in the basic instructional designs: convergent or divergent (as discussed by Manson and
In the convergent model, the instructional conditions are largely determined by the teacher. The quantities, kinds, and structures of information given the pupil are sufficient to predetermine his response. The teacher chooses and organizes the inquiry task. He may select and present the problem, provide the bulk of the resources used in the investigation, and respond to the ideas and questions of the pupils. The relevant data are organized to guide the learner to one legitimate, predetermined answer.

During the process of pupil-teacher interaction, the teacher influences the kind and amount of thinking of the pupil by organizing research activities, providing information and focusing individual efforts on the task. The pupils are expected to recall information, or to seek additional information before posing hypotheses or answers. The instructor has thought through the problem and anticipated possible student responses. He knows which responses are conventionally acceptable and thus tends to accept that answer even though the pupil may be able to substantiate other alternatives. The unusual response is acknowledged but dismissed. The preferences and preconceived ideas of the teacher prevail. The student soon structures his thinking to match the teacher's and will not even pursue alternatives. Programmed learning is an example of the convergent format.
Inquiry should generate divergent thinking, "the situation where the desired behavior of pupils is production of a number of verifiable and defensible alternatives rather than one 'best' answer. Although the criteria of knowledge and reason must still be fulfilled, the approach now is one of allowing for pupil responses that might be regarded as deviant or irrelevant in the convergent model." (56:80)

The teacher is concerned with the process of delineating an entire range of proposals meeting the criteria established for legitimate responses. He anticipates, desires, and supports a variety of viewpoints. There is the possibility of more than one response being correct, so the teacher is receptive to those answers and has the pupil explain the reasoning that led to them.

When using divergent inquiry the pupil perceives his responsibility as a learner and reinforces those cognitive behaviors that result in multiple and more creative responses. The learner understands his task is to generate and verify propositions and not merely reproduce facts. The advocates of inquiry tend to support the divergent model as it supports the key ideas, methodologies, and thinking skills requisite to understanding the social studies. (56:78-81)

In a similar pattern, the pupil-student modes concur with the convergent-divergent models. The "pupil" mode is to pose questions to oracles, teacher, books, or experts to find answers in what they
say. It is considered a "safe" mode of inquiry as one learns the conventional views and habits of one's own tribe, the myths of the tribe's history, and the contentions about the present that one's own clan finds convenient to tell. The pupil goes to authorities to find out what is in the world. (8:214)

The student mode of inquiry directs the questions to the inquirer himself and attempts to answer them on the basis of what he can see in the world. This type of inquiry is more dangerous because one tends to examine conventional myths and views, and seek to appraise them in the light of reason and evidence. It makes the student a skeptic as he looks for the variety, distortions, and discrepancies in the interpretations of events and people. Inquiry leads one to examine and evaluate the circumstances of his own life, to question the values he has been taught, and to be responsible for his own view. (8:214-217)

Both the "pupil-student" and the "convergent-divergent" modes are given as the extreme ends of types of inquiry. There should be opportunities for both and an intermingling of them to provide balanced instruction.

The inquiry-skills approaches emphasize definite instruction in the ability "to do" inquiry. The teacher plans lessons to provide practice in the various processes at increasing levels of ability. The specific skills of inquiry can be taught: such skills include:
observing, classifying, categorizing, securing information from reference sources, comprehending and interpreting information, communicating, synthesizing, analogizing, comparing, generalizing, and inferring. The teacher identifies which process is the purpose of the lesson and the students practice it. It is expected that the students will use these skills more proficiently as they use inquiry in other situations.

The purpose of the inquiry approach is to develop the students' repertory of strategies useful to them in problem solving. After working on problems, the students spend time discussing the various strategies they used as they worked. They also consider different strategies they will or could use when working on similar problems. The students are not taught how to behave like scholars but instead are placed in a situation in which they use what they know and are allowed to do what makes the most sense to them as they work. They usually will intuitively use data generating, data organizing, data using, and theory using processes as they work. With thoughtful experience in working on problems, the processes the student designs and uses will become more sophisticated. The student gains in the ability to decide for himself what process to use, when to use it, and what to use on it. He also decides how well he has used the processes in terms of what he wanted to do.
Both the skills and general inquiry models have a place in the teaching of inquiry. Each has its unique values and limitations. The decision of which one to use depends on the specific objectives sought at the time. (68:148-153)

The Big Questions model of inquiry was proposed by Clements, Fielder, and Tabachnick. In it, the problem involves the transformation of the Big Question into a series of small, answerable questions. These questions must lead to the solution and must be answerable through observation rather than through appeal to authority. (8:65) They also called it "The Mystery Model" as it closely parallels the features of a mystery fiction. In a mystery story the Big Question is simply "Who did it?" The hero-detective then seeks to answer the Big Question by formulating a series of smaller questions answerable by observation. He must observe: the place of the event, the testimony of various people, and relevant documents, records, and other items. The detective is "limited in what he will discover by the questions he has the wisdom or the good fortune to ask." If he asks enough small questions which lead in the right direction, the guilty one is eventually caught. During the process there were probably many false leads based on hunches or hypotheses. These would have demanded further observations. In its essential features, the "mystery model" is the same as a method of social studies inquiry. (8:66)
The formation of interesting Big Questions initiate inquiry. Some Big Questions result from noticing one's ignorance of certain aspects of his own cultural milieu. A common-place aspect of everyday life may be converted to an object of curiosity and contemplation. An example of this might be, "How did our streets get their names?" Other Big Questions develop from acquaintance with information regarding past or contemporary affairs which stimulate curiosity. An example would be: after reading about early California and the missions, the class would ask, "How did the priests decide where to locate a mission?"

The class would formulate questions and seek to answer them. Students would use reported findings of others or the relevant original documents if available. They would assign their own interpretations to the search data. In this inquiry, the student must create his own mystery by his questions; in a mystery fiction, the detective is given his mystery. Another difference is that a murder mystery has a unique solution and then the mystery terminates; in social studies inquiry there is no unique solution or termination. New concepts provide new ways of thinking about old problems and further investigation is stimulated. (8:67) Freedom of choice in the "Big Questions" inquiry study is "justified by the demands of a particular teaching-learning situation and its potential for increasing the efficiency with which children learn." (8:117)
Instructional Design

Using inquiry as the method of teaching social studies provides the opportunity for using a variety of grouping arrangements in the classroom. The learning design may call for the large group or whole class working together, small-group committees, teams of two, or an individual seeking information on his own. Much of the bulk of inquiry in elementary social studies is done in groups and the group activities often provide the motivation for independent, individual inquiry. Some areas of the social studies curriculum are more effectively taught by group design than by the individual one. The abilities of the students, the activities of the learning situation, the reference resources and media available, the facilities and physical arrangement within the room, and the personal preference of the teacher, are the factors that help determine which organizational design is to be used. (21:93, 94) Valuable and pertinent suggestions for class organization may be found in The Teacher's Role in Social Science Investigation (21:93-123) and Social Studies for Children in a Democracy. (24:239-300)

Group Inquiry. When the group design is utilized, various strategies are employed to bring together thinking processes, democratic values and behavior, value conflicts, and techniques of group work. Generally, the problem-solving model of inquiry is
used as concepts and methods of inquiry are interwoven into useful patterns for group inquiry.

The value of well-directed group work is more effective learning by the pupils. As students discuss, evaluate, challenge, revise, and share ideas, suggestions, activities, and problems, their concepts can be clarified, hypotheses stated, generalizations formulated, and higher levels of thinking reached. The teacher or leader can direct the attention and activities toward worthwhile objectives. More productive study is attained by tapping the best thinking of individuals in the class. The motivation to inquire can be increased by the enthusiasm of some class members. It is a good way to develop democratic attitudes and behavior patterns of cooperativeness, tolerance, open-mindedness, respect, responsiveness, and concern. The depth and breadth of a child's learning can be stimulated and increased by sharing inquiry with others. (24:240)

The main disadvantages of an entire class design are that it probably fails to involve each pupil, and it limits and inhibits communication of the individuals. (21:96) Michaelis also noted that group work should be limited to activities:

1. which have purposes shared by members of the group, so each will benefit and not waste time

2. in which the children possess or can be taught the necessary skills and techniques of group work

3. in which cooperative action is needed to achieve the purposes
(4) in which effective working relationships can be maintained

(5) in which the diversified talents of the children can be put to use. (24:240)

Group-work inquiry usually follows a problem-solving model. To initiate a unit, the teacher will use selected materials to stimulate the children's thinking of questions or problems. The material may be pictures, maps, reading or listening to a story or poem, artifacts, documents, films, news items, other resources, or a happening at school. There should be a discussion to define, clarify and sequence the problems. The questions or problems then should be listed on charts or on the chalkboard.

Next, the teacher asks questions which draw on the children's previous knowledge and understanding of the subject. This is to elicit proposals that may be investigated, to clarify needs of more information, and to detect misconceptions and erroneous ideas. Usually the children will suggest questions or hypotheses to direct their investigation. Critical thinking is now needed to evaluate the proposals and suspended judgment should be emphasized in the wake of additional information.

Determining the best ways to proceed with the investigation is the group-planning phase. Ways to gather information, possible sources of information, and assignment of responsibilities, are considered. (24:245)
The fourth step in group inquiry is locating, appraising, and selecting information. With the plans in mind, each pupil proceeds to gather information related to the specific problem or hypotheses listed. Many study skills are used to collect the data which must be appraised as to relevancy to the subject and accuracy. (See Appendix, page 136.)

The next phase of organizing and summarizing information is completed after the needed information is gathered. This actually was started during the group planning and continued through the collecting data phase. Organization and summarization help the class to interpret, present, share, and use data as a basis for generalizing. There are many ways to organize and share the information. The important point is to help children develop "increasing understanding and skill in organizing information in ways that facilitate meaningful interpretation." (24:248)

Interpreting information and forming generalizations is the sixth phase of group inquiry. The original questions and proposals are considered along with the collected information. A consideration of the meaning and significance of the data is involved in interpretation of it. The group should also examine the limitations of the data, such as the need for additional information, controversial points still not resolved, information based mainly on opinion, and points of discrepancies. Criteria for judging information is established. The
class may change or discard their original proposals and decide to search for further information or, if the data appear to be adequate, they may make and check tentative conclusions. Checking a conclusion involves the processes of relating the information to a question, stating it so that it is consistent with the data, and checking it with others. If the tentative conclusion does not check out, the group suspends judgment and plans to gather additional data. (24:248)

Evaluating the processes and outcomes is another phase of group inquiry. Appraisal and evaluation is continuous and ongoing during each phase of inquiry by the teacher and pupils. By getting clues through observing the children at work, the teacher questions and comments in ways that help children to appraise their inquiry skills and processes being used. The teacher should also have some means to periodically and systematically appraise the various aspects of children's thinking and learning. Tests may be used to check vocabulary, concepts, basic information, reading skills, and study skills. Charts and checklists may be used to appraise work habits, reports, committee work, techniques, use of material, and other products and activities. To improve in attitudes, skills, and understandings that are essential in effective thinking, both teacher-appraisal and self-evaluation are used. The teacher uses these evaluations in planning specific lessons. After the children have gained experience in identifying errors and difficulties in their
own thinking and inquiry activities, they need experience in applying the learnings to new situations. Michaelis illustrated many charts and checklists to use to evaluate and appraise the aspects of inquiry for both self-evaluation by children and the teacher appraisal. (See Appendix page 136.) (24:250-2)

The group-work techniques should be viewed as an integral part of group inquiry so that the various elements of the inquiry will be blended in smoothly as related experiences. Michaelis viewed the grouping, committee work, planning, discussion, activities, and evaluation as important techniques to promote group inquiry. (24:252)

The information regarding group-work techniques of inquiry was found to be in principle the same as all other material on group or committee work in a classroom. As there are extensive sources concerning this in textbooks and manuals for teachers, and as it is a technique not solely peculiar to inquiry as such, the writer decided to forego any further detail of group techniques on the grounds that it is not pertinent to this particular study.

**Individual inquiry.** The individual design provides for organization of pupils for independent work, so that each pupil is pursuing the goals assigned to him using a minimum of communication with his classmates. This design is effective for reading assignments, researching resource materials, and preparing oral and written reports. It is not recommended for tasks of direct ob-
servat ion of behavior since individual differences in perception need to be discussed as observed. The advantages of this design are: it provides for the individualization of instruction; the child becomes more responsible for his own learning; it allows for a variety of goals to fit a diversity of interests, backgrounds, and abilities; and it allows the teacher to see what each student is doing. There has been more emphasis lately on helping children become "autonomous learners" so they can continue their learning away from the school environment and in later life. In many instances, individual inquiry will have been motivated by pupil's special interest and not as an assignment as part of the group inquiry. Then he selects his own problem, goals, and means to proceed to accomplish his goals. (21:95)

The skills involved in independent inquiry are mainly the skills of reading and language, and thinking abilities. To help children transfer and apply language skills to problems in social studies, especially planned instruction should be designed. Content and topics from the social studies should be used as the bases for lessons on study skills. Some of these skills are: effective use of textbooks and reference sources, gathering and organizing information, note taking, outlining, and preparing oral and written reports. Individual inquiry helps develop more effective study habits. (24:269-298)
The success criteria of individual inquiry should include:

(1) Do I understand?

(2) Does my theory fit the data?

(3) Have I solved the problem to my satisfaction?

Several writers (33, 40, 44, 45, 59) stressed that inquiry should be used in the primary grades because the young child is naturally full of questions and inquiry maintains and nurtures this questing and curious spirit. Experience has shown that even very young children can discover and evaluate social concepts, skills, and attitudes. They can question in continuity, formulate tentative answers, test these answers, and draw conclusions on the basis of this testing. The scope of this is in accord with research studies of Piaget and Bruner regarding the ability of children to learn at an early age. The primary child is mature enough to gather and evaluate data. Also, under the proper guidance of an adept teacher, the primary child can make inferences, and can develop, analyze, and evaluate hypotheses.

