

THE UNIVERSITY OF MANITOBA

THE EFFECT OF TRAINING IN QUESTION
ANALYSIS AND IDENTIFICATION ON
STUDENTS SUBSEQUENT QUESTIONING BEHAVIOR

BY

JOHN SILVESTRO CONCI

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ABSTRACT

This study investigated the effects teaching grade three students questioning strategies would have on their question asking skills, on their understanding of social studies content, and on their attitude toward social studies.

A population of 55 grade three students were randomly placed into one of the two control groups or into one of the two experimental groups. The instructional content and activities were taught by two instructors. Each instructor taught one of the control groups and one of the experimental groups. Only students in the experimental groups were taught questioning strategies. They also received instruction in Community History which was taught to students in the control groups. The teacher directed questioning strategies included materials and activities which modeled high and low order questions for students to identify, classify, and formulate. The definitions of high and low order questions, including criteria to identify and formulate these kind of questions was governed by a question taxonomy developed for this purpose.

Pre-tests and post-tests were employed to measure differences in question asking skills and attitudes between the control group and the experimental group. During each questioning test the students were encouraged to ask questions about slides depicting scenes from their

ABSTRACT CONTINUED

community's past. Student questions were recorded and classified. A five point Likert scale with labels strongly agree, agree, not sure, disagree, and strongly disagree were used to measure student attitudes toward 20 statements. The achievement test on Community History completed by all students at the end of this unit of study was used to measure differences in achievement between the experimental and control group.

The results of the study indicated that students in the experimental group did not ask more questions, including high order questions than students in the control group. However, students in the experimental group asked a greater percentage of high order questions than did the control group, and correspondingly, a significantly lower percentage of low order questions. Students in the experimental group did not score higher on the achievement test than the control group. Training in questioning strategies also did not improve student attitudes toward social studies.

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CHAPTER ONE

INTRODUCTION

The educational system of the Province of Manitoba is presently experiencing the development and implementation of new curricula. These curricula, influenced by recent trends in educational philosophy and psychology, are designed to actively involve students in their own learning. One of the primary assumptions of these new curricula is that such active involvement will encourage critical thinking, promote the understanding and application of subject content, and lead to the development of quality cognitive skills. The new curricula further assumes that attainment of these educational objectives will be enhanced by educational environments which encourage student questioning. This thinking is typical of many researchers and educators (Batson, 1981; Clegg, 1970; Cohen, 1983; Gall, 1970; Hyman, 1980; Marksberry, 1973; Smith, 1981). They believe student cognitive processes and comprehension skills are enhanced through active participation by asking questions. They also contend that by encouraging students to ask questions and instructing them in questioning strategies teachers can improve student question asking skills.

Importance of Student Questioning Behavior

Examination of the literature suggests that there are many beneficial outcomes associated with student questioning. Postman and Weingartner (1969) argue that questioning is an important vehicle for helping students to

learn since knowledge is achieved in response to questions. Another contention is that students can use questions to interpret and develop conclusions about topics being examined or puzzling circumstances (Marksberry, 1978; Zahorik, 1971). More specifically, the current literature emphasizes the importance of student questioning in developing cognitive skills and improving knowledge and comprehension. These latter functions of questioning will be further addressed in the following discussion.

Developing Cognitive Skills

Taba (1965) argues that questioning is an important vehicle in the development of cognitive skills. Her position is that "the concept of thinking can only be learned by doing" (p. 534). This process can be promoted by encouraging students to ask questions, especially high order questions. She argues that by formulating high order questions students can develop and acquire skills in each of three important cognitive tasks.

These cognitive tasks which are both teachable and learnable, include formation of concepts, interpretation of data and inference, and application of principles. These can be further subdivided into specific skills. In formation of concepts the cognitive skills are enumerating, listing, grouping and labeling. The cognitive task of interpretation of data and inference consists of developing generalizations and principles from an analysis of concrete

data. This task also contains several sub-processes which include identifying specific points in data, explaining specific items or events, and forming inferences which go beyond that which is directly given. Finally in the third cognitive task of application of principles known reasons and facts are applied to explain new phenomena or predict consequences from known conditions. Predicting, hypothesizing and then formulating logical explanations are three different operations which this task requires.

According to Taba (1965) these three cognitive tasks can be learned and developed through questioning. First she contends that thinking skills develop from student interactions with their environment. The role of student questions is stressed here because they can become an important vehicle students may utilize in actively acquiring information and developing cognitive skills as they interact with their environment. Therefore it would appear that student questions are very important in assisting student learning both in and out of school.

Secondly, Taba argues that cognitive tasks are developed and mastered in a sequential order. According to her "each cognitive skill develops from the previous cognitive level which is a prerequisite for the success in mastering the next one" (p. 536). Questioning plays a role here since, as students search for information, their questions may progress from recall to interpretation to

analysis questions and so on until the response they are searching for is obtained. This progression usually begins with a recall question and moves up the hierarchical categories to high order questions. Cognitive skills, it is argued, are developed as students move through this sequential ordering of questions.

Finally, Taba states that this sequential ordering of thought processes is sometimes interrupted to accommodate the acquisition of information which requires the use of a cognitive skill that does not follow the normal sequential pattern. Students can make this leap beyond the existing conceptual framework when their questions have a specific purpose that cannot be accommodated effectively by sequential questioning. This process puts students in charge of their knowledge acquisition since they can directly ask for the information they need and are ready for. This argument supports the development of higher order questioning ability through which students can pursue the knowledge they require.

The process described here, it is argued, will develop as students raise high order questions which relate to the three cognitive tasks described by Taba. The student cognitive skills developed will depend on the progression of high order questions they ask or specific high order questions they formulate for each of their inquiries. Therefore, by providing students with an understanding of

high order questions teachers will provide students with an important vehicle for developing their cognitive skills.

Improving Knowledge and Comprehension

Student questions also have ramifications for their acquisition of knowledge and comprehension. Many researchers, (Cohen, 1983; Guzak, 1967; Manzo, 1969; Ortiz, 1977; Smith, 1981), provide evidence which demonstrates that teaching students to ask questions improves their comprehension of reading materials. Raphael and Gavelek (1984) argue that questioning facilitates the use of comprehension monitoring/fostering activities which in turn expand comprehension. The significance of this process is that the students, through their questions or sequences of questions, are in control of the information they are seeking. However, this purpose may be limited by the kind of questions they are capable of formulating since, according to Smith (1976), "comprehension is directly related to cognitive levels of questions" (p. 3). Thus, the ability to ask high order questions provides students with the advantage of being able to obtain a broader range of information as well as developing an understanding of content beyond simply recalling facts.

The theoretical positions developed (Raphael and Gavelek, 1984; Smith, 1981; Taba, 1965), support the idea that students' ability to formulate high order questions is an important vehicle for comprehension. The works of the

authors cited here strongly suggest that by formulating high order questions student comprehension is extended to include opinions, evaluations, judgements, predictions, comparisons and causes of specific ideas or circumstances which affect the world's population and its environment. The explanations students receive from their high order inquiries will enable them to gather information and form their own personal knowledge, interpretations and values based on their comprehension of the responses to their questions. Through the use of high order questions, students can control the kind of information or knowledge they want to acquire from the numerous sources of information available to them.

Statement of the Problem

In spite of the educational importance of student questions most observational studies carried out in classrooms suggest that there is a low frequency of student questions, and that many of the questions students ask are of the lower order requiring the respondent to recall facts or information.

Floyd (1960) observed the questioning practices of primary pupils and teachers. He found the frequency of student questions was as low as 3.75%, 5.14%, and 3.64% of the total number of questions in primary classrooms during a school day. In elementary social studies classes, Dohl (1966) found that of 43,531 behavior incidents only 728 were student questions. Suskind (1969) found an average of two

student questions were asked every half hour in elementary social studies classes.

Such observational studies also suggest that students do not usually pose effective or thought provoking questions with the potential to develop cognitive processes and learning skills. Several researchers (McLean, 1980; Taba, 1965), report that most student questions relate either to procedures, materials, and assignments, or the clarification of previously presented material or content.

Given the theoretical arguments (Cohen, 1983; Hyman, 1980; Raphael and Gavelek, 1984; Smith, 1981; Taba, 1965), regarding the role of student questioning in developing cognitive skills and enhancing comprehension of subject matter, these studies present a problematic situation. An obvious conclusion is that educators should help students become competent and effective questioners (Cohen, 1983; Marksberry, 1979; McLean, 1984; Sadker and Cooper, 1974). These researchers suggest that students need to be taught questioning strategies, encouraged to question, and provided with opportunities to practice and develop this skill.

The problem investigated by this study is outlined by a series of questions which are:

Will teaching elementary students questioning strategies using a modeling approach supported by worksheets;

1) increase the number of questions they ask?

- 2) increase the number of high order questions they ask?
- 3) increase the number of low order questions they ask?
- 4) increase the proportion of high order questions they ask?
- 5) decrease the proportion of high order questions they ask?
- 6) improve their achievement of social studies content?
- 7) improve their enjoyment toward social studies?
- 8) improve their perception of the importance of social studies?
- 9) improve their attitude toward the opportunity to participate in social studies?
- 10) improve their attitude toward the degree of difficulty of social studies?
- 11) improve their overall attitude toward social studies?

The instructional approach employed involved grade three students in questioning strategies which included teacher modeling, group discussions, and worksheet activities.

Limitations

Several factors may have limited the results of this study. Firstly, the tests of questioning behavior, achievement, and attitude were constructed by the researcher. Although they were modeled from tests used by other researchers they may be considered as limiting factors. The questioning pre-test and post-test sessions were under the direct control of the investigator and may

have been unconsciously biased. The investigator was also one of the instructors in the study. There was, however, an attempt to compensate for this by having the investigator teach one each of the control and experimental groups while a colleague taught the other experimental and control groups. The length of the study was short term, lasting approximately three weeks. The generalizability of the results of the study are limited by the type of student this study addressed. These grade three students were from middle to moderately high income families. Further, the methodology employed in presenting the social studies oriented questioning materials did not utilize a variety of activities. This approach which basically required students to identify, classify, and formulate questions may have limited their ability in learning to ask high order questions.

Definition of Terms

The following are definitions for terms used in this study:

Achievement is the ability to remember the content of a specific unit of study.

Attitude can be described as orientations to a subject, favourable or unfavourable that matter to an individual.

Comprehension monitoring/fostering are the readers' expectations or hypotheses about the content of

the material to be encountered.

High order Questions are those questions which have a number of purposes and possible answers. They are concerned with interpretation, extrapolation, application, analysis, synthesis, and evaluation.

Low order Questions are those questions which require the respondents to recall knowledge or translate information into their own words. They have specific answers which are the same for everyone.

Question Training Strategies are those activities designed to develop an individual's understanding of the functions and purposes of questioning as well as interpretations of various types of questions.

Plan of the Thesis

Chapter one has developed an argument for the importance of attempting to increase the number of questions students ask including higher order questions. Chapter two contains a summary of the literature relevant to this problem. Chapter three describes the design of the study, the question taxonomy implemented, the training activities and procedures, and the test instruments that were used. Chapter four presents an analysis of the results. The summary, conclusions, and recommendations for further research are presented in Chapter five.

CHAPTER TWO

REVIEW OF THE LITERATURE

The important function of student questions in developing cognitive skills and enhancing student comprehension seems to be ignored by most educators. This statement is justified by the evidence which shows that during classroom interactions most students do not ask many questions, particularly high order questions. Researchers' accounts of student questioning behavior and its causes is expanded upon in this chapter. A review of the various methods that have been employed by researchers designed to promote and improve student question asking skills is also presented.

Factors Responsible for Student Questioning Patterns

Several factors, both individually and together, are responsible for the paucity of student questioning skills. These factors, which are described below, include teacher domination of classroom verbal activity and the kind of questions teachers ask.

Teacher Domination of Classroom Talk

One of the most influential elements hindering student questioning skills is the teacher's control of classroom interaction. Most research states that student questions are hindered and unintentionally discouraged because most classroom discourse is dominated by teacher talk. Flanders (1960) presents empirical evidence in support of this

fact. His observations of verbal and non-verbal interactions in the classroom show that two-thirds of classroom talk is dominated by the teacher. Bellack's (1965) observation of the verbal activity of grade 11 teachers and pupils showed that teachers were considerably more active than pupils in the amount of verbal activity that took place in the classroom. He found that teachers talked approximately three times more than students. These two studies suggest that students generally have little opportunity to talk or even ask questions during classroom discourse.

Type of Teacher Questions

Observational studies indicate that, while they are dominating classroom talk, teachers ask a large number of questions which focus primarily on the recall of facts or information.

Floyd (1960) observed and recorded the questions of 40 primary classroom teachers and pupils. He found that from an average of 348 questions asked during a school day, 42% of the questions requested specific facts while only 20% of the questions called for thoughtful responses from the children.

Similar high percentages of fact questions were found in two studies by Susskind. In 1969 he observed nine classrooms from grades three, four and five during six, 30 minute periods. The findings of this study showed that

teachers asked an incredibly large number of questions which were predominately low order. In 1979 he observed 32 classrooms from grades three to six during 40 minute social studies classes and found teachers asked a much higher proportion of questions than the students.

Only ten per cent of teacher questions recorded by Dodl's (1966) observations of fourteen elementary classrooms during social studies instruction were identified as searching for information in a hypothesized direction, while most of the other questions were basically information seeking.

In another study conducted at the elementary level, Guzak (1968) observed four grade two, four grade four, and four grade six teachers in order to find out what kind of questions teachers asked and what questioning strategies they utilized during reading lessons. Each teacher was observed for approximately five hours over a three day period with observations being tape recorded and transferred to written protocols for analysis. He found that almost 80% of teacher questions required the recall of facts.

According to Gall's review (1970) of the research, the findings of teacher questioning practices are fairly consistent. She concludes that about 60% of teacher questions require students to recall facts; about 20% require students to think; and the remaining 20% are procedural.

A survey of research conducted by Hoetker and Ahlbrand (1969) found that for decades teachers have been generally formulating low level questions.

Hare and Pulliam's (1980) observation of 35 elementary school teachers, in grades one to five also show that teachers ask a high percentage of recall questions.

The instructional objectives of many educators are somewhat dictated by the large proportion of low order questions which seem to stress memory and convergence (Durkin, 1979; Floyd, 1970; Huenecke, 1973). An observational study of grades three through six social studies classes led Durkin (1979) to conclude that teacher questions were directed at acquiring the right responses from their students. This pattern, although not desirable, is typical of most questions in readers, content area books, and teacher manuals which are also generally low order, stressing memory and convergence.

Banton (1978) analyzed a sample of 1,050 questions from 75 readers in grades one to six. The results showed that 75% of the questions required low level thinking, were short, and requested factual answers.

It is obvious that teachers' large number of low order questions definitely do not encourage or give students the opportunity to ask questions. What many researchers (Rosenthal, 1972; Smith, 1981; Susskind, 1979) consistently state is that if teachers want their students to ask higher

order questions they should become aware of their questioning patterns and ask a large portion of high order questions. They believe students ask the kind of questions their teachers ask.

Other Factors

Additional factors responsible for hindering student question asking skills include "wait time", the classroom environment, and the personal characteristics of the learner.

Rowe's study on "wait time" which attempted to determine the effect of increasing the time teachers wait for students to respond to a question, found that only one second lapses between the end of a question and the next verbal interaction. "She comments on the ineffective questioning practices of teachers, which, because of this limited reaction time, gives students little time to think or express themselves more productively" (Rowe, 1969, p. 11).

Most schools inadvertently discourage active questioning by the students (Dodl, 1966; Susskind, 1979). The atmosphere and learning conditions during classroom discourse are not conducive to student questioning. This seems to influence students in limiting their inquiries even though they do not understand a concept or would like further verification on a topic.

One final observation worth mentioning is the influence

of students' personal characteristics on their questioning skills. Students often do not ask questions because they are shy and have a poor self concept, or because the material to be learned does not interest them (Dillon, 1981; Siefert, 1980).

In general most students encounter some sort of barrier to question asking behavior. The end result is that most students reach maturity with few skills and limited experience in posing questions. This raises the question of how to improve student question asking skills. The literature points to guidance, training, and the opportunity to ask questions. These three points are described below.

Research on Strategies to Improve Student Question Asking Skills

The major understanding arising out of the literature with respect to the development of student question asking skills suggests there are two facts generally responsible for its present state. The passive, non-inquisitive student and the domineering teacher. Training, practice, and awareness of questioning skills on the part of teachers and students provide the means for developing active and efficient student questioners (Hunkins, 1976; Hyman, 1980; Manzo, 1969; Piercey, 1971; Zahorik, 1971). Experimental evidence shows that students can be trained and influenced to improve the number of questions they ask, including high order questions. The following review of research on

altering questioning behavior encompasses studies which attempted to improve both the number and kind of questions elementary students ask. The studies reviewed deal with modeling, responding to student questions, problem-solving, micro-teaching, cognitive development, and self-generated comprehension questions.

Modeling

Rosenthal, Zimmerman, and Durning (1970) report improvement in the questioning activity of sixth grade, primarily Mexican-American children from economically disadvantaged homes. These students observed a role model raise questions about twelve stimulus pictures. Separate groups of students observed the model create questions based; a) on nominal or physical properties or stimulus objects, b) on functional uses to which the stimuli might be put, c) on abstract relations concerning the stimuli, or d) on judgements of value or preference regarding the stimuli. All groups learned and applied the model's questioning pattern and generalized them to new stimulus pictures. The students followed the model's stylistic criteria in formulating questions.

In another study of similar design Rosenthal and Zimmerman (1972) found that grade three students exposed to explicit questioning instruction asked more appropriate questions than those who received less direction in learning

the model's way of asking questions. Sixty-four girls and 64 boys drawn randomly from two schools were then randomly assigned to experimental and control groups consisting of eight boys and eight girls with the constraint that proportions from either school be comparable. The stimuli were similar to the one used in the previous study but different pictures were used. The first set of pictures which were displayed to all children was the vehicle for the model's questions. The two groups were given either implicit or explicit instructions to imitate the model's questioning pattern. A second set of pictures was presented to all children to assess the generalizations of questions formulated. The results favoured the group receiving explicit instructions in modeling the model's questions.

Susskind (1979) attempted to foster children's competency in question-asking by providing training in questioning to their teachers. He hypothesized that the rates of student questions would be strongly influenced by teacher patterns of questioning. The study contained three phases; observation, interview, and interview and evaluation. In phase one the types of statements made by teachers were recorded in 32 classrooms from grades three through six during 40 minute sessions. Teachers opinions about question asking in the classroom were gathered in the second phase. In the third phase six teachers participated in a two month, one hour a week, seminar called Developing

Curiosity and Creative Thinking in the Classroom. This seminar was intended to improve teacher patterns of questioning and thereby increase student initiation of questions. The participants were then observed during four 40 minute, post-seminar observations. The results obtained from these observation sessions correlated significantly with Susskind's hypothesis.

A systematic method, Students Ask Questions (SAQ) was utilized by Smith (1981) for teaching urban third grade students to actively participate in instruction by learning to generate literal, inferential, and critical questions with the teacher as the model. Twelve third grade classes received three different instructional approaches during their reading lessons. In four classrooms the teachers followed their regular teaching procedures using the basal reader, while in another, four teachers conscientiously asked literal, inferential and critical questions during the comprehension discussion. In the four experimental classrooms, the students were taught using the SAQ procedure for comprehension discussion. All students used the same basal reading series. Students were placed in level 7, 8, 9, or 10 by school personnel. In order to measure question generation ability, students read an unfamiliar section from the level of the basal reader in which they received instruction and they were asked to formulate questions about it. The results based on a sample of 168 students showed

the SAQ group generated significantly more of each type of question than either of the control groups. They also indicated that students of low, average, and high reading abilities in the SAQ group all generated significantly more of each kind of question than comparable students in each group.

