QUESTION-ASKING RESPONSES RELATED TO PICTURE VERSUS READING STIMULI AT SELECTED ELEMENTARY LEVELS

by

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ABSTRACT

Several critics of education have suggested that children learn not to ask questions as a result of their school experiences. This study was designed to provide a description of quantity and quality of questions asked about a reading passage and about a picture by pupils in grades 3 through 7.

There were two general hypotheses for the study. The first predicted that Ss. at the higher educational levels would ask fewer questions about both stimuli; and that there would be a greater differential between the questions illicited by the two stimuli at each succeeding educational level.

The second general hypothesis predicted that with regard to quality of questions Ss. at each higher educational level would ask significantly more lower than higher quality questions about the reading. Their questions about the picture stimulus would remain at about the same quality at each educational level.

A sample of 120 Ss., 24 from each grade, was interviewed and required to ask questions about picture and reading stimuli. A five level scale was constructed. Questions from levels one to five were considered to be

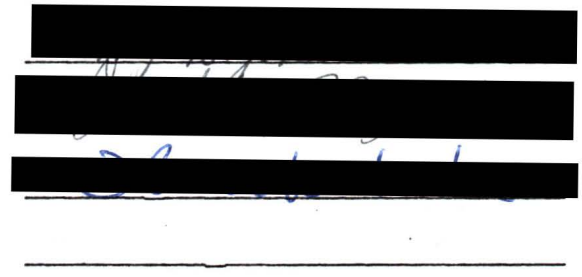
successively more useful for self-learning.

Results showed that Ss. at every grade level asked more questions about the picture than about the reading stimuli. There were more questions asked about both stimuli at the grade 7 level than at the grade 3 level.

With regard to quality of questions, the median number of higher level questions asked about the reading stimuli was zero at every grade. In response to the picture, the grade 7 students asked more questions at every level of quality than did students in any other grade.

It was concluded that although students in this study demonstrated the ability to ask higher level questions in response to the picture, they did not show this ability to ask them about the reading stimuli.

It was recommended that teachers should be aware of the quality of questions their students ask about reading and should consider the possibilities for higher level questions in reading materials which they select for use in class.



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CHAPTER 1

INTRODUCTION

The Importance of the Problem

For many years educators have agreed that one of the most important aims of public education is to develop independent, adaptable self-learners. Recent technological changes have increased agreement about the need, if not about the methods for developing self-learners. Technological changes have forced many adults, who once considered themselves permanently skilled for a particular field, to re-learn their skill. Many others, having lost the skill of learning, have found themselves displaced by machines or programmes which have proved more adaptable than their own adult minds. Awareness that learning is a life-long survival skill has recently been stated with insistance by several educators (Flanders, 1970; Strasser et al., 1971; Torrance, 1969; Zahorik, 1971) and today there is increased emphasis on finding ways by which school experiences can develop, in every child, an attitude of independent knowledge-seeking that will extend beyond school situations and into adulthood. Essentially, today's educated person must meet change and the unknown with curiosity and active interest rather than dread and passive resignation.

Among those who frequently have expressed doubt about the positive role of public education in the development of adaptable, questioning adults have been educators who have studied the question-asking behavior of students in classrooms. Some educators (Carner, 1963; Potter, 1966; Schwab, 1958) have charged that children become less willing to ask questions related to school work as they progress through school. Several critics of education have argued that exposure to public education is equivalent to exposure to social conservatism. These observers assert that questioning is seen by teachers and administrators as a challenge to the status quo and is discouraged in many schools (Bradley, 1969; Bromwich, 1972; Flanders, 1970; Holt, 1968; Postman, 1971; Zahorik, 1971). Some educators have suggested that there is a tendency for many children, after they have been in school for some time, to ask fewer questions related to schoolwork while maintaining or increasing the frequency of their questions about the non-school world (Allen, 1969; Dodl, 1965; Holt, 1968; Torrance, 1970).

Some educators have singled out the teaching of reading in elementary school as the educative process most likely to stifle questioning in young students (Allen, 1969; Betts, 1961; Bradley, 1969; Carner, 1963; Guzak, 1967). All of these critics cited the kinds of questions which teachers ask their students about reading material as the principal means of stifling curiosity. In response

to these criticisms it might be useful to note whether older children who had been longer in school could ask more questions about reading material than could children whose school experience had necessarily been of shorter duration. It might also be useful to study children's question-asking responses to school versus non-school stimuli as a crude estimate of the extent to which their development as questioners in school matched their development as questioners out of school.

The Problem

It is the purpose of this study to determine whether, at each educational level from grades 3 - 7, students' question-asking responses to a reading stimulus increase in number more than their question-asking responses to a picture stimulus.

It is also a purpose of this study to determine whether, at each educational level from grades 3 - 7, students' question-asking responses to a reading stimulus improve in quality of questions more than their question-asking responses to a picture stimulus.

Definitions of the Terms

Question-asking. - the behavior of overtly asking questions (i.e. uttering questions).

Quality of questions. - the position of any question on the scale for evaluating questions designed for this study.

Self-learning. - a process of learning by one's own efforts or with minimal guidance. Decrease in guidance is seen as a positive development in self-learning.

Suppositional thought. - a process of supposing alterations in real or fictional matters and of being aware of the consequences of those alterations.

Upper-middle-class-areas. - those residential areas which at the time of this study were reputed to be upper-middle-class by local opinion as well as by official estimates of property value.

Assumptions

The assumptions of the present study included:

1. Questioning is the principal verbalization of inquiry.
2. Questioning about reading is a more active response to reading than simply recounting what is remembered about the textual matter (Carner, 1963; Guzak, 1967; Schwab, 1958; Zahorik, 1971).
3. Questioning by the reader about the material he plans to read adds purpose to the reading act (Allen, 1969; Manzo, 1969).
4. Questioning about reading requires more use of the questioner's creative ability than does either answering questions put by others or recounting what has been read (Schwab, 1958).

5. Questioning has a positive effect upon the questioner's comprehension of any reading material about which he has questioned (Manzo, 1969; Russell, 1968).
6. Increased tolerance of ambiguity about the correctness of answers to questions indicates increased development of the questioner as self-learner (Burkhart and Berheim, 1963; Torrance, 1970).
7. Evidence of personal involvement in information shows a deeper and more self-directed experience of the information than does detached, exact knowledge about the information (Brown, 1969).
8. When a school child is given two tasks question-asking about a picture and question-asking about some reading material, his question-asking responses to the reading material will generally reflect his school behavior in questioning about reading material. His question-asking responses to the picture will more specifically reflect his out-of-school behavior in questioning about the non-school world as he perceives it.

CHAPTER 2

A REVIEW OF THE LITERATURE

Questioning in School

"Questions indicate the spirit of the educative process" (Burkhart and Neil, 1968, p. 8) yet some of the earliest and most persistent criticism of North American schools has been expressed in complaints regarding the passive and unquestioning attitude of its students and graduates. Some critics of public education have argued that questioning is discouraged by pressures from the school to conform. Holt (1968) observes that teachers kill not only the curiosity of children but their feeling that it is an admirable thing to be curious. He asserts that "by the age of ten most of them will not ask questions and will show a good deal of scorn for the few who do" (p. 168). Postman (1971) asserts that curricula builders, teachers and administrators are suspicious of the consequences of instruction in question-asking and "clearly value other forms of behavior more, such as memorizing and ventriloquizing" (p. 6). Flanders (1970) suggests that in schools "independence is often considered to be an evil that is punished" (p. 15). Questioning directed not only towards a specific learning task, but towards the relevance of that learning task to the non-school world may be one of the

acts of independence which some classrooms find difficult to accommodate. In a study of kindergarten and first grade behavior problems Bromwich (1972) found high curiosity was shown in one-to-one interviews by subjects who had received teacher reports of poor cooperative behavior and low report card marks.

If questioning is seen as a creative and activating impulse in the total school curriculum it may provide the same impulse to reading. Independent behavior, however, does not have a record of teacher approval in reading classes. Bradley notes that "the curious child is not always the 'A' student in reading" (p. 450) and this child may even appear bored and disinterested during reading lessons.

Earlier critics worried that reading and "stiff phonics courses benumbed the children" (Huey, 1908, p. 348). More recently Betts (1961) has asserted that "children who have not learned to think far outnumber those who have not learned the necessary phonic skills" (p. 183).

It has also been suggested that in school situations and especially in reading lessons curiosity, as expressed in question-asking, is diminished (Allen, 1969; Bradley, 1969). In most reading classes teacher questions easily outnumber student questions. Mihajlovich (1968) surveyed five grade five reading classes and found that teacher's questions outnumbered students at a ratio of 12:1.

In spite of criticism that education may diminish independent questioning, educators apparently agree that learning is more likely to take place when the learner has asked his own questions about the learning task (Suchman, 1960; Torrance, 1969, 1970). Betts advises that this is also true when learning takes place through the medium of reading. "The best motivation for reading is the pupil's own inner drive--his questions and other expressions of purposes" (Betts, 1961, p. 181).

Lack of free-wheeling and persistent questioning has been identified as a negative factor in learning, especially among children of lower socio-economic status (Minuchin, 1971; Bromwich, 1972) and as a possibly restrictive factor in language learning (Bernstein, 1961).

Questioning has been identified as an essential skill of critical reading both by findings of high correlation between "curiosity" and reading comprehension; and by definition of questioning as a signal behavior of "active reading". Maw and Maw (1962) report on the basis of a correlational study that "high curiosity children do comprehend more from what they read than do low curiosity children" (p. 240). Stauffer (1960) defined an attitude of active inquiry in reading as "a positive factor in learning to read in the content fields" (p. 552).

According to Smith (1968), teachers have a responsibility to teach children to read capably in the content fields. Passive reading is not adequate for

problem-solving subject matter. It is crucial that students learn to read as an act of participation with the author in his inquiry. According to Russell (1968) a reader must be capable of critical reading if he is to comprehend reading material in the problem-oriented subject fields, and critical reading is related to critical thinking.

In the intermediate grades of elementary school, awareness in the content fields that many students are reading too passively and without sufficient comprehension to cope with the content has inspired some interesting attempts to improve question-asking in specific areas.

Blank and Covington (1966) gave science based instruction in question-asking to grade six students and found that the experimental group increased in number of questions asked on the criterion posttest and received superior marks on science achievement tests. These researchers stipulated, however, that there was no indication that the skills learned in the science based instruction in question-asking were applied by any of the students to any of their other school subjects.

Earlier, Suchman (1960) attempted intensive inquiry training of grade five students in science problem-solving situations. After fifteen weeks Suchman reported that his students were making fewer untested assumptions, were formulating and testing more hypotheses and were performing more controlled versus uncontrolled experiments. As in the reports by Blank and Covington, however, Suchman found that

his students showed improvements only in the science area--there was no transfer of inquiry strategies from science inquiry to other school subjects. Suchman concluded: "inquiry skills cannot be successfully taught to this age group as an isolated content area" (p. 417).

It seems evident that the teaching of inquiry methods requires a common base, such as an approach to reading, to enable these methods to extend from subject to subject. Science problems and mathematical concepts make little impression on the methods a child will use in his reading class. However, as long as printed texts remain our most common means of presenting facts to school children, children will take their reading skills and the attitudes learned in reading classes, with them into every other subject field. The need for inquiry training, focusing on the reader as questioner, is increased by every page of printed text in every subject that a child must read for himself. The passive approach of the current good reader who absorbs his basal portion of narrative fiction and writes neat answers to literal comprehension questions is inadequate for the more challenging content of other subjects--as it is for resistence to the flood of contemporary reading matter. Reading classes which fail to prepare children to cope with the content of other subjects very likely also fail to prepare them to cope with mass media. Russell states:

> The mass media of communication influences us to think and act alike. Conformity, not individuality is stressed in our listening and much of our reading (Russell, 1968, p. 201).