There is no need to wait for a background of skills and accumulated knowledge before using inquiry. Rather, the skills can be developed concurrently with using inquiry techniques. The teacher must use a problem which is "macrocosmic," within the experiences of the children's world. Another condition necessary for inquiry in the primary grades is that instruction be individualized
and personal. Less stress is placed on the entire class learning the
same information, and more emphasis is placed on experiences in
keeping with the abilities and interests of individual class members.
Research and evaluation are kept more informal and simple for
young children. Role-playing and field trips pertinent to the investi-
gation are good inquiry learning activities. The model suggested by
Clements, Fielder, and Tabachnick, "Big Questions," is an
appropriate one to follow for primary children. Some instruction
should be given the children in formulating and responding to ques-
tions. Evaluative-type questions that require judgment are especial-
ly interesting to primary-grade pupils.

Inquiry in the social studies at the primary level is a means
to a beginning as a process of acquiring knowledge and of developing
critical thinking. Traditional, expository teaching can frustrate
native curiosity; inquiry strategies provide the alternative of using
curiosity to stimulate learning. By guiding pupils along investigative
modes, the teacher can develop subject matter and at the same time
teach inquiry. Pupils grow in the ability to inquire only by being
given meaningful opportunities to investigate. They learn the inquiry
process by inquiring. (59:538, 539, 550)

Inquiry techniques for the middle grades incorporate the
methodologies that effective teachers use in social studies and
include some differences according to Kravitz and Soroka. The
emphasis in inquiry is comprehensive in the sense that children not only collect data but organize and apply it. The pupils are guided in thinking about the knowledge they acquire. Opportunities are given to compare and categorize concepts. The children do more evaluating of the factual material and then use the interpretations of that material to form generalizations, to draw tentative conclusions, and to verify their hypotheses. Critical thinking abilities are developed as they study controversial issues and are involved in decision making and defending that decision against a competing alternative. A main characteristic of the inquiry approach is its focus on ways of thinking and on how one learns.

Kravitz and Soroka wrote an article which illustrated ways children in grades four, five, and six can be guided to higher levels of thinking. They also presented specific techniques for using maps, primary source reading materials, and resource people (interviews) in inquiry strategies. Pupils using the inquiry approach can effectively acquire insights that can help them understand their social environment. "Studying social studies through inquiry strategies will help middle-grade children become active participants in the learning process." (52:542)

Supportive Classroom Conditions

The role of the teacher and having the proper conditions in the classroom appear to be requisite aspects of inquiry learning. To
accomplish such conditions the school must have available for use primary documents, a variety of interpretations of past and present events, and records and artifacts that relate what has been and is going on in the world, rather than distorted textbooks. The students must have a certain level of abilities and capacities to be able to use or be taught the skills needed to do inquiry. The students must be provided the opportunity to express how they feel and think about the world in which they live. (7:216)

Classroom climate. The climate of the classroom needs to be one in which the students raise questions of their own, live comfortably without closure to an issue, dare to create ideas and try them out on classmates; and the teacher does not play the role of being the final judge of the quality of answers but rather of being a motivator and moderator of profitable lines of thinking. (61:435)

Suchman said that inquiry cannot survive in a setting where it is believed that knowledge is absolute, that it must be passed down to students from authorities, and that the student must accept it as truth. Inquiry can occur in a climate that affords freedom for students to gather data and to build and test theories in their own way. The learner must have access to data and a responsive environment which yields data upon demand and enables him to test ideas against empirical events. The student must also have freedom from being evaluated on his responses. (33:56, 57)
Turner, in stressing individualized instruction, also stated that the problem in focus must be relevant to the learner and that his goals must be commensurable to his abilities. The development of judgment-making ability should be a definite aim. The importance of questions should be emphasized rather than answers. The learner should realize that there is a range of alternatives and not just one correct answer or way of arriving at that answer. Since values and attitudes are explored in inquiry, each individual's belief system must be considered important. The teacher cannot assume to know all that is important about what is being learned; he, too, is inquiring. (65:73)

The conditions in a classroom which support inquiry were well summed up in the following paragraph by Skeels:

The atmosphere of the classroom must foster within the children a feeling of trust and security. Students need to know that they will receive help and understanding from the teacher and that they can ask questions and offer acceptable answers without fear of being wrong. The classroom environment should provide excitement and stimulation for learning. Materials should be available to supply the needs of searching minds. The teacher should create an atmosphere of mental freedom that enables each individual to think without concern for boundaries. (31:43)

Role of the teacher. In an inquiry-oriented classroom, the concept of the teacher's role takes a definite change in emphasis. In a traditional setting, the teacher assumed the major roles of information giver and disciplinarian, with minor roles of motivator,
referrer, counselor, and advisor. However, in an inquiry-centered room, the primary role of the teacher is that of motivator with minor emphasis on being an information giver, disciplinarian, referrer, and counselor.

In the role of motivator, the teacher initiates the problem situation for the children to identify and stimulates their thinking. He poses questions to bring focus and direction to their search. The teacher assumes the role of information giver only when the students request it or if it is necessary to redirect the activities back to the goal. Guiding children to materials and sources of information is his role of referrer. Supplying encouragement and diagnosing difficulties are the acts of counselor. The teacher must discipline at times to avoid chaos and for learning to progress but usually he guides the children to self-discipline which is a vital facet of inquiry. (31:44)

An important aspect is the attitude of the teacher. The teacher must feel favorable toward inquiry and accept it as a desirable and useful teaching strategy. He must be able to allow pupils to become involved in an active way, to show confidence in the child's ability and capacity to seek evidence for himself so that the inquiry is a cooperative arrangement between pupil and teacher. (59:539) The teachers who have had the greatest success in using inquiry are those who themselves adopted an active attitude of
inquiry. (21:20) A teacher must not view his position as the central figure in the classroom but accept a less prominent but important role of a guide. Children are keen observers of the teacher with respect to human relations, so the teacher's own attitudes of open-mindedness and mutual respect are essential. The teacher's own enthusiasm can stimulate interest and motivate inquiry. (62:547) Success in inquiry is stimulated when the teacher is a sufficiently secure human being who is not threatened by, but enjoys, seeing students arrive at solutions without his "expert" assistance and that this approach may produce learners who will go beyond him in the development of concepts. (65:72) Also, the teacher cannot feel committed to a rigid time schedule or to covering a fixed number of study units or textbooks. He must be flexible as to time required for the study.

There are skills the teacher must possess to be able to teach in an inquiry way. The teacher must be knowledgeable about the process by which children acquire the desired learnings as much as about the content he teaches. He has to be able to organize the learning environment and to provide diverse experiences in keeping with the abilities and interests of the individual class members. To instigate the inquiry, a teacher must help establish a problem or situation within the experiences of the pupils but without an obvious solution. He must be skillful in using questions that stimulate and
probe the inquiry to higher levels of learning, both cognitive and affective. Also, he needs to use wisely a variety of teaching techniques, skills, and strategies which will benefit the situation and pupils. (59:539)

To be able to use inquiry, the students need explicit training in the method itself. This places three obligations upon the teacher according to Psencik. First, it requires him to teach the steps in the method of inquiry. Second, teachers must teach the essential cognitive skills, and finally, teachers must give attention to the mode of inquiry when they are teaching for knowledge objectives. Teachers must be aware of the importance of the mode of inquiry and reinforce the process of learning it through repetitive use. (29:51)

A great change for the teacher in an inquiry-centered classroom is in his planning and preparation. The planning includes preparing behavioral objectives, questioning strategies, material acquisition, activities, and evaluation. The objectives for inquiry activities take on a new dimension in the acquiring of knowledge and understanding. They focus on the pupil's ability to readily identify problems, to use previous knowledge to pose hypotheses, to interpret data to test hypotheses, and to generalize from the conclusions of the inquiry. The teacher needs to be aware of the danger in trying to achieve too many objectives in one activity.
Inquiry thrives with questions, so the planning of questioning techniques and strategies is crucial. The teacher must ask appropriate questions, thus serving as a model of an inquiring mind to his pupils. The students also need to learn how to ask questions to obtain the desired knowledge. The teacher needs to know the different levels of questions and how to employ them. To use questions effectively, the teacher is required to be well prepared in the subject-matter content of the study as well as the thinking and learning processes through which the pupils are proceeding.

The materials available for use by the students need to be screened to determine whether they stimulate questions and discussions or terminate them. The inquiry method is best suited to in-depth studies of limited topics rather than extensive studies over a wide range. The teacher needs to have sufficient materials available that are varied enough to take into account the different aspects of a study.

The learning activities planned by the teacher should be open-ended and allow for divergent thinking by the pupils. The activities should lead to creative or innovative answers that require the pupils to substantiate them by evidence.

The planning for evaluation needs to be a testing of the pupils' abilities to do the steps of inquiry process and the products as well as the student's behaviors. It needs to be continuous and not
just a culmination. Most of the evaluation can be done by joint pupil-teacher endeavor. A self-evaluation of the teacher must be employed also.

Goldmark stated that the role of the teacher is that of also being an inquirer into alternate ways of teaching, individual student's behavior, social interaction, and own values. He is continuously making judgments about the means-ends goals of the curriculum and the relevancy of an inquiry as it concerns his particular group of children. He must direct and limit the subject matter inquiry according to their level and the sustained concern of the class. The teacher needs to inquire into the context of the class situation to determine the experience background of the children, the degree of freedom to extend, and the qualities of attitudes and human relationships of the children. The quality of the teacher and the method also should be inquired into. Other inquiries of the teacher are: into the materials which he can use, the modes of inquiry which he can employ, and the critical-thinking skills which need to be developed. A teacher also must inquire into all the qualities that pervade the classroom as it is quality that initiates and expands inquiry into an on-going process. (15:155-169)

The teacher plays an important role in structuring and directing the inquiry process and also for creating a climate for inquiry in a classroom. The ability to direct students toward
inquiry is a technique that requires planning, knowledge in the subject area, knowledge in the students, and understanding of the sociological and psychological factors influencing the child. (45:35)

Role of the student. The responsibility of the child in an inquiry-centered classroom was stated by Skeels to be:

Active participation is required of the child at all times. Mental activity involving rational thought to identify problems and suggest possible solutions is a necessity for the child. He must be able to express his thoughts in a manner that can be understood by all. He must be open-minded and willing to accept the thoughts and opinions of others. He must not be fearful of making mistakes or overly concerned about whether his suggested answers or solutions are right or wrong. (31:52)

The child's ability to search for information from various sources is also very important. He needs to be able to look at all sides of an issue and make decisions based on the available information. To apply the generalizations to his own life, he must have insight into his own behavior. (31:52)

Suchman, too, stated that when the teacher takes on the responsibility of leading children to new understandings, the teacher must make these assumptions about those children. "First, he must assume his pupils have the prerequisite understanding and intellectual skills to obtain the desired meaning from what the teacher is saying or doing." or a conceptual readiness. Second, he must assume that the "pupils find these learning experiences rewarding enough to
invest the energy needed to form new conceptual organizations," or intrinsic motivation. (33:55)

Resources. There are materials specifically prepared for use in inquiry strategies in the classroom which help make the task of the teacher easier. However, the supply is still limited and many school districts cannot fund the purchase of all new materials, so teachers are faced with using the traditional learning resources that are available to them. How to apply the expository materials to inquiry teaching strategies has been the concern of many writers, including Nelson and Simmons. (58:543-546)

The most important step in an inquiry lesson is the initiating one because that step is the major determinant of the course the remainder of the sequence will follow. The teacher must select from the available conventional resources the ones which "present contrasting viewpoints so that a genuine problematic situation is created." (58:543) After presenting materials which show discrepancies, the teacher would use questioning to bring out the different points of view and to stimulate the children to raise questions of their own. The resources should be used which encourage the children to think critically about issues and to seek supporting data from at least two or more different points of view.

The formation of concepts should be divided into teachable steps such as: listing specific bits of information from a larger
whole; grouping those that have common properties; and labeling each group. The traditional learning resources (textbooks, trade-
books, tape recordings, maps, authorities, films, dictionaries, and encyclopedias) can be used to obtain and group the data, and to label or classify the groups. The learning resources used in the develop-
ment of each step should provide an active transaction between the child and the material. (58:544)

After the pupils have processed information on the topic of study, the teacher will need to guide the children to make inferences from the data and form generalizations from the categorized data. A variety of learning resources such as reading materials, film-
strips, tape recordings, pictures, charts, original documents, and television can be used for this purpose. The teacher uses questioning to guide the pupils to analyze the information and to arrive at some generalizations. The opportunity to apply the principles and facts from previous learnings to new and novel situations usually is pre-
sent at the culmination of a learning sequence. Here resources play an important role in: enabling pupils to formulate hypotheses or predict consequences, determining the factors that explain or sup-
port the hypotheses, and in verifying the hypotheses or predictions. Teachers must look to learning resources as necessary ingredients to implement the lessons designed to develop inquiry skills and techniques.
There has been a surge of inquiry-oriented instructional materials produced recently such as simulation games, transparency overlays, films, pictures, tapes, records, textbooks, pupil workbooks, and series of pamphlets which serve as springboards of inquiry action. The teacher must inquire into them and select the ones most appropriate to the specific purpose of the lesson and the maturity and ability of the children. Consideration must be given to the involved effort, time, and expense of the resource. The time allotted to social studies in the elementary classroom is too short to bring in extraneous gadgets, devices, books, or other materials that do not contribute to the purposes of the program, so the teacher must employ sound criteria for selection of the instructional resources to be used. (24:301-324)

As has been disclosed in this chapter, inquiry may be accomplished within a variety of methods in a classroom depending on the goal of the lesson, background and experiences of the students, materials available, and the characteristics of the teacher. Inquiry teaching methods focus on effective thinking by the pupils, and learning how to learn. The inquiry approach means any mode of instruction that helps learners acquire the skills of the inquiry process. Inquiry is the process individuals or groups go through in attempting to answer questions or to solve problems they deem worthy of their attention. It is a process of decision making. In
order to clarify what it is that people do as they inquire, the following chapter reviews the inquiry processes. "Inquiry is more efficient if the inquirer knows what he's doing." (68:158)
Chapter 3

REVIEW OF THE LITERATURE
ON INQUIRY PROCESSES

The inquiry process in social studies is the student's active participation as he uses means of intelligence to search for and to seek information upon which to base concepts and values. The definition of inquiry process is operational as it tells what one does as one inquires. The inquiry process is a form of behavior on the part of the learner while inquiring. Michaelis said that the processes of inquiry "include defining, observing, classifying, interpreting, comparing, contrasting, hypothesizing, generalizing, predicting, analyzing, synthesizing, evaluating, inferring, and communicating." (57:68, 69) The Social Sciences Education Framework for California Public Schools defined the inquiry processes as a "systematic arrangement of ways men typically inquire with efficiency and success." (74:3) The following processes were derived by studying man's behavior while inquiring and are not to be used as a set of rules for sequence of process.