These four studies illustrate that student questioning behavior can be improved by observing and imitating their teacher's questioning pattern. Teachers who want to improve student question asking skills should ask the kind of questions they want their students to ask.

Responding to Student Questions

Another category of studies focuses on attempting to increase the number and level of questions students ask by providing a response to their questions.

Ross and Balzer (1975) observed the questions of sex and grade level paired students in grades one, three, and five on a set of stimulus pictures. One member received responses to their questions while the other did not. Those students given the responses asked considerably more questions than those who did not. Consequently within a relatively brief period of time (about one hour in total) the provision of answers influenced the number of questions students asked.

Finklestein and Ritter (1980) studied whether asking kindergarten to third grade students to look at an

unfamiliar painting accompanied by a question or statement would produce more questioning of an analytical nature such as 'how' or 'why' questions, on the part of the child. The children were shown the picture and interviewed individually. Each child was instructed to tell the interviewer what they wondered about the picture. Half of the group received a question from the interviewer designed to cause the student to think deeper. The other half of the students simply received an encouraging statement from the interviewer. The results of the question generation session of approximately 40 minutes in duration clearly show that responding to children's questions with further questions will not cause him/her to ask more questions. However, it did lead them to respond with higher level questions. This suggests that a relationship does exist between the response of the interviewer and the level of a child's question.

Problem Solving

In a study of problem-solving abilities using the 'twenty question' procedure, elementary school children ranging in ages from six to eleven years were shown pictures of objects. They were asked to determine which picture the experimenter was thinking of by asking only questions which could be answered with 'Yes' or 'No'. Results of the forty minute game showed an increase in the frequency of constraint-seeking questions and a decrease in the frequency of hypothesis-testing questions with increasing age (Mosher

and Hornsby 1966). What is significant here is that with development a child builds a more constrained or purposeful strategy for using information.

Microteaching

In a study of a different nature, Sadker and Cooper (1974) demonstrate that elementary social studies students can be trained to ask high order questions. Four students from a class of 24 fifth graders were instructed and trained in the asking of high order questions through a micro-teaching procedure. Student questioning behavior was analyzed prior, during, and following the micro-teaching, with and without rewards. Student questioning type increased during reinforcement sessions.

Cognitive Development

Students exposure to question categories based on different functions and various levels of thinking and cognitive skills have also been shown to influence and improve student questioning patterns.

Spencer and Horney (1978) conducted a study of the questions asked by fifth to twelfth grade social studies students in Indiana. Over a period of approximately two hours students were exposed to four levels of questioning: cognitive memory, convergent, divergent, and evaluative. These questions were either modeled by the teacher or presented on worksheets. Students classified and formulated questions suggested by the worksheets or activities. The

data obtained from the study revealed that students could not operate at all four levels of questioning as anticipated. Students did, however, show a preference for higher level questions. The authors concluded that the ability to question at all four levels is a skill and as such can be learned.

Amanda Batson (1980) conducted a study of 14 sixth grade gifted students to determine if the inclusion of high level interactive questioning procedures would affect the cognitive processes of gifted students. Students were exposed to a questioning category based on those established by leading authors in the field. At the same time they participated in student initiated questions where they categorized their questions on a certain topic under established headings. The end product of this study, which had a total instructional time of two and a half to three hours, showed increases in five student cognitive processes as well as improvement in the questioning strategies of all students.

Cognitive skills were also developed in a questioning study by Nash and Torrance (1974). They assumed that increasing the basic ability of students to ask meaningful and productive questions would enhance their cognitive development. They involved 50 grade one students in a reading program which contained activities based on incomplete knowledge. Another group of 50 students which

served as the control group were involved in a traditional grade one reading program. The Question Asking Task Scale, developed by Torrance (1970), was administered to the treatment groups. This instrument recorded student questions pertaining to four Mother Goose prints. The students were encouraged to ask questions that could not be answered by looking at the object. The data demonstrated that a concerted approach which emphasizes the incompleteness of knowledge encountered in reading experiences will improve the questioning performance of students, particularly in ways that would seem to lead to creative problem solving.

Essentially these studies demonstrate that student cognitive skills can be enhanced by influencing and encouraging students to ask questions, especially high order questions. They also demonstrate that acquainting students with some sort of question classification system is a useful vehicle in this process.

Student-Generated Questions

Student-generated questions in improving reading comprehension are examined below.

Manzo (1969) developed a method called The ReQuest Procedure for improving reading comprehension and student questioning behavior. The ReQuest Procedure, which is a one to one teaching approach, has been tested in a clinical setting with remedial students ranging from seven to twenty-five years of age. The results of this experiment

strongly indicated that ReQuest was significantly more effective in improving student questioning behavior and reading comprehension than was Directed Reading Activities (DRA), a five step teaching strategy for improving comprehension. With ReQuest the teacher gives the student a purpose for reading through reciprocal questioning. Both the student and teacher read a sentence or paragraph. They then exchange questions about what they read. Throughout the interaction the student is forced to imitate the teacher model's questioning behavior.

Cohen (1983) was successful in training elementary school students to generate questions. Forty-eight urban third grade students gained competence in question generation through the explanations and instructions provided by recipe format question generation booklets. The first part of training consisted of 15 minute sessions on six consecutive days, while the second session involved 20 minute periods on each of four consecutive days. The results showed significant gains in all three experimental groups when their question asking skills were applied to short stories. Significant gains on the standardized test as well as the criterion test demonstrate that training students in generating questions can enhance comprehension. These findings suggest that training in student-generation of questions can start as early as the primary grades and that this type of training may improve students

comprehension of stories.

Palinscar (1984) used Manzo's reciprocal questioning procedure to enhance student performance in reading comprehension questions. Twenty-one grade seven students were divided into four groups. Two groups were instructed by Title I Remedial Teachers, while the other two were instructed by classroom teachers working with "low track" language arts students. Three training sessions were scheduled with each teacher. The first one explained the rationale and development of the reciprocal teaching procedure, while the other two were practice sessions using the reciprocal teaching procedure and activities. During the reading sessions the students read passages from a variety of reading series at which time the reciprocal teaching procedure was introduced and conducted. This method was used for a period of 25 to 30 minutes for a total of about 20 days. A maintenance phase and follow up were also included in the study's design. The study's hypotheses were confirmed since the students' ability to answer comprehension questions increased as a result of the reciprocal teaching procedure. The students also showed gains over an extended period of time.

Directly related to these studies on student-generated questions is a study which deliberately presented students with ambiguous information and was designed to influence students to ask questions to decode the ambiguous

information into meaningful content. To do this Cosgrove and Patterson (1978) used a referential communication game with preschool to grade four students. When ambiguous information was given the grade four students asked questions when they didn't understand, while the younger children just made guesses and made less accurate selections. The younger students did not ask questions because it did not occur to them that it would help. When they were encouraged to ask questions the results involved more correct choices than previously. This study suggests that students should be encouraged to ask questions and also should be made aware of the need to ask questions when they don't understand.

Summary

Modeling, responding to student questions, problem solving, micro-teaching, cognitive development and self-generated questions are some of the approaches researchers have used in their attempt to increase the frequency and level of student questions. A message emanating from these studies is that students need to be encouraged to question. It is important for them to be exposed to questioning patterns and strategies through special training in this skill. Through such training students can become competent and effective inquirers, enhancing their learning skills. More specifically student question asking skills become an important avenue in the

development of student cognitive skills and their
comprehension of textual and non-textual material.

CHAPTER THREE

DESIGN OF THE STUDY

This chapter presents a description of this study's purpose, the research hypotheses, and a general overview of each phase of the experimental design. Although many of these experimental components were developed by the author, references are made to various researchers whose work influenced the methodology of this study.

Purpose of the Study

The purpose of this study was to determine if elementary students' question asking behavior could be influenced through training strategies which employed social studies content. The effects of these training procedures on student attitudes toward social studies and their retention of content were assessed.

Research Questions

Essentially this study can be viewed as the development and field testing of a learning package for improving student questioning skills. A review of the literature in this area suggested the following research questions:

Will teaching elementary students questioning strategies using a modeling approach supported by worksheets;

- 1) increase the number of questions they ask?
- 2) increase the number of high order questions they ask?
- 3) increase the number of low order questions they ask?
- 4) increase the proportion of high order questions they ask?
- 5) decrease the proportion of low order questions they ask?

- 6) improve their achievement of social studies content?
- 7) improve their enjoyment toward social studies?
- 8) improve their perception of the importance of social studies?
- 9) improve their attitude toward the opportunity to participate in social studies?
- 10) improve their attitude toward the degree of difficulty of social studies?
- 11) improve their overall attitude toward social studies?

General Design

Subjects

The sample consisted of three grade three classrooms with a total of 55 students. They attended a suburban school in Winnipeg, Manitoba. The economic background of these children ranged from lower to upper middle incomes.

Independent Variables

In order to facilitate studying changes in questioning frequency and questioning level, control and experimental groups were established. The students were randomly assigned to two experimental and two control groups. The researcher and a colleague each taught one experimental group and one control group. (Table 1)

Table 1
TREATMENT GROUPS

<u>Group</u>	<u>Experimental Group</u>	<u>Control Group</u>
1	Researcher's colleague (13)	Researcher's colleague (13)
2	Researcher (14)	Researcher (15)

The table indicates that experimental group 1 and control group 1 with 13 students each were taught by the researcher's colleague. Experimental group 2 and control group 2 with 14 and 15 students respectively were taught by the researcher.

The experimental groups received instruction in question strategies in the context of a unit of study on Community History. The control group studied the same unit but without the questioning instruction.

Since only two groups could be taught by the researcher and his colleague at one time, two student teachers taught language arts to the other groups. (Table 2)

Table 2

INSTRUCTIONAL SESSIONS

Instructional Session A

Groups	Activity	Instruction Given
1 (a) Experimental	Questioning Skills and Community History	Researcher's colleague
1 (b) Control	Language Arts	Student teacher A
2 (a) Experimental	Questioning Skills Community History	Researcher
2 (b) Control	Language Arts	Student Teacher B

Instructional Session B

Groups	Activity	Instruction Given
1 (a) Experimental	Language Arts	Student teacher A
1 (b) Control	Social Studies Community History	Researcher's colleague
2 (a) Experimental	Language Arts	Student teacher B
2 (b) Control	Social Studies Community History	Researcher

Table 2 represents the format of the two instructional sessions. During instructional session A questioning training strategies and Community History were taught to experimental group 1 by the researcher's colleague, while experimental group 2 received their instruction from the researcher. At the same time language arts instruction was given to control group 1 by student teacher A while student teacher B taught control group 2. This instructional

session lasted forty minutes. At the end of the period the experimental and control groups changed places to begin instructional session B. In this session experimental group 1 received language arts instruction from student teacher A while student teacher B taught experimental group 2. Community History was taught to control group 1 by the researcher's colleague while the researcher taught control group 2. These four groups of grade three students took part in these instructional sessions on a daily basis for a period of about twelve days.

The following discussion will describe the actual activities that were presented during these instructional sessions.

Treatment

The control and experimental groups received instruction on Community History. However the experimental group also received instruction in questioning strategies. A more detailed description of the activities each group participated in is presented below.

Control Groups

The students in the control group were taught about the history of their community by their appointed instructors. The topics covered included settlement, the people, homes, occupations, food, clothing, the general store, transportation, and recreation. This information was presented to the class using strategies which included

lectures, discussions, filmstrips, reading activities, and worksheet assignments. Most of these materials were drawn from the Manitoba grade three social studies curriculum, reference books, and filmstrip packages on Community History.

What must be stressed here is that the content provided to the control groups dealt only with these Community History topics. They did not receive any instruction in question training strategies. The experimental groups on the other hand also covered these historical topics but less intensely. The control groups had more time to work through these activities than the experimental group which also received questioning training within the same amount of time.

Experimental Groups

This study adopted a modeling approach to teach students questioning strategies, similar to the method implemented by Spencer and Horney (1979). Students were encouraged to imitate teacher questions directed at topics of study. This was followed up with activities that required students to identify and classify questions using the criteria established by the question taxonomy (see p. 200).

Modifications however, were made to Spencer and Horney's training materials to serve the purpose of this study. Teachers coordinated and interpreted each activity,

students distinguished the difference between two kinds of questions, the duration of the study was extended, and the content focused on Community History.

This method of training elementary students to ask high order questions has been utilized by several researchers because of the strong correlation between the kind of questions teachers ask and student questions. Their studies lend support to the method utilized by this study. These researchers similarly presented students with interpretations of the question categories with examples and activities to develop student understanding of each kind of question. A brief description of these studies' procedures are presented in the following paragraphs.

Batson (1930) taught seven gifted grade six students to ask four kinds of questions; recall, think critically, think creatively, and evaluate. Interpretations and examples of each kind were modeled by the researcher who formulated specific types of questions about pictures or reading passages under consideration. Students also employed this method. With the assistance of the researcher their questions were labeled as to type.

Another study whose methods of teaching students to ask high order questions corresponds to this study was conducted by Sadker and Cooper (1974). These researchers also taught students to ask high order questions by initially providing interpretations and examples of each kind to the students.

The students and teachers discussed ways to distinguish between the five kinds of high order questions which were comparison, evaluation, problem-solving, cause/effect, and divergent. As students applied these questions to many circumstances they were filmed and used later to provide reinforcement and suggestions for students to further develop and practice this skill. Also a reward system was included to further encourage students to ask questions.

Further, grade three students were taught to ask literal, inferential, and critical questions. Each kind of question was modeled individually by the teacher prior to presentation of instructional material and content. After each kind of question was formulated several times, the teacher guided students in asking the questions. According to Smith (1981) this approach led students to ask these kinds of questions to determine answers to their inquiries.

Essentially similarities drawn from these four studies suggest their appropriateness and feasibility for this kind of study. These include; the purpose of these studies which were designed to train students to ask high order questions to satisfy their inquiries; the development of a question taxonomy; the provision of question definitions and interpretations by the teacher who modeled the question types and guided student questions; and the use of a variety of activities for students to practice and develop this skill. It was concluded that these research elements tried

out and assessed in a variety of settings could be adopted by this study.

The method of instruction and suggested activities of the question training strategies are described in the following outline. For a more detailed description, refer to Appendix B, The Questioning Strategies Materials.

1) Awareness

These activities were designed to emphasize the importance of questions and to describe their uses. Student Activity Worksheets 1 and 2 served this purpose. (Appendix B)

With Student Activity #1, Questions are Important, the teacher handed out the worksheet and discussed the importance of student questions as outlined on the worksheet. Student comments were encouraged. This activity, which lasted about 20 minutes, was then followed by an introduction to Community History. (Appendix B)

In Student Activity #2, Questions are Everywhere, students learned that questions can be asked in many places. They were to compose questions they would ask at home, at school, with friends, and with others. A group of students were then selected to read their questions aloud. These questions were discussed briefly. They were then followed up with a brief presentation which pointed out that questions are an important part of our lives. This activity took up one half of the forty minute social studies period. (Appendix B)

The third part of these awareness exercises was based on Student Activity #3. The students were expected to write down a question they would ask an Indian Chief if they were Christopher Columbus. They were also required to imagine they were an Indian Chief and ask Christopher Columbus a question. Students were briefly provided with background information on Christopher Columbus. As the students read out their questions it was pointed out that there were many kinds of questions a person could ask. This activity also covered the first half of the period. (Appendix B)

2) Low Order Questions

Students were given Student Activity Worksheet #4 which was read together with the whole class. The definition and examples of this kind of question were discussed with the students. Each student was then asked to complete the four question sentences. The students shared their questions with the rest of the class. It was stressed that the answers to these kind of questions were the same for everyone. This activity covered the first half of this period, but it was also reviewed in the preceding exercise. (Appendix B)

3) High Order Questions

This section was based on Student Activity Worksheet #5 which provided definitions and examples of the high-order questions. The teacher read each kind of high order question, sample questions were provided, and the students

attempted to formulate similar kinds of questions. The students then completed the question beginnings at the bottom of the page. These were discussed and shared with the class. This activity took up the first twenty minutes of two class periods. (Appendix B)

4) Question Taxonomy

The students were then provided with copies of the question taxonomy (Appendix E), Framework for Classifying and Formulating Student Questions. The students and the teacher read through the definitions of the low order and high order questions. The teacher then provided examples of each kind of question and solicited student examples. This activity was conducted during the first half of two class periods.

5) Preparing Questions to ask the Guest Speaker

This activity was designed to give students the opportunity to apply and extend their questioning skills. The students were told that a historical presentation on early Charleswood would be given to them by two elderly Charleswood residents. Prior to the presentation the students and the teacher formulated questions they could ask these people. The student and teacher questions were classified under their appropriate headings using the criteria established during the preceding activities. Students were encouraged to attempt to raise low order and high order questions. In this activity as well as worksheet

#5 and the question taxonomy the teacher used some of the sample questions from Appendix C as model questions for the students. This activity covered the first half of a class period.

6) Presentation on Community History

Two early residents of Charleswood came to the school and gave two, forty minute presentations describing life in Charleswood over the last 85 years. These people used photographs, slides, and personal recollections to describe the history of Charleswood. Topics covered included early settlement, people, schools, businesses, and transportation. The two experimental groups and the two control groups were combined for this activity. The presenters encouraged the students to ask questions at various stages throughout the presentations. These questions were recorded using a tape recorder.

7) Classification of Community History Questions

The questions the students asked the early residents of Charleswood were transferred onto paper. Since over a hundred questions were asked only 25 questions were chosen for students in the group to classify. These questions were written under their appropriate headings on chart paper. This activity was conducted during the first half of a social studies period.

8) Questioning Review

This review used Student Activity Worksheet #5. The

students read ten questions and classified them as being high order or low order questions. These were corrected by the teacher and then discussed with the whole class determining the criteria that were used to classify each question. This activity also covered the first 20 minutes of a class period. (Appendix B)

Student Activity Worksheet #7 was also distributed to each member of the experimental groups. They were briefly provided with an explanation of the assignment. The students chose three famous people and wrote a low order question and a high order question on chart paper that they would like to ask these people. Various students displayed the questions they asked their famous person. The students once again were asked to label each question. A class discussion summed up these questions and the whole purpose of asking questions. This lasted the first half of two class periods. (Appendix B)

These methods of training elementary students to ask high order questions were developed and adapted from studies reviewed in Chapter Two.

Instructors

The questioning strategies and the Community History content were taught by the researcher and the researcher's colleague. The researcher developed both units of study and went over the content material and the outline of activities with his colleague during two, one hour sessions. More

importantly these instructors completed each activity in the question strategies. The researcher's colleague also spent individual time studying the questioning taxonomy. Both instructors met each morning prior to and following the treatment to briefly plan each days activities and also to determine students' progress and whether or not further emphasis was needed.

Each instructor attempted to cover the material as prescribed in the instructional package for the experimental and control group. The instructors attempted quite effectively not to provide the control group with any instruction on questioning. Throughout the study both instructors cooperated successfully in their attempts to meet their instructional assignments for the experimental and control groups.

Dependent Variables

The evidence provided by the literature leads us to believe that instructing students in question training strategies will result in:

- 1) both more questions and a higher proportion of higher order questions,
- 2) improved attitudes toward social studies
- 3) better achievement of social studies content.

The Questioning Taxonomy

A basic consideration in this study was the development of a suitable question taxonomy. This was needed to provide

criteria for determining kinds of questions and methods that would be employed and taught to the students. A taxonomy was also necessary for establishing a code for the development of categories for measuring the kinds of questions students asked.

Several popular taxonomies including those found in Table 3 were studied.