Questioning, Reading and Self-learning

If reading classes are to develop more independent young questioners, children must cease to perceive mere passive absorption as the principal reading task. This change can be achieved only partly through the teacher's efforts in posing abstract or suppositional questions. The self-learner must be capable of asking his own questions about school reading assignments, popular writers, flamboyant advertisers and political verbiage. As Carner has pointed out, it is one thing to be able to answer questions asked by a teacher "but quite another to be able to question oneself independently about the material being read" (Carner, 1963, p. 547-548).

Children cannot be suddenly challenged to begin questioning independently about reading material. They need instruction in adopting a more active attitude to reading. Schwab (1958) has urged that elementary school children be guided to enter creative inquiry with the author of the reading material. Guzak (1967) cautions that the guidance received from many reading classes is in the opposite direction and that children become "programmed" into asking and answering literal level questions about all reading material.

It is not enough for the student merely to learn to ask his own questions. The quality of questioning is crucial. A child who has been trained to answer factual and obvious questions will possibly respond to the new task of asking questions by playing teacher and asking the same type of questions. "The evidence that good teaching has taken place is reflected in the kinds of questions pupils ask" (Carner, 1963, p. 550). From earliest reading lessons children have perceived their post-reading tasks perhaps even more closely than have the teachers who set them. Barbe (1968) interviewed a poor reader who regularly received higher than expected comprehension scores. The student's "method" of simply remembering the numbers and dates from a reading passage and jotting these down as answers revealed how children do read according to the post-reading assignments that they have learned to expect. In a survey of several reading classes Carner (1963) observed that "the ability to indicate the 'facts' was taken as evidence that thinking had taken place" (p. 547).

In summary, it appears that many educators feel question-asking is not encouraged in school and that children gradually learn not to ask questions in school. As yet, no studies seem to have been attempted to determine if the same gradual learning not to question also takes place in children's non-school learning. Some educators assert that if students were able to question independently about their reading material they would read

more successfully, especially in the content fields. Observers report that in reading classes students are exposed to teacher questions which are restricted almost entirely to the level of literal comprehension.

CHAPTER 3

THE DEVELOPMENT OF THE SCALE

The present study attempts to investigate children's question-asking in elementary school. In this chapter certain studies and theories are discussed in terms of the theoretical background which they have added to the implementation of this investigation. This discussion is divided into three sections. First, methods of evaluating questions are reviewed in order to construct a rationale for the scale to be used in evaluating questions in this study. Second, the scale which has been constructed for purposes of this study is discussed. Third, methods and materials which have been used to collect children's questions for other studies are reviewed and the methods and materials used in the present study are described.

Methods of Evaluating Questions

In written or spoken context a question is a relatively simple item of communication to identify. Earlier studies of teacher and pupil questioning (Aschner, 1961; Burkhart and Neil, 1968; Flanders, 1970) simply counted each construction requiring a separate response as a question.

Mere quantity of questions, however, can tell little about the spirit of the educative process and its role in developing self-learners. Several educators have agreed that some questions are more valuable for self-learning than others and have devised hierarchical classifications of questions according to various criteria (Aschner, 1961; Burkhart and Berheim, 1963; Burkhart and Neil, 1968; Carner, 1963; Corey and Fahey, 1940; Flanders, 1970; Guzak, 1967; Torrance, 1966; Yamamoto, 1962). All have agreed that in order to teach inquiry strategies or to guide teachers to ask better questions it is essential to evaluate objectively the thought content of questions. They have not all agreed on the choice of best criteria on which to base such an evaluation and some of the descriptions of the criteria "have been beset by ambiguities" (Yamamoto, 1965, p. 281).

Early efforts to classify questions emphasize the need to make clear the criteria by which questions are to be judged. Corey and Fahey (1940) asked twelve judges to examine science questions and select those which indicated "the operation of the higher mental processes" (p. 95). Although none of the judges expressed any doubt as to what they were looking for inter-rater agreement was only moderate (Md. r = .63[p. 99]).

Progress towards objectively evaluating children's questions appears to have been made through successive revisions of the scoring rationale for the Torrance Tests

of Creative Thinking (1966). In these tests the area of possible questions is delimited by presenting subjects with a picture about which to ask questions. Judges were to use two criteria: fluency and originality. Fluency was judged according to whether or not the questions were "relevant" to the picture. Originality was judged according to the questioner's application of new ideas to the situation presented in the picture. In devising a score for originality Torrance applied a modified version of the scoring system of the Object Question Test Manual (Burkhart and Berheim, 1963). This scoring system divides questions into two categories: Factual and Personal (Self-involving); and three levels: Simple Answer Questions, Complex Answer Questions and Divergent Questions. If Simple and Complex Answer Questions are categorized as Factual they are awarded no points. If they are categorized as Personal (Self-involving), however, Simple Answer Questions are awarded one point and Complex Answer Questions are awarded two points. Divergent questions are awarded four points whether they are categorized as Factual or as Personal (Self-involving).

In modifying this scoring system Torrance (1966, p. 44-45) stipulated definitions of "Factual" and "Personal" questions. According to these definitions questions are considered factual when they rely on facts for an answer. Answers to factual questions are based upon reference to an established body of knowledge, encyclopedias, dictionaries and completed research. Questions are considered personal

when they involve the use of "you" and rely upon personal experience, perception, opinion, attitude or thought for an answer. Personal questions also are seen to include value judgements which do not explicitly refer to personal experience or involve the use of "you". Torrance suggests as examples of these personal questions: "Is it exciting, inspiring, good, etc.?" (p. 44-45).

Yamamoto (1962) devised a scale which also provided objective evaluations of questions. Yamamoto categorized questions as: Global, Specific, Reasoning, and Definitive. When Yamamoto applied this scale to questions asked by students from kindergarten to Grade 12 he reported an overall tendency of transition from Global questions through Specific to Definitive as students progressed through school. Global questions were described as those questions by which young children "ask unspecified questions about everything around them in lieu of...certain hypotheses about the world" (Yamamoto, 1962, p. 89). Definitive questions were described as those by which older children "when they have already established many hypotheses...try to confirm their conclusions" (p. 89). According to Yamamoto's scale, therefore, the highest or most mature category of questions is that which expresses the least doubt or wonder. Ambiguity is the antithesis of this type of questioning. As has been reported, Mosher and Hornsby (1966) also found children unwilling to express doubt or confusion in their questions. In that study

eleven year olds were unwilling to ask "guessing" questions. They spent much time in thought in order to phrase elaborate constraint-seeking questions.

Potter (1966) also found that students showed concern over the form of their questions. She reported that grade three students resisted guessing when she assigned them the task of correctly identifying an out-of-focus photograph. She concluded that "they had discovered the possibility of error, but did not know how to avoid it except by remaining silent" (p. 128).

In a study more strictly limited to reading, Carner (1963) stated that questions could be ranked according to a three-level scale. The lowest level of questioning required use, by the questioner, of concrete facts. The second level required the questioner to use abstract ideas. The third level required the questioner to use creative thinking in order to form "questions which begin, What would happen if...?" (p. 550).

Lack of behavioral description of the questioner or precise description of the behavior required for answerers leaves the reader in some doubt as to the scope of Carner's three levels of questioning. Questions at Carner's highest level might, perhaps, also have been described in terms of answerability. A question beginning "What would happen if...?" implies that the questioner is manipulating the environment from which he has drawn his questions--he is making some change and supposing certain

consequences from that change. It would seem that at this level of questioning no single correct answer exists. Those who answer are being required to "project" themselves into a different world and as many correct answers must exist as there are potential answerers. The possibility for correctness disappears with the introduction of ambiguity into the "world" of fact from which the question is drawn. Carner observed that the third level had been "successful in stimulating creative thinking since it placed no pressure on the individual to give correct answers"(p. 550).

Somewhat similar to Carner's third level, or creative questions, were questions assigned to the highest category in a later categorization scheme devised by Burkhart and Neil (1968) for teacher education. In discussing questions as life sources, Burkhart and Neil classified questions according to three processes of inquiry: rational, procedural and suppositional. The classification which they devised was not intended as an explicit scale for question evaluation. However, in listing suppositional questions as their third form of questions and in their comments on the imaginativeness which this form of questioning allows, the authors have implied that suppositional questioning is the most important and signifies the most maturity of the three questioning processes. They conclude:

> The most important thing here is that to survive culturally in a world that requires the development of an enormous number of new ideas each day, we must learn to think suppositionally (Burkhart and Neil, 1968, p. 23).

A Scale for Evaluating Questions

In a review of attempts to classify questions hierarchically at least two critical points emerge.

First, any instruments intended to provide a measure of a subject's skill must attain the highest possible standards of objectivity. Second, any instrument which purports to provide a highest and lowest evaluation must do so according to criteria associated with the purpose for which measurement is being made.

It is apparent from the literature that criteria for evaluating questions must be stated in objective terms that allow not only strong inter-rater correlation among the judges, but possible replication of the study. "Until it becomes clear that judges are, in fact, using the same frame of reference, subjective ratings should not be used exclusively" (Yamamoto, 1965, p. 289). Since 1964 behavioral descriptions of educational objectives have existed for both the cognitive and affective domain in the Taxonomy of Educational Objectives (Bloom et al., 1956, 1964). Application of suitable descriptions from the Taxonomy might be useful in making clear the frame of reference with regard to criteria for evaluating questions. All evaluation of questions on the scale constructed for

this study (Table 1) is done with reference to the position of a question in terms of the suitable levels of thought in the cognitive and affective domains (Table 2). As in the Taxonomy, each level of questioning subsumes those below. For example, questions at level five on the scale (Personal Expanded) are associated with cognitive behaviors 6:20, 6:10, 5:20, 4:20, 3:00, 2:00, 1:12 and affective behaviors 5:1, 2:3, and 1:1.

The second critical point for a hierarchical classification of questions must be according to criteria associated with the purpose for measurement--development of self-learning. Any alteration in the given facts by the questioner indicates his tolerance of ambiguity. Once the questioner has <u>supposed</u> any change in the given facts no single correct answer exists to his question. Thus, by reference in the scale to possible answers assessment is permitted of the development of the questioner as self-learner.

Since, for purposes of this study, question-asking has been considered as an indicative measure of the development of the questioner as self-learner, questions which appear to mark greater maturity in this area have received higher placement on the scale for the present study. Two evaluative statements, crucial to the construction of the scale, have been made in deference to the criterion that a question is more valuable to the extent

TABLE 1

A SCALE FOR EVALUATING QUESTIONS

Category	Restricted			Expanded	
Description of question-content in categories	Restricted to facts, events, objects, and characters presented to the questioner			Expanded beyond facts, events, objects and characters presented to the questioner	
Level	1	2	3	4	5
Description of questions in terms of Possible Answers at each level	Can be answered with one correct answer. Information for answer is presently at hand to the questioner.	Can be answered with one correct answer. Information for answer is not presently at hand to the questioner.	Cannot be answered with one correct answer because information for answer is viewpoint, opinion, impression or value judgement.	Cannot be answered with one correct answer because the question requires answerer's supposition about the effects of some change in or addition to the information at hand.	Cannot be answered answered with one correct answer because the question requires answerer's supposition and viewpoint, opinion, impression or value judgement about the effects of some change in or addition to the information at hand.
Examples	Was the bird in the cage? Did the boy have bare feet? What is on the wall?	Why was the window shaped like a bell? What was the boy's name? How long ago is this?	Did the children like the hall? Was the girl surprised? Why was the boy scared? Are the children poor?	Was it a castle? Did the bird have a short neck like a puffin? Do the marks warn them that someone is coming? Where were their parents?	Do you think these were oriental children? Is she making a fist to get ready to hit someone? In what city do you think this happened?

TABLE 2

BEHAVIORS IN COGNITIVE AND AFFECTIVE DOMAINS
(BLOOM ET AL., 1956, 1964)
ASSOCIATED WITH A SCALE FOR EVALUATING QUESTIONS

Levels of Questions				
Level 1	Level 2	Level 3	Level 4	Level 5
Cognitive Domain				
Knowledge of specific facts (1:12)	Comprehension (2:00) Application (3:00)	Analysis of Relationships (4:20)	Production of a plan (ability) to propose ways of testing hypotheses) (5:20).	Judgement using internal evidence (6:10). Judgement using external evidence (6:20).
Affective Domain				
Awareness (1:1)		Satisfaction in Response (the behavior is accompanied by an emotional response) (2:3)		Readiness to revise judgements and change behavior in the light of evidence (5:1)

that it shows the questioner's greater development as a self-learner.