(1) Observation--look closely, watch for details, see units and their various parts

(2) Classification--assign names and ranks to observed things, set up classes and place things in those classes
(3) Definition—explain as precisely as possible what a thing is or the limits of its applicability

(4) Comparison and Contrast—compare is to note the similarities, contrast is to note specifically the dissimilarities

(5) Generalization—make a statement that is intended to apply to all the members of one class

(6) Inference—perceive something not explicitly appearing in the thing observed or described—usually an inference goes into realm of speculation—speculation is not to be guesswork but based on observation, discrimination, and experience

(7) Communication—give, send, or transmit to another being, by any means, an idea or feeling

The general aim in teaching such a system of inquiry is to help the student make conscious what might otherwise remain unconscious, make deliberate what might otherwise remain intuitive. (74:3, 4)

Fenton pointed out that teaching the process of inquiry is important by stating that no one can achieve freedom or efficiency as an investigator without the conscious knowledge of how one structures evidence. Suchman (33:25-34) has expressed the same rationale regarding the importance of teaching the students the process of inquiry. He said that it is a responsibility of the teacher to "help the students to understand the nature of the inquiry process itself" because a student has a great advantage in obtaining knowledge if he understands the nature of knowledge and the process of acquiring it. (33:25) Students need to be able to recognize and identify the different elements of the learning process. To build their concepts and vocabulary, the teacher labels the component parts during an
inquiry session. Generally, children are not intrinsically interested in the process itself but are more concerned with explaining the event and so theorize readily. A more experienced inquirer will show some caution in leaping to conclusions about the causes of events because he has learned that significant and verified data are very important to that theory. Children begin inquiring naturally at a very early age but spend little time thinking about the inquiry process itself. "If they are to become proficient inquirers, they must convert this intuitive ability into knowledge that they can apply with purpose and control." (33:27)

The students must have considerable experience in inquiring before they try to discuss the process, otherwise the discussion would be abstract and meaningless. When the teacher does begin deliberate discussion of the process of inquiry, he should take the major ideas first and then introduce the refinements of the inquiry process in gradual steps, progressing at a rate keyed to the students' abilities. The first major idea to be presented is that of "theory." Theories play the most significant role in the process, serving as guidelines for data gathering. The distinction between theory and data is important, and the teacher must constantly make this distinction clear while also emphasizing the complementary roles of theory building and data gathering (interdependent relationship).
A most effective approach to understanding the inquiry process is to examine the various operations performed by the inquirers, in other words, to inquire into the process itself. The role of the teacher in raising questions about the process is crucial since most children have not really thought about the existence of such a process. The teacher guides the discussion by raising questions about the students' behavior after many actual inquiry sessions. As much as possible, the students should try to describe their own behavior of inquiry so they will formulate the concepts in their own terms. Often students can make a clear analysis of the strategies they had used quite intuitively when they reflect on what had been said and done in an inquiry session. The students must gain a greater understanding of the process of inquiry or their inquiry will remain at the intuitive level and they will not increase their ability to inquire and learn. The teacher must continually focus the students' attention on the process of inquiry until the students have reached a proficiency level that will in itself reinforce an interest in inquiry process. (33:32)

Berry stated that the process of inquiry consists of "applying certain past experiences, ideas, biases, or interests . . . to selected data in order to complete a particular task." (66:7) This process involves three mental operations repeated over and over again: developing a hypothesis or tentative answer, testing this hypothesis, and drawing conclusions (generalizing) on the basis of
this testing. The use of data is present in each step. Inquiry can be stated as these sequential steps that the learner consciously or unconsciously does:

- Defining a task
- Developing a tentative answer
- Testing the tentative answer
- Developing a conclusion
- Applying the conclusion
- Generalizing

Describing precisely how one inquires is a difficult task because learning is individual and varied, and further research needs to be done in that area. However the steps listed above are identified as certain aspects which represent the inquiry process in general.

(66:8)

According to the "data-theory loop" model of inquiry, four groups of processes are: data organizing, data using, theory using, and data generating. (The various activities of each group were listed in Chapter 2 of this study.) These processes are the means by which the relationship between data and theory becomes functional and exists. Inquirers in different disciplines will use different data-generating and data-organizing processes because they seek different kinds of data. The student may know various processes of inquiry but will use the process appropriate to the problem under investiga-
Objectives of the inquiry process

The objectives of the inquiry program are based on the processes or steps in which the learners are involved. A broad range of objectives can be given for a generalized inquiry process but there also are more defined ones to fit the type and level of the inquiry, the characteristics of the students, and the discipline in the social study.

The California framework listed behaviors that illustrate key outcomes of an inquiry and concept approach to the study of man.

The broad goals for the total (kindergarten through the twelfth grade) social sciences program stated that all students should have the ability to:

Define issues, problems, and topics of study clearly, giving attention to values, feelings, and attitudes as well as to concepts, generalizations and other cognitive elements;

Select and use modes and processes that are appropriate to the particular problem or topic under systematic investigation;

Interpret, generalize about, and infer from data meaningfully, assess the accuracy of information, and communicate ideas and findings effectively;

Define concepts and use them as intellectual tools of inquiry to analyze issues and human events in terms of guiding observation, collecting relevant data, classifying data, making comparisons, interpreting findings, and communicating ideas;

Contrast or compare human rights, freedoms, and responsibilities in the context of personal and cultural identities and differences;
Propose, examine and evaluate solutions to problems in terms of a consequence-analysis based on a priority of various sets of values;

Make and test hypotheses and apply generalizations, taking account of relevant available information to avoid overgeneralizing;

Express and demonstrate ways in which fundamental values of our democratic creed are a part of our American heritage. (74:6, 7)

The broad objectives that follow were proposed by Skeel:

Develop the student's ability:

- to identify and define a problem situation and to apply such knowledge to everyday life

- to formulate hypotheses based on previous knowledge and information presented

- to compare and evaluate various theories, data, and generalizations in testing tentative hypotheses

- to select facts relevant to hypotheses

- to state generalizations from results and apply them to new situations

Acquire skill:

- in using various materials to secure significant information

- in discovering the relationships between previously and newly acquired information to gain new insights into the solution

- in rational thought processes of forming hypotheses and testing, revising, and refining them

- in expressing opinions on issues after analysis of information

Acquire knowledge:

- of problem-solving techniques
-of methods of inquiry used by social scientists

- of recall information necessary for problem solution

Develop an attitude:

- of open-mindedness toward all sides of an issue before arriving at a decision

- of acceptance of opinions and understanding why they vary

- of concern and interest in society by active participation

These objectives are general and based on the desired outcomes of overall inquiry. The specific behavioral objectives should be developed within the classroom. They should be defined in terms of observable student performances and determined by the curriculum and needs of the individual classroom. (31:45, 46)

Michaelis presented the basic objectives of social studies in four categories: knowledge, affective, inquiry, and skills. The objectives emphasized intellectual power in obtaining the outcomes essential to effective citizenship. Many relationships exist among the objectives; however, it was necessary to list some in the four categories to highlight the primary emphasis given to each one. The objectives listed specifically for inquiry were:

To develop the ability to inquire by means of processes that unite concepts, values, and methods of inquiry in cognitive forms that enable students to:

(1) Analyze topics and problems, weigh alternatives, consider consequences of alternatives, and make decisions

(2) Formulate criteria and use them to make judgments
(3) Use models of inquiry flexibly, adapting them to different topics

(4) Use such techniques of inquiry as systematic observation, the planned interview, critical reading of source materials, role playing, field trips, and interpretation of graphic materials

(5) Use geographic methods of inquiry to derive spacebound generalizations

(6) Use historical methods of inquiry to derive timebound generalizations

(7) Use methods of inquiry from the social sciences to derive generalizations of wide applicability

(8) Use a variety of methods of inquiry in area studies and in studies of such topics as urban growth, other cultures, minority groups

(9) Use cognitive processes involved in defining, classifying, applying, analyzing, synthesizing, evaluating, hypothesizing, inferring, interpreting, and generalizing

(10) Sharpen the thinking abilities used in all forms of inquiry, including perceptual, associative, conceptual, critical, creative, and problem-solving abilities

(11) Build cognitive structures that include concepts, values, and processes of use in studying human relationships

Michaelis and Strasser both, as did Skeels, stressed that objectives should be defined in specific behavioral terms in order to facilitate instructional planning, selection of materials, and evaluation. Careful and precise statements of objectives provide guidance for the student, teacher, administrator, budget analyst, consultant and all involved in instructional decision making. (68:173) The reader can find helpful suggestions for formulating behavioral
objectives in the works of Bloom, Krathwohl, Popham, Mager, Gerhard, and in other materials recently published due to the current interest in Planning, Programming, Budgeting, System in California and the Behavioral Outcomes Approach in general.

Strasser stated that there are two kinds of objectives which underlie the inquiry process, namely sequential and accretive. Planned situations of instruction are essential to the development of both kinds. "In both cases, the child's cognitive functioning, experiencing, and social interacting are of consequence in the process of deriving meaning for him; in learning to inquire, in coming to appreciate the usefulness of inquiry as a way of coming to know, and, in coming to see himself as a productive inquirer." (75:5)

The sequential behavioral objectives of inquiry are identified as a series of progressively more sophisticated and intellectually complex levels of operating as one engages in the process of inquiry. There are five levels of sequential behavioral objectives which range from the probes of the novice to the systematically planned strategy of the experienced. These levels and objectives are discussed later in this chapter.

The accretive objectives do not change as do the sequential objectives. They remain the same all through one's lifetime as well as during the educative years. The student learns these objectives through his experiencing, interacting, and reflecting. The meaning
one ascribes to each objective becomes increasingly more sophisticated with experience. Sometimes the children gain experience in an objective spontaneously, but the teacher must also design situations which provide the experience. The experiences must be within the cognitive-function level of the students and in relevant frequency to be cumulative for the learner.

The teacher should use a checklist to seek and evaluate the evidence of growth in both the cognitive and behavioral components of the accretive objectives. (A complete list of the accretive objectives as listed by Strasser can be found in the Appendix on page 138.) The direct functioning of the learner is the means to determine growth in the behavioral components or operational level of accretive objectives. This can be done by asking, "Does he, or doesn't he?" To seek evidence of growth in the cognitive component, the teacher should observe what a child does as he gains data which implies his theory is no longer useful, or simply ask the child, "In what ways is the data useful to you?" The teacher needs to keep aware of all the objectives and to be conscious of planning to achieve them. Other than the specific ones listed, Strasser pointed out that one other objective which is achieved through inquiry and is very significant to education, is that inquiry gives an individual a means of expressing autonomy and exerting some influence over a group learning situation by knowing how to ask questions. (75:6-18)
The generalized process of inquiry assumes a variety of forms depending on the nature of the question or problem. In formulating objectives, Estvan stated that the type of inquiry, skill, or methodology to be taught must be specified. Since the skills involved develop gradually, the level of performance must also be stated. He said that the scholar engages in at least six forms of inquiry and each functions with a different approach. His "taxonomy" classified inquiry in six methods and delineated the objectives of each category on beginning, intermediate, and advanced levels of competence.

The objectives listed were basically the same as ones already listed in this chapter and the categories are discussed in Chapter 4 concerning modes of inquiry.

Estvan, in reference to young children, stated that the goals have to be appropriate to the age and development of the child and designated in terms of levels to meet each child's requirements. He placed the objectives in four classifications as follows:

1. Cognitive objectives deal with knowledge and understanding

2. Affective objectives are the feeling and attitude component of behavior, focus on the child's interest in discovering answers for himself and his persistence in face of frustration

3. Psychomotor objectives aim at all the skills involved in the process of inquiry such as formulating questions, collecting information, working with data, and confirming the findings
(4) Skills objectives designate how the child deals with information he gathered, including the ability to differentiate and to synthesize data.

In the data-collecting phase of inquiry, the prime objective is that the child use all his appropriate senses to obtain data. The four levels of ability to investigate in progression of capability are:

(1) The child attends to what the teacher is doing in a demonstration.

(2) The child reports accurately the series of steps involved in an experiment he witnessed.

(3) The child follows directions step-by-step as he performs an experiment.

(4) The child plans the experiment for finding out an answer.

Young children demonstrate growth in the development of inquiry skills when they independently check the results to confirm their findings rather than take the word of the teacher. They can check for themselves by repeating the procedure to see if the results are the same or by comparing the product to the real thing. The teacher evaluates the young pupil's progress in using the inquiry process mainly by observation of his behavior. (44:230)

Skills Used in Inquiry Process

The development of intellectual skills is an essential part of inquiry process. The skills used over and over in doing inquiry are collecting evidence and evaluating it for accuracy and relevancy; evaluating sources of information; translating and interpreting
evidence; seeking relationships and drawing logical conclusions; and structuring meaningful patterns. The skill objectives listed by Michaelis are also appropriate to inquiry. These include developing competence in the ability to:

- use a variety of sources of data including primary and secondary materials, textbooks, library materials, periodicals, community resources, and audio-visual media

- locate, gather, appraise, summarize, and report information

- read materials critically, listen critically, and study independently

- interpret and make maps, graphs, tables, charts, time lines and other graphic materials

- organize material from several sources and present it in pictorial, written, oral, or graphic form

- distinguish facts from opinions, relevant from irrelevant information, conclusions from supporting evidence

- detect errors of thinking, propaganda, unwarranted assertions

- work as a member of groups, participate actively, adhering to group standards and evaluating efforts (24:10)

Clements, Fielder, Tabachnick stated that other intellectual skills appropriate to the use of inquiry are: acquiring a language whose content and structure are capable of patterning, ordering, and communicating social realities; and acquiring the suppleness of mind that permits the examination of alien cultural and individual forms. (8:13)
The teaching of inquiry skills must be personalized because inquiry begins with a felt need and productive thinking is the result of many factors that vary from individual to individual. The teacher must be aware of the learner's motivation, personality, cognitive abilities, and environmental situation, as these are clues to the kinds and levels of inquiry with which the learner can cope. Learning inquiry skills will seem more significant if it is based on the student's own experiences plus his intellectualizing of those experiences. Some learning takes place by studying what others do, but the most effective learning is derived from personal experience. The learner must also be conscious of the process and skills he is using and periodically review and evaluate the products and techniques used. For most inquiry skills, appropriate evaluation techniques must be designed because there are few standardized instruments available. Especially at the elementary level, the teacher should focus on the specific skills most important in each method of inquiry and determine the instruction to use on the basis of the personal and social needs of the pupils. (13:364-367)

Evaluating skills. Inquiry is a process. To evaluate a process, one looks at the end product or observes the process in progress. If attention is given to the end product only, then it is necessary to make inferences about the adequacy of the various steps.
Continued observation of how the learner goes about doing the process is a more likely base for judging the specific elements of the process. Inquiry is a complex of kinds of behavior and skills. The essence of inquiry is the way these skills go together, but there is not available currently a standardized instrument for assessing the overall competence of the student while engaged in inquiry. It is possible to construct a checklist of objectives of each method of inquiry to serve as a guide in observing the inquiry process in action.