Table 3

Question Classification Systems

(adapted from James Spencer and David Horney)

Bloom et al. (1956)	Guilford (1956, 1967)	Sanders (1966)	Hyman (1979)
Knowledge	Cognitive	Memory	Definitional
Comprehension	Memory	Translation	
Application	Convergent	Interpretation Application	Empirical
Analysis		Analysis	Evaluative
Synthesis	Divergent	Synthesis	
Evaluation	Evaluative	Evaluation	Metaphysical

These teacher oriented taxonomies, however, were found to be somewhat difficult and confusing in terms of their hierarchical arrangement of thinking skills for grade three students to learn and utilize. A three category taxonomy (Batson, 1980; Smith, 1981) was also not suited to this study's purpose. More suitable taxonomies were found (Sadker and Cooper, 1974; Spencer and Horney, 1979). Each researcher developed low order and high order questions. Sadker and Cooper's high order questions were evaluative,

comparison, problem solving, cause/effect and divergent. Spencer and Horney used evaluative and divergent high order questions. Although both taxonomies contained a series of high order questions they could be used to distinguish low order from high order questions.

These examples from the literature provided support for the use of a two category question taxonomy. Further, the simplicity of two categories made it practical for use with grade three students. A taxonomy of this nature tends to avoid confusion in formulating and classifying questions in the appropriate category. Although several types of high order questions are included in the taxonomy, students were not expected to know each type but to use these high order questions as one question category. (Appendix E)

Question definitions and interpretations used in this study are presented in (Appendix E), the Framework for Classifying Student Questions. It is from this framework that the instructional methodology and observation instruments were designed and managed. Additional interpretations of these categories are presented in the training activities.

Research Instruments

Three instruments were developed in this study: a question categorization framework, an attitudinal scale, and a content achievement test. The development and method of employment for each of these instruments is described below.

Measuring Questioning Behavior

The questioning pre-test and post-test utilized the same format and procedures. Groups of five students viewed a series of slides at 15 second intervals. The slides were then shown to the students again only at a much slower pace, giving the students ample time to ask one or more questions each.

The instructions given to the children in the pre-test and post-test were; "You will be shown a set of slides showing you what life was like in Manitoba and Canada about a hundred years ago. I would like you to tell me what you would like to know about each slide." If a question was repeated I asked the students, "Can you think of something else you want to know about?" Once each child formulated a question for each slide I asked them "What else would you like to know about these slides?" This allowed these students to ask as many further questions about the slides as they would like.

Each time a student proposed to raise a question his/her name was called out, then their question was raised. This facilitated coding individual students' questions which were tape recorded during this session. The questions were then transferred onto the Student Question Observation Instrument. (Appendix G)

This method of providing students an opportunity to formulate questions after viewing slides or pictures was

based on similar approaches used by several other researchers. Batson (1980) encouraged 14 gifted students to ask as many questions as possible about a series of pictures. These recorded questions were then labeled as to type. First, second and third grade students were asked to ask questions about a painting (Finklestein (1980)). Nash and Torrance (1974) used the Question Asking Task (1970) to measure growth in the questioning ability of grade one students. This test was administered prior to and following the treatment. The examiner showed a small group of four children one of four Mother Goose prints and gave instructions which encouraged the children to ask questions about the picture - questions which could not be answered by looking at the picture. The questions were recorded over a ten minute period and then transferred to categories.

A similar approach was implemented by Ross and Balzer (1975). A series of eight slides developed from pictures found in children's books accompanied by brief descriptive statements were used to encourage grades one, three, and five students to ask question.

These studies suggest that students can be influenced to ask questions about pictures. The obvious appeal pictures have for students of this age makes this a suitable method for encouraging students to ask questions.

Attitude Survey

The social studies attitude survey (Appendix A) was

developed by the researcher after consulting several attitude surveys, (De Gracie, 1977; Powell, 1980). Twenty statements were developed to assess the four attitude areas which included enjoyment, importance, participation, and difficulty. Five statements addressed each area. A five point Likert scale with labels strongly agree, agree, not sure, disagree, and strongly disagree were used to measure student attitudes toward the twenty statements. Each of the four attitude areas were mixed on the instrument. The scores for each attitudinal area were then totalled to provide the actual score from which pre-test and post-test comparisons could be made.

Achievement Test

An achievement test (Appendix D) was administered to all the students in the experimental and control groups. This test was intended to determine if the students in the experimental group, who received instruction in question training strategies, understood Community History content better than those in the control group.

The questions for the achievement test were gathered from the material covered during the unit on Community History. A multiple choice format was adopted. The students were required to select the best one of four closely related responses to a question. Twenty questions were asked on the test. The tests were corrected and a percentage out of a hundred was calculated for each student.

Data Collection Procedures

Data was collected from the pre-test and post-test attitude survey, the questioning pre-test and post-test, and the Community History Achievement Test completed by each student in the experimental and control group.

Measuring Questioning Behavior

The method of collecting the questions asked by the students during the questioning pre-test and post-test was a tape recorder. The student recorded questions were then transcribed on a sheet of paper under each students' name. The researcher read these questions carefully and labeled them as either a high order or low order question. The criteria which were used for categorizing questions are contained in The Framework for Classifying and Formulating Students' Questions. (Appendix E)

Once these questions were all categorized this information was transferred onto the Question Observation Instrument. (Appendix G) The researcher entered a tally mark (/) below the appropriate category for the kind of question each student asked during the pre-test or post-test. Areas calculated included total number of questions, the number of high and low order questions, and the percentage of high and low order questions. In this way each student's question asking skills could be observed from this Question Observation Instrument.

This instrument also displayed the question asking

skills of the entire control and experimental groups. Totals for each category could be tabulated since students were listed according to the group they belonged to; either experimental group 1 or 2, or control group 1 or 2. These total scores for each category were used to compare the questioning abilities of the control group and the experimental group.

Observation instruments and procedures of similar design have been used (Hunkins, 1976; Lehman, 1972; Ryan, 1979; Sadker and Cooper, 1974; Susskind, 1969). Each of these studies utilized a checklist format which facilitated the recording of student questions. These instruments included a general list of categories developed to record the frequency and types of questions asked by students. The criteria which were used for these categories were developed in each study in order that questions could be coded.

An advantage of this system is that the kind of question activity is preserved, student questions are recorded, and totals for each category are taken. These can then be compared to determine if any significant differences emerge for each category between the treatment and instructor groups.

Attitude Survey

Each of the four attitude measures including enjoyment, importance, participation, and difficulty were tabulated. These tabulations, which ranged from five to 25, provided

the total score for each of these attitude areas. By totaling these four attitude areas a score with a range from 20 - 100 was derived as an indication of the overall attitude. The method which was employed to tabulate each area is presented in the Attitude Survey Measurement Tool. (Appendix F)

The scores for each attitude area were then totaled for the control group and the experimental group. These scores were used to determine if there were any significant differences between the control group and the experimental group in any of the attitudinal areas.

Achievement Test

The students in the experimental and control groups completed the multiple choice Community History test at the end of the study. The researcher developed an answer key which he used to correct the test. The student responses were only considered to be correct if they chose the best answer. Students were instructed to provide only one answer. Each test was scored out of 20. This score was then converted to a percentage. The percentages were used to make achievement comparisons between the experimental and the control groups.

Data Analyses Procedures

Pre-test

An analysis of variance was used to test for pre-test differences between the experimental and control groups in

the areas of level of questions and attitude toward social studies.

Post-test

An analysis of variance and co-variance was used to detect post-test differences between the experimental and control groups and also between the two instructor groups in the areas of level of questions, attitude toward social studies, and content achievement. Then results were further analyzed using a post-hoc t-test analysis which tested for significant treatment/instructor interactions between the four interacting groups which were compared as presented here:

Instructor 1's experimental group vs instructor 1's control group

Instructor 2's experimental group vs Instructor 2's control group

Instructor 1's experimental group vs Instructor 2's experimental group

Instructor 1's control group vs Instructor 2's control group.

CHAPTER FOUR

RESULTS AND DISCUSSION

The main purpose of this study was to determine the effect teaching grade three students questioning strategies would have on their question asking skills, on their understanding of social studies content, and on their attitude toward social studies. The teacher directed the questioning strategies, and utilized materials and activities which modeled questions for students to identify, classify, and formulate. After each of the question training sessions the students in the experimental group covered the same material on Community History that was taught to the control group.

The data collected from the questioning and attitude pre-test and post-test, and the content achievement test, were tabulated and statistically analyzed using an analysis of variance and co-variance. The statistical analysis was then used to determine the differences between the experimental and control groups, and between the instructor groups, for each of the questioning attitude and achievement variables. The results were then analyzed using a post-hoc t-test analysis which recorded and described significant treatment/instructor interactions that may have occurred between the four interacting groups.

Essentially the outcome of the statistical analysis assessed the impact teaching students question training strategies had on their questioning frequency, on their

ability to ask high order questions, on their attitude toward social studies and on their achievement of social studies content. It also tested whether or not the instructors had any impact on their students for each of the dependent measures.

Previous research has indicated that teaching students question training strategies can enhance their question asking skills which in turn improves their comprehension of textual and non-textual materials. In particular the enhancement of comprehension and cognitive skills is mentioned most often by researchers. The attitude variable, seldom mentioned by research, was included in this study because of the possible impact improving students question asking skills may have had on their attitude toward this subject.

The results of this study are presented and discussed in this chapter. In addition, some important implications, practical and research, which may be derived from the research are pointed out.

Results

Pre-test

The data in Table 4 show the mean scores and the difference in means in the experimental and control groups as computed using an analysis of variance. These mean scores do not reveal any statistically significant differences in the number of questions or the kind of

questions each group formulated prior to the treatment. Similarly there were no significant differences between these groups in any of the five attitudinal areas.

The data in Table 5 also indicate that during the pre-test the subjects in the two instructor groups showed no statistically significant differences between the two groups in either the number or kind of questions each group formulated or in the five attitudinal areas.

The following discussion provides an expanded description of the results for the research questions.

Question 1 - Total Number of Questions

There was no significant difference ($F=(1,51)=2.720$ $p=0.105$) between the number of questions asked by the experimental and control groups. The results also indicate that there was no significant difference ($F=(1,51)=0.015$ $p=0.902$) between the number of questions asked by the two instructor groups. Finally, the results also recorded no significant treatment/instructor interaction ($F=(1,51)=1.168$ $p=0.285$).

Questions 2 and 3 - Number of High and Low Order Questions

The results indicated that there were no significant differences between the number of high order questions ($F=(1,51)=0.131$ $p=0.719$) and the number of low order questions ($F=(1,51)=1.521$ $p=0.223$) asked by the experimental and control groups. Also there were no significant

Table 4

Pre-test Means and Standard Deviations for Student Questions
and Social Studies Attitude Questionnaire

	Treatment		F-value	P-value
	Experi- mental	Control		
Total No. of Questions				
Mean	14.41	18.53	2.720	0.105
Standard Deviation	(11.281)	(5.982)		
No. of High Order Questions				
Mean	6.03	5.54	0.131	0.719
Standard Deviation	(5.165)	(4.632)		
No. of Low Order Questions				
Mean	10.55	13.00	1.521	0.223
Standard Deviation	(8.074)	(6.040)		
Percentage of High Order Questions				
Mean	0.37	0.31	1.087	0.302
Standard Deviation	(90.173)	(0.225)		
Percentage of Low Order Questions				
Mean	0.63	0.69	1.087	0.302
Standard Deviation	(0.173)	(0.225)		
Enjoyment Attitude				
Mean	13.82	14.11	0.127	0.724
Standard Deviation	(3.434)	(2.215)		
Importance Attitude				
Mean	11.14	10.74	0.124	0.727
Standard Deviation	(4.673)	(2.987)		
Opportunity to Participate Attitude				
Mean	13.52	14.54	1.930	0.171
Standard Deviation	(2.613)	(2.789)		
Difficulty Attitude				
Mean	14.54	15.23	1.004	0.321
Standard Deviation	(2.836)	(2.405)		
Total Attitude				
Mean	53.00	54.61	0.595	0.444
Standard Deviation	(8.752)	(6.664)		

*p<.05

Table 5

Pre-test Means and Standard Deviations for Student QuestionsTest and Social Studies Attitude Questionnaire

	Instructors					
	Group	Group	F-	P-	T. x I.	T. x I.
	1	2	Value	Value	F-	P-
Total No. of Questions					Value	Value
Mean	16.15	16.55	0.015	0.902	1.168	0.285
Standard Deviation	(6.491)	(11.394)				
No. of High Order Questions						
Mean	5.96	5.66	0.048	0.828	0.005	0.946
Standard Deviation	(3.985)	(5.633)				
No. of Low Order Questions						
Mean	10.19	13.07	2.129	0.128	0.128	0.722
Standard Deviation	(5.629)	(8.268)				
Percentage of High Order Questions						
Mean	0.38	0.30	2.252	0.140	0.024	0.877
Standard Deviation	(0.191)	(0.202)				
Percentage of Low Order Questions						
Mean	0.30	0.38	2.252	0.140	0.024	0.870
Standard Deviation	(0.191)	(0.202)				
Enjoyment Attitude						
Mean	13.92	14.00	0.008	0.930	0.000	0.989
Standard Deviation	(2.869)	(2.976)				
Importance Attitude						
Mean	11.70	10.28	1.722	0.195	0.153	0.697
Standard Deviation	(3.750)	(4.043)				
Opportunity to Participate Attitude						
Mean	14.19	13.83	0.272	0.604	0.000	0.994
Standard Deviation	(2.815)	(2.674)				
Difficulty Attitude						
Mean	14.84	14.86	0.000	0.999	2.206	0.144
Standard Deviation	(2.866)	(2.475)				
Total Attitude						
Mean	54.65	52.96	0.647	0.093	0.093	0.761
Standard Deviation	(7.343)	(8.244)				

*p<.05

T. x I. - Demonstrates interaction results between the two instructor and the two treatment groups.

differences between the number of high order questions ($F=(1,51)=0.048$ $p=0.828$) and number of low order questions ($F=(1,51)=2.129$ $p=0.151$) asked by the two instructor groups. In addition there was no significant treatment/instructor interaction for the number of high order questions ($F=(1,51)=0.128$ $p=0.722$) the students asked.

Questions 4 and 5 - The Percentages of High and Low Order Questions

There was no significant difference between the percentage of high order questions ($F=(1,51)=1.807$ $p=0.302$) asked by the experimental and the control groups. The results also indicated that there was no significant difference between the percentage of low order questions ($F=(1,51)=2.252$ $p=0.140$) and between the percentage of low order questions ($F=(1,51)=2.252$ $p=0.140$) asked by the instructor groups. In addition there was no significant treatment/instructor interaction for the percentage of high order questions ($F=(1,51)=1.639$ $p=0.206$) or for the instructor groups.

Questions 7, 8, 9, 10, and 11 - Attitude Measures; Enjoyment, Importance, Participation, Difficulty and Overall Attitude toward Social Studies

No significant difference between the experimental and control group was recorded for each of the following student attitudes toward social studies; Enjoyment ($F=(1,51)=0.127$ $p=0.724$), Importance ($F=(1,51)=0.124$ $p=0.727$), Participation

($F=(1,51)=1.930$ $p=0.171$), Difficulty ($F=(1,51)=1.004$ $p=0.321$) and Overall Attitude ($F=(1,51)=0.595$ $p=0.444$).

The results also displayed no significant difference between the two instructor groups for each of the following student attitudes toward social studies; Enjoyment ($F=(1,51)=0.008$ $p=0.930$), Importance ($F=(1,51)=1.722$ $p=0.195$), Participation ($F=(1,51)=0.272$ $p=0.604$), Difficulty ($F=(1,51)=0.000$ $p=0.999$) and Overall Attitude ($F=(1,51)=0.647$ $p=0.425$).

These results also indicated that there were no significant treatment/instructor interactions for the following student attitudes toward social studies; Enjoyment ($F=(1,51)=0.000$ $p=0.989$), Importance ($F=(1,51)=0.153$ $p=0.697$), Participation ($F=(1,51)=0.000$ $p=0.994$), Difficulty ($F=(1,51)=2.206$ $p=0.144$), and Overall Attitude ($F=(1,51)=0.093$ $p=0.761$).

From these results it was reasonable to infer that the random assignment procedure produced groups of students that were balanced in terms of these variables.

Post-test

The data in Table 6 show the mean scores for the subjects in the experimental and control groups as computed using analysis of co-variance. These mean scores do not reveal any statistically significant differences in the number of questions or the kind of questions each treatment and instructor group formulated as a result of the

Table 6
Post-test Means and Standard Deviations for Student
Questions Test and Attitude Questionnaire in each
Question and Attitude Variable

<u>Question #1</u> Will teaching elementary students questioning strategies using a modeling approach supported by worksheets increase the number of questions they ask?						
Condition	Number	Mean	Standard Deviation	Adjusted Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	19.07	(12.606)	19.07	1.269	0.265
Control	26	22.69	(12.305)	22.69	1.269	0.265
<u>Instructor</u>						
#1	26	20.58	(10.214)	20.62	0.009	0.923
#2	29	20.97	(14.399)	20.93	0.009	0.923
<u>Question #2</u> Will teaching elementary students questioning using a modeling approach supported by worksheets increase the number of high order questions they ask?						
Condition	Number	Mean	Standard Deviation	Adjusted Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	5.45	(6.853)	5.43	3.140	0.082
Control	26	2.92	(2.018)	2.93	3.140	0.082
<u>Instructor</u>						
#1	26	4.96	(6.010)	4.93	0.835	0.365
#2	29	3.62	(4.539)	3.64	0.835	0.365

*p<.05

t trend .05<p<.10

Table 6 Continued

Question #3 Will teaching elementary students questioning strategies using a modeling approach supported by worksheets increase the number of low order questions they ask?

Condition	Number	Mean	Standard Deviation	Adjusted Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	15.79	(11.267)	15.83	1.603	0.221
Control	26	19.77	(12.235)	19.72	1.603	0.221
<u>Instructor</u>						
#1	26	15.62	(9.642)	15.66	1.541	0.220
#2	29	19.52	(13.388)	19.48	1.541	0.220

Question #4 Will teaching elementary students questioning strategies using a modeling approach supported by worksheets increase the proportion of high order questions they ask?

Condition	Number	Mean	Standard Deviation	Adjusted Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	0.26	(0.199)	0.26	5.874	0.019*
Control	26	0.15	(0.114)	0.19	5.874	0.019*
<u>Instructor</u>						
#1	26	0.25	(0.195)	0.25	2.633	0.111
#2	29	0.17	(0.144)	0.18	2.633	0.111

* $p < .05$

t trend $.05 < p < .10$

Table 6 Continued

Question #5 Will teaching elementary students questioning strategies supported by worksheet activities decrease the proportion of low order questions students ask?

Condition	Number	Mean	Standard Deviation	Adjusted F-Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	0.74	(0.199)	0.75	5.874	0.019*
Control	26	0.85	(0.114)	0.85	5.874	0.019*
<u>Instructor</u>						
#1	26	0.75	(0.195)	0.75	2.633	0.111
#2	29	0.83	(0.144)	0.82	2.633	0.111

Question #6 Will teaching elementary students questioning strategies supported by worksheet activities improve their achievement of social studies content?

Condition	Number	Mean	Standard Deviation	Adjusted F-Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	61.90	(16.433)	61.88	3.444	0.069t
Control	26	69.91	(15.065)	69.83	3.444	0.069t
<u>Instructor</u>						
#1	36	66.35	(17.003)	66.44	0.125	0.725
#2	29	65.00	(15.641)	64.92	0.125	0.725

*p<.05

t trend .05<p<.10

Table 6 Continued

Question #7 Will teaching elementary students questioning strategies supported by worksheet activities improve their enjoyment toward social studies?

Condition	Number	Mean	Standard Deviation	Adjusted F-Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	13.97	(2.666)	13.96	0.52	0.821
Control	26	14.08	(1.765)	14.09	0.52	0.821
<u>Instructor</u>						
#1	26	14.65	(2.348)	14.66	4.008	0.051*
#2	29	13.45	(2.063)	13.45	4.008	0.051*

Question #8 Will teaching elementary students questioning strategies supported by worksheet activities improve the importance of social studies?