First, questions which were expanded beyond the facts presented to the questioner are more valuable than those questions which are restricted to the facts as presented to the questioner. Questions expanded to facts or ideas beyond those presented to the questioner are more valuable because "so many instances of creation are in the form of revision of information that we already possess" (Guilford, 1965, p. 15). Expanded questions allow the questioner as self-learner to bring all the outside experience and knowledge that he already possesses to bear on the presented facts.

Second, questions which indicate a personal involvement of the questioner in the information are more valuable for self-learning than those questions which indicate a detached approach to the information. A personal involvement in the information is assumed to indicate a more self-directed and creative experience of the information because "if one is to have a creative encounter with reality or with information one must be open, that is, one must involve oneself totally with experience" (Brown, 1969, p. 87).

Description of Levels on the Scale

Level 1. Questions at the first level on the scale, Inadequate Factual Restricted, are those questions

for which there is one correct answer and for which the answer is presently available to the questioner. Examples of Inadequate Factual Restricted questions are: As the questioner has just read the sentence, "The big bird was in the cage." "What size was the bird?" or "Where was the bird?" As it is difficult to imagine how any learning can accrue to the asker of questions at this level, they have been assigned to the lowest level on the scale which is intended to measure questions as indicators of self-learning development.

Level 2. Questions at the second level on the scale, Adequate Factual Restricted, can be answered by one correct answer and seek information that is "factual" as defined by Torrance (1966, p. 44, see p. 16 this paper). Learning therefore can proceed from this type of questioning, but it will, of course, be learning that is dependent upon others, either reference literature or resource people. In terms of Bloom's Taxonomy (Table 2) questions at the second level indicate that the questioner has experienced awareness of the information and has acquired knowledge of the specific facts revealed in the information.

Level 3. At the third level, the questioner is not only aware of the information but has ventured to confront it with a personal viewpoint or interpretation of the personal viewpoints of characters or objects presented in the specific information. In terms of the Taxonomy, it is at this level of questioning that the "emotional component"

first appears. Personal questions are as defined by Torrance (1966, p. 44, see Some Methods of Evaluating Questions, p. 17) with the addition of awareness of personal experience, perception, opinion or value judgements of others besides the questioner.

Since the criterion of the scale is the development of self-learning, the decision was made to place Personal Restricted questions above Factual Restricted. This decision has been maintained even though it created the problem that questions which reveal more efficient methods of inquiry received a lower position than less efficient questions which nevertheless revealed the questioner's intuition and personal insight. The problem was central to the construction of the scale. The position taken was simply that there must be some measure of self-involvement if self-learning is to be achieved. In studies of creativity, the role of insight and intuition remain as crucial aspects of the type of inquiry most likely to develop self-learning. Guilford (1967) states that "emotional aspects have something to do with the birth of an idea" (p. 321).

In terms of the dichotomy of divergent and convergent thinking, questions at levels one, two and three are questions resulting from convergent thinking. At these levels the child questions either in a detached or personal manner about the information that has been collected and presented to him. His questions deal with thoughts that

have been directed to that information. He may ask what it is when the answer is obvious (level 1). He may ask what it is when the answer is available either from his own factual knowledge or from the factual knowledge of others (level 2). He may ask about personal knowledge, impressions or value judgements concerning the information as it has been presented to him (level 3). He does not direct his thoughts away from the information. Neither does he consider re-arranging the available information.

Level 4. Questions at level four, Factual Expanded, require the questioner to contribute to the information either by revision of information (i.e. manipulation or re-interpretation of the information) or by drawing questions from additional ideas outside the information. The questioner at level four is often alert to the consequences of possible alterations: "If that...then what?" or, "What would happen if...?" At level four the questioner does not expect or seek one correct answer. He does not approach the information purposefully to relieve tension over specific uncertainties. Instead, he approaches it somewhat playfully and amuses himself by rearranging it to create even more uncertainties.

Some additional support for placing Factual Expanded Questions above Factual Restricted Questions has been drawn from outside studies of successive phases of exploration behavior. In observing the exploration behavior of young children Hutt (1966) found that inquiry

aimed at categorization was a precursor to more free-wheeling manipulation of any unknown. At the beginning of the second phase identified by Hutt specific exploration gives way to play and the emphasis changes from the question of What does this object do? to What can I do with this object?

Level 5. The questioner at the fifth level also behaves in a manipulative way towards the information in that he seeks rather than avoids ambiguities. The addition of personal involvement in the information and in the consequences of manipulating the information distinguishes this level from the detached factual questioning at level four. The addition of personal evaluation by the questioner at level five may be seen by his references to emotions, viewpoints, impressions and value judgements of himself, characters or inanimate objects contained in (or brought by himself to) the information. Manipulation of the information is no longer one-way, nor is it directed only towards the information-as-object as it is at the fourth level. Fifth level questions show self-projection of the questioner. His involvement in possible consequences is expressed through reference to thoughts or feelings of characters or objects which are likely to be affected by such consequences. Evaluation may be expressed through references to the good or bad, sad or happy reactions of characters or objects to such consequences. "Readiness to revise judgements and to change behavior in the light of

evidence" (Bloom et al., 1964, p. 184) may be expressed by the questioner through reference to the sequential consequences of changed behavior by a character or object in response to a new event. At level five the opportunities for self-learning are at a maximum. The questioner has created his own opportunities for learning through supposition of the consequences from his manipulation of the information.

The Experimental Questioning Task

A study which undertakes to determine whether children develop increasing skill in asking questions about reading must draw more from the literature than an assurance of shared concern. The present section reports research findings which provide guidance in constructing an experimental questioning task. In particular, guidance was sought for choice of the most suitable methods and materials for stimulating question-asking.

Methods. Some studies of children's questions (Torrance and Radig, 1959; Yamamoto, 1962) have used pen and paper tests to collect children's questions. Others (Corey and Fahey, 1940; Mihajlovich, 1968) attempted to collect oral questions in the classroom. In both written and oral methods the researchers expressed concern about the quantity of children's questions which they were able to collect. Torrance and Radig concluded that "having to write out one's ideas...clearly inhibits their flow" (p. 4).

Corey and Fahey reported the median number of questions asked by grade seven pupils during a year of classroom instruction was sixteen. Mihajlovich's grade five students asked 114 questions during the same period that their teachers were asking 1,403 questions.

The method of the one-to-one interview seems more successful in collecting children's questions. Bromwich (1972) found this method drew responses showing "high curiosity" from young students who had been described as behavior problems on the basis of their classroom behavior. For older students who might model their classroom behavior on a peer-approved model, Surkes (1971) also found the one-to-one method successful.

As has been noted, a connection exists between question-asking and problem-solving. According to Guilford (1967) problem-solving and creative production "have so much in common that they are basically the same phenomenon" (p. 312). Therefore, methods for stimulating creative production have been used in the present study to stimulate question-asking.

Among methods of testing creative thinking, the Torrance Tests of Creative Thinking (1966) are, perhaps, best known. Two criticisms made of the method of administrating these tests seemed relevant to the administration of stimuli for question-asking. Adams (1968) criticises the administration of tests calling for "flexibility in thinking" in "the competitive evaluation

atmosphere commonly found in the classroom" (p. 191). Wallach (1970) stipulates that strict timing of the tests "would not seem to be conducive to...generating new ideas" (p. 1233).

A suitable method for stimulating question-asking, then, would seem to be the one-to-one interview with no explicit time limits and where "test" associations such as booklets, pen and paper tasks and competitive peers are excluded.

Materials. Several studies of children's questions have successfully used pictures to stimulate question-asking responses from children in grades 1 - 12 (Mosher and Hornsby, 1966; Potter, 1966; Torrance and Radig, 1959; Yamamoto, 1962).

It must be stipulated that the materials required for the present study were not selected primarily to produce maximum arousal of curiosity. Rather, the materials were chosen to delimit the area of the subjects' question-asking. Since both non-reading (picture) and reading stimuli were required, and comparisons of responses to both types of stimuli were planned, the primary concern for materials was that neither stimuli should delimit or increase the area of the subjects' possible question-asking to a significantly greater extent than the other. To this end the picture stimulus (Appendix A) was selected first and the reading stimuli were then written by this investigator with attention being paid to content

equivalence (Appendix B). For this reason, it seemed preferable to select a black and white rather than a colored picture. Selection of a picture rather than an object was made with deference to content equivalence with the reading stimuli and to resources available in the literature in terms of children's responses to the stimulus.

The picture selected was the same one that is used in Verbal Form B of the Torrance Tests of Creative Thinking (1966). Many responses to this stimulus have been collected and evaluated according to these criteria: fluency, flexibility, originality and adequacy. In terms of the major types of conceptual conflict associated with arousal of curiosity (Berlyne, 1965) the picture and the battery of collected responses to it indicated the presence of the following factors of curiosity arousal (all responses from Torrance, 1966, p. 18):

Doubt: What will happen?
Is someone chasing them?

Perplexity: Why are the symbols there?
What do they mean?
What are the symbols?

Confusion: Are they chasing someone?
Is someone chasing them?

Suitable materials for stimulating question-asking then, would seem to be capable of arousing at least some of the reactions associated with curiosity.

Where the purpose of presenting two specific stimuli is to make possible the evaluation of questions about the stimuli it is essential that both stimuli do present a range of relatively the same size for possible question-asking. To achieve this end the reading stimulus is rather more descriptive than is the usual reading material in elementary school texts. It is not narrative but is a frozen description of the same moment in time as is drawn in the picture stimulus. Further, objects and characters are introduced in the reading stimulus in approximately the same sequence as the eye, travelling left to right across the picture and discerning large before small, fore-ground before back-ground, would note them. Only such colors (black and white) as are shown in the picture are described in the reading stimuli. Since no characters are named in the picture none is named in the reading stimuli. Since no title is applied to the picture none has been applied to the reading. Three forms of the reading stimuli were written in order to use vocabulary acceptable to students in five different grades. Vocabulary was based on the reading texts used in grades 3, 4, and 5 in British Columbia schools at the time of this study.

CHAPTER 4

THE PLAN OF THE STUDY

This chapter is divided into five sections that discuss the plan of the present study. Section one is a statement of the hypotheses and the method of analysis. Section two describes procedures followed in implementing this study. In the third section the instruments used in the study are described. Section four briefly describes the process followed in collecting the questions. In section five the training of the judges is described.

Hypotheses

A Rationale Underlying the General Hypotheses

From the literature the following rationale has been formulated:

In a society of technological change reading is probably the most adaptive and efficient means of self-learning (Betts, 1961; Russell, 1968; Athey, 1970). However, to be efficient as a means of self-learning, reading must be approached as an active process of inquiry rather than as a passive process of recall (Schwab, 1958; Stauffer, 1960; Smith, 1968). Questioning about any written material by the reader before, during and after

reading will improve his comprehension of the written material (Betts, 1961; Maw and Maw, 1962; Manzo, 1969). Because many commercial and teacher-made reading comprehension tests in the elementary grades use mainly literal recall questions (Carner, 1963; Guzak, 1967; Allen, 1969; Bradley, 1969; Flanders, 1970) as children continue in school they increasingly perceive the recall of facts from their reading to be the principal post-reading task (Barbe, 1968; Bradley, 1969). It was the purpose of the present study to investigate whether this perception of reading as a passive experience is revealed in a decreasing number of questions asked about reading material by children as they progress through the elementary school grades. It is expected that the range of children's questions about reading material will become more restricted the longer the children have been in school, while the same restrictions will not necessarily appear in questions asked by the same children about non-reading material. For example, it is expected that grade seven children will ask fewer questions related to a reading stimulus than will grade three children; but that the same pattern will not necessarily hold when the children ask questions about a non-reading stimulus. It is further expected that in relation to a reading stimulus grade seven children will ask significantly more restricted, literal questions than will grade three children. However, in relation to the non-reading stimulus, it is expected that grade seven

children will ask as many or more expanded level questions as will grade three children.