Specific inquiry skills must be evaluated to achieve growth. There are some instruments available for evaluating the skills in isolation. The results of these tests indicate whether the pupil possesses the skill, but not if he can apply it as a part of the overall inquiry process. The proof of the ability to inquire is in the integration of these skills. The teacher can make and record observations of the learner as he engages in an inquiry process in the classroom. Estvan denoted a list of procedures to use to evaluate pupils' inquiry skills according to the different modes of inquiry.

(13:357-364)

Levels of inquiry

Goldmark defined inquiry as being "a reflexive, patterned search, which takes questions from the substantive level, to the
A concept of inquiry is the asking of questions in search for answers, thus the questions initiate inquiry, determine what level it will be on, and direct the search. The questions are not random but located in a system at some level of competency.

The first level of inquiry is the substantive or descriptive level. The questions on this level ask for the "what," "how," the "where," or the "when" of the subject matter under study. It is a search for facts. The answer to such questions is usually a statement of fact or a description and serves to expand information about the subject matter. This level establishes the problem and its background, gathers data about the subject, and helps determine the means-ends relationship and direction of the investigation. (15:3)

The criteria level is the second level of inquiry. The question "why?" is asked and the search is then directed to the reason for the phenomena in question. The "why" question is on a higher level than the substantive level "since it asks not for a description of a judgment but for the reasons, the criteria, or the general rules applied to the judgment." (15:4) These general rules can be applied to more than one particular instance which, because of the wider applicability, places the rules on a higher generic level.
than the substantive level. The second, or criteria, level is said to be a search for concepts. More value is placed on the search for concepts in education today because they afford greater understanding of the subject in question and have a greater range of applicability.

The third level of inquiry examines the values and assumptions underlying the selection of alternative sets of criteria. The question on this evaluative level is "why this law, rule, or principle?" The question asks not for the judgment or the reasons for the judgment, but for the reasons for the reasons. The answers require the stating of the "assumptions" of the law, rule, or principle. This level is seldom encouraged to children because the questions require examining our basic assumptions, evaluating alternative philosophies, and thus defending or changing our assumptions. In inquiry, this third level is a crucial one: "(1) because inquiry will force one to assume responsibility for the assumptions he uses in making a judgment; (2) because such inquiry can result in new principles and their applications and in new applications of old principles." (15:4, 5)

Strasser et al., also noted three levels of inquiry but in a different frame of reference. His "Process Learning Sequence" is a descriptive statement of the changes in a student's behavior as he becomes better at inquiring, whereas Goldmark described types or modes of inquiry on three levels of cognitive functioning.
As students inquire within a classroom where conditions facilitate growth, the student's theory-seeking and theory-testing processes and strategies evolve through three identifiable stages of development. With time, experience, and thought, the student's inquiry processes and strategies move from the intuitive level through the Awareness Level to the Functional Level. (68:161)

When most students, regardless of age, begin on their first inquiry problem in the classroom, they usually work on the Intuitive Level, which is trial and error problem solving. The student confronts a problem and does something, not knowing what he is going to do or what he did after he finished. Because he is not aware of the processes he used, those processes are not dependable for him, or, in other words, they are not there for him to use in the next similar situation. Because of the trial and error quality, the Intuitive Level behavior is viewed as noncumulative in relation to learning the processes of inquiry. However, it is recognized that there is some transfer of learning for a student's way of working and degree of involvement in the next problem. Working intuitively can be useful and a source of new ways and new applications of work.

The Awareness Level represents the beginning of student's "formal" conceptualization of the processes and strategies of inquiry. At this level, a student is able to identify the various inquiry processes he, or other students, uses. This enables him to study what he and others do as they attempt to solve problems. The
main characteristic of behavior at this level is that the student can
systematically experiment with various inquiry processes and
strategies to find out what those processes and strategies will do for
him. As the student continues to use inquiry process in both new and
familiar situations, his understanding of the function of the process
increases.

"At the Awareness Level, a label is tied to an action. At the
Functional Level, a labeled action is tied to a purpose or function."
(68:164) A student is now able to select a course of action for
inquiry from a range of alternatives in terms of what he wants to
do—-to prescribe which strategy to use. Becoming a more productive
inquirer involves the ability to do the various inquiry processes and
strategies and to know when and which ones to use. The student is
able to consider: "what good did the process that I used do for me;
in what situations is it useful; how will I know when to use it next
time?" (68:164)

While all students respond to a problem intuitively, those
who are at the Functional Level in their development recog-
nize when they have discovered a new way of working for
them. In recognizing what they have done, they bring the
'new' process or strategy to an Awareness Level. In reflect-
ing on how the process or strategy was useful, it moves to the
Functional Level. As a result, it becomes a part of the stu-
dent's continually growing processes-strategies repertory.
His range of alternative ways of working increased. And it is
in part, at least, an individual's growing processes-strategies
repertory which contributes to his power as an inquirer.
(68:164, 165)
The statement by Rudolph, "Inquiry is more efficient if the inquirer knows what he's doing and does it on purpose," helps to clarify the levels. (68:158) When the inquirer "knows what he's doing," he is at the Awareness Level; when he "does it on purpose," the inquirer is working on the Functional Level of the sequence.

In an earlier publication (1967), Strasser defined the sequence of student behavior in inquiry as being on five levels, each with progressively more sophistication of the inquiry process. These levels were described and the goals and objectives (both student and teacher) were given.

Level 1 is "Getting Involved" or "Sharing of Ignorance" as the student enters the inquiry activity by random questioning. The inquirer learns the ground rules and presents his theories and information. This way he is learning the structure and goals of the situation.

Level 2 is "Exploring the Tools of Inquiry." At this level, the student uses his theories as a point of departure for inquiry. The learner engages in performing various operations, becomes aware of their meaning, function, and usefulness.

Level 3 is "Transplanting Needed Information into Productive Operations." Now the student is aware of the specific information he needs in order to substantiate his theory. This need for information is translated into inquiry operations designed to generate the data
needed. The inquirer is learning the functions each operation serves, and he intuitively uses operations in series.

Level 4 is "Developing Strategies of Inquiry." At this level, the student conceptualizes the various tactics or strategies he or others use, identifies them and their function.

Level 5 is "Inquiry in More Autonomous Ways." The student's inquiry behaviors are now internally motivated and voluntarily carried out. The teacher now functions as a peer-inquirer. One of the goals of education is to help the student achieve this level of being a productive, systematic, and autonomous problem solver. (75:6-12)

Questions Used in Inquiry

A notable means of stimulating pupils' inquiry and thinking skills in the social studies is the effective use of questions. Teachers' questions are significant in nurturing the development of cognitive powers and related skills of the pupils. Questions reveal the operational objectives of inquiry and also reveal whether the teacher is guiding the pupils in their inquiry techniques. Questions can focus the thinking and inquiry of the pupils, so teachers should analyze the type of thinking and the task to be initiated and ask the appropriate question to trigger the desired activity. (17:186)

Clements, et al., emphasized the importance of questions by saying that study is a dialogue consisting of formulating and answering
questions that are not directed toward authorities but toward oneself.

... Thus, the central task of teaching students how to study lies in the problem of teaching students what questions are, how to formulate them, how to order them into a productive series, and how to answer them through the scrutiny of things. (8:21)

An important aspect of learning how to study is simply learning how to ask questions, because the questions one asks limit what he can discover. Clements et al., designed the "Big Question" model as a method of inquiry.

Goldmark gave as a popular concept of inquiry that of asking of questions in a search for answers. A question is asked when some doubt or discontinuity is felt. The questions are in a context or a specific frame of reference, and use the language of a discourse. Those questions are not random as they are located in a system at some particular level of competency, framed in the language of the system, and indicate the tools of inquiry needed to seek the answers. The first questions launch the inquiry and direct the search. Each level of inquiry has its patterns of questions and types of answers, as was previously discussed in this chapter. This pattern of questioning is called inquiry and it expands and perpetuates inquiry. (15:3, 7)

Michaelis also stressed the importance of questions in inquiry. He stated that "Effective questioning is truly an essential element in the development of skills of inquiry. Questions may be
used to bring together the substantive and inquiry phases of the structure of the social studies. (24:132) Effective inquiry calls for higher levels of thinking, which can be stimulated by well-planned questions.

A part of all methods and models of inquiry uses analytical questions. They are used by the teacher to analyze problems, guide planning, focus attention on items that may be neglected, guide the study of instructional media, and evaluate learning. Students use questions to guide their study from the first phases of inquiry on through the last. The questions need to be planned on different levels of complexity to insure that the learner move from the information or knowledge level on up through the evaluative level of inquiry. Questions are used at all levels to sharpen thinking, clarify attitudes and other feelings, and improve inquiry. When a new topic is under study, the teacher first uses questions on the basic level as a means of determining if the students have the knowledge and comprehension needed to move to higher levels. A student must comprehend the matter under study before he can engage in analysis, synthesis, and evaluation. In the affective domain, also, a variety of questions can be formulated on values and differing points of view. (24:130-132)

In reference to teaching inquiry to the young child, Gies and Leonard, and Estvan stated that questioning is the basic technique of guiding the young and inexperienced through the inquiry process and
that much depends on the type of question used. A basic canon for helping the child develop inquiry skills is: "When the child asks a question, don't tell but ask questions to guide him through inquiry." Questions can function to focalize attention and direct inquiry. The question should be phrased to state a problem-solving situation such as "How could we do this?" Then, "I wonder how we can find out?" indicates that a procedure is required. Questions should provide clues as to the kind of thinking and procedures required to find the answers. After the child has probed through questions to collect information, he structures the data in light of the solution and chooses an answer. The climate in the classroom should help a child feel comfortable in voicing questions, and he should be rewarded for initiating thoughtful questions. (45:8) (44:391, 392)

Hunkins was interested in finding if elementary teachers used effective questions in teaching inquiry techniques, so he made a study of the research and literature available. The findings of other research showed that the teachers did most of the questioning in a classroom and that questions used were mostly the recall type, not questions to stimulate thinking or to develop effective inquiry techniques. Mr. Hunkins was curious as to the effects different types of questions would have on the thinking and achievement of pupils in the social studies milieu. He conducted an experiment with sixth-grade pupils using instructional materials employing questions of the
analysis and evaluative type for one group, and materials having a dominant emphasis on knowledge questions for the other group. After a four-week period, it was reported that the students who had worked with the analysis and evaluation questions had a higher degree of achievement on a test constructed by the investigator. He stated several hypotheses of why the higher cognitive-level questions produced higher achievement, but he also concluded that the one experiment could not substantiate the evidence and further research was needed. (17:190-193)

Kinds of questions. The inquirer uses questions to obtain information. The kinds of questions he asks and their sequence reveal much about the way he is thinking. Suchman classified questions into four groups; and each kind could be used to ask about four kinds of data; events, objects, conditions, and properties. The classification scheme is as follows:

(1) Verification--this includes all questions which seek to identify or verify some aspect of a given event

(2) Experimentation--questions that attempt to ascertain the consequences of some change in the circumstances

(3) Necessity--questions that seek to determine whether a particular aspect of an event was necessary for the outcome

(4) Synthesis--includes all questions which seek to determine whether a particular idea about causation is valid
Suchman suggested that a teacher use a record sheet on which each child's questions are recorded in sequence as they occur during an inquiry session. This can be done by a helper while the session is going on or taken later from a tape of the session. The purpose of coding the questions is to facilitate the analysis of the questioning strategy. Strasser also used an Operation-Operandi Matrix which recorded the student's tactical moves as he questioned. The record sheet provides data about the functioning of the student behavior.

By categorizing questions a teacher can recognize many inquiry patterns that characterize particular styles of thinking and searching. Recognizing the inquiry pattern of a student helps the teacher to understand better how the student thinks and inquires, and provides necessary data for making decisions about how to respond to him. (32:56)

According to the Science Research Associates' booklet, The Teacher's Role in Social Science Investigation, inquiry is begun by the children being confronted by a provocative phenomenon and then they formulate questions about that phenomenon as observed. Such questions are designed to stimulate certain kinds of information as descriptive, inferential, cause-and-effect, or value. This step requires skill on the part of the teacher to guide the children to phrase questions that are relevant to the study. In the second step of making hypotheses and building theory, the students are asked "what will happen if?" and "why do you think that?" During the phase of collecting and analyzing data, the students learn to use
questions in surveys and interviews. There are many question-asking activities by both the pupil and teacher in the inquiry process.

The Science Research Associates booklet contained a glossary of nine most commonly used types of questions used in conducting inquiry as follows:

1. **Descriptive**: What happened? What are they doing? What is going on? How many different kinds are there?

2. **Comparative**: How are they different from each other? How are they similar? How would scientists do it?

3. **Historical**: When did it get started? How did it get started? Has it changed from the way it used to be? What have they found to be true in the past?

4. **Causal**: What caused him to behave that way? Why did it turn out that way?