Condition	Number	Mean	Standard Deviation	Adjusted F-Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	12.38	(5.024)	12.38	0.936	0.365
Control	26	11.31	(3.998)	11.30	0.836	0.365
<u>Instructor</u>						
#1	26	11.65	(4.915)	11.64	0.137	0.712
#2	29	12.07	(4.292)	12.08	0.137	0.712

*p<.05

t trend .05<p<.10

Table 6 Continued

Question #9 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude toward the opportunity to participate in social studies?

Condition	Number	Mean	Standard Deviation	Adjusted F-Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	14.10	(3.320)	14.10	0.983	0.326
Control	26	14.96	(3.026)	14.97	0.983	0.326
<u>Instructor</u>						
#1	26	14.69	(3.271)	14.70	0.175	0.677
#2	29	14.34	(3.154)	14.34	0.175	0.677

Question #10 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude toward the degree of difficulty of social studies?

Condition	Number	Mean	Standard Deviation	Adjusted F-Mean	F-value	P-value
<u>Treatment</u>						
Experi-mental	29	15.52	(3.345)	15.51	1.632	0.207
Control	26	16.42	(2.043)	16.45	1.632	0.207
<u>Instructor</u>						
#1	26	16.677	(2.535)	16.78	4.630	0.036*
#2	29	15.21	(2.896)	15.20	4.630	0.036*

*p<.05

t trend .05<p<.10

Table 6 Continued

Question #11 Will teaching elementary students questioning strategies supported by worksheet activities improve their overall attitude toward social studies?

Condition	Number	Mean	Standard Deviation	Adjusted F- Mean	F- value	P- value
<u>Treatment</u>						
Experi- mental	29	55.62	(10.069)	55.59	0.201	0.444
Control	26	56.58	(6.632)	56.61	0.201	0.444
<u>Instructor</u>						
#1	26	57.58	(8.571)	57.59	1.602	0.425
#2	29	54.72	(8.493)	54.71	1.602	0.425

*p<.05

t trend .05<p<.10

treatment. However there was one exception. The experimental group asked a greater percentage of high order questions and a smaller percentage of low order questions than did the control group. A significant treatment/instructor interaction was also recorded for the total number of questions.

The data in Table 6 indicates that there was no significant difference in students' achievement in social studies as a result of the treatment.

Further, the data in Table 6 also indicates that the treatment groups showed no significant difference in any of the attitude areas following the treatment. The instructor groups however, showed a significant difference in their attitude toward the enjoyment and difficulty of social studies.

Tables 7, 8, and 9, present data indicating significant treatment/instructor interactions for the total number of questions, and the importance and total attitude areas.

The following comments provide an expanded description of the results for the research questions.

Question 1 - Total Number of Questions

The results indicated that training elementary students in questioning strategies did not increase the total number of questions they asked. The results demonstrated no significant difference ($F=(1,51)=1.269$ $p=0.265$) between the number of questions formulated by the experimental and

Table 7

<u>Total Number of Questions</u>				
<u>Treatment/Instructor Interaction</u>				
Treatment				
Instructor	Experimental	Control	T-Value	P-Value
#1	23.14 (14)	15.27 (15)	0.497	0.019*
#2	17.58 (12)	27.07 (14)	0.042*	0.019*
T-value	.094	.068t		
P-Value	.019*	.019*		

Table 8

<u>Importance Attitude-Treatment/Instructor Interaction</u>				
Treatment				
Instructor	Experimental	Control	T-Value	P-Value
#1	13.64 (14)	11.20 (15)	.036*	0.013*
#2	9.33 (12)	13.00 (14)	.409	0.013*
T-Value	.204	0.044*		
P-Value	0.013*	0.013*		

Table 9

<u>Total Attitude-Treatment/Instructor Interaction</u>				
Treatment				
Instructor	Experimental	Control	T-Value	P-Value
#1	59.14 (14)	52.33 (15)	.375	.047*
#2	55.75 (12)	57.29 (14)	.247	.047*
T-Value	.070t	.903		
P-Value	0.047*	0.047*		

*p<.05

t .05<p<.10

control groups. There was also no significant difference found between the number of questions asked by the two instructor groups ($F=(1,51)=0.009$ $p=0.923$). A significant treatment/instructor interaction ($F=(1,51)=5.911$ $p<.05$) was revealed by the analysis.

Questions 2 and 3 - The Number of High and Low Order Questions

The results indicated that training elementary students in questioning strategies did not increase the number of high and low order questions they asked. There were no significant differences between the experimental and control groups in terms of the number of high order ($F=(1,51)=3.140$ $p=0.082$) or low order ($F=(1,51)=1.603$ $p=0.221$) questions asked. Also, no significant differences were recorded in the number of high order ($F=(1,51)=0.835$ $p=0.365$) or low order ($F=(1,51)=1.541$ $p=0.220$) questions asked by the two instructor groups. Further, there was no significant treatment/instructor interactions for the number of high order questions ($F=(1,51)=0.208$ $p=0.650$) or the number of low order questions ($F=(1,51)=3.713$ $p=0.060$).

Questions 4 and 5 - Percentage of High and Low Order Questions

The results indicated that training elementary students in questioning strategies increased the percentage of high order questions they ask and conversly decreased the proportion of low order questions they asked. The

experimental group asked a significantly larger proportion of high order questions ($F=(1,51)=5.874$ $p<.05$) and a correspondingly smaller proportion of lower order questions ($F=(1,51)=5.874$ $p<.05$) than did the control group. The percentage of high order questions formulated by the experimental group was 26% compared to the 15% by the control group. Correspondingly, the experimental group formulated 74% low level questions as compared to 85% low level questions by the control group.

No significant difference was recorded for the percentage of high order ($F=(1,50)=2.633$ $p=0.111$) or low order ($F=(1,50)=2.633$ $p=0.111$) questions asked by the two instructor groups. There was also no significant treatment/instructor interactions for the percentage of high order ($F=(1,50)=0.121$ $p=0.729$) or low order ($F=(1,50)=0.121$ $p=0.729$) questions.

Question 6 - Achievement (content)

The results indicated that training elementary students in questioning strategies did not improve their retention of social studies content. Although the control group scored higher (70%) on the social studies achievement test than did the experimental group (62%), this difference was almost statistically significant ($F=(1,50)=3.444$ $p=0.069$). Further, there was no significant difference ($F=(1,50)=0.125$ $p=0.725$) in the achievement scores of the two instructor groups. There was also no significant treatment/instructor

interaction with respect to the achievement scores ($F=(1,50)=1.639$ $p=0.206$).

Questions 7, 8, 9, 10, and 11 - Attitude Areas;
Enjoyment, Importance, Participation, Difficulty, and
Overall Attitude toward Social Studies

The results indicated that the experimental group did not improve their attitude toward social studies after receiving training in questioning strategies as part of a social studies unit. More specifically the students in the experimental group did not see social studies as more enjoyable, more important, less difficult, and as a subject in which they had increased opportunities to participate.

There were no significant differences between the experimental and control groups in any of the following attitudinal areas: Enjoyment ($F=(1,50)=0.520$ $p=0.821$), Importance ($F=(1,50)=0.836$ $p=0.365$), Participation ($F=(1,50)=0.983$ $p=0.326$), Difficulty ($F=(1,50)=1.632$ $p=0.207$) and Overall Attitude ($F=(1,50)=0.201$ $p=0.444$).

The results did, however, indicate significant differences between the two instructor groups in the enjoyment ($F=(1,50)=4.008$ $p<.05$) and the difficulty ($F=(1,50)=4.630$ $p<.05$) attitudinal areas toward social studies. In each case it was instructor 1's group that found social studies significantly more enjoyable and less difficult than instructor 2's group.

No significant differences between the two instructor

groups were recorded for the attitudinal areas of importance ($F=(1,50)=0.137$ $p=0.712$), participation ($F=(1,50)=0.175$ $p=0.677$), and overall attitude ($F=(1,50)=1.602$ $p=0.425$) toward social studies.

Significant treatment/instructor interactions were revealed by the analysis for the importance ($F=6.658$ $p<.05$) and total attitudinal area ($F=3.365$ $p<.05$). The treatment/instructor interaction for the importance area displayed two significant differences in the interactions between instructor 1's experimental and control groups ($p=0.036$) and also between the two instructors control groups ($p=0.044$). In this interaction instructor 1's experimental group was more positive toward the importance of social studies than the control group. Instructor 1's experimental group's positive attitude toward the importance of social studies was in the direction predicted. That is their attitude toward the importance of social studies improved significantly as a result of the treatment. However, in the other interaction instructor 2's control group showed a positive attitude toward social studies while instructor 1's control group did not.

For the total attitudinal area, a difference approaching significance ($p=0.070$) was displayed between the two instructors' experimental groups.

No significant treatment/instructor interactions were found for enjoyment ($F=(1,50)=0.438$ $p=0.511$), participation

($F=(1,50)=0.269$ $p=0.666$), or difficulty ($F=(1.50)=0.731$ $p=0.397$).

Discussion

The pre-test and post-test results for the eleven research questions are discussed in this section.

Pre-test

As noted above the absence of significant differences between the means of the treatment and control groups on the pre-test verifies equality of the students with respect to the variables that were assessed. These randomly assigned groups were relatively similar in terms of their questioning frequency, kind of questions they formulated and their attitude toward social studies.

Post-test

Question 1 - Total Number of Questions

With regard to the first research question it appears that the students in this study did not ask more questions as a result of receiving training in questioning strategies. A number of factors may have contributed to this outcome including the training materials, the instructional approach, the classroom climate, the students' age, kind of questions, worksheet activities, pre-test and post-test conditions, the content of the slides, and the size of the groups. These factors will be discussed in the succeeding discussion followed by an explanation of the significant treatment/instructor interactions.

Although the impact of the training materials are discussed individually they also emerge in the discussion of the other factors since they are interrelated with many of them. These materials, which were developed from previous research, did not seem to encourage students to increase the number of questions they asked. Rather they focused on getting the student to ask higher order questions. It may have been that the questions chosen for the students to imitate and expand upon were too difficult to interpret or too easy to interest them. During the use of the training materials the teachers consistently coaxed and prompted students in their efforts to emulate the model's questions.

Many of the worksheet activities, which required students to formulate a question in response to the first few words of the question, may not have given students effective practice in formulating their own questions. This type of exercise may have caused students to become dependent on this format and therefore less eager to formulate an entire question on their own, especially a high order question.

The instructional approach for utilizing the materials may also not have been appropriate for influencing the students in the experimental group to ask more questions. The study employed an approach similar to studies which resulted in an increase in students' questions (Batson, 1980; Cohen, 1983; Smith, 1981). The methods used in this

study, however, may have overemphasized student questions and may not have paid enough attention to responding to student inquiries. Student questions were seldom provided with direct answers. The content sessions may have provided information for student questions, but this information was not provided when the questions were asked. The need for teachers to respond to student questions was stressed (Patterson, 1978; Ross and Balzer, 1975). In their research, students whose questions were answered by the teacher asked more questions. Therefore what this training package may have needed was a mix of activities designed to have students formulate questions and also receive answers to the majority of their inquiries.

The classroom climate also may have inhibited student understanding of the questioning content and strategies. The training sessions were held in four different rooms. One of these rooms was quite small and the other room was a music room. These rooms were different from those that the students were accustomed to in terms of the environment, size, appearance, and seating arrangement. These changes may have in some way limited the number of questions students asked.

An additional negative factor may have been the students' age. They may have simply been too young to benefit from the training. This speculation is based on studies of a similar nature (Sadker and Cooper, 1974;

Batson, 1981) whose subjects were students in either grades five or six. These older students were probably better suited to manage the subject matter used as a vehicle for this study's question taxonomy and the associated instructional strategies and activities. However Smith's (1981) findings suggest that grade three students can be taught through teacher-modeling to formulate literal, inferential and critical comprehension questions. This in turn suggests a training approach, which places greater emphasis on teachers' modeling of high and low order questions prior, during, and following the reading and discussion of Community History content, might have been more suitable for this age group.

Students also may not have asked many questions because they were unsure of what kind of question to ask. Students were expected to ask low order questions plus four kinds of high order questions: evaluation, comparison, cause and effect, and divergent. They may have felt only high order questions should be formulated because of the emphasis placed on these type of questions. The students may have been inhibited, especially since most of them seemed to be unfamiliar and inexperienced in asking high order questions.

Another reason for this lack of an increase in student questions may have been the questioning pre-test and post-test activity. The social studies unit on Community History, which was the basis of this unit, may have allowed

the students to acquire a fairly substantial amount of information. Possibly the students' desires to raise questions in response to the post-test slides were not a strong priority because their previous experience and knowledge had answered many questions they may otherwise have asked. Further, the post-test slides, or repetition of the same procedure, may have had the effects of reducing students' desires to use such questioning skills as they had developed. So the motivational effects of the repetition of the testing situation may have been a factor.

The slides may not have been interesting enough to motivate the students to ask questions about them. Students may have perceived the black and white slides which included pictures of people, old buildings, antique articles, and old clothing to be dull and unattractive. It is also quite possible that the content of each slide may have had the potential to solicit only a limited number of questions, thus putting a ceiling on questioning opportunities for the students.

Another factor to be considered that may have influenced the number of questions students asked was a lack of consistency in the size of the groups during the questioning pre-test and post-test. The initial size of the experimental and control groups to be tested were five students per group. However, absent students reduced the total numbers of students in the experimental and control

groups from 30 to 26 and 29 respectively. Therefore most of the test groups contained five students but some had only three or four students. It was quite possible that the number of student questions in these irregular size groups may have been greater or less depending on whether these smaller groups had a positive or negative impact on the number of questions these students asked.

Also, while as indicated previously, there were no significant differences between the number of questions asked by the experimental and control groups, or between the two instructor groups, there was a significant treatment/instructor interaction ($F=(1,51)=5.911$ $p<.05$). A post hoc analysis indicated that the difference lay between instructor 2's experimental and control groups. This interaction demonstrates a significant difference ($p=.042$ $p<.05$) between the number of questions formulated by instructor 2's experimental and control groups. No significant differences were recorded between instructor 1's experimental and control groups ($p=.197$), and between instructor 1 and instructor 2's control groups ($p=.094$).

Figure 1 displays the following interactions among these groups.

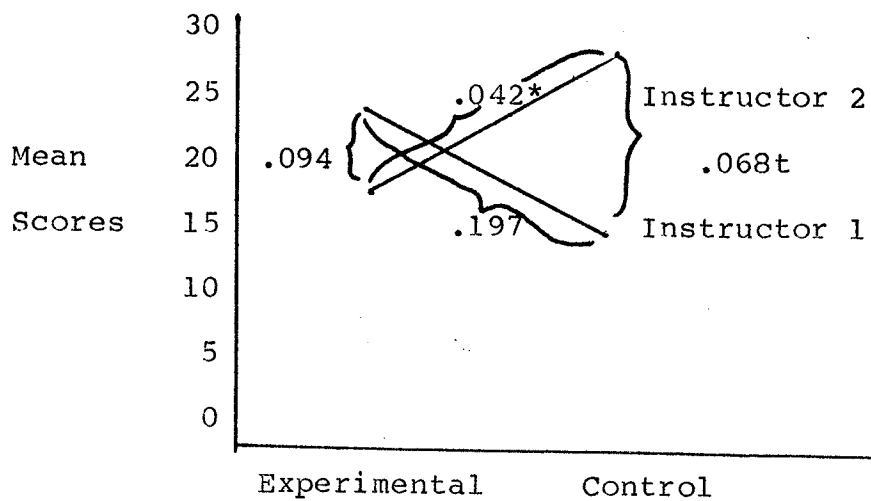
Inst. #1's Exp. Grp. vs Instr. #1's Ctrl. Grp. = .197

Inst. #2's Exp. Grp. vs Inst. #2's Ctrl. Grp. = .042*

Exp. Grp. #1 vs Exp. Grp. #2 = .094

Ctrl. Grp. #1 vs Ctrl. Grp. #2 = .068

Figure 1 Total Number of Questions



The interaction ($p=.042$) between instructor 2's experimental and control groups shows that the control group asked more questions than the experimental group. It seems that the control group performed more positively for this instructor than the experimental group. It is possible that this happened because the content and mode of presentation were familiar to both the instructor and control groups from previous social studies classes and presentations.

Also in this treatment/instructor interaction, the lack of a significant difference between instructor 1's experimental and control groups ($p=.197$) and also between instructor 1 and instructor 2's control groups ($p=.094$) indicates that students in each of these groups were not significantly influenced by the treatment they received or by who presented it.

Questions 2 and 3 - Number of High and Low Order Questions

With regard to the second and third research questions it appears that the students in this study did not ask significantly more high order questions. However, there was a trend in the experimental group toward more higher order questions ($p=0.082$). This suggests that exposure to training in questioning strategies may have influenced the students to ask more high order questions. The results, which did not reach a level of significance must be viewed somewhat skeptically even though they are somewhat in line with the findings of a number of researchers (Banton, 1980; Sadker and Cooper, 1974; Smith, 1981).

The failure of the treatment to bring about a significantly greater number of high order questions may have been due to some of the factors responsible for the lack of an improvement in the actual number of questions students asked. These factors, which were discussed in the context of question 1, include the content of the question taxonomy, the training materials, the instructional approach, and the age of the students. However, other possible factors which may have prevented students from asking significantly more high order questions were: the nature of the instructional approach, the worksheet activities, the time frame, and the student interest.

The nature of this study's approach may not have

effectively influenced students to develop and to master asking these kind of questions. It appears that the students were not highly motivated to ask questions in this manner. Reading and classifying questions, as well as modeling teacher questions did not seem to hold the interest of the students. It did not allow them to concentrate on developing a thorough understanding of these high order questions. This approach did not allow students to acquire the knowledge and experience to form a strong foundation from which students could formulate many questions, especially high order questions.

The worksheet activities may also have been ineffective in helping students to ask more high order questions. It appears that students needed more concrete practice in formulating high order questions than just reading numerous kinds of questions and formulating questions similar to those provided by the worksheets or the teacher. Pearson (1984) supports this suggestion since he believes that "the greater portion of time students spend on a task the better they will get." (Duffy, Roehler, Mason, (1984) p. 224) What this study should have done then, is provide the students with numerous opportunities for them to practice this skill. Observations during this study also indicate that students required more than six hours to effectively understand and formulate high order questions. Students usually asked low order, fact seeking questions and had to

be consistently prompted and directed to formulate high order questions. They asked primarily high order questions which were cause and effect or "why" questions. Most activities soliciting student questions demonstrated that students required further emphasis on asking other types of high order questions, especially comparison and divergent questions. A review exercise designed to provide students the opportunity to categorize ten questions as high or low order questions revealed that only seven out of 26 students classified eight or more of the ten questions correctly. Fifteen students classified six or seven of the questions correctly, while five students classified less than four of the ten questions correctly.

The size of the four instructional groups, which were 15 in each case, may have inhibited student participation and their understanding of the ideas introduced in the instructional package. Smaller groups would have allowed more time for each student to formulate and analyze questions. The teacher would have been able to concentrate more effectively on topics causing difficulty and individual students experiencing difficulty would also receive more attention. Smaller group sizes may also have encouraged timid and cautious students to ask questions (Batson, 1980; Sadker and Cooper, 1974). Conflicting evidence is presented by others (Cohen, 1983; Smith, 1981). These researchers were successful in developing an increase in the number of

high order questions amongst students in class sizes of approximately 25 students.