General Hypotheses

From the preceding rationale two general hypotheses have been formulated:

Subjects will, in general, ask significantly fewer questions about reading and non-reading (picture) stimuli at each educational level from grades three to seven. However, at each educational level there will be observed a significantly greater decrement in question-asking behavior related to the reading stimuli than to the picture stimulus.

In quality of questions, as defined for this study, subjects will ask significantly more lower than higher quality questions about the reading stimuli as they progress from grades three to seven. Their questions about the picture stimulus will remain at about the same quality as they progress from grades three to seven.

The Null Hypotheses

The general hypotheses have been expressed in the following null hypotheses which were tested in this study ($\alpha = .05$).

1. There will be no significant differences in the number of questions asked by grade 3, 4, 5, 6 and 7 pupils in response to a picture stimulus.
2. There will be no significant differences in the number of questions asked by grade 3, 4, 5, 6 and 7 pupils in

response to reading stimuli.

3. At each level (1-5) in quality of questions there will be no significant differences in the number of questions asked by grade 3, 4, 5, 6 and 7 pupils in response to a picture stimulus.
4. At each level (1-5) in quality of questions there will be no significant differences in the number of questions asked by grade 3, 4, 5, 6 and 7 pupils in response to reading stimuli.
5. In each of the five groups of pupils (grades 3, 4, 5, 6 and 7) there will be no significant differences in number of questions asked in response to a picture versus reading stimuli.
6. At each level (1-5) in quality of questions in each of the five groups of pupils (grades 3, 4, 5, 6 and 7) there will be no significant differences in number of questions asked in response to a picture versus reading stimuli.

Design

Procedure

Hypotheses 1 - 4 have been tested by an application of the Kruskal-Wallis one-way analysis of variance by ranks. Because the data collected for this study could be expressed only in ordinal measurement it was not possible to test hypotheses five and six by application of single

tests of significance. It was necessary to divide hypothesis five into five sub-hypotheses:

> 5a. There will be no significant differences between the number of questions asked by Grade 3 subjects about the picture and the number of questions asked by Grade 3 subjects about the reading stimuli.
>
> 5b. There will be no significant differences between the number of questions asked by Grade 4 subjects about the picture and the number of questions asked by Grade 4 subjects about the reading stimuli.
>
> 5c. There will be no significant differences between the number of questions asked by Grade 5 subjects about the picture and the number of questions asked by Grade 5 subjects about the reading stimuli.
>
> 5d. There will be no significant differences between the number of questions asked by Grade 6 subjects about the picture and the number of questions asked by Grade 6 subjects about the reading stimuli.
>
> 5e. There will be no significant differences between the number of questions asked by Grade 7 subjects about the picture and the number of questions asked by Grade 7 subjects about the reading stimuli.

Each of the sub-hypotheses was then able to be tested by an application of the Wilcoxon matched-pairs signed ranks test.

It was necessary to divide hypothesis six into twenty-five sub-hypotheses (Table 3) which were tested by an application of the Wilcoxon matched-pairs signed ranks test.

TABLE 3

SUB-HYPOTHESES TO HYPOTHESIS SIX

Stimulus	Level 1	Level 2	Level 3	Level 4	Level 5
	Number of Questions Asked by Grade Three Subjects				
Picture Reading	6a.* $1_p = 1_r$	6b. $2_p = 2_r$	6c. $3_p = 3_r$	6d. $4_p = 4_r$	6e. $5_p = 5_r$
	Number of Questions Asked by Grade Four Subjects				
Picture Reading	6f. $1_p = 1_r$	6g. $2_p = 2_r$	6h $3_p = 3_r$	6i $4_p = 4_r$	6j $5_p = 5_r$
	Number of Questions Asked by Grade Five Subjects				
Picture Reading	6k $1_p = 1_r$	6l $2_p = 2_r$	6m $3_p = 3_r$	6n $4_p = 4_r$	6o $5_p = 5_r$
	Number of Questions Asked by Grade Six Subjects				
Picture Reading	6p $1_p = 1_r$	6q $2_p = 2_r$	6r $3_p = 3_r$	6s $4_p = 4_r$	6t $5_p = 5_r$
	Number of Questions Asked by Grade Seven Subjects				
Picture Reading	6u $1_p = 1_r$	6v $2_p = 2_r$	6w $3_p = 3_r$	6x $4_p = 4_r$	6y $5_p = 5_r$

*At each grade comparisons are made between the number of questions asked at levels 1 - 5--i.e. 6a. There will be no significant differences between the number of questions asked by Gr. 3 Ss. at Level 1 about the picture (1_p) and the number of questions asked by Gr. 3 Ss. at Level 1 about the reading stimuli (1_r).

Population

Students attending schools which served upper-middle-class areas, as defined for purposes of this study, and who were in grades 3 - 7 at the time of this study were considered as the population.

Sample

Five elementary school classes were selected from a school serving an area which would be described as upper-middle-class. The decision to use students from an upper-middle-class area was based on studies of question-asking by children of various socioeconomic classes (Bernstein, 1961); Minuchin, 1971). These studies reported that economically disadvantaged children ask fewer questions. The school selected for this study was described by its district superintendent as a school which served an upper-middle-class area and as a school into which there was no busing from other areas.

A further description of the area served by the selected school was provided by an official of the municipal assessing department. According to this description the area could be called upper-middle-class in that over 90 percent of the residences were single family dwellings which had been appraised between $40,000 and $150,000 with the average home value being about $50,000. Census data was not yet available on this area at the time of this study since the first houses had been built four years after the 1961 census.

From this school a sample of 120 subjects, 12 girls and 12 boys in each of the five grades was selected according to their scores on a group reading test.

Instrumentation

A group reading test, the Bond Balow Hoyt (BBH) New Developmental Reading Test, Primary and Intermediate Levels, Form A (Lyons & Carnahan, 1968) was administered to establish a replicable definition of the pupils in grades 3 - 7 selected for this study. The test was administered to all subjects in their regular classrooms. High, median and low reading scores by subjects selected for this study are shown in Table 4.

TABLE 4

HIGH, MEDIAN AND LOW BBH LITERAL COMPREHENSION OF READING SCORES OBTAINED BY SUBJECTS GRADES 3 - 7

	Grade Equivalent Scores		
Grade	High	Median	Low
3	5.8	5.1	4.2
4	9.0	5.3	3.1
5	9.4	5.8	3.1
6	10.8	7.2	5.3
7	9.9	8.2	3.3

A small enrollment in the Grade Seven class necessitated the selection of one very low reader in order to maintain an equal number of boys and girls in the

sample. In each of the five classes the top 12 girls and 12 boys (subjects) were selected on the basis of their BBH scores. Classmates of the subjects (non-subjects) were also interviewed. Questions from the non-subjects were used as examples in The Judges' Manual (Appendix D) and as The Training Set of questions used in training the judges.

Individual Interviews

All subjects and non-subjects were interviewed individually by the same interviewer on two separate occasions. One interview (picture interview) was used to collect each child's questions about the picture stimulus (Appendix A). One interview (story interview) was used to collect each child's questions about the reading stimuli (Appendix B).

Two precautions were observed to control the effects of the first interview on the question-asking responses of each subject in his second interview. In case the question-asking task or stimuli were remembered from the first interview, a three-week interval was left between the first and second interviews for each subject. Also, in case the factor of being the first stimulus to be seen by the subject would significantly affect question-asking responses to either stimuli, both picture and reading stimuli were randomly assigned as first or second interview stimulus for each subject.

The two interviews differed only in respect of stimulus used. At each interview, after a preliminary conversation intended to establish rapport, each subject was handed either the picture or the form of the reading stimulus appropriate for his or her grade.

Interview procedure (Appendix C) was adapted from that used in the "Ask" section of the Ask and Guess Test (Torrance, 1966). Protocol for each interview was as follows:

> Picture Interview. After a preliminary conversation, intended to establish rapport, the interviewer states:
>
> "I am going to give you a picture and, as you look at it, I want you to think of all the questions you can about what you see in the picture. You may ask questions about any part of the picture. I will not be giving you any answers to your questions. I just want to see how many questions you can think of. Here is the picture. Now, remember, think of as many questions as you can about what is in the picture, about what is happening in the picture and about your ideas as you look at the picture."
>
> If, after a thirty-second pause, no more questions appear to be forthcoming, the interviewer will ask:
>
> "Is that all you can think of?"
>
> If the subject replies in the affirmative the interview is over.
>
> Story Interview. After a preliminary conversation, intended to establish rapport, the interviewer states:
>
> "I am going to give you a story and as you read it, I want you to think of all the questions you can about what you are reading. You may ask questions about any part of the story. I will

not be giving you any answers to your questions. I just want to see how many questions you can think of. Here is the story. This is not a reading test so tell me when you cannot read a word and I will read it for you. Now, remember, think of as many questions as you can about what is in the story, about what is happening in the story, and about your ideas as you read the story."

If, after a thirty-second pause, no more questions appear to be forthcoming, the interviewer will ask:

"Is that all you can think of?"

If the subject replies in the affirmative, the interview is over.

Data Collection

This study was carried out in February, March and April, 1973. Each interview was tape recorded in its entirety. The stimulus to be used and the subject's first name and grade were stated at the beginning of each interview. All questions asked by subjects and non-subjects were transcribed by a typist.

Questions asked by all subjects in the picture interviews were counted and numbered separately from questions asked by all subjects in the story interviews. The two groups of questions--labelled The Data Set--were then prepared for the judges. All questions were assigned identifying numbers by which the name and grade of the subject could be established by records kept of the original transcripts. Names of subjects were not shown on questions submitted to the judges so that the judges were not aware that any child had asked an exceptionally large

or small number of questions. Questions were also arranged out of grade sequence so that no clues such as enlarged vocabulary or more complex syntax would emerge as a trend and influence the judges.

Training the Judges

Three judges (a research assistant and two teachers) were trained to assign questions to levels on the scale for evaluating questions designed for this study. The training followed four stages. In the first stage, the judges received three three-hour training sessions. During the first training session the Judges' Manual was read and discussed with relation to categorization of picture interview questions only. This was done because it was felt to be crucial that the judges understand at once the criteria by which they were to distinguish expanded from restricted questions. The physical borders of the picture provided a semantic crutch by which this distinction was made. Judges were instructed that the first criterion of Expanded Category questions was that the subject had reached in thought outside the borders of the picture. In each of the second and third training sessions of the first stage 200 questions were categorized by the judges according to Restricted, Expanded and Unjudgeable categories.

Judges then received the data set picture interview questions and were instructed to assign each question to one of the three categories. When this was finished the

second stage of training began. The fourth and fifth three-hour training sessions required the judges to review the manual and discuss it in relation to assignment of picture interview questions to levels one - five on the scale. One hundred questions from the training set picture interviews were assigned to levels and discussed at each of these sessions.

Judges then returned to the data set picture interviews and were instructed to assign each Expanded and Restricted question to one of the five levels.

When this was finished the same training strategy was repeated for the data set story interview questions. In the third stage of training the judges reviewed the manual, assigned questions from the training set story interviews to categories and discussed their decisions. When the third stage was completed judges assigned the data set story interview questions to categories.

When this was completed the fourth stage of training began and judges assigned questions from the training set story interviews to the five levels. They then returned to the data set story interview questions and assigned them to levels.

The inter-rater agreement among the three judges for the data set picture interview questions was 93.3 percent; for the data set story interview questions, 88.2 percent.

CHAPTER 5

RESULTS AND DISCUSSION

Hypotheses 1 - 4 were evaluated by the application of the Kruskal-Wallis one-way analysis of variance (Siegel, 1956). Sub-hypotheses of Hypotheses Five and Six were evaluated by the application of the Wilcoxon matched-pairs signed-ranks test.