5. **Prediction**: How will it end? What's going to happen next?

6. **Experimental hypotheses**: If I do this, will he do that? What would happen if...?

7. **Methodological**: How can we find out? Where can we locate resources? Are these observations reliable? How valid are our data?

8. **Value inquiry**: Which way is best? Is that a good way for things to end?

9. **Relevance or application**: How does this apply to me? How does this idea or generalization apply to other situations? at home? after school?

The S. R. A. study units are based on specific areas of human interaction. The glossary was intended as a reference guide and other types of questions could arise in other types of inquiries.
As stated by Sanders, good questions are built around varying forms of thinking and are directed toward learning and evaluative thinking, rather than determining what has been learned in a narrow sense. He used the book *Taxonomy of Educational Objectives*, edited by Bloom, to develop a "taxonomy of questions." The same categories of thinking were used to classify questions in the sequential order of: memory, translation, interpretation, application, analysis, synthesis, and evaluation. Students can be led to think in each classification the use of questions directed at each level. Many teachers over-use the memory type of questions and tend to offer students too few questions requiring the other levels of thinking. The teacher should have knowledge in the format of each type of question to be sensitive to providing opportunities for higher levels of thinking on the part of the students and also to evaluate the materials to be used. (30:2-6) (*Classroom Questions, What Kinds?* by Norris M. Sanders is a good source for types of questions and their application.)

Jarolimek also grouped questions according to the classifications of objectives suggested by Bloom's *Taxonomy*. He stated four main groups of questions other than recall or memory type that can be utilized as:

1. Those requiring a depth of comprehension by translating, interpreting, or extrapolating the given information

2. Questions requiring application of information (showing how the information will be used)
3. Questions requiring analysis (identify and classify elements, show relationships, discover the organization and structure of elements in a body)

4. Questions requiring synthesis (integrate previously learned information with new into original ideas)

(18:521-526)

Criteria for inquiry questions. Some criteria which should prove helpful in defining good inquiry questions and in improving the students' ability to phrase questions were listed in the S. R. A. booklet as follows:

1. The question must be one that can be answered by collecting data.

2. The question must not presuppose the data.

3. The question should be slanted to finding out about behavior in general rather than finding out about specific individuals.

4. Study questions should not be questions for which answers produce value judgments (unless, of course, it is a value inquiry project).

(21:17,18)

It is important that the pupils become aware of the fact that scientists evaluate their questions, and the pupils learn to evaluate their own questions also.

According to Sanders, the approach to an intellectual atmosphere in a classroom is through a systematic consideration of questions that require pupils to use ideas, rather than simply to remember them. Some of the elements which make a good question are precision, clarity, relevance to the matter of study, and suita-
bility to the comprehension level of students. Questions designed for grading student progress should call for the same kinds of thinking as those used in instruction; therefore, questions should be designed to match the instruction which preceded the asking. The receptivity of the students and their pre-knowledge of the subject must also be noted in designing questions. Wording in a question must be clarified as sometimes a word as used will have a stipulated meaning instead of its common usage meaning.

Asking questions is a basic way by which the teacher stimulates student thinking and learning. To design a good classroom question, the teacher needs to analyze and plan the thinking task desired. Then he should fit the form and phrasing of the question to that task. Precision and clarity in the wording of the question is imperative. The teacher who skillfully designs questions which stimulate reasoning, evaluating, creative thinking, as well as remembering, is like a catalyst helping young minds to grow.

(1:144-148)

Teacher response. The teacher's reaction to pupils' questions and answers creates part of the emotional climate in a classroom. The importance of this was cited by many writers whose works were reviewed. The response of some teachers suggests that they think obtaining a perfect answer is necessary and any answer short of perfection deserves criticism. This, of course, quickly
discourages the desire to inquire. (34:246) Strasser was so concerned with the teacher behavior in inquiry that he devised a classification system to identify the various moves a teacher exhibits in an inquiry session. The descriptive rather than prescriptive system is referred to as "Teacher Tactical Move Classification System" and identifies teacher behavior as three kinds of moves. They are:

1. general moves, 2. responsive moves, and 3. initiatory moves.

In the responsive moves category are the behaviors related to the prior question or statement by a child. The responsive moves were defined in five categories of: 1. clarifying meaning, 2. accepting, supporting, or reinforcing the child, 3. responding to child's data probe, 4. identifying inquiry process, and 5. identifying inquiry products.

In some cases the teacher may respond in a way not directly called for by a child's question or statement, but yet consistently with the goals, philosophy and psychology of inquiry; e.g., T (R4) 'You've just done an experiment.' In all cases of responsive moves, teacher behavior is in a sense programmed by prior student behavior. (76:3)

(More detailed information is available in Strasser's recent publication, Teacher Behaviors in Teaching Toward Inquiry, published by Search Models Unlimited, Hayward, California.)

Questions are a fundamental tool of teaching, so instruction should be given to pupils in formulating and responding to them.

Good questions encourage thinking and learning. (59:550) Inquiry does contribute to the sharpening of a child's ability to translate
what he wants to know into a question. Students as well as teachers should strive to devise questions that add dimensions of quality thinking: the higher the level of questions, the higher the level of inquiry.

A review of the process of inquiry was presented in this chapter. Process was defined as all the activities of "doing" inquiry. The main value of teaching the inquiry process is that "one learns by doing." The objectives and skills of the process were cited as a means to better evaluate an inquiry session. The levels one may engage in while "doing" inquiry were explained. Since questions are a basic tool of inquiry, they were defined and classified. In the next chapter, the Modes of Inquiry are reviewed.
Chapter 4

REVIEW OF THE LITERATURE ON
THE MODES OF INQUIRY

The term "modes of inquiry" as used in the California framework for social science education is "intended to represent the kinds of intellectual activity appealed to at a given time by the teacher's presentations, assignments, and general organization in the classroom." (74:4) Thomas and Brubaker referred to the term as "those techniques people use to analyze social situations and plan action for solving social problems." (34:50) The modes and processes taught in the classroom should be those which can be used in daily life, are useful in social studies instruction, and are consistent with the ways of inquiry in the supporting disciplines. Michaelis, a member of the California curriculum committee, stated that the modes and processes are interrelated with concepts as students investigate human activities in a variety of settings. In the new California social sciences education curriculum guide this inquiry-conceptual approach is considered to be more productive of effective teaching and learning than other approaches already tried. (57:68)

The social studies include such a wide variety of topics and problems that to have only one mode of study to use would be
completely inadequate. There is a need for three highly interrelated modes to deal with the scientific, humanistic, and policy-making aspects of social studies. First, an analytic mode is needed for the scientific and generalization side of social studies as students engage in economic, political, spatial, and social analysis. An integrative mode is needed for the humanistic and particularizing aspect of social studies because it brings together the unique and particular aspects of the events, individuals, groups, geographic regions, and other special topics. Third, a policy mode (also called valuing) is needed for the decision-making and evaluative side of social studies. It is used to make judgments or decisions concerning urban, minority, economic, political, or other issues and problems of study. It is a problem-solving mode. (57:68) An explanation, derived from Michaelis, Thomas and Brubaker, and the proposed Social Sciences Education Framework for California Public Schools, of each of the three modes of inquiry is as follows.

Analytic. The first mode is called analytic because it consists of isolating selected social phenomena for study, classifying them by exact definitions, and by examining the relationships among the classifications. In doing the analysis, some "common-sense" distinctions are used and then refined by more precise analysis. Studies in the analysis proceed by a systematic investigation of selected sets of events or settings. The processes the inquirer uses
are: make specific observations; collect and classify data; develop definitions for the constructed classes and then check the reliability of the classifications; examine, compare and contrast the relationships among the defined classes; draw generalizations about the data in the form of hypotheses, theories, or principles; draw inferences by testing the valid generalization in a new situation.

The analytic mode of investigation is the main one used in the primary grades; however, it is used in all disciplines and at all levels of education. This mode is used in everyday life as one makes generalizations about vacations, shopping, clubs, recreation, voting, and other activities, after examining the various factors such as cost, value received, procedures, and the like. Fairly broad applications of the generalizations can be arrived at by examining several cases. (51:69)

The inquirer in the analysis mode uses concepts which he constructs or contrives to guide his search for pertinent data. The goal is to develop intellectual skills in the use of concepts and analytical questions as tools of systematic investigation in the social sciences. (74:10)

Integrative. The second type is called integrative because it requires that the investigation be into all facets of a situation in its entirety rather than singling out one aspect for attention, as in the analytic mode. Studies in this integrative mode focus on all the features or attributes of a single setting or event. A varied set of perspectives for comprehending and viewing the situation comes from
a synthesis of constructed classes and understandings. A variety of concepts—drawn from one's personal life, culture, or the particular study—are used. The inquirer seeks to use all the knowledge and insight that are necessary to reveal the setting as coherent in its totality and as believable as his own culture and setting. The integration of wholes and parts is achieved in cultural or historical terms or the two together. The integrative investigation focus is on one or more related aspects of significance to the study. The inquirer then seeks to communicate to others a description of the reality he has found or created with enough of the diversity and coherence of the culture so that his audience could experience it vicariously.

The integrative mode requires a higher learning ability as students integrate, synthesize, or bring together the things which were discriminated clearly by analysis. The major processes are defining, comparing, and generalizing. The goal is to teach students to look for relationships of parts to the whole. In historical integration, students learn to see that cultures, nations, people, and events of the past have a time relationship to each other and to the present. Similarly, in the cultural integrative mode, students are led to see how mythology, religion, economics, and geographic locations function as parts of a whole culture. Values become a significant part in this mode as so often the aspects of another culture that seem important have a value implication for our own culture.
In everyday life, the integrative mode is used when one wishes to recreate a particular happening or situation. One would synthesize or integrate the details that portray the unique and special aspects of a good vacation, activity, or recreational event. The emphasis now is on a particular event or set of events rather than on an analytic study that would lead to a broad generalization.

Policy making or valuing. The third mode uses the results of the analytic and integrative phases for determining what to do about a social situation. Policy making is a form of planning action. Studies in this valuing mode

... pertain to learning situations where understandings gained from analysis and integration are put to use to answer questions such as 'what should I, or we, or they do next?' Learning in this mode should develop the student's ability to act rationally and effectively to obtain reasonable, mature, and therefore consciously chosen goals. (74:11)

Besides using the understandings gained from the analytical and integrative modes, the inquirer is faced with making a decision about his own values which probably entails clarifying and modifying those values. The goal is to develop the intellectual skills to handle value questions and controversial issues. Rational decision making in the valuing mode uses the processes defined in problem-solving; i.e., identify and define the problem; determine suitable methods to gather information; identify relevant and significant values and information; assess the validity of the information; generate trial
solutions; test the solutions in terms of predicted consequences; decide which is the best solution. The final step of valuing, a rational decision, may take one of several forms: "(a) to act in a certain way; (b) not to act at all; or (c) to decide on a preference that may be acted upon in the future." (74:12)

As students progress in learning activities, they can assign and compare values, and weigh alternatives in order to make qualified judgments about predicted outcomes of present actions. In the valuing mode, teachers emphasize the processes of generalization and inference; the student has to recognize problems, deduce alternate solutions, and make rational decisions about which alternatives are best.

The policy mode is used in life situations when one needs to make a decision or judgment about shopping, vacations, voting, and other activities. Public education is concerned with the teaching of valuing for the purpose of helping individuals to realize that choices ought to be made as a result of a self-conscious reasoning process. Valuing, as a mode of inquiry,

... should thus be seen not only as the next logical step after analysis and integration, but also as incorporating and extending these modes in such a way as to attain reasonable, mature, and therefore consciously chosen goals. (74:5)

The three modes should be used interrelatedly in the social studies to provide balanced instruction in the inquiry skills. Ideally, a well-designed program should provide opportunities for the students
to master each mode and learn the strengths and limitations of each. Although the three modes ought to be emphasized at different grade levels in order of the sequence listed, they are not exclusive to certain grades. Even the policy mode can be used in the primary grades to some degree. Instruction should be planned and sequenced to provide for cumulative growth. The three modes are also cross-disciplinary, as all are used by the social scientists in the various disciplines. Evaluation should be planned to assess the growth of the students' ability as they use the three modes in daily life as well as in educative life. (See Appendix page 142.)

Collier and Kliebard each conceded that there is not a certain mode for a certain discipline but the mode to use is determined by the kind of problem or question to be answered and the concepts they use. Summed up, determining what mode to use depends in some measure on: one's perspective or point of view, the phenomena with which one is concerned, the kinds of questions one asks, and the language, particularly the concepts, one uses. (51:51)

Estvan explained the modes of inquiry as being classified in a way useful for instructional purposes. The six categories are arranged in a way to suggest ascending order of difficulty with respect to complexity of process and control of variables. The categories are also listed in the order of the modes concerned with past events first, then those of contemporary implication, and the
final ones are concerned with the way things should be. The six modes of inquiry in order as they are defined are library, historical, descriptive, experimental, problem-solving, and normative methods.

**Library.** The library method is essentially a secondary or rediscovery process. The purpose of using it is to be informed about the works of colleagues and to gather already known information about the question under investigation. After reading vast stores of knowledge, the student evaluates and integrates the ideas into his own conceptual scheme.

**Historical.** The historical mode deals with the past. The student searches for records of past events, processes the data, and presents his interpretation of it. He uses both primary and secondary sources of information and thus must determine the authenticity, validity, accuracy, and reliability of the data he collects.

**Descriptive.** Descriptive studies assess the current status of things. Data is gathered by: (a) observation techniques of anecdotal recording, check-lists, rating scales, photography, time-sampling, participant-observers, (b) self-reporting techniques such as interviewing, questionnaires, polls, surveys, testing, and (c) content analysis of published documents, reports, and other materials. The focus may either be on a single event or person or on a set of related events.

**Experimental.** The experimental method is a systematic and
scientific form of inquiry. It is controlled research having one set of factors held constant while the effect of variable factors is carefully observed. This is used to determine the relationship between two or more elements and to test which is best for a solution. Hypotheses are formulated and tested for predicted outcomes by controlling the variables and analyzing the statistics.