The lack of high interest student related material may not have motivated the students in learning to ask high order questions. The content of community history in influencing students to develop their question asking skills did not seem to generate enough interest for them to ask questions. A unit on modern day attractions like Star Wars or Gremlins may have caught student interest. At the same time the kind of materials that were used to motivate the students to ask questions did not have any specific problems, ambiguities, or disharmonies that may have also prompted students to ask questions.

Questions 4 and 5 - Percentage of High and Low Order Questions

With regard to the fourth and fifth research questions it appears that the groups differed significantly in terms of the proportion of high and low order questions they asked during the post-test. The students in the experimental group asked a significantly greater percentage of high order questions than did students in the control group, and correspondingly, a significantly lower percentage of low order questions. These results support the research which shows an increase in high order questions following training in questioning strategies (Batson, 1980; Cohen, 1983; Sadker and Cooper, 1974; Smith, 1981). This significant

proportional shift does not coincide with the failure to obtain a significant increase in the number of higher order questions. The cause of this outcome may be due to a shift that is real but not picked up by the analysis in question 2. Evidence supporting this statement is shown by the difference in the number of high order questions between the treatment groups which was almost significant ($F=(1,51)=3.140$ $p=.089$). Another possible suggestion may be that the two results taken together (the number of questions generated at each level and the percentage) leads one to hypothesize that a longer treatment period would ultimately have a significant effect.

Question 6 - Achievement (Content)

With regard to achievement, it appears that the experimental group did not do significantly better than the control group following training in questioning strategies. In fact a trend ($F=(1,51)=3.444$ $p=0.069$) shows that the students in the experimental groups obtained slightly lower scores (62%) than those in the control groups, whose mean score was approximately 70%.

There are several explanations for the failure of the experimental groups to do better on the social studies achievement test than the control groups; emphasis on content, student questioning, student achievement, responding to student inquiries, and student generated questions. The most obvious explanation for this situation

was the greater emphasis placed on content with the control groups. The addition of questioning strategies may have inhibited the progress of the experimental groups on the content test since less time was spent on the content oriented activities.

A number of authors stress the importance of student questions for student learning, but there is limited research which verifies this statement or demonstrates the effect training students in questioning strategies has on student achievement during and following units of study in the content oriented subjects. However, some researchers (Hunkins, 1968; Kneip and Grossman, 1973; Kneip, 1977; Ryan, 1973) provide evidence that the use of high order questions by teachers while presenting subject content or concepts does improve student achievement and understanding. This research, while not dealing with student questions and a mastery of content, raises the possibility that there may be a link between such student skills and learning content.

The students in the experimental group may have also not done better than the control groups because the questioning strategies did not supply answers to their questions. During the historical presentation students in the experimental groups were not encouraged to ask many questions about the content or topic of study because the teacher provided the groups with most of the content. Essentially students were not given much responsibility in

searching for information on this topic. There was a complete separation between the question training package and the social studies unit. Any questions students raised during the historical presentation were responded to, but no comments were made concerning the structure of the questions.

According to research (Cohen, 1983; Smith, 1981) student questions are an important vehicle for students' acquisition of knowledge. Pearson (1984) argues in favour of this process. "He feels an understanding of content would benefit from explicit instructional attempts to help students cope with the kind of comprehension problems they are asked to solve in their lives in school". (Duffy, Roehler, and Mason, (1984) p.231) The explicit instructional attempts that Pearson addresses include the training of students to ask questions. This argument gains further support from researchers (Cohen, 1983; Manzo, 1982; Van Jura, 1982) who found that having students generate questions before, during, and after reading improves student comprehension of reading material. These findings shed some light on improving student achievement of social studies content. This approach can be utilized by social studies teachers when students are expected to read content or do research projects. This study however did not utilize an approach of this nature, and this may in part explain the absence of a significant difference in achievement between

the groups.

Questions 7, 8, 9, 10, and 11 - Enjoyment, Importance, Participation, Difficulty, and Overall Attitude toward Social Studies

Although the main goal of this study was to alter student questioning behavior, it was hoped that students undergoing the experimental treatment would find it interesting and thus develop a more positive attitude toward social studies and questioning behavior. There are several possible explanations why there were no statistically significant differences between the experimental and control groups in terms of student attitude toward social studies; the training materials and activities, the length of the study, the lack of student success in learning to ask high order questions, and the student characteristics. These factors will be explained below. They will be followed by an explanation of significant differences between the instructor groups. Significant treatment/instructor interactions for the importance and total attitude areas will also be addressed.

The absence of a significant effect on student attitude toward social studies may have been the fact that the content, materials, and activities used with this study did not attract the interest of the students. In many cases student participation was limited and they were seldom presented with challenging problems or activities that may

have caught their interest.

The failure to influence student attitudes may also have been due to the short duration of the treatment. This short treatment of approximately six hours over a twelve day period may not have been long enough to effectively bring about attitudinal differences.

It can also be assumed that students lack of success in achieving the primary objective of this study may not have influenced student attitudes toward social studies to improve. Essentially, what is implied here is that all the factors that probably did not influence students to become competent and proficient in asking high order questions; the instructional package and approach, the length of the instructional package, size of the groups, grade level and complexity of the subject matter; may have been responsible for students not improving their attitude toward social studies. If the students had formulated many questions, especially high order questions, during questioning instruction and the unit on Community History, they may have found this to be an effective strategy to use in learning social studies content. Therefore students' competence and success in formulating questions may have influenced them to develop a more positive attitude toward social studies.

Student attitudes toward social studies may also be explained by Dillon's research, which includes students' personal characteristics and their attitude toward them, on

why students do not ask many questions. Dillon feels some students do not ask questions because they feel their questions are not important enough to be asked. This was probably experienced by some students in the experimental groups. Dillon also feels the nature of the student may influence whether or not he/she asks questions. If a student was shy or felt his/her question may be ridiculed by the teacher or the students he/she probably did not formulate his/her question. This may also have been influenced by the size of the group. However, it must be viewed carefully since the pre-test and post-test groups of five students were quite small and may not have been that instrumental in hindering student questions. However, the instructional groups of 15 students may have inhibited some students from formulating questions during the training. This behavior did not allow them to receive feedback or develop their question asking ability since they seldom volunteered a question. Therefore, it appears that student attitude toward social studies may not have improved because of some students' personal feelings toward expressing themselves in the classroom. This includes raising questions even though these students received instruction and encouragement during questioning training.

An analysis of the results however, presents significant differences in the attitude of the instructor groups with respect to their enjoyment of social studies and

their perception of the difficulty of this subject.

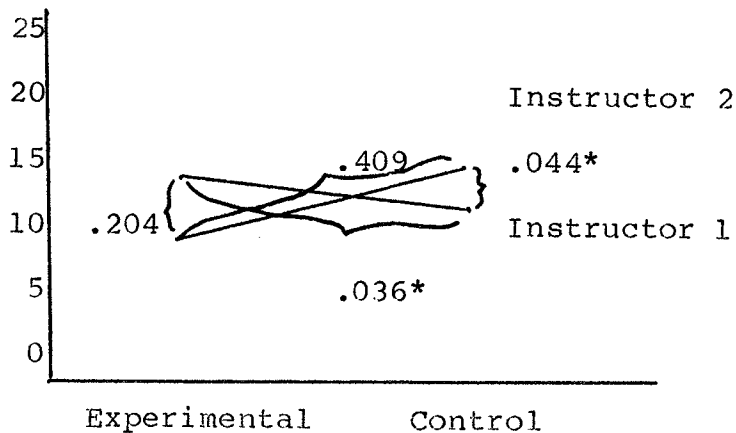
Instructor 1's group was more positive toward each of these attitudinal areas than instructor 2's group was. The significant difference in the instructor groups implies that the students in instructor 1's group found social studies less difficult and more enjoyable than those in instructor 2's group. Instructor 1's groups obviously relate quite positively to her instructional style and approach.

Therefore a plausible explanation for these differences in attitude could be the difference in the teaching styles of the two instructors in presenting the treatment activities and materials. As discussed above instructor 2's total involvement in collecting the materials and developing the instructional package could have influenced his teaching style, causing him to adopt an assertive and structured style which was not readily accepted by the students in his control groups. For whatever reasons students did not seem to be very receptive to his approach.

The importance and total attitudinal areas displayed significant treatment/instructor interactions. A post hoc analysis (see figure 2) indicated that the treatment/instructor interaction for the importance attitude lay between instructor 1's experimental and control groups ($p=0.036$) and between instructor 1 and instructor 2's control groups ($p=0.044$). These comparisons indicate that instructor 1's experimental group may have found social

studies to be more important than the control group while instructor 2's control group may have found social studies to be more important than instructor 1's control group. No significant difference was recorded in the interaction between instructor 1 and instructor 2's experimental groups ($p=0.204$), nor between instructor 2's experimental and control groups ($p=0.409$).

Figure 2; Treatment/Instructor Interaction
for the Importance Attitude



The above figure displays the following interactions.

Inst. #1's Exp. Grp. vs Instr. #1's Ctrl. Grp. = .036*

Inst. #2's Exp. Grp. vs Inst. #2's Ctrl. Grp. = .409

Inst. #1's Exp. Grp. vs Inst. #2's Exp. Grp. = .204

Ctrl. Grp. #1 vs Ctrl. Grp. #2 = .044*

The treatment/instructor interaction for the total attitude area was also further analyzed using a post hoc analysis, however no significant interactions between the four interacting groups were recorded.

The following discussion explains possible causes for

the significant treatment/instructor interactions with respect to the importance attitude area. It indicates that instructor 1's experimental group found social studies to be more important than did the control group. A reason for this outcome may be that instructor 1's comments regarding the importance of student questions in helping students learn social studies content may have made an impact on these students.

The comparison of the two instructors' control groups was also significant. Instructor 2's control group may have found social studies to be more important than instructor 1's control group because instructor 2 was more familiar with, and knowledgeable about the material and content of this Community History unit. At the same time students may have also felt comfortable with his preferred teaching style. Further, he may have been quite positive about presenting his material to this class because of his experience and knowledge in this field. Students in some of these groups were also members of his regular class and their familiarity with his teaching style may have influenced their attitude and behavior toward him. Within this interaction there were no significant differences between instructor 2's experimental and control groups, nor between instructor 1 and instructor 2's control groups. The results of this latter comparison may be expected because these groups received social studies instruction similar to

that which they were accustomed to, and in some cases by their regular social studies teacher. The lack of a significant interaction between instructor 2's experimental and control groups may also have been a result of instructor 2's mode of instruction which did not seem to alter student attitudes toward social studies in either of these groups.

This chapter presented the results of this study.

These results were analyzed and discussed to determine the effects that teaching students questioning strategies had on their question asking abilities as well as on their achievement in social studies and their attitude toward social studies. This discussion leads us to the next chapter which presents some implications of this study for teachers and further research.

CHAPTER FIVE

SUMMARY, CONCLUSION, IMPLICATIONS

Summary

This study attempted to endorse a body of research which indicates that teaching students questioning strategies increases their questioning frequency and the number of high order questions they ask. Emerging from this main objective was an attempt to determine the effects teaching students questioning strategies would have on student content achievement and their attitude toward social studies.

Students from three grade three classes were randomly placed into one of the two control groups or into one of the experimental groups. The main content presented to the control groups centered on Community History, while the experimental groups received training in questioning as well. These students were presented with a question taxonomy comprised of high and low order questions.

Accompanying this taxonomy were the instructional strategies and activities. Students were presented with explanations supported by examples of each question type. They were then given the opportunity to identify, classify, and formulate similar types of questions.

Student questioning behavior was recorded in a pre-test and post-test environment. During the testing students were encouraged to raise questions about slides depicting scenes from their community's past. These questions were recorded

and then categorized using the question classification criteria developed for this study.

Each group of students received a social studies attitude test before and after the treatment. The achievement test on Community History was completed by the students at the end of this unit of study.

It was anticipated that the students would ask more questions overall, including a greater number of high order questions. It was also predicted that they would demonstrate both more positive attitudes and higher levels of content mastery.

Conclusions

This section presents the conclusions of this study which were adopted from the discussion of the results for each question and attitude category, and the achievement test.

The predictions, drawn from a body of research which indicates that teaching students questioning strategies will significantly increase the number of questions students ask, including the number of high order questions, was not born out by this study. However, there was a significant difference in the percentage of high and low order questions formulated by the treatment groups. The students in the experimental groups asked a significantly greater percentage of high order questions than did the control group, and correspondingly, a significantly lower percentage of low

order questions. A significant interaction was recorded for the total number of questions which indicated that instructor 2's control group asked more questions than instructor 2's experimental group and also more than instructor 1's control group.

The prediction that teaching elementary students questioning strategies will improve their retention of social studies content was not supported by the results since a trend was recorded which showed that the control group scored higher on the social studies achievement test than did the experimental group.

The attitude of students in the treatment groups did not support the prediction that training in questioning strategies would improve students' attitude toward social studies. However, significant differences were found between the attitudes of the instructor groups with respect to enjoyment and difficulty. In both cases the main effect was achieved since instructor 1's group found social studies to be more enjoyable and less difficult than instructor 2's group.

Significant treatment/instructor interactions were also found for importance and overall attitude toward social studies. In these interactions instructor 1's experimental group found social studies to be more important than instructor 1's control group.

Implications for Educators

This study showed that teaching elementary students questioning strategies does not improve the number of questions and high order questions they ask, with the exception of a significant percentage increase in high order questions. However, the successful use of similar strategies with other groups of students suggests that the goal of teaching students questioning strategies should not yet be dismissed. Modifications to this study's questioning taxonomy and the training activities might still prove useful in helping educators to improve student question asking skills. Approaches suggested by the results of this study are described below.

1) This study suggests that teachers should be cautioned if they plan to use an instructional package with a short training period similar to the one used by this study or the ones on which it was modeled (Sadker and Cooper, 1974; Smith, 1981; Spencer and Horney, 1978). A longer training period is probably needed in order to give students ample opportunities to formulate numerous questions on a variety of topics and in response to various stimuli. These training sessions should probably be followed by constant reinforcement and review throughout the school year. Students should participate in an ongoing program aimed specifically at developing their ability to formulate high order questions.

2) Many researchers (Nash, 1970; Olmo, 1973; Patterson, 1978; Torrance, 1970) suggest that teachers present their students with materials and activities that exhibit puzzling problems, disharmonies, ambiguities, and deficient information which challenge and encourage students to ask questions.

3) Students who are learning to formulate high order questions will probably benefit from small training groups. This will enable students to have numerous individual opportunities to formulate questions. It will also give students more time with the instructor when specific assistance is needed. This is important when we consider the difficulty students encountered in this study as they tried to understand and formulate various kinds of high order questions. Smaller groups also provide the opportunity for the teacher to observe individual student patterns of questioning and provide them with direct feedback. This will make students aware of areas in their question statements that must be altered to improve the actual purpose and content of their questions. Essentially, small training groups may permit teachers to have a greater impact on students as they learn to ask high order questions.

4) Teachers should exert caution when choosing materials or training packages to promote and develop the questioning skills of their students. They must choose procedures and

materials whether they be teacher modeling, worksheets, or microteaching, which are suited for a specific grade level. It appears that the minimum age for a student to classify and formulate high order questions is unclear. This study recommends that grade three may be too low a level to achieve success in classifying and formulating high order questions. However, researchers (Batson, 1981; Sadker and Cooper, 1974; Smith, 1981) provide the evidence which indicates that students of grades three, five, and six can learn to formulate high order questions using these suggested question training strategies. The researcher would not recommend that students lower than grade three be expected to learn and formulate different kinds of high order questions. Student-generated questions (Cohen, 1983; Kitagawa, 1982; Palinscar, 1984; Smith, 1981) are one method recommended in improving the questioning skills of grade three students. Attempts to improve the questioning abilities of grade one and two students should focus on the purpose and uses of questions, and also on improving the numbers of questions students ask.

5) An important recommendation for improving the kind of questions students formulate is that teachers should ask the kind of question they want their students to ask, especially during the duration of any questioning training strategies their students might be exposed to. Although this evidence was not apparent in this study, researchers (Gall, 1970;

Marksberry, 1980; Susskind, 1979) consistently report that the rate, content, and sequence of teachers' questions can be modeled by their students.

6) Since this study was designed to develop student questioning skills many of the activities provided an opportunity for students to practice and develop this skill. Answers to students' questions were seldom given. According to research, students benefit from receiving answers to their questions (Patterson, 1978; Ross and Balzer, 1975).

They report that students whose questions were answered asked more questions than students whose questions were not answered. It appears children who receive good answers to their questions will ask more. Therefore teachers need to take the time to listen to student questions and also answer them effectively. They must encourage students to ask questions as they search for information. This process was not implemented in this study and may, in some ways, have hindered students' questioning behavior.

Implications for Research

The purpose of this section is to present implications for further research based on the outcome of this study.

1) It has been suggested by this study, that students need to be presented with stimuli that will highly motivate them to ask questions. Therefore research should focus on the effect of high interest materials which present puzzling problems, disharmonies, ambiguities, and deficient

information.

2) Many question taxonomies have been designed by both researchers and educators. It can be assumed that these were developed in the hope of providing a workable design primarily for researchers and teachers. It would be a useful avenue of investigation to examine the adaptation of various taxonomies for students use.

3) The researcher raised some questions regarding the size of the groups receiving training. An important study for researchers to investigate would be whether or not the size of the training groups influences students' understanding of questioning training strategies.

4) Another implication for further research on student questioning may concentrate on the period of time spent on training students in questioning strategies. Is a three week intensified period learning questioning strategies sufficient, or does a full year of reinforcement and practice of the skill of questioning improve student abilities to formulate both low and high order questions.

5) A final implication for research would be to investigate the impact teaching students questioning strategies has on their attitude toward the content oriented subjects.

REFERENCES

- Abbott, G. Teaching the learner to ask for information. TESOL Quarterly, 1980, 14, 5-16.
- Alfke, D. Asking operational questions. Science and Children, 1974, 11, 18-19.
- Andre, M.E., and Anderson, T.H. The development and evaluation of a self-questioning study technique. Reading Research Quarterly, 1978-1979, 14, 602-623.
- Banton, L. Broadening the scope of classroom questions. Education Digest, 1978, 44, 35-40.
- Barr, R.D., Barth, J.L., and Shermes, S.S. Defining the social studies, Arlington, Virginia: The National Council for the Social Studies, 1977.
- Barth, J.L., and Shermis, S.S. Methods of instruction in social studies education (2nd ed.) Washington, D.C.: University Press of America, 1984.
- Batson, A.D. Questioning a reading/thinking foundation for the gifted. Paper presented at the annual meeting of the Southwest Regional Conference of the International Reading Association, San Antonio, Texas, January 29-31, 1981. (ERIC Document Reproduction Service No. ED201 999).
- Bellack, A. The language of the classroom. New York: Teachers College Press, Columbia University, 1966.
- Berlyne, D.E., and Frommer, F.D. Some determinants of the incidence and content of children's questions. Child Development, 1966, 37, 176-189.

- Biodini, A.M., and Koubik, Nancy A. Ask....and you shall conceive. Journal of Creative Behavior, 1980, 14, 235-241.
- Bloom, B.S. (Ed.) Taxonomy of educational objectives, handbook 1; cognitive domain. New York: David McKay, 1956.
- Cairns, H.S., and Hsu, J.R. Who, why, when, and how: a developmental study. Journal Child Language 1978, 5, 477-80.
- Carin, A. and Sund, R.B. Developing questioning techniques. Columbus, Ohio: Charles E. Merritt Publishing Company, 1972.
- Cazden, C.B. Children's questions: their forms, functions, and roles in education. Young Children, 1970, 25, 202-220.
- Cohen, R. Self-generated questions as an aid to reading comprehension. The Reading Teacher, 1983, 36, 770-775.
- Cross, J.S., and Nagle, J.M. Teachers talk too much. English Journal, 1969, 58, 1362-1365.
- DeGracie, J.S., and Vicino, F.L. Yes-no and all-of-the-time-to-never. Educational Technology, 1977, 17, 34-36.
- Dillon, J.T. A norm against student questions. The Clearing House, 1981, 25, 136-139.
- Dillon, J.T. The multidisciplinary study of questioning. Journal of Educational Psychology, 1982, 74, 147-165.