Hypothesis One

There will be no significant differences in the number of questions asked by grades 3, 4, 5, 6 and 7 pupils in response to the picture stimulus (α .05).

The number, median and range of questions asked by the five groups of subjects about the picture and reading stimuli are shown in Table 5. In comparison with subjects in grades three and seven (the lowest and highest school grades in the sample) subjects in grades 4, 5, and 6 asked a rather similar number of questions. The differences among the five groups did not reach the level of significance. The findings, therefore, failed to reject Hypothesis One.

The findings under Hypothesis One indicate that the grade seven subjects asked more, but not significantly more, questions about the picture stimulus than any other group. Each of the groups of subjects at the higher

TABLE 5

ANALYSIS OF HYPOTHESES ONE AND TWO
NUMBER OF QUESTIONS ASKED BY SUBJECTS ABOUT
THE PICTURE AND READING STIMULI

Grade	Total Asked about both Stimuli	Hypothesis One (The Picture Stimulus) Total	Median	Range	Hypothesis Two (The Reading Stimuli) Total	Median	Range
3	1435	890	15	5 - 230	545	11.5	3 - 140
4	1096	590	23	4 - 63	506	19	6 - 42
5	1096	692	19.5	6 - 206	404	17	3 - 36
6	883	515	16	7 - 93	368	13.5	2 - 36
7	1585	1068	31	6 - 172	517	18	4 - 57
Kruskal-Wallis "H"		H = 3.82 (n = 120; df = 4, not sig.)			H = 4.15 (n = 120; df = 4, not sig.)		

educational levels asked a higher median number of questions about the picture than did subjects in grade three. Increased vocabulary and experience would, perhaps, account for this increasing median number of questions if it had appeared as a steady increase from grade three to four to five and so on. Instead, a certain downward trend was observed across the three central grades--grades four, five and six. Findings related to Hypothesis One, therefore, do not show an increasing or decreasing trend across the five grades in number of questions asked in response to the picture stimulus.

Hypothesis Two

There will be no significant differences in the number of questions asked by grades 3, 4, 5, 6, and 7 pupils in response to the reading stimulus (α .05).

The total number of questions asked about the reading stimuli appeared quite similar for all groups (Table 5). Since the differences indicated by the Kruskal-Wallis one-way analysis of variance did not reach the level of significance the findings failed to reject Hypothesis Two.

When the number of questions asked by the subjects in each grade was ranked from highest to lowest (Appendix E, Table A) only one individual (in grade three) was found to have asked more than 100 questions in response to the reading stimuli. Addition of the questions asked by this individual to the total number of questions resulted in an apparent decreasing trend from the high total number

asked at grade three to lower totals asked in grades four, five and six. The median numbers, however, showed no such trend beyond a slight downward trend in the central grades of the study from grades four through six.

It seemed of some interest that only at grade three were individuals responding with very high numbers of questions to the reading stimuli. As may be seen (Table 5) the range of questions asked about the reading stimuli was much narrower at every educational level for the reading stimuli than it was for the picture stimulus.

Findings related to Hypothesis Two showed no significant differences among the groups in number of questions asked about the reading stimuli, and no trend to increased or decreased questioning across the five grades in question-asking responses to the reading.

Hypothesis Three

At each level (1 - 5) in quality of questions there will be no significant differences in the number of questions asked by grades 3, 4, 5, 6 and 7 pupils in response to the picture stimulus (α .05).

Findings from the analysis of Hypothesis Three are shown in Table 6. The five groups of subjects were significantly different at both of the Personal levels of questioning (3 and 5). Grade seven subjects asked more than twice as many level 3 questions as the next highest group (the grade three subjects). The number of level 3 questions asked by subjects in grades four, five and six appeared quite similar. A difference of only five level 3

TABLE 6

ANALYSIS OF HYPOTHESIS THREE
TOTAL, MEDIAN AND RANGE OF QUESTIONS ASKED AT LEVELS 1 - 5
IN RESPONSE TO THE PICTURE STIMULUS

	Level 1			Level 2			Level 3			Level 4			Level 5		
Grade	Tot	Md	R	Tot	Md	R	Tot	Md	R	Tot	Md	R	Tot	Md	R
3	250	6.5	0-37	185	2	0-45	42	0	0-17	271	1	0-121	57	0	0-28
4	161	3	0-44	259	7.5	0-49	19	0	0- 3	79	1	0- 13	2	0	0- 2
5	94	2.5	0-12	323	8.5	0-87	23	0	0- 9	187	2	0- 81	11	0	0- 5
6	221	6	0-43	138	4.5	0-16	24	0	0-11	81	2	0- 14	6	0	0- 5
7	320	5.5	0-67	323	9	0-63	114	1	0-37	205	4.5	0- 40	51	0	0-19
Kruskal-Wallis "H" (n 120 df 4)	8.86			8.93			9.67*			6.50			11.86*		

* $p < .05$

n = 120

df = 4

questions separated the total questions asked by these groups. The high number of level 3 questions asked by grade three and grade seven subjects appeared worthy of note. The difference at grade seven followed small differences recorded for every grade after a decline from grade three to grade four. Since level 3 questions are the first level of Personal question (Appendix D, The Judges' Manual) the high number of this type of question asked by grade three subjects was felt to reflect a personal and self-centered approach by subjects at this, the youngest age in the study. The difference between grades three and four could then be interpreted as reflecting the greater use by older subjects of more impersonal and fact-centered approaches to information. However, grades five and six asked more level 3 questions about the picture than did grade four subjects. The difference between grade four and grades five and six was slight. Only four and five more level 3 questions were asked by the two higher grades (respectively) than were asked by grade four subjects. Nevertheless, this slight upward trend from grade four through grade six did not support the assumption that older subjects in the sample had more frequently used the impersonal levels of question-asking. Further, grade seven subjects asked 95 more level 3 questions than did grade four subjects. Thus in the first level of personal questions, grades three and seven subjects asked a significantly greater number of questions about the

questions separated the total questions asked by these groups. The high number of level 3 questions asked by grade three and grade seven subjects appeared worthy of note. The increase at grade seven followed small increases recorded for every grade after a decline from grade three to grade four. Since level 3 questions are the first level of Personal question (Appendix D, The Judges' Manual) the high number of this type of question asked by grade three subjects was felt to reflect a personal and self-centered approach by subjects at this, the youngest age in the study. The difference between grades three and four could then be interpreted as reflecting the increasing use by older subjects of more impersonal and fact-centered approaches to information. However, grades five and six asked more level 3 questions about the picture than did grade four subjects. The difference between grade four and grades five and six was slight. Only four and five more level 3 questions were asked by the two higher grades (respectively) than were asked by grade four subjects. Nevertheless, this slight upward trend from grade four through grade six did not support the assumption that older subjects in the sample had increasingly used the impersonal levels of question-asking. Further, grade seven subjects asked 95 more level 3 questions than did grade four subjects. Thus in the first level of personal questions, grades three and seven subjects asked a significantly greater number of questions about the

picture than did any of the three central groups in the study.

Grades three and seven also asked a significantly greater number of level 5 questions about the picture than did grades four, five or six subjects. Level 5 questions require the questioner to bring ideas to the picture and to show some personal involvement in questions about these ideas (Appendix D). None of the higher grades asked as many level 5 questions about the picture as did the grade three subjects. This difference appeared worthy of some discussion.

Although level 5 questions appear at the top of the scale, questions at this level do not require very complex thought. The criteria of the scale were personal involvement in questioning and the capacity to expand ideas beyond the given information. Level 5 questions represent a synthesis of these two criteria. From previous studies it might have been expected that the older subjects would use a less personal approach to question-asking (Mosher and Hornsby, 1966; Potter, 1966; Yamamoto, 1962). However, as was seen in the total number of level 3 questions, grade seven subjects in response to the picture used personal questions more than twice as frequently as did the grade three subjects.

From inspection of the total number of level 5 questions it appeared that the grade seven subjects in this study did not retain their position with respect to the

grade three subjects. Although they asked more than twice as many level 3 questions as did the grade three subjects, the grade seven subjects asked slightly fewer level 5 questions than did the grade three subjects. It must be remembered, however, that the total number of questions is somewhat influenced by the presence, in grade three, of some individuals who asked a comparatively high number of questions about the picture. The median number of both levels 3 and 5 questions asked about the picture was zero for every grade. Inspection of the total number and median number of level 4 questions, while it produced no significant differences, produced some information about the ability of the grade seven subjects to ask questions at an Expanded level. At level 4 questions are factual rather than personal, but they require evidence that the questioner has brought ideas <u>to</u> the given information (Appendix D). Levels 4 and 5 comprise the Expanded levels of questioning in the scale. At level 4 the grade seven subjects also asked fewer (although not significantly fewer) total questions about the picture than did the grade three subjects. However, when the number of questions asked by the subject was divided according to levels 1 - 5 (Appendix E, Tables B - F) only one individual (in grade three, Table B) was found to have asked more than 100 level 4 questions about the picture stimulus. Addition of questions asked by this individual to the total number of questions gave the grade three group the highest total number of level 4 questions among the five groups. When the

median number of questions was considered, this position was not retained by the grade three group. The median number of level 4 questions asked about the picture by the grade three group was one; the median number asked by the grade seven group was 4.5--the highest median number among the five groups.

The findings under Hypothesis Three, therefore, indicate that grades three and seven subjects asked a significantly greater number of levels 3 and 5 questions than the other three groups in response to the picture stimulus. Also, although the differences were not significant, grades three and seven subjects asked more level 4 questions than did the other three groups in the study and the median number of level 4 questions asked by grade seven subjects about the picture stimulus was more than twice that asked by any other group.

Hypothesis Four

At each level (1 - 5) in quality of questions there will be no significant differences in the number of questions asked by grades 3, 4, 5, 6 and 7 pupils in response to the reading stimuli (α .05).

Findings from the analysis of Hypothesis Four are shown in Table 7. The five groups of subjects were significantly different only at the Personal Restricted level of questioning (level 3). None of the other groups asked as many level 3 questions about the reading stimuli as did the grade three subjects. Grade seven subjects asked the second highest number of questions at this level. Grade

TABLE 7

ANALYSIS OF HYPOTHESIS FOUR
TOTAL, MEDIAN AND RANGE OF QUESTIONS ASKED AT LEVELS 1 - 5
IN RESPONSE TO THE READING STIMULI

	Level 1			Level 2			Level 3			Level 4			Level 5		
Grade	Tot	Md	R	Tot	Md	R	Tot	Md	R	Tot	Md	R	Tot	Md	R
3	303	6	0-49	107	1	0-39	16	0	0-11	38	0	0-23	3	0	0-3
4	180	1	0-34	249	6	0-31	0	0	0- 0	27	0	0-12	0	0	0-0
5	76	1	0-18	262	8.5	0-31	1	0	0- 1	13	0	0- 3	4	0	0-4
6	170	3.5	0-28	132	3.5	0-26	4	0	0- 3	20	0	0- 8	0	0	0-0
7	247	5	0-47	171	1.5	0-30	12	0	0- 4	29	0	0- 8	1	0	0-1
Kruskal-Wallis "H" (n = 120 df = 4	7.10			7.79			10.85*			1.90			2.03		

* $p < .05$

four subjects asked no questions about the reading stimuli at this level or at levels 4 and 5.

Hypothesis Five

In each of the five groups of pupils (grades 3, 4, 5, 6 and 7) there will be no significant differences in the number of questions asked in response to the picture versus the reading stimuli (α .05).

The results of the Wilcoxen matched-pairs signed-ranks test of the sub-hypotheses of Hypothesis Five are shown in Table 8. There were no significant differences in the number of questions asked about the two stimuli by subjects in grades four and five. In grades 3, 6, and 7, however, subjects asked significantly more questions about the picture than about the reading stimuli. Sub-hypotheses 5a and 5d were rejected at a .05 level of confidence and sub-hypothesis 5e was rejected at a .01 level of confidence.