**Problem-solving.** The problem-solving mode is used when one is faced with a problem that requires a remedy. A "problem exists when there is a marked discrepancy between the state of things and what is considered to be desirable." (13:343) The goal is to determine the appropriate solution to a problem from several alternatives. This requires applying known principles to the case.

**Normative.** The normative, or deliberation, mode is required when decisions must be made on the basis of objective evidence and also in due consideration to standards, norms, and values such as is in the case of "controversial issues." The student learns to objectively analyze and determine how the findings and ethos can be "accommodated in the formulation of a decision that represents progress in democratic living." (13:344)

Estvan also listed the skills objectives for each mode and the types of questions appropriate to the mode of inquiry. "The particular form of inquiry in which they engage in at any one time
depends on the nature of the questions being asked, the maturity of the children, and their level of skill development." (13:345) Many kinds of learning experiences must be provided in the classroom for students to develop the various skills in the different modes of inquiry. (13:342-345)

Major Criticisms of Inquiry

Even the proponents of inquiry included in their writings some aspects of the inquiry mode or method which are open to criticism and which pose problems. Some criticized the value and importance of inquiry as a method, the effects inquiry can cause, the limitations and disadvantages of its use, and the sociological problems which hamper the use of inquiry as a teaching method in a classroom.

There seemed to be a general theme expressed by many that the value and importance of inquiry is much overrated. Skeel, Ausubel, Crabtree, Manson, and Williams, each claimed that present research does not permit a final, valid conclusion to the claims that inquiry is a more effective method of teaching; that far more research is needed to determine if all the values of inquiry as purported do exist; and that the widespread enthusiasm for inquiry outruns its empirical test. The instructional format should not be mistaken for adequate assurance of desirable learning. Due to the complex nature of inquiry and the variables of students and teachers, Crabtree stated, researchers have not attempted to design a test
incorporating all the effects of inquiry teaching. There are so few
definitive and experimentally designed research studies that all the
evidence so far is only empirical support. (40:523)

Ausubel claimed that, furthermore, the inquiry method has
become sacrosanct, and the students are coerced into using inquiry
to collect data which could have been presented by the teacher as
well. This means that much valuable time is sometimes wasted and
thus inquiry can be costly. The inquiry method is not always condu-
cive to meaningful discovery and is not a substitute for a minimal
amount of appropriate didactic teaching. (2:142) Ausubel stated that
problem-solving is not efficient for transmitting subject matter and
inquiry tends to ignore the substantive content of a discipline. (2:161)
He objected to using the inquiry-discovery method because it can end
up in complete chaos in a classroom. Ausubel purported that
Suchman's inquiry is falsely called discovery because it is all struc-
tured in sequential steps and so is not like a laboratory learning.
(2:160) He objected to the inquiry method on the grounds that it has
unwarranted assumptions, overstated claims, and inadequately tested
propositions. (2:143)

Skeel also proposed that in inquiry too little attention is given
to the crucial role played by facts and skills in a student's mastery
of a body of knowledge. Many learnings in inquiry are not transfer-
able unless they are over-learned. She quoted Friedlander's doubt
that a child's curiosity is really an incentive for academic learning as it may be unsystematic, non-cumulative, and easily satisfied.

She expressed concern that inquiry accepts any answer and thus the child might not have the opportunity to test his answers to find out if they are right or wrong. (31:53)

Laforse wrote that inquiry is just another "fad and fashion" of education and not so new an idea really. It appears to be much the same as Dewey proposed about fifty years ago and as yet has not been tested soundly in our educational system. Fads periodically sweep our educational establishment in response to environmental pressures. (53:66, 67)

The results of teaching inquiry to children can be disastrous. The danger lies, wrote Goldmark, Clements, Mallan and Vaughn, in that inquiry practice puts into jeopardy some aspects of our perceived, stable world. Inquiry method is committed to lead individuals to examine the circumstances of their lives, question the values they have been taught, and to become responsible for their own views.

Actually, all of these writers firmly advocated inquiry but were also reporting that some people see danger in promoting inquiry in public schools because of the secularization of thought and values. The resistance to using inquiry is an effort to avoid confronting the challenge and danger in encouraging our young people to reflect intelligently about the world they live in. This leaves all beliefs,
values, and public matters, in general, open to question and subject to change.

Beyer, Crabtree, Cox and Hagen and Stansberry, each warned of the limitations of inquiry. Some children learn more effectively by other teaching methods; not all pupils are suited to the inquiry approach. Crabtree stated that not all children benefit from using the inquiry method as they are not all equally disposed to some of the requirements of the open-ended, hypothetical-learning mode. Children have deeply-based response patterns of either reflective or impulsive responses. The inquiry approach assumes that the learner withholds action until he has used reflective thinking in examining carefully the data, and a wide range of alternatives before making a choice. Thus, the impulsive child, as he wants immediate answers and closure, will be at a disadvantage using the inquiry method but does better if the expository mode is used.

Furthermore, there are restrictions in that the elementary school child is not sufficiently mature nor socially experienced enough to engage in long-term problem-focused studies in the larger issues of national life. He lacks the larger conceptual scaffolding on which to relate such inquiries. The young child is still in the early processes of building the structures and skills for productive thinking. (41:408)

Beyer wrote that it is important to remember that inquiry is not best used at all times and is not best suited to covering large
amounts of material in a short amount of time. The schedule of class periods must be flexible as, more often than not, inquiry strategy will require more time than allowed. The learner must engage in the tasks of inquiry actively or there is no process of learning, and some students are just not receptive to it. (66:14,15)

Hagan and Stransberry displayed some critical feelings toward inquiry by posing questions such as: "How much of the school program should be inquiry?" and "Is there a danger that inquiry may become just a ritual?" (48:537)

Several writers proposed that the inquiry method presents many problems to teachers. Smith and Mackey, Laforse, and Cox each stated that as yet there needs to be a definitive clarification of the inquiry method for both the teacher and the general public. There is no real academic freedom in the classroom so the teacher who uses inquiry must be ready to defend it. Generally speaking, most teachers have not been sufficiently trained in the inquiry process which places them as novices. In order to be able to use inquiry as a teaching strategy, more time, effort, dedication, knowledge, and realization of the value and nature of inquiry method on the part of the teacher is required. (50:220) Rogers stated that the effectiveness of inquiry depends upon the intelligence, wit, creativity, and sensitivity of teachers. (60:77)
Smith & Mackey stated that the social setting of the teacher poses problems inherent in using inquiry in the classroom. There are pressures, both real and conceived, that the community places on a teacher. Inquiry can produce unpredictable outcomes, especially if the inquiry deals with a controversial subject. A community, reluctant to accept the values of free inquiry, can place the teacher in a hostile environment in which to function. Thus, a teacher in fear of losing his job, may avoid using any inquiry at all. Another pressure is that the bureaucratic nature of the school may inhibit innovation so the teacher does not dare try using inquiry. The teacher feels a role conflict due to this ambiguous status. Vagueness and ambiguity at the educational institutions have inhibited a professional agreement on a meaningful and precise role for the social studies teacher. Also, there is an absence of inquiry-oriented reference groups which are needed for teachers to identify with. Such groups would be supportive of inquiry and supply a concept of inquiry of greater definitional specificity, help train teachers in the methods of inquiry, and provide communication concerning news and proceedings of inquiry. (63:462, 463)

Inquiry will fail in the classroom unless teachers are aware of the importance of the mode of inquiry and of the necessity to reinforce the process of learning it through constant use. It is very systematized and some teachers are not prepared to use it.
They often try to have the children discuss a subject without being knowledgeable on that subject themselves.

According to Strasser et al., inquiry will not happen in an organized, systematic way in a classroom unless teachers want it to, and unless they have the ability to:

1. recognize the various processes as students use them
2. prescribe and use appropriate teacher behaviors which create conditions for inquiry, facilitate the student's growth, and generate diagnostic data for the teacher
3. identify or create problem-focus situations appropriate to their students
4. subject their teaching to their own continuing professional inquiry. (68:156)

Because inquiry is a different way of teaching from what many teachers are comfortable with, they need to be motivated to at least try it.

Both positive and negative aspects of inquiry have now been presented to give a critical analysis of the inquiry method of teaching social studies. The significant and relevant findings that were revealed in the review of literature pertaining to the inquiry method of teaching social studies in the elementary school are presented in the following chapter.
Chapter 5

SUMMARY

The purpose of this study was to present a critical analysis of the various aspects of inquiry as a strategy for teaching social studies in the elementary grades. The writer undertook this project to gain a more conceptual understanding of the inquiry method. One of the reasons that it is important to know about inquiry is that the new Social Sciences Education Framework for California is an inquiry-conceptual scheme and the new instructional materials are based on using inquiry. The study was done by reviewing the available literature concerning inquiry method that was published from 1960 to 1970. This summary chapter contains the findings that this writer found to be most significant and relevant to making an analysis of inquiry method.

Findings from the Literature about Inquiry Methods

Several authors substantiate the finding that inquiry is not really an innovative method in the educative field. Even though the term "inquiry method" is labeled as a newer way of teaching of the past decade, Socrates, the ancient Greek scholar, used the inquiry approach as he taught by posing questions and invoking inductive
reasoning. Also, fifty years ago, Dewey pioneered the reflective thinking and problem-solving models of inquiry. Other terms somewhat synonymous to inquiry which have been in use for a time are: discovery learning, critical thinking, scientific investigation, inductive thinking, and problems approach. It was a general consensus derived from the writings of Crabtree, Goldmark, Michaelis, Clements, Massialas, and Fenton, that the inquiry method fits best in the social studies area of the curriculum. According to Massialas and Cox, the inquiry-approach in social studies emphasizes the concepts and generalizations which explain the actions of mankind in society, and it incorporates models of search, verification, and invention the learner uses in his quest for dependable knowledge.

Definition. Another finding was that there is no capsule definition of inquiry that was agreed upon by the authorities. Inquiry can be thought of as implying either the intellectual activities of the learners seeking and transforming knowledge or as the instructional conditions created by the teacher. Inquiry is essentially a process of finding out for oneself by asking questions and seeking answers. Beyer referred to inquiry as a series of related acts, deliberate or intuitive, by which one seeks solutions to some problems or for some purpose. It is the application of purpose to data in order to develop useful knowledge. Crabtree defined inquiry as channels of interaction which involves processes of search and critical, reflective thinking.
The processes use skills in defining problems, gathering information, categorizing data, hunching and hypothesizing, specifying criteria, testing, validating, and synthesizing evidence, and applying the conclusion to formulate a generalization. Goldmark stated that social studies inquiry begins when there is a dissatisfaction in a social situation and a need to resolve that problem and ends with a proposed resolution. The inquirer must analyze and evaluate all possible alternatives and select one or reconstruct to build new alternatives.

Values of inquiry. There appeared in the literature many findings as to the value of inquiry. A common claim was that inquiry provides the student with the knowledge and skills to construct his own inquiry schema to use in his future quests for knowledge and in any everyday life situation which might confront him. Another long range goal given was that students, once having learned to use rational inquiry, will as adults be more capable to deal objectively with the affairs of man and society and thus settle problems without conflict. Also, they will participate actively as responsible citizens in a democratic community. Several writers stressed that inquiry increases the ability to exercise effective choice by using critical and rational thinking in decision-making. In today's environment of diversity of cultural alternatives and a plethora of pressures on one's time and money, it is important that decisions be made rationally rather than
impulsively. Kaltsounis also claimed that inquiry prepares children
to function as adults in a complicated society because they will be
more able to understand and accept changes which will lessen the
cultural lag. Other findings of the affective values of inquiry are:
it develops attitudes of open-mindedness, respect for differing views,
objectivity in human relationships and problems; inquiry develops an
analytic view of values and assumptions; and it promotes skepticism
of findings and interpretations.

The findings also indicated the cognitive values of inquiry.
Because the students pursue their own learning, the motivation to
think and learn is increased, and the acquired knowledge is more
meaningful and is retained longer. There is greater transfer value
of learnings because inquiry uses acquired knowledge applied to new
situations. Crabtree stated that the inquiry method provides the
elementary school child a means of ordering his knowledge and
developing his cognitive skills.

Purposes. The findings indicate that inquiry is done in the
classroom for the purposes of: generating knowledge, verifying a
knowledge claim, criticizing value assumptions, or resolving an
observed discrepancy. In everyday life, one engages in inquiry for
the purposes of: finding a solution to a problem, answering a
question, satisfying a curiosity, resolving a value conflict, or
determining the validity of a generalization.
Methods. The major finding was that the choice of which of the variations of inquiry to use will vary according to the purposes of the inquirer, kinds of evidence and resources to work with, and the ability and experience of the inquirer. However, there seemed to be three basic steps in common to all inquiry: forming hypotheses, testing and hypotheses, and drawing conclusions. Fenton, Beyer, and Michaelis each presented a problem-solving model using the following six steps:

1. Recognize a problem (define the task)
2. Formulate hypotheses (a tentative answer)
3. Recognize the logical implications of hypotheses (testing)
4. Gather data (check relevancy and source)
5. Analyze, evaluate, and interpret data (draw a conclusion)
6. Evaluate the hypotheses in light of the data

Goldmark used the same format but added a seventh step of "Inquiry into the Inquiry." It is important to always look for what to study next as that expands inquiry.

The review presented the finding of several models but each model functions to bring together the concepts, related questions, and procedures of study in relationship to the particular discipline it serves. Michaelis presented a range of models for the various disciplines of social studies as well as the phases which are common to all of them. Various authors gave their interpretations of inquiry,
which further substantiates the evidence that there is not "one" method of inquiry but several to use. Strasser et al., explained the "data-theory loop" model as one moves from data to theory to data to theory while inquiring. Data and theory each are a base for the other, create a necessity for the other, function interdependently and thus have a dynamic relationship.

The "Big Question" model (Clements et al.) resembles a mystery fiction in that the large, more or less unanswerable question, is transformed into a series of smaller, more or less answerable, questions. These smaller questions must lead to the solution of the big question. This is especially appropriate for younger or inexperienced inquirers. Inquiry can be done for learning inquiry strategy itself or to learn the specific skills involved as explained in the inquiry-skills approach.