- Dodl, N.R. Questioning behavior of elementary classroom groups. California Journal for Instructional Improvement, 1966, 9, 167-8.
- Donlan, D. How to play 29 questions. Journal of Reading, 1977, 21, 109-14.
- Durkin, D. Reading comprehension instruction in five basal reading series. Reading Research Quarterly, 1981, 16, 515-544.
- Durkin D. What classroom observations reveal about reading comprehension instruction. Reading Research Quarterly, 1978-1979, 14, 481-533.
- Fahey, G.L. The questioning activity of children, The Journal of Genetic Psychology, 1942, 60, 337-357.
- Finklestein, J.M., and Ritter, V.F. Does anyone have any questions? 1980 (ERIC Document Reproduction Service No. ED188 768).
- Flanders, N.A. Analyzing teaching behavior, Massachusetts: Addison-Wesley, 1970.
- Floyd, W.D. An analysis of the oral questioning activity in selected Colorado primary classrooms (Doctoral dissertation, Colorado State College, 1960). University Microfilms, No.66-2512.
- Fraenkel, J.R. Ask the right question. The Clearing House, 1966, 40, 397-401.

- Frase, L.T., and Swartz, B.J. Effect of question production and answering on prose recall. Journal of Educational Psychology, 1975, 67, 628-35.
- Gall, M.D. The use of questions in teaching. Review of Educational Research, 1971, 40, 707-721.
- Goldberg, L. I know the answer, but what's the question? Science and Children, 1979, 16, 8-9.
- Guzak, F.J. Teacher questioning and reading. The Reading Teacher, 1967, 21, 227-234.
- Hare, C.V., and Pulliam, C.A. Teacher questioning a verification and an extension. Journal of Reading Behavior, 1980, 12, 69-73.
- Helfeldt, J.P., and Lalik, R. Reciprocal student-teacher questioning. The Reading Teacher, 1976, 30, 283-7.
- Hoetker, J., and Ahlbrand, W.P. The persistence of the recitation. American Educational Journal, 1965, 145-67.
- Honea, M.H. Wait-time as an instructional variable. The Clearing House, 1982, 56, 167-70.
- Hoskin, B., Swick, K. Questioning and learning. The Clearing House, 1973, 47, 567-8.
- Huenecke, D. Promoting student questions. Elementary English, 1973, 50, 647-650.
- Hunkins, F.P. Involving students in questioning. Boston: Allyn and Bacon Inc., 1976.
- Hunkins, F.P. Questioning strategies and techniques. Boston: Allyn and Bacon Inc., 1972.

- Isaacs, N. Children's "why" questions. In S. Isaacs (Ed.) Intellectual Growth in Young Children. New York: Harcourt, Bruce, 1930.
- Kitagawa, M. Improving discussions or how to get the students to ask the questions. The Reading Teacher, 1982, 36, 42-45.
- Klein, S. Making social studies meaningful to elementary students. The Social Studies, 1982, 73, 178-181.
- Knier, W.P. Some effects of high level questions with systematic positive reinforcement on the achievement of selected social studies concepts. Social Education, 1977, 41, 340-344.
- Knier, W.M., and Grossman, G. The effects of high level questions in competitive and cooperative environments on the achievement of selected social studies concepts. The Journal of Educational Research, 1979-80, 41, 82-85.
- Lehman, R.A. The effects of creativity and intelligence on pupils' questions in science. Science Education, 1972, 56, 103-121.
- Lordon, J. Structured discovery: a modified inquiry approach to teaching social studies. History and Social Science Teacher, 1981, 16, 121-122.
- Mangione, A.R. How to train students and teachers to ask questions. English Education, 1982, 4, 48-52.
- Manzo, A.V. Reading and questioning: the request procedure. Reading Improvement, 1970 7, 80-84.

- Manzo, A.V. The request procedure. Child Development, 1982, 53, 123-129.
- Marksberry, M.L. Student questioning: an instructional strategy. Educational Horizons, 1979, 51, 190-195.
- McLean, J. Curiosity won't kill the kittens. Elements: Translating Theory into Practice, 1980, 12, 2-3.
- Miyake, N., and Norman, D.A., To ask a question, one must know enough to know what is not known. Journal of Verbal Learning and Verbal Behavior, 1979, 18, 357-64.
- Morrow, K. Asking questions. English Language Teaching, 1979, 33, 97-98.
- Mosher, E.A., and Hornsby, J.R. On asking questions. In J.S. Bruner, R.R. Oliver and P.M. Greenfield (Eds.) Studies in cognitive growth. New York: Wiley, 1966.
- Nash, W.R., and Torrance, E.P. Creative reading and the questioning abilities of young children. Journal of Creative Behavior, 1974, 8, 15-19.
- Newton, J.L. Decision making: theory into practice in the social studies. History and Social Science Teacher, 1978, 13, 169-73.
- Olmo, B.G. Teaching students to ask questions. Language Arts, 1973, 52, 1116-1119.
- Oritz, R.K. Using questioning as a tool in reading. Journal of Reading, 1977, 21, 109-114.
- Palinscar, A.S. The quest for meaning from expository text: a teacher guided journey. In G. Duffy, L.R. Roehler, and

- J. Mason (Eds.), Comprehension instruction: perspectives and instruction. New York: Longman 1984.
- Patterson, C.J. Teaching children to listen. Today's Education 1978, 68, 52-3.
- Pearson, D.P. Direct explicit teaching of reading comprehension. In G. Duffy, L.R. Roehler, and J. Mason (Eds.), Comprehension Instruction: perspectives and instruction. New York: Longman, 1984.
- Piercey, D. Is the right person being trained to ask questions. Paper presented at the meeting of the Western College Reading Association, Los Angeles, California, April 1971. (ERIC Document Reproduction Service No.ED050 896).
- Postman, N. and Weingartner, C. Teaching as a subversive activity. New York: Delacorte Press, 1969.
- Powell, W.L. What do students think of your class? Today's Education, 1980, 69, 78-80.
- Raphael, T.E. and Gavelek, J.R. Question-related activities, and their relationship to reading comprehension: Some instructional implications. In G. Duffy, L.R. Roehler, and J. Mason (Eds.), Comprehension instruction: perspectives and instruction. New York: Longman, 1984.
- Raphael, T.E. Question answering strategies for children. The Reading Teacher, 1986, 36, 186-191.
- Rees, A.L. Getting questions asked. English Language

- Teaching Journal, 1975-1976, 30, 303-310.
- Riegle, R.P. Classifying classroom questions. Journal of Teacher Education, 1976, 27, 156-161.
- Roehler, L.R., and Duffy, G. Direct explanation of comprehension processes. In G. Duffy, L.R. Roehler, and J. Mason (Eds.), Comprehension instruction: perspectives and instruction. New York: Longman, 1984.
- Rosenthal, T.L., Zimmerman, B.J. Instruction specificity and outcome expectation in observationally induced question formulation. Journal of Educational Psychology, 1972, 63, 500-504.
- Rosenthal, T.L., Zimmerman, B.J., and Durning, K. Observationally-induced changes in children's interrogative classes. Journal of Personality and Social Psychology, 1970, 16, 681-688.
- Ross, H.S., and Balzer, R.H. Determinants and consequences of children's questions. Child Development, 1975, 46, 536-9.
- Rowe, M.B. Science, silence, sanctions. Science and Children, 1969, 6, 11-13.
- Ryan, F.L. Differentiated effects of levels of questioning on student achievement. Journal of Experimental Education, 1973, 41, 63-67.
- Sadker, M., and Cooper, J. Increasing student high-order questions. Elementary English, 1974, 51, 502-7.
- Sanders, M.M. A second look at classroom questions. The

- High School Journal, 1972, 55, 267-277.
- Sanders, N.M. Classroom questioning: What Kinds.
New York: Harper and Row, 1966.
- Siefert, M. Student questions. Journal of Reading, 1980,
23, 450-2.
- Siegler, R.S. The twenty questions game as a form of
problem solving. Child Development, 1977, 48, 395-403.
- Singer, H. Active comprehension: from answering to asking
questions. The Reading Teacher, 1978, 31, 901-903.
- Smith, C.T. Improving comprehension, that's a good
question. Paper presented at the sixth annual meeting of
the International Reading Association World Congress on
Reading, Singapore 1976. (ERIC Document Reproduction
Service NO. ED142 944).
- Smith N.J. Teaching the language arts through saq:
students asking questions. Paper presented at the Annual
Meeting of the Plains Regional Conference of the
International Reading Association, Des Moines, Iowa, 1981
(ERIC Document Reproduction Service No. ED212 979).
- Spencer, J.M., and Horney, D.P. Questions social studies
students ask. A research project of the North Community
School Corporation, Linden, Indiana, 1978. (ERIC Document
Reproduction Service No. ED164 372).
- Susskind, E. Encouraging teacher's to encourage children's
curiosity: a pivotal competence. Journal of Clinical
Child Psychology 1979, 8, 101-6.

- Susskind, E. The role of question asking in the elementary school classroom. In F. Kaplan and B. Sarason (Eds.), The Physcoeducational Clinic. New Haven, Connecticut, 1969.
- Sutton, R.M. On asking (and answering) questions. Physics Teacher, 1977, 15, 94-5.
- Taba, H. The teaching of thinking. Elementary English, 1965, 42, 534-542.
- Torrance, E.P. Guiding creative talent. Englewood Cliffs, New Jersey: Dodd, Mead, and Company, 1962.
- Torrance, E.P. Group size and question performance of preprimary children. Journal of Psychology, 1970, 74, 71-75.
- Turner, T.N. Question games for social studies. Social Education, 1981, 45, 194-196.
- Tyack, D. and Ingram, D. Children's production and comprehension of questions. Journal of Child Language, 1976, 4, 211-223.
- Ukens, L. How would you respond? Science and Children, 1974, 11, 27-8.
- Van Jura, W.J. The role of questioning in developing reading comprehension in the social studies. Journal of Reading, 1982, 26, 214-216.
- Wagoner, S.A. Comprehension monitoring: what is it and what we know about it. Reading Research Quarterly, 1983, 18, 328-347.

Wilén, W. "Are your students ready for inquiry"? The Social Studies, 1979, 70, 170-175.

Zahorik, J.A. Questioning in the classroom. Education, 1971, 91, 358-363.

APPENDIX A

Student Attitude Survey

STUDENT ATTITUDE SURVEY

I N S T R U C T I O N S

please follow these directions.

1. This is not a test. There are no "right" or "wrong" answers. Just respond to each item as honestly as you can.
2. The questions ask you to tell how you feel about many different things. Your answer to each question should tell how you feel about it.
3. Please work carefully and quickly. Do not spend a long time on any one question. Choose the answer that seems best to you at the moment. Please answer all the items and give only one answer to each.
4. For each question you are just to tell how you feel about each statement by selecting one of the five ways given for each statement.

EXAMPLE

READ THE FOLLOWING SENTENCE. THEN CIRCLE THE NUMBER SO THAT IT SHOWS HOW YOU FEEL ABOUT THE IDEA IN THE SENTENCE.

	STRONGLY AGREE	AGREE	NOT SURE	DISAGREE	STRONGLY DISAGREE
I LIKE SCHOOL.	1	2	3	4	5

IF YOU AGREE STRONGLY YOU WOULD CIRCLE THE NUMBER BELOW STRONGLY AGREE. IF YOU DISAGREE STRONGLY YOU WOULD CIRCLE THE NUMBER BELOW STRONGLY DISAGREE, AND SO ON.

ALL THE STATEMENTS WORK THE SAME WAY. SHOW HOW YOU FEEL ABOUT EACH STATEMENT BY CIRCLING THE NUMBER BESIDE IT.

	STRONGLY AGREE	AGREE	NOT SURE	DISAGREE	STRONGLY DISAGREE
1. SOCIAL STUDIES IS AN ENJOYABLE SUBJECT.	1	2	3	4	5
2. I HAVE LEARNED A GREAT DEAL FROM MY SOCIAL STUDIES CLASSES.	1	2	3	4	5
3. I OFTEN GET A CHANCE TO TAKE PART IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
4. SOCIAL STUDIES IS AN EASY SUBJECT TO UNDERSTAND	1	2	3	4	5
5. I FIND MOST TOPICS INTERESTING IN MY SOCIAL STUDIES CLASSES.	1	2	3	4	5

	STRONGLY AGREE	AGREE	NOT SURE	DISAGREE	STRONGLY DISAGREE
6. EXAMINING PICTURES, MAPS, SLIDES, ETC. HAVE HELPED ME LEARN A LOT IN SOCIAL STUDIES.	1	2	3	4	5
7. I TAKE PART A LOT IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
8. I FIND IT DIFFICULT TO PARTICIPATE IN GROUP DISCUSSIONS IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
9. SOCIAL STUDIES CLASSES ARE BORING.	1	2	3	4	5
10. SOCIAL STUDIES IS ONE OF THE MOST USEFUL SUBJECTS I KNOW.	1	2	3	4	5
11. I FEEL FREE TO EXPRESS MY OPINION IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
12. MOST OF THE MATERIALS WE USE IN SOCIAL STUDIES CLASSES ARE EASY TO UNDERSTAND.	1	2	3	4	5
13. I LIKE TO WORK ON SOCIAL STUDIES ASSIGNMENTS.	1	2	3	4	5
14. CLASS DISCUSSIONS HAVE HELPED ME LEARN A LOT IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
15. I DON'T GET A CHANCE TO EXPRESS MY OPINIONS IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
16. SOCIAL STUDIES IS A HARD SUBJECT TO LEARN.	1	2	3	4	5
17. SOCIAL STUDIES DOES NOT HOLD MY INTEREST.	1	2	3	4	5
18. SOCIAL STUDIES IS VALUABLE TO EVERYONE WHO TAKES IT.	1	2	3	4	5
19. I TAKE PART VERY LITTLE IN SOCIAL STUDIES CLASSES.	1	2	3	4	5
20. I FIND IT DIFFICULT TO EXPRESS MY OPINION IN SOCIAL STUDIES CLASSES.	1	2	3	4	5

APPENDIX B

Questioning Strategies Materials and Activities

Student Activity #1 - Questions are Important

Purpose: To make students aware of the purpose and importance of questions.

Time Required: 15 minutes.

Procedure: Duplicate and hand out classroom set of worksheet #1. Read this information over with the class and allow a discussion to occur.

Student Activity #1 - QUESTIONS ARE IMPORTANT

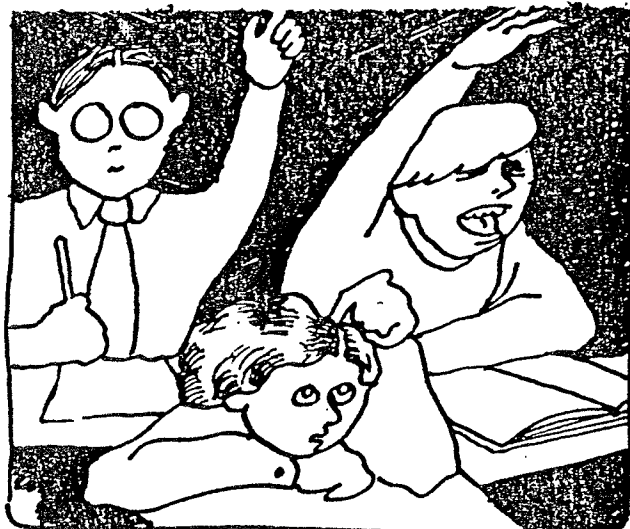
Purpose: To make students aware of the purpose and importance of questions.

Time Required: 15 minutes.

Procedure: Duplicate and hand out classroom set of worksheet #1. Read this information over with the class and allow a discussion to occur.

QUESTIONS ARE IMPORTANT BECAUSE...

What time is it?... Where are you going?... Did you get paid today?... When will you be home?... Did you like the show?... What did you mean by that?... Would I look better in the brown outfit? What will she think if I show up early?... Where did I leave my shoes?... Why am I here?... Why do you treat me like you do do do?...



...They are everywhere.

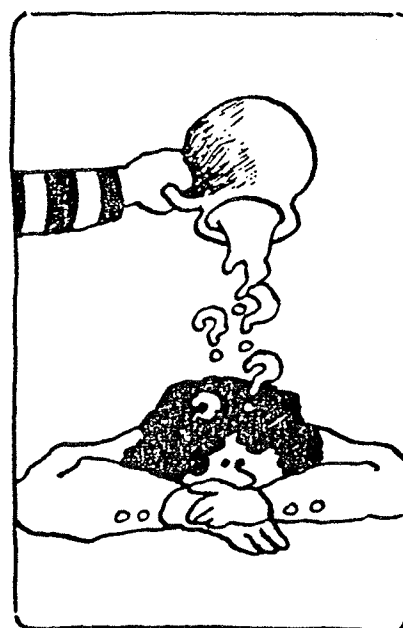
...Some are asked aloud...while others are thought but not asked.



Not much is learned without a question, and...



...To process questions, one must think.



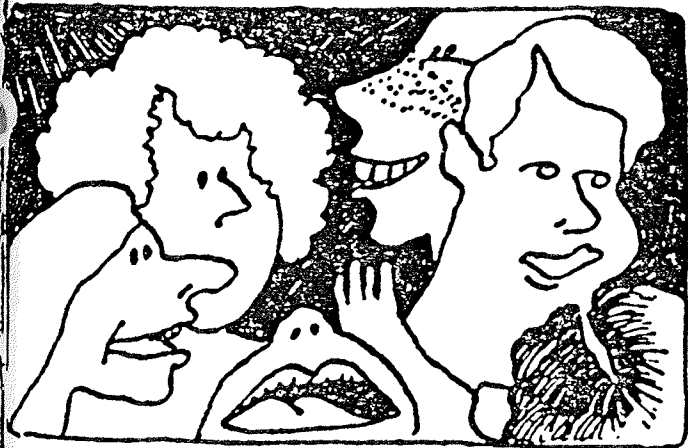
Questions are, therefore, the catalyst of learning!

Learning happens when.....there is give and take between



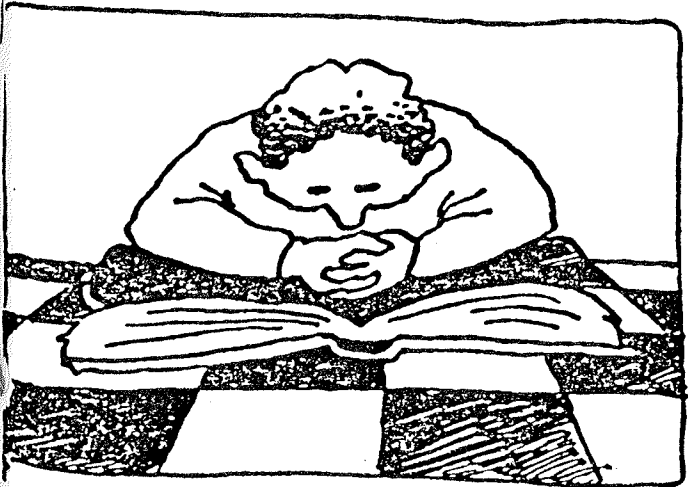
a teacher and his/her students. Questions are asked and answers are given. The answers are the same for everyone in the group.

Learning also happens when.....there is exchange between and



among students dealing with questions that have individual answers and are not the same for every student.

Learning also happens when.....students individually process all kinds of questions by themselves.



Student Activity #2 - QUESTIONS ARE EVERYWHERE

Purpose: To cause students to begin to think about questions.

Time Required: 20 - 25 minutes.