In the first of the two general hypotheses of this study a trend to fewer questions about picture and reading stimuli was predicted in the question-asking behavior of subjects in grades 3 through seven. The findings of Hypothesis Five indicated significant differences in the number of questions asked by students in grades 3, 6, and 7 about the picture and reading stimuli. A comparison of the median number of questions asked about the two stimuli, however, showed an opposite trend to that predicted in the general hypothesis. More questions were asked by subjects at each educational level from grades 3 through 7 in response to both stimuli (Figure 1).

TABLE 8

ANALYSIS OF SUB-HYPOTHESES TO HYPOTHESIS FIVE
TOTAL AND MEDIAN NUMBER OF QUESTIONS ASKED IN RESPONSE TO
PICTURE VERSUS READING STIMULI (GRADES 3 - 7)

Grade	Sub-Hypothesis	Stimulus	Number of Questions Asked	Median Number of Questions Asked	Wilcoxon T
3	5a	Picture	890	15	73.00*
		Reading	545	11.5	
4	5b	Picture	590	23	105.00
		Reading	506	19	
5	5c	Picture	692	19.5	111.00
		Reading	404	17	
6	5d	Picture	515	16	67.00*
		Reading	368	13.5	
7	5e	Picture	1068	31	57.00**
		Reading	517	18	

n = 24

* $p < .05$

**$p < .01$

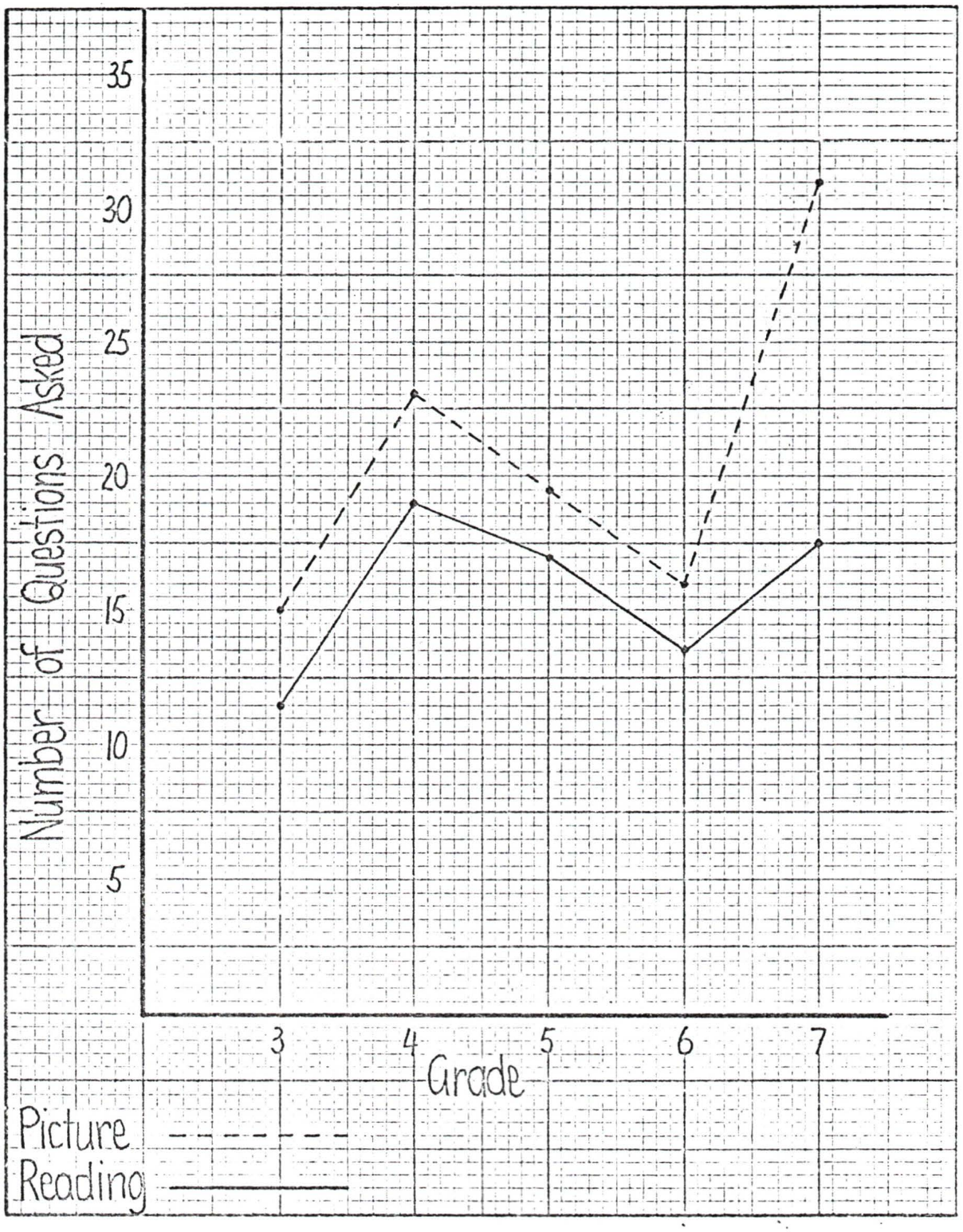

Fig. 1. Median number of questions asked by all subjects (Grades 3 - 7).

The second part of the first general hypothesis stated further that a significantly greater decrement would be observed in the question-asking behavior related to the reading than to the picture stimulus. This was rather firmly supported by the results of Hypothesis Five as may be seen when median numbers of questions asked about the two stimuli are compared (Figure 1). Subjects at every educational level asked more questions about the picture than about the reading stimuli.

It was an assumption of this study that question-asking responses to the picture stimulus would reflect the out-of-school questioning behavior of the questioner and that question-asking responses to the reading stimuli would reflect the questioner's in-school questioning behavior. It may be argued that the subjects in this study found it an easier task to ask questions about a picture than about reading. The findings as displayed in Figure 1, however, do not entirely support the argument. It may be seen that subjects in the first four grades asked a higher median number of questions about the picture than about the reading stimuli. The differences in median number of questions asked about the two stimuli were quite similar for these four grades. The smallest difference between questions asked about the picture and reading stimuli was a difference of 2.0 in median number of questions asked at grade five. The largest difference was at grade four where the median number of questions asked about the picture was

4.0 questions more than was asked about the reading stimuli. Differences at grades 3 and 6 were 3.5 and 2.5 respectively. Subjects at these four educational levels apparently found the picture stimulus slightly easier as a stimulus for question-asking than the reading stimuli. Also, they all appeared to have found it to be so to about the same extent. Grade seven subjects, however, asked a median number of 31 questions about the picture and 18 about the reading--a difference of 13, or more than three times the greatest difference shown by any of the other groups in question-asking responses to the two stimuli. The argument that the subjects in this study simply found it an easier task to ask questions about the picture than about the reading does not explain why grade seven subjects should have found it more than three times easier than did any of the other groups.

Hypothesis Six

> At levels (1 - 5) in the quality of questions in each of the five groups of pupils (grades 3, 4, 5, 6 and 7) there will be no significant differences in numbers of questions asked in response to picture versus reading stimuli (α .05).

The results of the Wilcoxon matched-pairs signed ranks test of the sub-hypotheses of Hypothesis Six are summarized in Table 9. At the levels of Personal Restricted, Factual Expanded and Personal Expanded questioning (levels 3, 4 and 5) the two numbers of questions asked in response to the two stimuli were significantly different. Fewer differences appeared at the

TABLE 9

ANALYSIS OF SUB-HYPOTHESES TO HYPOTHESIS SIX
TOTAL AND MEDIAN NUMBER OF QUESTIONS ASKED AT LEVELS OF QUALITY 1 - 5 IN RESPONSE TO PICTURE VERSUS READING STIMULI (GRADES 3-7)

		Level 1		Level 2		Level 3		Level 4		Level 5	
		Tot	Md	Tot	Md	Tot	Md	Tot	Md	Tot	Md
Hyp.						Grade 3					
	Picture Stim.	250	6.5	185	2	42	0	271	1	57	0
$H_o 6$	Reading Stim.	303	6	107	1	16	0	38	0	3	0
a=e	Wilcoxon T	113.00		67.50*		9.00**		23.00**		0.00**	
						Grade 4					
	Picture Stim.	161	3	259	7.5	19	0	79	1	2	0
$H_o 6$	Reading Stim.	180	1	249	6	0	0	27	0	0	0
f=j	Wilcoxon T	125.00		106.50		0.00**		22.00**		0.00**	
						Grade 5					
	Picture Stim.	94	2.5	323	8.5	23	0	187	2	11	0
$H_o 6$	Reading Stim.	76	1	262	8.5	1	0	13	0	4	0
k=o	Wilcoxon T	72.00*		115.00		0.00**		13.50**		0.00**	
						Grade 6					
	Picture Stim.	221	6	138	4.5	24	0	81	2	6	0
$H_o 6$	Reading Stim.	170	3.5	132	3.5	4	0	20	0	0	0
p=t	Wilcoxon T	65.50*		93.00		8.00**		9.00**		0.00**	
						Grade 7					
	Picture Stim.	320	5.5	323	9	114	1	205	4.5	51	0
$H_o 6$	Reading Stim.	247	5	171	1.5	12	0	29	0	1	0
u=y	Wilcoxon T	75.50*		52.50**		11.50**		8.50**		0.00**	

(n = 24) *p < .05

**p < .01

levels of Inadequate Factual and Factual Restricted questioning (levels 1 and 2). For example, subjects in grades 3 and 4 did not ask a significantly different number of questions about the two stimuli at level 1. Grades 4, 5 and 6 subjects did not ask a significantly different number of questions about the two stimuli at level 2. Subjects in grade 7 asked a significantly different number of questions about the two stimuli at every level on the scale.

In the second of the two general hypotheses of the present study it was predicted that subjects would ask more lower quality than higher quality questions about the reading stimuli at each educational level from grade 3 through grade 7. Questions by students in grades 3 - 7 about the picture stimulus were expected to remain at about the same quality. In general, findings from Hypothesis Six showed that subjects in grades 3, 5, 6 and 7 asked more lower quality questions about the picture than about the reading stimuli. In Figure 2, the median number of levels 1 and 2 questions have been combined. It may be seen that significantly greater numbers of lower quality questions were consistently asked about the picture stimulus.