Even when using the inquiry approach to learning, there is a wide variance in the role of teacher-authority, as was demonstrated by the convergent-divergent and the pupil-student models. In the convergent and pupil components, the instructional conditions, resources, and predetermined solution are largely directed by the teacher. At the other end of the scale are the divergent and student approaches which allow for many verifiable and defensible answers and the student perceives learning as his responsibility.
With such a variance in the ways to use inquiry, a teacher has a choice, but should provide opportunities to try each kind and use an intermingling of them for balanced instruction.

Grouping. It was found that inquiry method is suited to a variety of ways of grouping in the classroom. Inquiry may be done with the whole class, smaller groups or committees, teams of two, or an individual working independently. The design of the learning activities, the learning abilities and social maturity of the children, the resources available, the physical facilities, and the personal preference of the teacher are all factors which help determine which group design to use.

Much of the social studies inquiry in elementary school is done as whole class or group design. The group work may then instigate some individual inquiry. The group design employs various strategies to bring together thinking processes, democratic values and behaviors, value conflicts, and techniques of group work. Usually a problem-solving model is used as the class members discuss and share information, delegate responsibilities, clarify concepts, state hypotheses, and formulate generalizations. The values of group work include the following: (1) more productive learning is obtained by tapping the best thinking of class members;
(2) the teacher can direct the attention and activities as needed; and (3) the enthusiasm of some tends to motivate others.

In the individual design, inquiry is pursued independently and with a minimum of communication. This is effective for researching resource material and preparing reports or graphic presentations. The advantages of individual design are: that it provides for individualized instruction and a diversity of interests, and that the pupil becomes responsible for his own learning.

The idea that inquiry is as good for primary children as for the middle grades was supported by the fact that inquiry helps to maintain the natural curiosity of young children. The studies of Piaget and Bruner substantiate the belief that young children can discover and evaluate social concepts, skills, and attitudes as they engage in the processes of inquiry. The problem situation must be "macrocosmic" (within the child's world) and inquiry must be kept more informal.

Supportive Conditions. In the reviews of the literature, it was indicated that there are several elements needed to support inquiry in a classroom. One factor is that there needs to be easy access to a variety of resource materials. The climate of the classroom must be one in which the student feels free to raise questions, is free of the pressures of closure or of being wrong, and dares to create ideas and try them. The role of the teacher changes from being an
authority on the quality of answers to being a moderator and an inquirer also. All findings indicated that the teacher plays an important role in creating a climate for inquiry by the way he structures and directs the process. The teacher needs to have an enthusiastic, active attitude toward inquiry as a desirable and useful strategy. The students, too, must have the requirements of active participation, possession of the intellectual skills necessary to comprehend communication, and a conceptual readiness. They need to be able to rationalize and communicate ideas, and to be open-minded and willing to accept ideas of others.

Resources. There was evidence in the literature that a teacher can use traditional materials in inquiry teaching. To initiate inquiry, materials which present discrepancies in their interpretation and thus cause a problem situation are to be used. The other steps of inquiry, such as data gathering and classifying, can also be done with the available, traditional resources. Many new instructional materials termed as "inquiry materials" are on the market, such as games, springboards, and pamphlets. Teachers can look to all the resources as tools to implement the inquiry lesson but will need to use sound criteria for selecting them, with consideration as to the cost, time expended to use, and relevancy to the lesson.
Findings from the Review of Literature on Inquiry Process.

The findings from Chapter 3 all pertain to aspects of the process of inquiry. The inquiry process is what one does as one inquires. That is not a precise definition because it is not known exactly what the mental operations of the inquirer are. Through observing man's behavior while inquiring it was found that inquiry appears to be a set of acts which include: defining, observing, classifying, interpreting, comparing, contrasting, hypothesizing, generalizing, predicting, analyzing, synthesizing, evaluating, inferring, and communicating. They are not necessarily in this sequence of order, and not all are done in every instance of inquiry.

Suchman and Fenton substantiated the finding that teaching the process of inquiry is important because to achieve greater efficiency as an investigator, one must have the conscious knowledge of how to structure evidence and acquire knowledge. A most effective approach to understanding the inquiry process is to inquire into its various operations. So the teacher must focus attention on the process until the students have reached a proficiency level requisite to be autonomous.

Objectives. It was found that the broad objectives for inquiry are based on attaining competency in the behaviors just listed above as the processes of inquiry. Specific objectives should be developed within the classroom to fit the type and level of inquiry, the
curriculum, and the particular needs of the students. Stating the objectives in behavioral outcomes facilitates the instructional planning, selection of materials, and evaluation.

The objectives should be placed in two categories—sequential and accretive—according to Strasser. The sequential behavior objectives were defined on a progressive series of five levels. The accretive objectives stay the same and are comprised of cognitive and behavioral components.

The objectives can also be identified in four classes as Estvan did for the young child. The categories given were cognitive, effective, psychomotor, and skills. So, the findings include a variety of ways to classify objectives.

**Skills.** The writer found that developing and evaluating certain intellectual skills are essential parts of the inquiry process. The skills that are repeatedly used are the following: (1) collecting evidence and evaluating it for accuracy and relevancy; (2) evaluating sources of information; (3) translating and interpreting data; (4) seeking relationships and drawing conclusions; and (5) structuring meaningful patterns. Other skills which are appropriate to the use of inquiry are acquiring a language capable of ordering and communicating social realities, and acquiring a suppleness of mind that can examine an alien culture.
To evaluate inquiry skills one must observe the inquirer in action as well as judging the end product. Evaluation is necessary to achieve further growth; however, currently there is not a standard instrument for assessing the overall competency in inquiry. The student can be tested for certain skills in isolation but not on how he can apply those skills, which is the proof of his ability to "inquire." One way a teacher can judge this is to make and record observations of the learner while he is engaged in inquiry.

Levels of Inquiry. It was noted that the process of inquiry may be conducted on three levels, but they were described differently by two authors. Goldmark designated the levels of inquiry as follows. The first level is called substantive because it produces a descriptive statement of facts. The second level, criteria, answers the reasons for or criteria for a judgment and produces concepts. The third level examines the values and assumptions underlying the selection of the alternative sets of criteria. This level asks for the reason for the reasons or the assumptions of a law, rule, or principle. This level is seldom encouraged to children because it requires them to examine our basic cultural principles, which they are not prepared to do. It does force one to assume responsibility for the assumptions he uses in making a judgment, and it can result in new principles.
Strasser named the three levels of inquiry behavior as being intuitive, awareness, and functional. The beginner's level is intuitive, which is a phase of trial and error in working without actually knowing the processes being used. At the awareness level, the inquirer is able to identify the processes and strategies he uses. The experienced inquirer works at the functional level where a labeled action is tied to a purpose or function and he can prescribe what strategy to use. In an earlier publication, Strasser divided the levels of functioning on five levels of degree of ability, referring to the highest as being an "autonomous" inquirer.

Questions. Most of the writers stressed that a very significant element of inquiry is the questions, of both the teacher and students. Goldmark gave as a popular concept of inquiry that of asking questions in a search for answers. Those questions are not random as they are located in a system at some particular level of competency, framed in the language of the discourse, and indicate the tools of inquiry needed to seek the answers.

Teachers use questions to initiate inquiry and direct the search, analyze problems, guide their planning, determine the conceptual readiness of pupils, focus attention, and to evaluate competency. Questions need to be carefully planned on the different levels of complexity to insure that the pupils move up on the higher levels of learning. Pupils use questions in all phases of inquiry. Their
questions are crucial because the questions one asks limit what he can discover. Therefore, a central task of inquiry is teaching students what questions are, how to formulate them, and how to search for answers to such questions.

The kinds of questions have been classified by several authorities, but here again, there is a difference of ways. Suchman listed four groups of questions, classified by how they function in inquiry, as: verification, experimentation, necessity, and synthesis. The book by Lippitt et al., contained a glossary of nine most commonly used types of questions: descriptive, comparative, historical, causal, prediction, experimental hypotheses, methodological, value inquiry, and application. Sanders developed a "taxonomy of questions" based on levels of memory, translation, interpretation, application, analysis, synthesis, and evaluation. Jarolimek also classified questions according to Bloom's Taxonomy as having the objectives of recall, comprehension, application, analysis, and synthesis.

Criteria for effective questions should be observed. Some elements of a good questions are precision, clarity, relevance to the matter of study and to the preceding instruction, and suitability to the comprehension ability of the student. The Lippett et al., book proposed the following criteria for a "good" inquiry question: must be answerable by collecting data; must not presuppose the data;
should be aimed at behavior in general rather than at specific individuals; should not produce value judgments unless it is that kind of inquiry. The teacher's response to the pupils' questions is very important to continuing inquiry. Effective questioning improves inquiry and learning, so it is essential that pupils receive instruction in formulating and responding to questions and that teachers strive to devise questions that add dimensions of higher thinking.

Summary of the Review of Literature of the Modes of Inquiry

The findings from the review of literature about modes of inquiry reveal that there are different modes, each with its own function and processes. Determining which mode to use depends somewhat on one's perspective or point of view, the phenomena under concern, the kinds of questions asked, and the language one uses. According to the California framework for social studies, the term "modes of inquiry" is intended to refer to the kinds of intellectual activity appealed to by the teacher's particular assignment. In inquiry, the modes and processes are interrelated with concepts as students investigate human activities in a variety of settings. One mode of study would not be adequate because there is such a wide variety of topics and problems. So there are three highly interrelated modes to deal with the scientific, humanistic, and policy aspects of social studies.
The analytic mode is used for the scientific and generalization side of social studies as students engage in economic, political, spatial, and social analysis. Studies in this mode proceed by a systematic investigation of selected sets of events or settings. The processes used are: (1) make specific observations; (2) collect and classify data; (3) develop definitions for the constructed classes and then check, for reliability; (4) examine, compare and contrast the relationships; (5) draw generalizations; and (6) draw inferences by testing in a new situation. The analytic mode can be used in all disciplines at all grade levels.

The integrative mode is used for the humanistic and particularizing aspects of social studies. It brings together all facets of the investigation of events, individuals, groups, geographic regions, and other special topics. Inquirers look for relationships of parts to the whole. The processes used are defining, comparing, and generalizing. The integrative mode requires a higher learning ability as students integrate and synthesize the things that were clearly differentiated by analysis.

The policy making or valuing mode is used for making decisions or judgments concerning urban, minority, economic, political, or other issues and problems of study. The third mode uses the understandings gained from the analytic and integrative modes in a problem solving approach. The processes of generalizing and
inferring are emphasized as the students define problems, deduce alternative solutions, and make rational decisions about the alternatives. A goal of the valuing mode is to help individuals realize that choices ought to be made as a result of self-conscious reasoning power.

These three modes are useful in everyday life also. One uses the analytic mode to make generalizations about vacations, shopping, voting, recreation and other activities after examining the various factors of the event. The integrative mode is used when one wishes to recreate a particular happening or situation. One uses the policy mode to make a decision about such activities as shopping, vacationing, and voting. These three modes should be used interrelatedly to provide balanced instruction in the inquiry skills.

Estvan arranged the six categories of modes of inquiry in ascending order of complexity of process and control of variables. The name of each is descriptive of the method it uses; these six categories are listed in this order: library, historical, descriptive, experimental, problem-solving, and normative. Many kinds of learning experiences must be provided in each mode.

Major criticisms. Everything said so far has been on the positive side of inquiry. However, the reviews of the literature did reveal some negative findings too. There were some authorities who criticized inquiry and some of the advocates warned of the
limitations, disadvantages, and problems of inquiry. Many said that, at present, the research does not verify the claim that inquiry is a more effective teaching method than other methods. Ausubel objected to inquiry on the grounds that: it is costly and often wastes time on subject matter which could be presented in a short time by the teacher; it does not always produce meaningful discovery; it ignores the substantive content of a discipline; and there is not enough transfer of learning. He also stated that inquiry can end up in chaos in a classroom and, thus, no learning at all takes place. In other words, he objected to inquiry on the grounds that it has unwarranted assumptions, overstated claims, and inadequately tested propositions. Some writers showed great concern that inquiry is allowed in the public schools because inquiry leads the students to examine and question our beliefs, values, and public matters which then subjects them to change.

There are some limitations to the use of inquiry, since not all children benefit from the inquiry method. An impulsive child wants immediate answers and closure and so does better with the expository method. Some elementary children are not mature or socially experienced enough to engage in a long-term problem study of national life. The learner using inquiry must be an active participant and some students just do not have the intrinsic motivation. Inquiry is one way, not the only way, of learning, so it is not the best to use
for all learning objectives. It is not suited to covering large amounts of material in a short time.

Many teachers are not willing to use inquiry in their classrooms, or they may not have had the training necessary to feel secure in using inquiry. It does require more time, effort, dedication, and knowledge on the part of the teacher. The social setting of the teacher poses problems and pressures inherent in using inquiry.

A rather obvious finding is the finale: inquiry as a systematic, organized, effective teaching method does not just happen; it takes the willingness, intelligence, and effort of a creative teacher.
CONCLUSIONS AND RECOMMENDATIONS

This chapter contains the conclusions reached and recommendations made by the writer about inquiry as a method of teaching social studies in the elementary school. The conclusions are based on the significant findings from her reviews of the literature.

Conclusions

The writer offers the following as conclusions arrived at from the findings on inquiry method:

1. Inquiry as a method of teaching has gained popularity during the past few years but is not really an innovation.

2. Inquiry method is suitable for use in the social studies curriculum of both elementary and secondary schools.

3. There is not a precise, specific definition of inquiry. Even the advocating authorities have not come to an agreement of definition.

4. Inquiry can imply either the intellectual activities of the learner or the instructional conditions created by the teacher.

5. There are other terms which have meanings similar but not synonymous to the inquiry method of teaching such as problem-solving approach, reflective thinking, critical thinking, scientific investigation, and discovery learning.

6. Each of the following can define inquiry:
   a. finding out for oneself
b. asking questions in search of information

c. a series of acts, either deliberate or intuitive, one does in seeking solutions to a problem or for some other purpose

d. the interaction of the processes of search and critical, reflective thinking.

7. The general pattern of the series of acts which comprise inquiry are:

- a. define a problem
- b. hypothesize a tentative answer
- c. gather information
- d. categorize the data
- e. test, validate, and synthesize the data
- f. draw conclusions
- g. apply the conclusions to formulate a generalization.