Procedure: 1. Duplicate and hand out classroom set of page

1. Read the directions at the top of the page together and page together and then ask the students to try and remember some questions they have been asked in each of those situations.

2. When they have had time to write some questions, a brief time of reporting could be held with selected students reading their questions to the class.

3. Read the summary statement aloud, having made the point that questions are a very important part of our lives!

4. Some of you may wish to have students make a simple folder to keep their question papers in as they may be worked out over an unlimited period of time. Many students take pride and more interest in work they can see accumulating.

QUESTIONS ARE EVERYWHERE

Name _____

Does it seem like someone is always asking you questions? Ones like these below? Can you think of one or two other questions that you have been asked in each of these places?

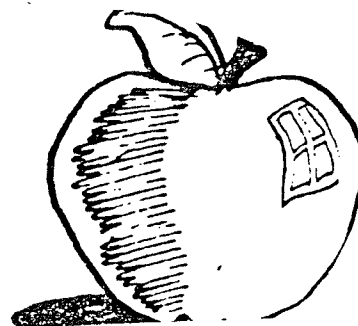
AT HOME



When...what....where....how much.....? Did you do your lesson?

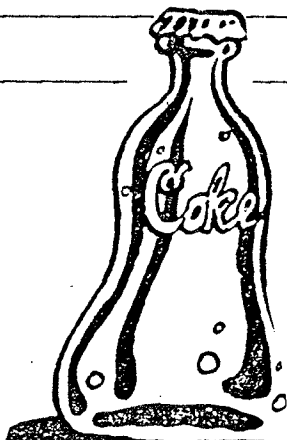
Did you pick up your room?
Why did you do that? Where are you going?

AT SCHOOL



Whatcha doing? Did you see that TV show? Can I go, too? Did you like him?

WITH FRIENDS



How do you feel? Where does it hurt?

WITH OTHERS



That's the way the world works -- by asking questions. That's the way you work, too. It just makes sense then that if we learn to ask better questions and to sort out the

questions we are asked, we should be able to get along better in the world.

Student Activity #3 - FIRST IMPRESSIONS

Purpose: To cause students to write questions they might use in an imagined situation.

Time Required: 20 - 25 minutes.

Procedure: 1. Duplicate and hand out page 2 to each

student. After making sure students

understand the directions, allow them five minutes to write their two questions.

2. Allow several students (two at a time) to

stand and read their questions as if role-

playing the two characters.

3. Summarize by asking the class whose question

they liked best. The point is to emphasize

that there are different kinds of questions

and that you will talk more about that

later.

FIRST IMPRESSIONS

Name _____



Imagine that you are Christopher Columbus and you have just landed in the New World (America). As you are coming ashore, you see a tall Indian named Chief Wel-Kum step forward to greet you. What would be the first question you would ask the Chief? Think about that and then write your question in the blank below.

If I were Christopher Columbus, I would ask the Chief, " _____

_____ "

Now, imagine that you are Chief Wel-Kum and you have watched this strange man come wading ashore from a giant ship. What would be the first question you would ask of Christopher Columbus?

If I were Chief Wel-Kum, I would ask Columbus, " _____



Listen now as others read their answers.

Do you notice that there are lots of different kinds of questions?

Student Activity #4 - Low-order Questions

Purpose: To teach students a definition of LOW-ORDER questions.

Time Required: 30 - 40 minutes.

- Procedure:
1. Duplicate a classroom set and hand out page 3.
 2. Allow 15 minutes to read and complete the page and then finishing the four questions at the bottom. The teacher should guide students through the first phase of this activity by reading the questions and discussing them with the students.
 3. You will need to observe the class, offering individual assistance where needed as students complete the four questions at the bottom.
 4. Have students share the questions they have written and stress what kinds of answers each calls for. Remember the final point is, "Is there an answer to this question that would be the same for all of us?"
 5. Before collecting the papers, ask students to tell what a low-order question is.
 6. Check to see that they have completed the papers and keep them to return at a later

date or return them to keep in their folders.

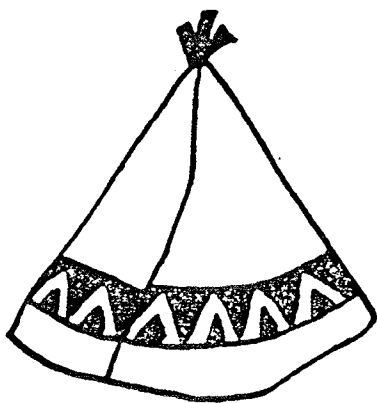
7. Stress the point that the answers to low-order questions will be the same for everyone in the class.

8. A final activity may be what low-order questions would we ask Christopher Columbus or Chief Wel-Kum? These can be written on the board and discussed for their accuracy in this category.

LOW-ORDER QUESTIONS

Name _____

As you have probably noticed, we have been talking a lot about questions. That's because it is really important to know about questions and how to use them. Now we want to show you that there are basically two kinds of questions. There are ones that we call low-order and ones that we call high-order questions.



Low-order questions are ones that have specific answers. These ask you to either remember word-for-word or explain something in your own words. Either way, there is one answer and it is your job to come up with it. The answer to a low-order question would be the same for all of us.

Here are some LOW-ORDER QUESTIONS.

1. What is the name of your community?
2. How many students are in your school?
3. What is the name of your principal?

Do you see that the answer to the first one is a place, the second is a number and the third one is a name? In all three cases the answer would be the same. Others may be:

4. When did the first settlers come to Charleswood?
5. What foods would the early settlers be able to obtain during the winter months.
6. How did Charleswood get its name?
7. What methods of transportation were used in the early 1900's?
8. Why did people come to live in Charleswood?

Choose any subject you like and complete the following sentences to make each a low-order question.

1. Who was the first _____ ?
2. What happened at _____ ?
3. Why did the _____ ?
4. What happened to _____ ?

Student Activity #5 - HIGH-ORDER QUESTIONS

Purpose: To teach students a definition of HIGH-ORDER questions.

Time Required: 10 - 20 minutes.

Procedure:

1. Duplicate and hand out page 4 to each student.
2. Allow students 15 minutes to read and complete the page. Again you should observe carefully while they are reading--offering to help where needed.
3. As a summary, have two or three students describe a high-order question and then go over the two items at the bottom of the page. It is hoped by this point they will see that low-order questions have one specific answer which would be the same for all of them, e.g. "What is today?"
(ANSWER: "Today is Tuesday!") It is obviously Tuesday for everyone in the room. The answers to high-order questions, on the other hand, can vary depending upon the imagination or values of the individual, e.g. "Are you having a good time today?"
(ANSWER: Yes; No; Maybe). There could be as many answers as there are people in

the room.

4. Have students share their written questions either in small groups or with the entire group to see if they agree as to what the question asks the reader to do.
5. Stress that it is the intent of the question that determines whether it is low-order or high-order.
6. Students must be made aware of the sub-categories of high-order questions and their intent. When posing high-order questions they must take these levels into consideration but not be required to recognize each of these subcategories.

HIGH-ORDER QUESTIONS

Name _____

HIGH-ORDER QUESTIONS have a number of purposes and possible answers. They may ask you to imagine how something could be different or similar, including your opinion and personal reactions on this issue. They may ask you to judge between things and decide for yourself what is better or worse, fair or unfair. High-order questions ask you to determine causes and effects of past and present events or ideas.

Since everyone has a different mind, they often come up with several different answers to the same questions. The answers to HIGH-ORDER QUESTIONS will not be the same for everyone.

Here are some examples of high-order questions:

1. If you had been one of the early settlers, how would you have felt about living in Charleswood?
2. Are you in favour of bringing back the death penalty? Why?
3. If you were the first person to settle and live in an area where no one ever lived, how would you decide what name to give the area you were living in?
4. When you grow up and have a family, will you live in Charleswood? Why?
5. Do you think Charleswood is a good place to raise a family? Why?

6. How do you feel about tearing down old historical buildings?
7. Should a large number of deer in the Charleswood area be killed to thin the herd?
8. Some good agricultural land exists in this area. Should new homes be allowed to be built on the land? Why?
9. How was life long ago different from today?

Can you see how people would have different answers to these questions?

Remember that:

1. To evaluate means to judge or choose something.
2. To compare means to decide how objects, comments, ideas and plans are the same or different.
3. To determine causes and effects of past and present situations and events.
4. To express opinions involves personal reactions to comments, objects, ideas and plans.
5. To imagine means to predict, reconstruct or to conclude something.

Here are some further examples of high-order questions:

Evaluative Questions - These questions require the respondent to choose or judge something as good or bad on the basis of some standard, and are proven facts and values.

1. Do you think it is important for a school to have a gymnasium?
2. Who is the friendliest person you have met? Give reasons for your choice?
3. Would you prefer to live in a city or on a farm? Why?
4. What do you think was the most reliable means of transportation during the early 1900's?
5. What do you think about going to school with only one room? Why?

Comparative Questions - These ask the respondent to decide if ideas are the same or different, and how they are the same or different.

1. Compare children's clothes in the early 1900's with those of today?
2. How would you compare riding in an early 1900 automobile with our modern automobiles?
3. Are there any differences or similarities in how people dressed in the early 1900's and how people dress today?
4. What are the differences or similarities in immigrating to Canada today as compared to the early 1900's?
5. Compare Canadian immigration quotas in the early 1900's with those of today?
6. Are there any similarities or differences in where the people immigrate from in 1900 compared to those of

today?

Cause and Effect Questions -

1. What caused people to remain in Charleswood once they moved here?
2. What influenced people to move away from Charleswood and settle elsewhere?
3. Did the distance of Charleswood from the center of Winnipeg influence early residents to purchase an automobile?
4. What would influence a Charleswood resident to own a car?
5. What would cause or influence you or your family to move to another country?

Divergent Questions - Divergent questions require the respondent to think creatively or offer their personal reactions to a comment or question. They involve imaginations which lead to predictions or conclusions. They also involve personal opinions on ideas, events, or objects.

1. If you were living in the early 1900's as a child, what would you have been doing?
2. What do you think schools were like in the early 1900's?
3. Give all the reasons you can think of why you would like

to have lived during the early 1900's?

4. What would happen if children did not attend school in the early 1900's?
5. If your family was transferred to Europe do you think you would be eating the same meals as you are accustomed to?

Choose any subject and complete the following sentences to make them high-order questions.

1. How do you feel about _____?
2. What would have happened if _____?
_____?
3. Was it right or wrong for _____?
_____?
4. What is your opinion of _____?

Can you tell me the difference between a high-order and a low-order question now? Let's see.

The answer to a low-order question is _____

but the answer to a high-order question is _____
_____.

Student Activity #6 - TYING IT ALL TOGETHER

Purpose: To evaluate students' progress in recognizing
HIGH-ORDER and LOW-ORDER questions.

Time Required: 20 - 30 minutes.

- Procedure:
1. Duplicate a classroom set and hand out page 5.
 2. Allow 10 - 15 minutes for students to complete the page. Make sure they understand that they are to put an "H" in front of HIGH-ORDER questions and an "L" in front of the LOW-ORDER ones.
 3. When most seem to have finished, go over their coding to see if they have clearly understood.

Student Activity #7 - KINDS OF QUESTIONS - REVIEW

Purpose: This activity is intended to be used as a review of the different kinds of questions, high-order and low-order.

Time Required: 40 minutes. If you allow discussion of the student questions, a full class period may be used.

- Procedure:
1. Duplicate a classroom set and hand out to students.
 2. Tell students to complete the activity according to the directions. This can be done in a small group or individually.
 3. When finished, ask individuals or groups to share the names of their famous people. Listing these on the board for the whole class to see creates more interest.
 4. Now ask individuals or groups to write a low-order and high-order question for each person. Have them write these on the board under their famous people.
 5. Class or groups discuss these questions, or what possible answers might be.

KINDS OF QUESTIONS - REVIEW Name _____

1. Suppose you could have a personal conversation with any famous person.
2. Think about all the famous people who you have seen or heard about. Then choose the three that you would want to meet. Write their names below.

1) _____

2) _____

3) _____

3. Now, because of the press of time, you can only ask each person a high and a low order question. Imagine that they are actually going to answer the question you ask. Select your questions carefully and write them below.

1) I would ask _____ (name) _____
the following questions: low-order _____

_____ high-order _____
_____ ?

2) I would ask _____
the following questions: low-order _____

_____ high-order _____
_____ ?

3) I would ask _____
the following questions: low-order _____

_____ high-order _____
_____ ?

APPENDIX C

Sample Stimulus Questions

Sample Stimulus Questions #1ImmigrationLow-order

1. Why did people immigrate to Canada?
2. What immigrant groups are shown in the slides?
3. Where did they come from?
4. Was there a period of time when many people immigrated to Canada?
5. Was there any period in time when most people immigrated to Canada?
6. What skills did these people have?
7. Did whole families immigrate or just young adults?
8. Where in Canada did most of these people settle?

High-order

Evaluative:

1. Do these people seem happy or sad? Why?
2. What is your reaction to limiting the number of immigrants to Canada each year?
3. How would you feel if you moved to a place where no one could speak English?
4. Do you think Canada was their first choice? Why?
5. Who do you think these signs attracted?
6. Should signs like these attracting people to Canada be used today? Why?
7. In your opinion, would people immigrating to Canada be

at an advantage or disadvantage in terms of jobs, opportunities, and finances?

8. Do you believe Canada has benefited from these immigrants? How?

Comparative:

1. In what ways are these immigrants related to the growth and prosperity of Canada?

2. In what ways was immigrating to Canada similar or different in terms of reasons and adjusting to a new way of life as compared to those immigrating to Canada the last ten years?

3. Compare this type of advertising for immigrants with any methods used today?

4. In what ways were the reasons for immigrating to Canada similar or different?

5. Compare this immigrant family to those of today?

Cause and Effect:

1. What effect did advertisements like these have on the numbers of people immigrating to Canada?

2. What would happen if Canada didn't put a quota on the number of immigrants allowed into Canada?

3. What would cause or influence your family to move to another country? Compare your reasons with those of the early immigrants. What similarities or differences are there?

4. What do you think may have happened if these people didn't leave their home country and come to Canada?
5. Why are all these people gathered together for this picture?
6. What effect did these immigrants have on Canada?
7. What caused or influenced such a large group of people like these to leave their country and come to Canada?
8. What effect did the Canadian way of life have on these people?

Divergent:

1. What things do you think this mother is worrying about?
2. How can you tell that these people were looking for a better life in Canada?
3. As the minister in charge of Canada's Immigration Policy, how would you control the number of immigration requests to Canada?
4. As an immigrant to Canada what would be your four most important concerns upon your arrival to Canada? Why?
5. As an immigrant what steps would you take to insure your survival and success in Canada?
6. Suppose there was no restriction on immigrating to Canada what effect would this have on the character, culture, and economy of Canada?
7. What kind of hardships did these people probably encounter as they made their way to Canada?

8. If you were a parent of a young family and you read this poster what thoughts would go through your mind? Would you come to Canada? Why or why not?

Sample Stimulus Questions #2OccupationsLow-order

1. What kinds of jobs did people have in the 1900's?
2. Are these jobs still being done today?
3. What materials are these men using to make these houses?
4. Are men or ladies making these hats?
5. What is this man doing with all those balls of thread?
6. What are these ladies printing? Is it a newspaper?
7. What are these men selling?
8. Who do you think would buy a gun? What would he use it for?

High-order

Evaluative:

1. Which of these occupations would you consider to be very important to these people? Why?
2. Why do you think these people chose these occupations?
3. How important were the services these people provided to the community as a whole?
4. Do you believe wagons were sold like our cars are sold today?
5. Why would someone want such a fancy looking carriage?
6. Do you think the printing industry was important during the early 1900's?
7. Select the occupation you like best and give us reasons

for your choice?

Comparative:

1. Compare working conditions shown in these slides to today's working conditions/
2. Which of these occupations are still being carried out today? How are they different or similar?
3. How is book binding today similar or different to the methods used in the early 1900's?
4. In what ways are these occupations similar or different to their modern day counterparts?

Cause and Effect:

1. What were some of the reasons why there was a demand for these factories to be established?
2. Why did people do these jobs?
3. Why was the printing business required?

Divergent:

1. Which of these jobs do you like? Why?
2. If you could choose one of these occupations which one would it be? Why?
3. What do you think some of these jobs were like?
4. How do you think these people felt about the jobs they were doing?
5. What do you think a fair wage would be for these people to earn? Why?

Sample Stimulus Questions #3SchoolLow-order

1. What means of hearing, lighting, and telling time were used in early schools?
2. What materials did students use to learn?
3. What topics did they learn about?
4. Was there more than one room in the school?
5. Are the students in this school all the same age?
6. What are the children doing? Is this a special class?
7. Who cleaned the school?

High-order

Evaluative:

1. Is this a school bus? How do you know? What do you think it was like riding to school on this horse drawn bus?
2. Do you think everyone who lived a certain distance from school could ride this school bus? Why?
3. Why do you think some of the early schools had one or two rooms?
4. Would you like having children of lower or higher grades in the same room as yourself? Why?
5. For what reason would you favor having these kinds of schools today?
6. Do you think the older children liked being in the same

classroom as the younger children?

7. How important do you think school was to the parent? to the children?

Comparative:

1. In what ways were schools in the early 1900's similar or different to the schools of today?
2. How does this school bus compare to the one you ride in?
3. In what ways are teachers of today similar or different from teachers in the early 1900's?
4. What is happening in the picture that is like what you do at school? What is different?
5. How does this class of children differ from your classroom?

Cause and Effect:

1. Why did children attend school?
2. What clues can you notice from these study prints that show you or represent student and parent attitudes toward school during the early 1900's?
3. Why are most of the walls in the classroom bare?
4. What things would you have to get used to if you attended this school? Why?
5. In what ways is this classroom picture similar or different to the ones taken at our school?

Divergent:

1. As a person of your age how might your leisure time be

spent at school?

2. What did parents expect of the schools?
3. What do you think school was like a hundred years ago?
4. What in your opinion, were advantages or disadvantages of this kind of school?
5. How might the children have felt about being in a mixed grade school?
6. Give all the reasons you can think of why you would or would not like to attend a school of this nature?
7. What impression do you have of these pictures showing what school was like many years ago?
8. How would you feel if you had to walk over two miles to school every day?

Sample Stimulus Questions #4Food and MarketsLow-order

1. What kinds of food did the early settlers eat?
2. Where did they get most of it?
3. How were meat and vegetables stored for long periods of time?
4. What are these women doing?
5. Why is that woman pushing the stick in the barrel?
6. Who did most of the cooking and baking?
7. What kind of meat did these people eat?
8. What could people buy at the markets?
9. What kind of things were sold at the general store?
9. What kind of things were sold at the general store?
10. What is this man buying?
11. Who do you think bought things at the general store?

High-order

Evaluative:

1. What do you think of these early stores?
2. If you could buy a few items, what would they be? Why?
3. Would you buy some of these dresses? Why?
4. What do you think should be the most popular item in this store? Why?
5. Would you prefer to shop in these general stores or our modern day stores? Why?
6. Do you think the girl in the picture will help her

mother prepare the food? Give reasons for your answer?

7. What do you think were the disadvantages of these early ice boxes? What did people, especially children think of them?

Comparative:

1. How would you compare this store with the stores of today?
2. What items sold in these stores are still being sold today?
3. How can butter be made more easily?
4. What early methods of preparing and canning vegetables and fruit are still being used in today's homes?
5. How are the goods sold and displayed in these stores similar to modern methods of selling and displaying products?
6. How do you think these early methods of canning foods compare to our modern methods?

Cause and Effect:

1. What were the effects these stores had on the people's lifestyles?
2. What are some of the reasons why the people in this store might be shopping here?
3. Why was butter made in this fashion?
4. Why did people can fruits and vegetables?