The combination in Figure 2 of levels 1 and 2 questions requires some discussion. In assigning questions to levels on the scale two criteria--evidence of personal involvement in the information and of expanded thinking which drew new ideas to the information--were required

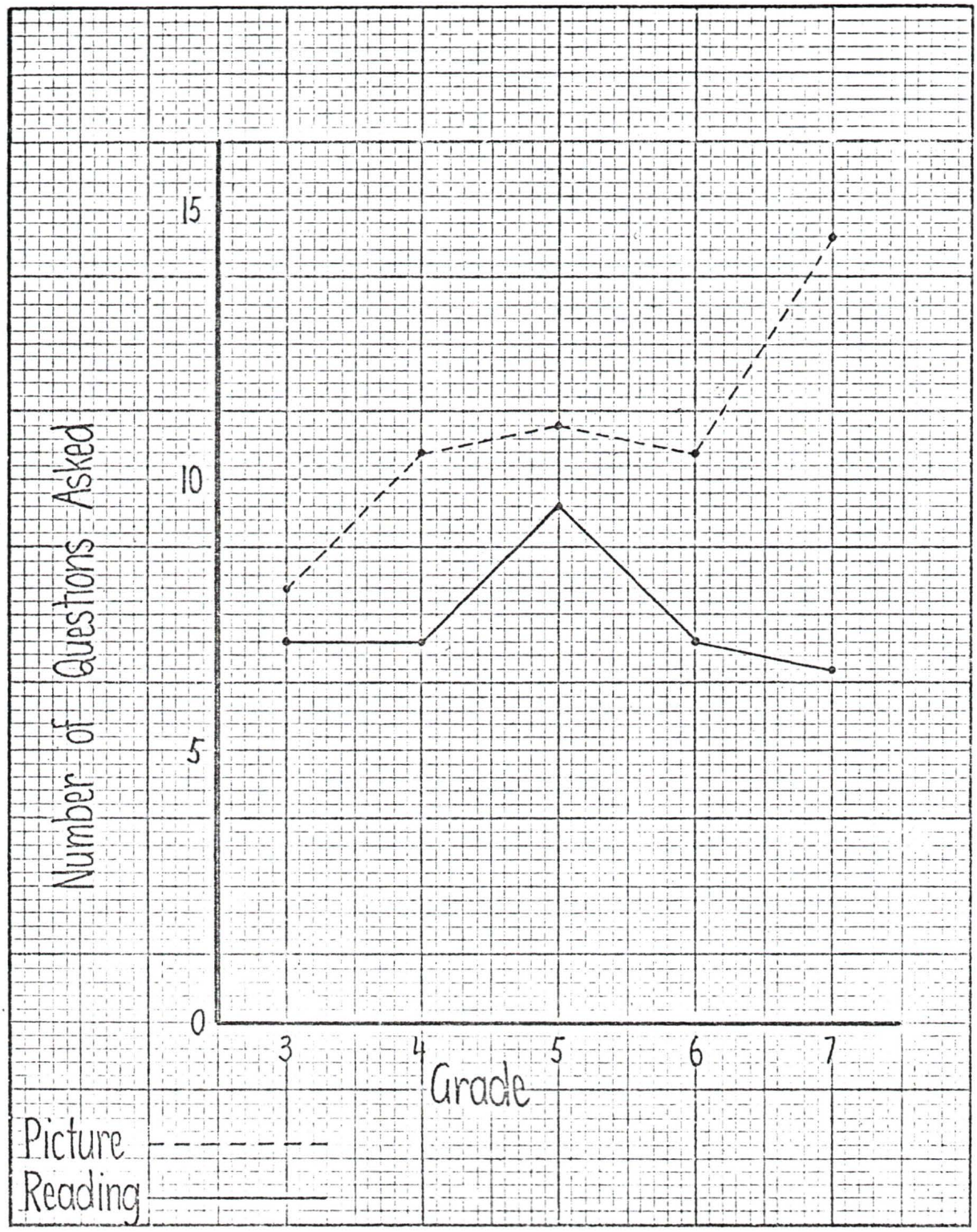

Fig. 2. Median number of questions asked by all subjects (Grades 3-7) at levels 1 and 2 combined.

before a question could be assigned to any level above levels 1 or 2 (Appendix D). Questions at these two lower levels deal only with impersonal inquiry about facts that are present in the given information. A combination of these lower levels was, thus, useful in investigating the significant differences indicated in the analyses of Hypothesis Six.

The slight difference between the median number of questions asked by grades 3 and 7 subjects about the reading stimuli is worthy of note since the grade 3 subjects were shown to have asked the higher median number of questions. Three groups of subjects, grades 3, 4, and 6 asked a median number of 7 questions at levels 1 and 2 about the reading stimuli. The highest median number of levels 1 and 2 questions asked about the reading was recorded by the grade five subjects, and the lowest median number recorded was at grade seven. The small sample of subjects used in the present study, and the slight difference in the decrease of question-asking about the reading stimuli at grade seven must be acknowledged as limitations on this finding. Nevertheless, it is somewhat remarkable that grade seven subjects should show the <u>least</u> facility in asking Factual Restricted questions about the reading stimuli. Many surveys and reports of reading research have been cited in the present study which have asserted that the majority of teacher questions about reading material concern only the "facts" of the material.

The findings of Hypothesis Six reveal that grade five subjects asked more, but not significantly more levels 1 and 2 questions about the reading stimuli than any of the other five groups. Grade seven subjects, who had been longest exposed to classroom questions about reading showed a slight decrease in questions asked at the two Factual Restricted levels about the reading stimuli.

At levels 3, 4 and 5 on the scale for evaluating questions both criteria for higher quality questions must be shown. The median number of questions asked at these higher levels were combined (Figure 3) in order to investigate the significant differences indicated in the analyses of sub-hypotheses of Hypothesis Six. It may be seen that significantly greater numbers of higher quality questions were consistently asked about the picture stimulus. None of the five groups asked more than a median of zero questions at the higher levels about the reading stimuli.

Order of Presentation

The reading and picture stimuli were randomly assigned to first or second interviews for every subject. It was noted that subjects at every grade asked more questions during second interviews for both stimuli (Table 10). The differences between first and second interviews were evaluated by the application of the Mann-Whitney U test. Subjects asked a significantly greater

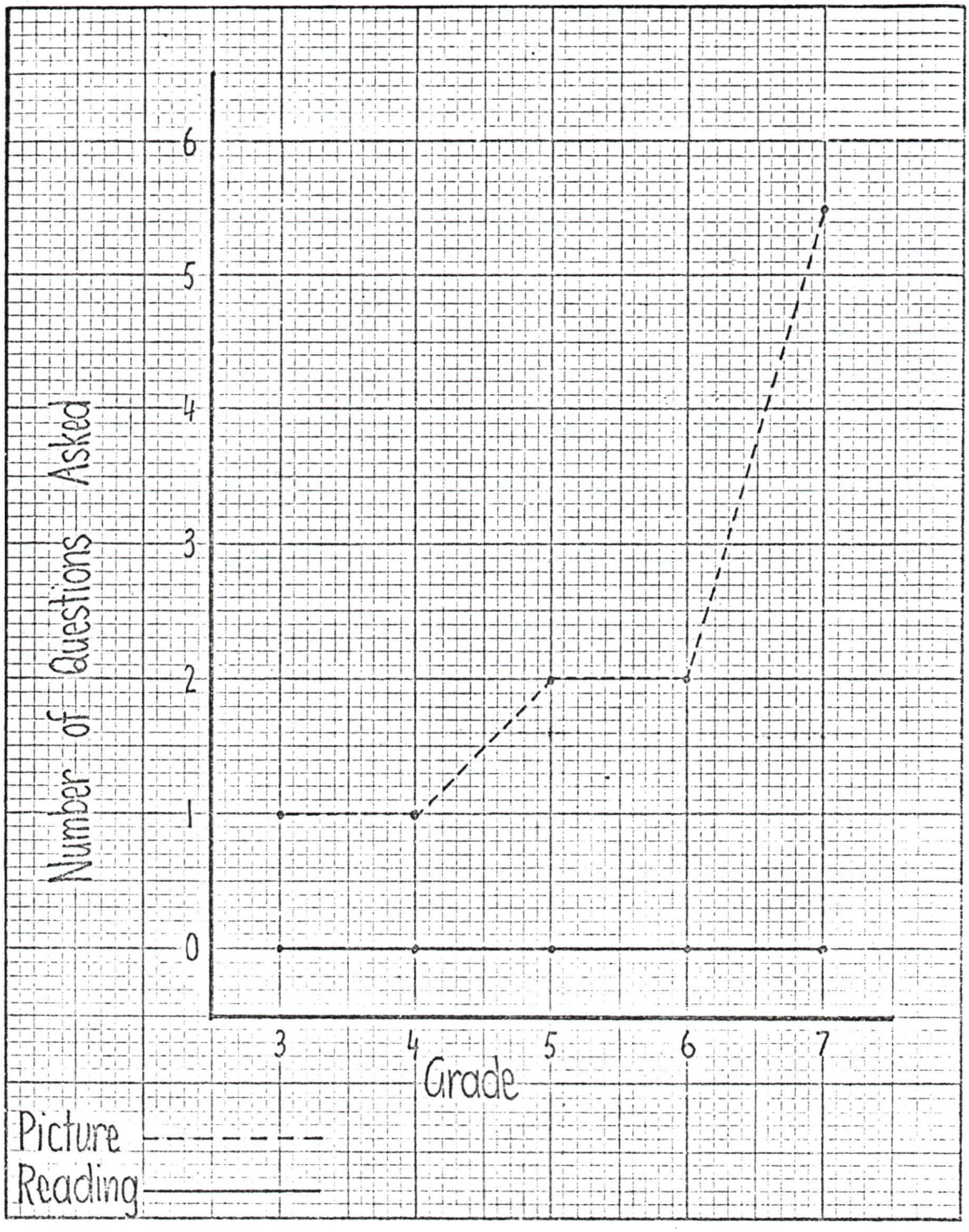

Fig. 3. Median number of questions asked by all subjects (Grades 3-7) at levels 3, 4 and 5 combined.

TABLE 10

NUMBER OF QUESTIONS ASKED ABOUT PICTURE AND READING STIMULI FOR STIMULI PRESENTED IN FIRST AND SECOND INTERVIEWS

Grade	Number of Questions asked about Picture when Picture Presented to Ss. in Interview 1	Number of Questions asked about Picture when Picture Presented to Ss. in Interview 2	Number of Questions asked about Reading when Reading Presented to Ss. in Interview 1	Number of Questions asked about Reading when Reading Presented to Ss. in Interview 2
3	414	476	205	340
4	251	339	238	266
5	239	453	150	254
6	230	285	170	198
7	509	559	216	301
Mann-Whitney "U"	6.00		3.00*	

* $p < .05$

number of questions about the reading stimuli when it was presented in the second interview. There was no significant difference in the number of questions asked about the picture in first and second interviews.

In spite of the three-week interval between interviews, it must be stipulated that the question-asking task was, to some extent, learned. An interesting possibility is suggested by the significant difference between first and second reading interviews. Every subject who was presented with a reading stimulus in his second interview had been presented with the picture stimulus in his first interview. Every subject who was presented with a reading stimulus in his first interview was then presented with the picture stimulus in his second interview. Although most subjects who received the picture in the second interview did ask more questions than those who received the picture in the first interview, the difference was not significant. The significant difference between first and second interviews for the reading but not for the picture stimulus possibly implies that the picture interview served as a greater "learning" experience than did the reading interview. Thus, subjects whose first question-asking task had been to respond to the picture were able to perform better in the second task by asking more questions about the reading stimuli. It may, perhaps, be inferred from this behavior that question-asking was more easily learned in response to the picture than the reading stimuli.

CHAPTER 6

CONCLUSIONS AND IMPLICATIONS

Conclusions

The Quantity of Questions

In the present study comparison of questions asked about two stimuli at five educational levels was made for the purpose of determining at which level and in response to which stimulus the subjects would ask most questions.

The highest total and median number of questions was asked by the grade seven subjects. No regular upward trend was found over the five levels from grade 3 through 7 and over the three central grades (grades 4, 5 and 6) there was a downward trend in the number of questions asked. In comparison with grade four subjects, subjects in grades five and six might be expected to have developed increased verbal fluency and experience which would have increased their question-asking behavior through the addition of new words and ideas. The results of this study suggest that increased verbal fluency and experience did not increase question-asking at grades five and six above the number of questions asked by grade four subjects.

At every grade responses to the picture stimulus outnumbered those to the reading stimuli. This behavior

may be seen to support the stipulation that the significant differences in question-asking responses to the picture versus the reading stimuli can be explained by the nature of the picture stimulus itself since it simply presented a more novel and easier topic for question-asking than did the reading stimuli. This stipulation must be seen as a limitation on the findings of the study. The stipulation did not, however, fully explain why grade seven subjects asked a median number of higher quality questions about the picture that was more than twice that asked by grades five and six subjects.

These effects may be due to sampling error in the small number of subjects in the study, 24 in each grade; and through teacher variable in the question-asking behavior of the different classroom teachers involved in the study.

The median number of questions asked by the grade seven subjects about the picture was significantly greater than the median number of questions asked about the reading stimuli (31-18). It might be suggested that these oldest subjects who had been longest in elementary school had more resources in terms of vocabulary and experience to apply to the question-asking task. However, such resources might have been expected to be applied to a lesser extent by grades five and six subjects in their question-asking behavior. Thus, the difference between median numbers of questions asked about the two stimuli would be expected to increase gradually, with grades five, six and seven subjects

asking increasingly higher numbers of questions about the picture. Instead, the smallest difference in median number of questions asked about the two stimuli was found at these grades (2.5 at both grades five and six).