8. There are many claims made of the importance of using inquiry methods of teaching, some of which are held as tentative conclusions until further research can validate the presuppositions.

9. Inquiry can provide a student with the knowledge and skills to construct his own scheme for learning, problem solving, making effective choices, and for rational decision making.

10. Inquiry can help develop attitudes of tolerance, open-mindedness, respect for others, skepticism of interpretations of events, and analyzing values and assumptions.

11. As the pupils participate actively in inquiry, it helps to combat boredom in school, increases motivation, and the acquired knowledge is retained longer and is more meaningful.

12. Inquiry is done for definite purposes in school and in everyday life.

13. Inquiry is systematic; it does not mean a "free-wheeling" classroom.

14. Inquiry develops responsibility for knowledge as it requires the decision or solution to be defended.
15. An important aspect of inquiry is to look for what to study next as that is how inquiry continues and expands.

16. The teacher has a choice of a wide range of instructional techniques when using inquiry, as many models are given. Inquiry can function differently in different classrooms.

17. The variables to consider when determining which method of inquiry to use are: the learning task, the teacher's purposes, the ability of the pupils, and the resources available.

18. In all models of inquiry, data and theory are dependent on each other.

19. There is a wide range in the degree of teacher-authority role even in inquiry.

20. Inquiry can be done by individuals, by pairs of students, by committees, or by large groups.

21. Inquiry is effective for young children with careful guidance by the teacher, with a macrocosmic problem being used.

22. Inquiry engages elementary school children at a higher level of cognitive functioning than it has been assumed they could do.

23. For inquiry to really function in the classroom the pupil must have the freedom: to raise questions, to respond with ideas without the threat of "being wrong," to not be required to achieve closure, and to try new ideas.

24. The teacher plays a very important role in inquiry with his own attitudes and abilities. The teacher displays an attitude of being an inquirer, too.

25. The inquirer, the student, must be capable of comprehending communications and have a conceptual readiness.

26. The standard textbooks and learning materials in a classroom can be used to implement inquiry.
27. There are so many "inquiry-based" materials available now that it is the job of the teacher to inquire into them with consideration to cost, the time and effort involved, and relevancy to the lesson.

The writer submits the following conclusions based on the findings about inquiry process:

1. A precise definition of inquiry process is difficult because it is not known exactly what one does as one inquires.

2. Inquiry process does appear to be (from observing the behaviors of inquirers) a set of acts of defining, observing, classifying, interpreting, comparing, contrasting, hypothesizing, generalizing, predicting, analyzing, synthesizing, evaluating, inferring, and communicating.

3. Although much of the process is often done intuitively, one can achieve greater efficiency by being conscious of the process.

4. Broad objectives for the inquiry process are skill and competence in the activities of the process as listed in #2 above.

5. The teacher will develop specific objectives within the classroom to fit the type of inquiry and the needs of the student.

6. Stating the objectives as behavior outcomes facilitates the planning, selection of materials, and evaluation.

7. Developing and evaluating certain intellectual skills are essential to the inquiry process.

8. Skills which are necessary to the process of inquiry are:
   a. collecting evidence and evaluating it for accuracy and relevancy
   b. evaluating sources of information
   c. translating and interpreting data
   d. seeking relationships and drawing conclusions
   e. structuring meaningful patterns
f. using language capable of ordering and communicating social realities

g. acquiring a suppleness of mind to examine an alien culture.

9. One way a teacher can assess competency in the skills of inquiry is to make and record observations of the student as he inquires.

10. There are discrepancies in the findings about "levels" of inquiry, as Goldmark determined three levels based on the type of information the questions sought, and Strasser denoted three levels of inquiry based on the ability to inquire.

11. Questions, used by both the teacher and student, are an essential element of inquiry as inquiry is based on the asking of questions.

12. A main task of inquiry is to sharpen the pupil's ability to translate what he wants to know into a question and to search for the answer.

13. Inquiry promotes the use of questions of higher cognitive level instead of so many of the recall type.

14. Questions can be classified as to the type of answer and level of thinking needed to answer them.

The following conclusions are drawn from the findings on the modes of inquiry:

1. There are modes of inquiry based on the function of the process, the kinds of questions asked, and the phenomena being concerned.

2. In social studies inquiry, the modes and processes are interrelated with concepts as students investigate human activities in a variety of settings.

3. The term "mode" of inquiry refers to the type of intellectual activity appealed to by the particular presentation. This term is similar to Goldmark's term "levels" of inquiry.
4. Three modes are needed to deal with the scientific, humanistic, and policy or judgment aspects of social studies. The three modes are highly related and are used in everyday life as well as in social studies.

5. Practice in the use of all three modes provides balanced instruction in the inquiry skills.

6. There is not sufficient research as yet to verify all the claims of the effectiveness of inquiry. Most of the enthusiastic raves are made by the advocates of inquiry.

7. Inquiry is not always suited to every pupil or to every learning objective.

8. There are many pressures which inhibit some teachers from even trying to use inquiry method.

9. Inquiry requires more time, effort, knowledge, and dedication on the part of the teacher than traditional teaching does.

10. Inquiry as an effective method of teaching does not just happen in a classroom; it is the responsibility of the teacher.

Recommendations

As a result of making a study of the inquiry method of teaching social studies, the writer proposes the following recommendations:

1. A teacher should use some caution and critical thinking when assessing the glowing reports of the effectiveness of the inquiry method.

2. There should be further research to validate the claims that inquiry:
   a. prepares students to become responsible and active citizens of a democratic community.
   b. gives more meaning to and greater retention of knowledge.
c. assures the use of rational decision making over the making of impulsive decisions in everyday life.

d. assumes that an individual will stay objective in his relations with others when his own values and concepts are being intruded upon.

3. Teachers should develop their own understanding and skills with regard to the meaning and implications of inquiry.

4. There should be more specific training for teachers on how to use inquiry in both the teacher-training institutions and in-service education programs for teachers.

5. To develop the skills of using inquiry method, the teacher should practice it and use patience, persistence, and reflection.

6. Teachers should have as a goal the producing of autonomous, life-long inquirers. To do this, the teacher must design lessons to give the students practice in inquiry, not just talk about it.

7. Teachers should inquire into the various ways to use inquiry and adopt the method best suited to their own class and purposes.

8. The teacher should designate the desired inquiry skills in terms of behavioral objectives.

9. To promote inquiry in the classroom the teacher should:

- avoid pronouncing judgment on the answers a pupil gives
- let the child come to grips with the problem event in his own terms
- present a situation within the child's world
- encourage active participation
- develop a feeling of mutual respect and trust
- have an open-minded point of view about knowledge and allow the children to have it too
- relinquish the role of authority about knowledge, become an inquirer also
- guide but not dictate the children's thinking
- help pupils apply their learning to new situations
- always be conscious of what to study next
- try to develop the ability of students to use both the cognitive and intuitive or creative skills in using inquiry

10. The teacher should inquire into the available traditional materials as well as into the newer materials for learning resources.

11. The teacher should use sound criteria when selecting new materials and evaluate it as to cost, time and effort involved in using, and effectiveness to the curriculum.

12. Instruments or devices to evaluate growth in inquiry competency should be designed.

13. Teachers should be more conscious of devising questions which promote the higher levels of cognitive functioning and not use so many recall type of questions.

14. Students should be given instruction in defining questions, how to ask them, and how to search for the answers.

15. To promote a balanced instruction in inquiry, the teacher should present lessons which will use each of the modes, processes, and methods of inquiry.

16. A teacher should inquire into the many different methods of teaching and select the one to use which best implements the curriculum and facilitates the learning process. The effectiveness of the methods and their use must be investigated.
17. For children to gain skill in all aspects of inquiry, they must have practice, so the teacher should provide sufficient opportunities for the children to practice inquiry. They "learn by doing" or as the appropriate cliche states:

   I hear and forget,
   See and remember,
   Do and understand.  (unknown)

A major societal goal for public education is the development of the autonomous individual, and using the inquiry method in the classroom should promote life-long and self-directed learning. This is not so new either, if one reflects on the observations of Thring (1821-1887) when he stated:

   Pouring our knowledge is not teaching.
   Hearing lessons is not teaching.
   Hammering a task is not teaching.
   No mere applying of knowledge is teaching.

Teaching is getting at heart and mind, so that the learner begins to value learning, and to believe learning possible in his own case. (28:T-38)
BIBLIOGRAPHY
BIBLIOGRAPHY

Books


Periodicals


Other Sources


CHARTS FOR CLASSROOM USE *

SELECTING INFORMATION

Is it related to the problem?

Can it be used to support or reject proposed solution?

Is it information that we do not have?

Does it explain new terms?

Does it help to clear up ideas?

CHECKING INFORMATION

Check one source against another.

Check facts and figures by comparing notes with the original reference.

Compare ideas presented in films and in books.

Read it a second time if doubt exists about what was said.

APPRAISING SOURCES OF IDEAS

Is it related to the topic?

Is it recent enough for our purpose?

Is it reliable? Valid?

Is it published by a special interest group?

JUDGING FACTS AND OPINIONS

Is it related to our questions?

Is the source reliable?

Is it consistent with related ideas?

Is it supported by evidence?

APPRAISING TALKS AND REPORTS

Is the title descriptive of the topic?

Does the introduction set the stage?

Are the ideas in good order?

Are main ideas supported by facts?
Does it contain enough information? Is it too general to be useful? Are opinions distinguished from facts?

Can it be checked against reliable sources? Is it advanced for a worthy cause? Do conclusions tie ideas together?

LOOK OUT FOR THESE ERRORS IN THINKING

- Mixing up the real and fanciful.
- Believing that there is only one way to do it.
- Thinking that one example "proves the rule."
- Confusing facts and opinions.
- Believing that one thing caused another because they happened together.
- Letting our feelings hide some of the facts.

Can you find others?

DID YOU REMEMBER TO DO EACH OF THESE?

- Get facts on all sides of the question.
- Check facts from different sources.
- Summarize information so that it is clear and easy to use.
- Check the meaning of terms and phrases that are not clear.
- Compare your findings with others.
- Make tentative conclusions that can be checked.

Specific Accretive Objectives: *

Behavioral Component - Operations Level

1.0 Distinguishes between:

1.1 data
1.2 theory
1.3 explanation
1.4 inference
1.5 property
1.6 condition
1.7 object
1.8 event
1.9 consequential variables
1.10 hypothesis

2.0 Is becoming more precise in the formulation and communication of

2.1 data verification (questions - operations)
2.2 experiment (questions - operations)
2.3 necessity questions and statements
2.4 synthesis questions and statements
2.5 theories, hypotheses, and explanations
2.6 strategies
3.0 Recognizes a difference between "hard" data, which is a product of verification or experimentation, and "soft" data, which is founded solely on interpretation, extrapolation, or assumption.

4.0 Draws inferences from the data available.

5.0 Formulates theories he feels will be useful in building explanations for observed events and in predicting yet unobserved events.

6.0 Applies existing theories in deriving explanations for observed events.

7.0 Appraises the usefulness of a theory through:
   7.1 validating assumptions inherent in the statement of a theory where possible
   7.2 utility: "Does it make the event more meaningful to you?"
     "Are you able to use it to explain all aspects of the event?"
     "Can you predict with accuracy?"
   7.3 generating hypotheses and designing experiments to gather data. (Uses theories as a base for experimental design.)

8.0 Identifies:
   8.1 limitations of data, ideas, and ways of working
   8.2 assumptions inherent in a theory
   8.3 problems for exploration

9.0 Is able to "step back" from the problem at hand in order to consider how he has worked, how he is working, and other ways he may work.

10.0 Revises or discards his theories in the light of reliable new data, or more precise data to the contrary.
Cognitive Component - Awareness Level

1.0 About Inquiry: He is becoming more aware that

1.1 in the inquiry session, a "no" response is useful datum

1.2 the development of strategies is productive in
   - devising more useful explanations
   - devising yet more productive strategies
   - others

1.3 the conscious use of strategies is a more productive mode of inquiring - as compared to randomized questioning

1.4 experiment and verification operations are a means to gather data

2.0 About Theory: He is becoming more aware that

2.1 a theory is an invented idea—a product of one's imagination and understanding

2.2 data interpretation is the link between an observed event and ideas about it

2.3 theories give rise to experiments and verification operations

2.4 theories may serve as a basis for explanations

2.5 a theory which may not fit all of the known facts may be useful, as long as it fits the facts and events better than any other idea or theory understood at the time

2.6 even poor theories may provide a basis for gathering data, which, in turn, may fill gaps in one's knowledge and lead to the development of a more powerful theory
2.7 more useful theories unite a greater number of facts and/or more divergent events with greater depth of meaning, precision, and accuracy

2.8 theories which are no longer useful may be discarded or modified—relative to the specific situation in which they were used

## THE MODES OF LEARNING AND PROCESSES OF INVESTIGATION:

A SUMMARY LISTING *

<table>
<thead>
<tr>
<th><strong>Analysis</strong></th>
<th><strong>Integration</strong></th>
</tr>
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| 1. Observation: selective  
1a. Objects/behavioral patterns  
1b. Direct/mediated  
1c. Measurement: number/extension/duration; relative/absolute | 1. Observation: comprehensive  
1a. Objects/behavioral patterns  
1b. Direct/mediated  
1c. Measurement: number/extension/duration; relative/absolute |
| 2. Classification: constructed classes  
2a. By physical properties/patterns of behavior | 2. Classification: observed classes  
2a. By physical properties/patterns of behavior |
| 3. Definition: behavioral | 3. Definition: refined |
| 4. Contrast  
4a. Identities and differences of observed phenomena | 4. Comparison  
4a. Similarities and differences of observed phenomena  
4b. With one's own experience |
| 5. Generalization  
5a. Interpretation of data  
5b. Generating hypotheses  
5c. Testing hypotheses  
5d. Using models  
5e. Making predictions | 5. Cultural and Historical Integration  
5a. Interpretation of data |
6. Inference

7. Communication
   7a. Using appropriate language
   7b. Translating from one language to another

Valuing

1. Defining the problem
2. Identifying, examining and refining relevant values and information
3. Generating trial solutions
4. Testing solutions
5. Deciding
6. Communication