Divergent:

1. These girls seem to be enjoying making butter. Do you think it was an enjoyable job?
2. Give me all the reasons you can think of why you would shop at these general stores?
3. How important were these early stores to the people?
4. How often do you think people made trips to these general stores? Why?

Sample Stimulus Questions #5TransportationLow-order

1. What methods of transportation were used in the early 1900's?
2. What were the roads like? Were they paved?
3. What kind of fuel did the early automobiles use?
4. Were the early automobiles expensive?
5. Where did people go with their automobile?
6. How much did it cost to ride a street car?
7. Where did streetcars usually go?

High-order

Evaluative:

1. Which of these early means of transportation would you use? Why?
2. Why do you think people bought and used an automobile?
3. Would you prefer to ride on a streetcar or in an early 1900's automobile? Why?
4. What do you think was the best means of travel in the early 1900's?
5. What do you think people thought of the automobile?
6. Why did people use different methods of transportation?
7. What do you think is happening for all these people to be crowded together on this street?
8. This man is delivering milk in a wagon. Do you think

milk was delivered to everyone in the city in this fashion?

9. What do you think this man would do if his automobile broke down?

Comparative:

1. In what ways is this picture of a traffic jam similar or different to traffic jams of today?
2. What early means of transportation are still being used? Why?
3. Compare this horse pulled streetcar to our modern day buses?
4. How would you compare milk delivery in this picture in 1920 with today's delivery methods?
5. Compare these early means of transportation. List their advantages and disadvantages.

Cause and Effect:

1. Why would people use this horse drawn streetcar?
2. What is the cause of this traffic jam?
3. Would the distance of Charleswood from the city center cause people living here to buy an automobile?
4. What effect did the streetcars and automobiles have on people's lifestyle?

Divergent:

1. How might the lives of people with cars in terms of accessibility and time be different from those without

automobiles?

2. What was your first ride on an airplane like? Do you think this feeling would be the same as those felt by children going on their first car ride?
3. What do you think riding in this horse drawn streetcar would be like?
4. Notice the many bicycles in this traffic jam? Why do you think so many bicycles are being used by these people?
5. Under what circumstances do you think people would buy and use one of the early automobiles?
6. Give me all the reasons you can think of why people bought a car or didn't buy a car?
7. How do you feel when you see one of these old automobiles driving down our modern streets? Would you like to own one? Why?
8. Which method of transportation did people prefer, horse, automobile, or the streetcar? Why?

Sample Stimulus Questions #6ChildrenLow-order

1. What kinds of games did boys and girls play?
2. Where would they play these games?
3. What kinds of toys did children have?
4. Did girls play with dolls? What kind of dolls?
5. What are the boy and girl carrying?

High-order

Evaluative:

1. Do you think the boys and girls of the 1900's should do similar jobs or different jobs as they did?
2. Would you guess these boys liked what they are wearing? Why?
3. Are they everyday clothes or just for special occasions? Why do you think so?
4. What do you think of children's hair styles in these pictures?
5. Do you think the sign on the steps attracted people to adopt these children?
6. Who do you think adopted these orphans?

Comparative:

1. Compare children's games and toys in the early 1900's with those of today's children. Describe what games, toys, and activities are similar? What are different?

2. How might this orphanage be different from our modern ones?
3. In what ways are the children of today like or different from the children in the early 1900's?
4. Compare these clothes with today's clothes?
5. Are there any differences or similarities in children's role or responsibility in the home now as compared to the early 1900's?
6. Compare children's hair styles in these photographs with those worn by today's children?
7. Compare these girl's clothes with those worn by girls of today?

Cause and Effect:

1. Why are the children playing this game?
2. When would the boys dress up like this? Why?
3. The children seem fairly old. What do you think caused them to become orphans?

Divergent:

1. As a child in the early 1900's what things would you enjoy doing? dislike doing?
2. What comment can you make about the life of children during the early 1900's based on this series of slides?
3. What might happen to these children if their chores were not completed?
4. How would you feel if you were a child growing up during

this period of time?

5. What do you think the people in this picture are thinking or feeling?
6. Would you want to live during this period of time? Why?
7. Which of the activities children took part in the early 1900's is important to you? Why?
8. How would you describe the feeling of these people in this photograph?
9. What do you think may have happened to these children?
10. Does it seem these girls are enjoying themselves? How can you tell?

Sample Stimulus Questions #7FashionLow-order

1. Where could a person buy clothes like these?
2. Did people make their own clothes?
3. How were they made?
4. What did they use to make clothes?
5. Where did the material come from?
6. These pictures show the girls always wearing dresses.
Did they ever wear jeans?

High-order

Evaluative:

1. What do you think of the way these people dressed?
2. What do you think of wearing a hat, a moustache?
3. Did wearing a hat symbolize anything?
4. Do you think there were rules about what boys and girls could or could not wear to school? What may some of them have been?
5. Select the piece of clothing you like best. Tell us why you chose this particular piece of clothing?

Comparative:

1. Compare these clothes with those worn by people today?
2. How did these fashions differ from our fashions of today?
3. In what ways are making clothes at home today different

or similar to method and reason used by people in the early 1900's?

4. How would you compare footwear, now and then? Point out major differences and similarities.

Cause and Effect:

1. When did people dress up in these fancy clothes? Why?
2. Why did women wear long dresses and shirts?
3. What effects have these early fashions had on modern fashions?
4. Why would people want to wear these kinds of clothes?

Divergent:

1. What do you think these people would think about today's clothing?
2. Would you prefer to wear these clothes or the ones you wear now? Why?
3. How might people in the country dress differently from people living in the city?
4. Give me all the reasons you can think of why people wore these clothes?

APPENDIX D

Community History Test

Read each question carefully and the 4 explanations below the question. Choose the best statement which correctly answers the question. To answer a question circle the letter in front of the answer which you feel is the correct answer. Only select one answer per question.

1. How did most children in early Charleswood usually get to school?
 - a) they walked
 - b) they went by horse
 - c) they were taken by horse-pulled wagons or sleighs
 - d) they rode their bicycles

2. What did students first use to write with in early schools?
 - a) pencil and paper
 - b) pen and paper
 - c) chalk and a slate
 - d) chalk and paper

3. What was the language of instruction in Charleswood's first school, St. Charles?
 - a) English
 - b) Ukrainian
 - c) German
 - d) French

4. One of the best words to describe the inside of a general store is:
 - a) clean
 - b) noisy
 - c) busy
 - d) cluttered

5. Many of the streets in Charleswood are named after:
 - a) people who died in World War I and II
 - b) the early residents of Charleswood
 - c) famous people
 - d) government officials

6. What would a person do for fun in early Charleswood?
 - a) swim in the river
 - b) play hockey
 - c) go horseback riding
 - d) all of the above

7. When Manitoba first became a province in 1870, it was nicknamed:
 - a) the gateway to the west
 - b) a farming province
 - c) the commercial capital of the west
 - d) the postage stamp province

8. Because Charleswood was several miles from Winnipeg the main industry was:
- a) ice collecting
 - b) farming
 - c) railroad industry
 - d) clothing
9. What was grown on the land of Manitoba's Legislative Building during the Depression?
- a) wheat
 - b) potatoes
 - c) flowers
 - d) grass
10. What is prairie gumbo?
- a) prairie wheat
 - b) prairie soil
 - c) a prairie tree
 - d) a prairie flower
11. What did this area look like before it was settled?
- a) it was covered with large prairie grasses
 - b) it was covered in bush and forest
 - c) it was covered in grasses, bush and fields of wild flowers
 - d) it was flat prairie
12. The very first people in Charleswood were:
- a) the Metis
 - b) Indians
 - c) Ukrainians
 - d) French
13. What were the sidewalks on Elmhurst Road made of in the 1920's?
- a) brick
 - b) cement
 - c) wood
 - d) gravel
14. Which things would you find in an early school and not in a modern school?
- a) lights
 - b) radio
 - c) inkwells
 - d) projector
15. What were the first roads in Charleswood like?
- a) gravel
 - b) wooden
 - c) mud
 - d) cement
16. An early house in Charleswood probably had:
- a) a dining room, a kitchen, a living room, two bedrooms
 - b) 2 stories with a dining room, living room, kitchen downstairs and 3 bedrooms upstairs
 - c) one large room downstairs and sleeping quarters upstairs
 - d) 2 stories with several rooms upstairs and downstairs

17. What could one buy at a general store?
a) meat b) vegetables c) clothing
d) almost anything one would need
18. Where in Charleswood can you go today and find the vegetation (grasses, trees and flowers) similar to those found here over 100 years ago?
a) Assiniboine Forest
b) the bush behind Royal School
c) the Living Prairie Museum
d) Assiniboine Park
19. People settled in Charleswood because it had:-
a) good farmland b) valuable minerals
c) inexpensive land d) good hunting
20. Children's clothes were:
a) usually bought at the store
b) knitted from wool
c) made from flour or sugar sacks
d) made from animal skins

APPENDIX E

Framework for Formulating and
Classifying Student Questions

Framework for Classifying and Formulating Student Questions

Low order Questions

Low order questions require the respondent to recall knowledge or translate information into their own words. They have specific answers which are the same for everyone.

High order Questions

High order questions have a number of purposes and possible answers. They may ask you to imagine how something could be different or similar, including your opinion and personal reactions on this issue. They may ask you to judge between things and decide for yourself what is better or worse, fair or unfair. High order questions ask you to determine causes and effects of past and present events or ideas. In general high order questions include the following types of questions:

Evaluative - These questions require you to judge or choose something as good or bad on the basis of some standard; and are proven by facts and values. They deal with matters of judgement, value, and choice. Often evaluative questions are distinguished by short introductory phrases such as:
What do you think about ...

In your opinion...

What do you think...

Justify your belief...

Defend your opinion...

Some examples are: What in your opinion were advantages or disadvantages of schools a hundred years ago? What do you think immigrating to Canada was like for many of Canada's early immigrants? Why do you think people began driving cars and using motorized machines on their farms? What do you think about the clothing people used to wear? Would you have liked to be a pupil in a one-room school? Why? Would you like to immigrate and move to another country? Why? Would you prefer to live in a city or on a farm? Why?

Comparative - These questions ask you to decide if ideas or objects are the same or different, identical or contradictory. Some examples are: In this picture which people are similar or different, from each other? Explain? Compare men's clothing styles in 1920 and 1930. Point out major differences or similarities.

How does riding on a ferry in 1920 compare with riding on one of today's modern ferries?

Comparative - How do these fashions in the picture differ from our fashions of today? How is this classroom different or the same to your own? Compare grocery shopping methods of today with those of the people during the early 1900's. In what ways are refrigeration methods of today different from those used 100 years ago?

Cause and Effect - These questions ask you to notice causal relationships. Some examples of their effects are: - What effect did World War I have on immigration to Canada by Europeans? Why did people settle in Charleswood? What would happen if these early settlers could not cross the rivers using a ferry? What effects did the introduction of the refrigerator have on people's lifestyle?

Divergent - These questions require you to think creatively or offer your personal reactions to a comment or a question. They involve imagination which leads to predictions or conclusions. They also involve personal opinions on ideas, events, or objects. Some examples are: How would you feel if the next Prime Minister of Canada were a woman? What is your best guess as to why these people dressed this way? What interests you most about this picture? Would you like to be an ice collector? Why or why not? Would you have liked to be a pupil in this school? Why? Do you think the teacher liked teaching in a multi-grade classroom?

APPENDIX F

Attitude Survey Measurement Tool

Attitude Survey Measurement Tool

Name	#	Treatment	Instructor	Enjoyment		Importance	
				Pre	Post	Pre	Post
Robbie	01	1	1	22	19	20	16
	02						
	03						
	04						
	05						
	15						

Name	#	Participation		Difficult		Total	
		Pre	Post	Pre	Post	Pre	Post
Robbie	01	15	16	15	20	72	71
	02						
	03						
	04						
	05						
	15						

APPENDIX G

Student Question Observation Instrument

Student Question Observation Instrument

Name	#	Treatment	Teacher	# of Questions	
				Pre	Post
Robbie	01	1	1	18	26
	02				
	03				
	04				
	15				

Name	#	# of Question Types				% of Question Types			
		High		Low		High		Low	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Robbie	01	0	0	18	26	0	0	100	100
	02								
	03								
	04								
	15								

Total

Treatment¹ 1 means experimental group
 2 means control group

Teacher² 1 means instructor #1 the researcher's
 colleague
 2 means instructor #2 the researcher

APPENDIX H

Pre-test Analysis of Variance Table

APPENDIX H PRE-TEST ANALYSIS OF VARIANCE TABLE

Question #1 Will teaching elementary students questioning strategies supported by worksheet activities increase the number of questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	232.382	1	232.382	2.720	0.105
Instructor	1.321	1	1.321	0.015	0.902
Treatment X					
Instructor	99.746	1	99.746	1.168	0.285
Error	4356.429	51	85.420		

Question #2 Will teaching elementary students questioning strategies supported by worksheet activities increase the number of high order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	3.287	1	3.287	0.131	0.719
Instructor	1.200	1	1.200	0.048	0.828
Treatment X					
Instructor	0.115	1	0.115	0.005	0.946
Error	1282.112	51	25.139		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX H CONTINUED

Question #3 Will teaching elementary students in questioning strategies supported by worksheet activities increase the number of low order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	78.162	1	78.162	1.521	0.223
Instructor	109.434	1	109.434	2.129	0.151
Treatment X Instructor	6.579	1	6.579	0.128	0.722
Error	2621.160	51	51.395		

Question #4 Will teaching elementary students questioning strategies supported by worksheet activities increase the proportion of high order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	0.043	1	0.043	1.087	0.302
Instructor	0.089	1	0.089	2.252	0.140
Treatment X Instructor	0.001	1	0.001	0.024	0.877
Error	2.012	51	0.039		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX H CONTINUED

Question #5 Will teaching elementary students questioning strategies supported by worksheet activities decrease the proportion of low order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	0.043	1	0.043	1.087	0.302
Instructor	0.089	1	0.089	2.252	0.140
Treatment X Instructor	0.001	1	0.001	0.024	0.877
Error	2.012	51	0.039		

Question #6 Will teaching elementary students questioning strategies supported by worksheet activities improve their level of achievement of social studies content?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	864.596	1	864.596	3.444	0.069
Instructor	31.439	1	31.439	0.125	0.725
Treatment X Instructor	411.384	1	411.384	1.639	0.206
Error	12801.905	51	251.018		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX H CONTINUED

Question #7 Will teaching elementary students questioning strategies supported by worksheet activities improve their enjoyment attitude towards social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	1.123	1	1.123	0.127	0.724
Instructor	0.069	1	0.069	0.008	0.930
Treatment X Instructor	0.002	1	0.002	0.000	0.989
Error	4.52	51	0.721	8.877	

Question #8 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude towards the importance of social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	1.950	1	1.950	0.194	0.727
Instructor	27.183	1	27.183	1.722	0.195
Treatment X Instructor	2.412	1	2.412	0.153	0.697
Error	804.969	51	15.784		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX H CONTINUED

Question #9 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude towards the opportunity to participate in social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	14.521	1	14.521	1.930	0.171
Instructor	2.048	1	2.048	0.272	0.604
Treatment X Instructor	0.000	1	0.000	0.000	0.994
Error	383.655	51	7.523		

Question #10 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude towards the degree of difficulty of social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	6.976	1	6.976	1.004	0.321
Instructor	0.000	1	0.000	0.000	0.999
Treatment X Instructor	15.333	1	15.333	2.206	0.144
Error	354.524	51	6.951		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX H CONTINUED

Question #11 Will teaching elementary students questioning strategies supported by worksheet activities improve their overall attitude towards social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	37.395	1	37.395	0.595	0.444
Instructor	40.698	1	0.647	0.425	
Treatment X Instructor	5.877	1	5.877	0.093	0.761
Error	3207.579	51	62.894		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX I

Post-test Analysis of Co-Variance Table

APPENDIX I POST-TEST ANALYSIS OF CO-VARIANCE TABLE

Question #1 Will teaching elementary students questioning strategies supported by worksheet activities increase the number of questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	10.133	1	10.133	0.090	0.765
Instructor	0.153	1	0.153	0.001	0.971
Treatment X Instructor					
Instructor	662.785	1	662.785	5.911	0.019*
Error	5606.237	50	112.125		

Question #2 Will teaching elementary students questioning strategies supported by worksheet activities increase the number of high order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	73.670	1	73.670	3.014	0.089t
Instructor	19.105	1	19.105	0.782	0.381
Treatment X Instructor					
Instructor	6.361	1	6.361	0.256	0.615
Error	1221.995	50	24.440		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX I CONTINUED

Question #3 Will teaching elementary students questioning strategies supported by worksheet activities decrease the number of low order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	54.575	1	54.575	0.536	0.467
Instructor	33.954	1	33.954	0.334	0.566
Treatment X Instructor	398.497	1	398.497	3.916	0.053t
Error	5088.128	50	101.763		

Question #4 Will teaching elementary students questioning strategies supported by worksheet activities increase the percentage of high order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	0.099	1	0.099	4.598	0.037*
Instructor	0.022	1	0.022	1.030	0.315
Treatment X Instructor	0.002	1	0.002	0.095	0.759
Error	1.076	50	0.022		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX I CONTINUED

Question #5 Will teaching elementary students questioning strategies supported by worksheet activities decrease the proportion of low order questions they ask?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	0.099	1	0.099	4.598	0.037*
Instructor	0.022	1	0.022	1.030	0.315
Treatment X Instructor	0.002	1	0.002	0.095	0.759
Error	1.076	50	0.022		

Question #6 Will teaching elementary students questioning strategies supported by worksheet activities improve their level of achievement of social studies content?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	864.596	1	864.596	3.444	0.069t
Instructor	31.439	1	31.439	0.125	0.725
Treatment X Instructor	411.384	1	411.384	1.639	0.206
Error	12801.905	50	251.018		

*p<.05

t trend<.05<p<.10

APPENDIX I CONTINUED

Question #7 Will teaching elementary students questioning strategies supported by worksheet activities improve their enjoyment attitude towards social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	0.066	1	0.066	0.014	0.905
Instructor	20.566	1	20.566	4.482	0.039*
Treatment X Instructor	2.213	1	2.213	0.482	0.491
Error	229.406	50	4.588		

Question #8 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude towards the importance of social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	8.760	1	8.760	0.790	0.378
Instructor	29.229	1	29.229	2.635	0.111
Treatment X Instructor	103.032	1	103.032	9.287	0.004
Error	554.684	50	11.094		

*p<.05

t trend<.05<p<.10

APPENDIX I CONTINUED

Question #9 Does training elementary students questioning strategies supported by worksheet activities improve their attitude towards their opportunity to participate in social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	5.278	1	5.278	0.514	0.477
Instructor	1.054	1	1.054	0.103	0.750
Treatment X Instructor	2.793	1	2.793	0.272	0.604
Error	513.273	50	10.265		

Question #10 Will teaching elementary students questioning strategies supported by worksheet activities improve their attitude towards the degree of difficulty of social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	8.465	1	8.465	1.184	0.282
Instructor	34.313	1	34.313	4.798	0.033*
Treatment X Instructor	10.215	1	10.215	1.428	0.238
Error	357.565	50	7.151		

* $p < .05$

t trend $< .05 < p < .10$

APPENDIX I CONTINUED

Question #11 Will teaching elementary students questioning strategies supported by worksheet activities improve their overall attitude towards social studies?

Source of Variation	Sum of Squares	d/f	Mean Square	F-Value	P-Value
Treatment	2.622	1	2.622	0.041	0.840
Instructor	69.860	1	69.860	1.097	0.300
Treatment X Instructor	265.134	1	265.134	4.163	0.047*
Error	3184.450	50	63.689		

* $p < .05$

t trend $< .05 < p < .10$