It is concluded from these findings that the grade seven subjects applied their developing verbal fluency and increasing experience to the task of asking questions about the picture stimulus to a greater extent than they did to the task of asking questions about the reading stimulus. Further, it does not seem that grades five and six subjects applied these resources to their question-asking about either of the stimuli.

The Quality of Questions

Comparison of the quality of questions asked about two stimuli by subjects in grades 3 through 7 was made for the purpose of determining at which grade and in response to which stimuli the subjects would ask most lower and higher quality questions.

Analysis regarding the quality of question-asking by grades 3 through 7 pupils showed that more lower level and more higher level questions were asked about the picture than about the reading stimuli.

Reading has been mentioned in this study as the principal medium by which students receive the facts and ideas which comprise their elementary school education. Several educators have been cited who stress the importance

of teaching children to read critically (Betts, 1961; Russell, 1968; Stauffer, 1960), and as an active process of inquiry with the author (Schwab, 1958). Many criticisms have been reported of the quality of questions asked by teachers about reading material (Carner, 1963; Guzak, 1967). Such criticisms have often included advice that children should be challenged both to ask their own questions about reading (Zahorik, 1971), and to ask more thoughtful questions about it (Allen, 1969).

In this study levels 1 and 2 questions have been described as restricted to facts presented to the questioner in the given information. They were intended to be most like the literal recall questions which critics have asserted are asked too frequently by teachers about reading materials. It had been predicted, if these criticisms were valid, that children at the higher educational levels who had heard more of these questions about reading materials might ask more levels 1 and 2 questions about the reading than about the picture stimulus.

The findings did not support this prediction. With the exception of a slight decrease in median number of questions asked at grade six, a trend to higher median numbers of levels 1 and 2 questions about the picture was found across the grades involved in this study.

Subjects in grades 3, 4 and 6 asked the same median number of levels 1 and 2 questions about the reading stimuli (7). Subjects in grade 5 asked the highest median

number of this type of question about the reading (9.5) and subjects in grade 7 asked the lowest median number (6.5). It appeared from these findings that students in grades 4, 6 and 7 had not learned to ask more literal recall questions about reading material than had the grade three subjects. It was felt that questioning at these restricted levels did not allow students to incorporate their increasing vocabulary or experience in the questioning task.

The Higher Quality Questions

In this study the quality of questions asked about reading has been considered crucial in the development of self-learning skills. The median number of levels 3, 4, and 5 questions asked about the reading stimuli was zero at every educational level in the sample. The importance of this conclusion lies in what was involved in asking the "higher" quality questions. Failure to ask higher level questions might indicate that students have not developed self-learning skills through their reading programs.

Levels 3, 4 and 5 on the scale were designated as higher levels because questions at each of these levels were felt to be successively more valuable as means to self-learning. In construction of the scale it was stipulated that certain questions are more valuable for self-learning than others. All questions showing personal involvement in the given information were placed above

those which dealt however expertly but impersonally with the facts presented in the given information. All questions showing that the questioner's ideas had been expanded beyond the given information were placed above those questions in which the questioner's ideas, however complex, had remained restricted to the facts presented in the given information. The level which was considered most valuable of all for the purpose of self-learning was level five. Level five questions must show evidence that the questioner's ideas had been expanded beyond the given information and that the questioner had expressed some personal involvement in these ideas.

As has been noted regarding levels 3, 4, and 5 questions, none of the groups in this study asked more than a median number of zero questions about the reading stimuli. From these findings it might be argued that these levels of questioning simply do not exist in the question-asking repertoire of students in grades 3 through 7. In considering this argument question-asking responses to the picture stimulus were of some value to the findings of the study. These responses showed that subjects at every educational level in the sample were able to ask more than a median number of zero questions at levels 3, 4, and 5 on the scale. Subjects at grades 3 and 4 have shown only a very limited ability to do so. The median number of higher level questions asked about the picture at both grades was

one. Subjects at grades 5 and 6 also responded with exactly the same median number of higher level questions to the picture stimulus--both grades asked a median number of two questions. The sharp difference at grade 7 (5.5 higher level questions asked about the picture stimulus) was difficult to explain. This behavior by the grade 7 students and the median number of higher quality questions asked about the picture by other students in the study supports the conclusion that students in this study were able to ask higher level questions although they did not show this ability to ask them about the reading stimuli.

Implications for the Classroom

The conclusions stated above lead to some implications for the classroom reading teacher.

Students at all grades should, of course, be encouraged to ask questions. It may be seen from this study, however, that attention should be given to the kinds of questions students learn to ask about reading. There is little to be gained by encouraging children to merely ask questions. One way to direct their attention to asking more thoughtful questions would be to help students ask their own questions about what they are being asked to read. Teachers and students also should informally evaluate such comprehension questions so that they can decide if they are worth reading to answer. It is also important that reading materials be evaluated for their contribution to the reader as a

self-learner. Good questions about reading require that there be something of value in the reading to be discovered. Conclusions from this study have indicated that children's higher quality questions are not illicited by reading material. Reading teachers who intend to direct their students' best questions to school materials, and expecially to reading must select reading materials that are worthy of good questions.

The two criteria of the scale, personal involvement and capacity for expanded ideas can be applied directly to an appraisal of reading material. For example, children are most likely to ask questions that show personal involvement about reading materials which are close enough to their own lives and experience to invoke a personal response from them as they read. Not every child is able to "identify" with or see himself in the child characters portrayed in the basal readers. Yet, if personal involvement in question-asking by young readers is to be encouraged, just such an element of "identification" on the part of the reader would be very helpful. Identification and involvement with reading material are, of course, easily encouraged when teacher and student together compose their own reading materials out of a combination of their personal school and out-of-school experiences. The second criterion behavior of the scale, capacity to expand

one's ideas beyond the given information, is also more easily encouraged in the questions of readers who have participated in making their own reading material. This is because most of the young reader's experience lies close at hand to the classroom where he sits to read. If he is to expand his ideas to bring his own experience to enrich his questioning of the reading material, this task is easier if the reading material itself is drawn from a mixture of immediate school and out-of-school experiences.

In addition, it is with reading materials written by the student that the student is most easily induced to approach reading as an active process. Experience-based reading material is the student's own interpretation of reality. He can perceive his "reality" as he pleases and here is an inducement to manipulate the events and facts with which he is dealing. Thus, he can be helped to see that all facts need not be passively accepted as unchangeable. He can be led to question suppositionally about changing the facts (level 4) and about feelings with regard to such changes (level 5).

Implications for Further Research

Implications for further research include two general concerns. First the validity of findings in this study should be further established. Second, the present study could be extended to other areas of the description

of question-asking. The need for controlled experimentation is also indicated.

The validity of the findings of this study should be further established by careful investigations. The two types of stimuli should be re-appraised. The scale for evaluating questions should undergo validation of the scale.

Additionally, descriptive studies could be designed to describe a wider sample of the area of question-asking in elementary school. Question-asking by pupils in the first two grades remains to be described. A select sample of children who read before entering school would be of interest to examine in terms of quantity and quality of questions asked about the two stimuli.

Differences in question-asking performances in the classroom versus in the one-to-one interview should also be explored. Manipulation of peer and teacher approval of question-asking in the classroom could be attempted and differences in quantity and quality of questions recorded. If learning of the question-asking task could be controlled, the same subject's question-asking performances in the privacy of the one-to-one interview could also be recorded in terms of quantity and quality of questions asked. Comparisons made between classroom and interview question-asking might then provide some clue as to the ages and

grades at which students begin to learn not to ask questions in class.

In the interview situation alone it would be of interest to collect and evaluate questions asked about the two types of stimuli if directions to the subjects were changed. Question-asking in quantity and quality might be changed if the interviewer said: I want to see how many interesting questions you can ask; or, I want to see how many hard questions you can ask.

In the light of statements made about the North American "style" of questioning (Barkan, 1960; Brown, 1969; Burkhart and Neil, 1968; Torrance, 1970) cross cultural descriptive studies of question-asking would be valuable. Question-asking behavior in North American may be significantly different from that in Samoa (Brown, 1969). Indications that question-asking behavior is influenced by socio-economic status (Bernstein, 1961; Bromwich, 1972; Minuchin, 1971) should also be investigated by descriptive studies of the population.

Finally, if findings of the present study can be replicated and it does appear that children do not ask higher quality questions about reading although they are capable of asking such questions about another type of stimulus, then a carefully designed experimental study could be appropriately directed toward this problem.

Lessons or inquiry training based on reading should be devised to re-direct children's higher quality questions toward their reading tasks. It may be, however, that the experimenters in such a study would find that in order to cause such a re-direction of children's question-asking ability not only the tasks but the schools in which they are performed must be changed.

REFERENCES

Adams, J. C. The relative effects of various testing atmospheres on spontaneous flexibility: A factor of divergent thinking. The Journal of Creative Behavior, 1968, 2, 187-194.

Allen, R. V. Asking questions, an essential reading ability. Claremont Reading Conference Yearbook, 33, 1969, 94-99.

Aschner, M. J. Asking questions that trigger thinking. N.E.A. Journal, 1961, 4, 44-46.

Athey, I. Affective factors in reading. In H. Singer and R. B. Ruddell (Eds.), Theoretical models and processes of reading. Newark, Delaware: I.R.A., 1970.

Barbe, W. B. Measuring reading comprehension. In D. C. Schubert & T. L. Torgenson (Eds.), Readings in reading. New York: Thomas Y. Crowell Co., 1968.

Barkan, M. Through art to creativity: Art in the elementary school program. Boston: Allyn & Bacon, 1960.

Berlyne, D. E. Conflict arousal and curiosity. New York: McGraw Hill, 1965.

Bernstein, B. Social structure, language and learning. Education Research, 1961, 3, 163-176.

Betts, E. A. Reading is thinking. The Reading Teacher, 1961, 25, 179-184.

Blank, S. S. & Covington, M. Inducing children to ask questions in solving problems. Journal of Educational Research, 1966, 59, 21-27.

Bloom, B. S., Englehart, M.D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. Taxonomy of educational objectives the classification of educational goals. Handbook I: Cognitive Domain. New York: Longmans Green & Co., 1956.

Bloom, B. S., Krathwohl, D. R. & Masia, B. B., Taxonomy of educational objectives the classification of educational goals. Handbook II: Affective Domain. New York: David McKay Co., Inc., 1964.

Bond, G. L., Balow, I. H.,& Hoyt, C. J. The Bond Balow Hoyt New Developmental Reading Test. Chicago: Lyons & Carnahan, 1968.

Bradley, R. C. Do current reading practices stifle curiosity. The Reading Teacher, 1969, 22, 448-452.

Bromwich, R. M. The young child's language and effective learning. Elementary English, 1972, 49, 826-831.

Brown, L. R. Creativity: Its implications for the elementary school language program. Unpublished Master's Thesis, University of Alberta, 1969.

Burkhart, R. C., & Berheim, M. Object questions manual. University Park Art Research Education, Pennsylvania State University, 1963.

Burkhart, R. C., & Neil, H. M. Identity and teacher learning. Scranton, Penn.: International Textbook, 1968.

Carner, R. L. Levels of questioning. Education, 1963, 83, 546-550.

Corey, S. M. & Fahey, G. L. Inferring types of pupils' mental activity from classroom questions asked. Journal of Educational Psychology, 1940, 30, 94-102.

Dodl, N. R. Pupil questioning behavior in the content of classroom discussion. (Doctoral dissertation, Stanford University) Stanford, California: University Microfilms, 1965, No. 65-2512.

Flanders, N. A. Analyzing teacher behavior. Reading, Mass.: Addison-Wesley Publishing Co., 1970.

Guilford, J. P. A psychometric approach to creativity. In H. H. Anderson (Ed.), Creativity in childhood and adolescence: A diversity of approaches. Palo Alto, California: Science and Behavior Books, Inc., 1965.

Guilford, J. P. The nature of human intelligence. New York: McGraw Hill, 1967.

Guzak, F. J. Teacher questioning and reading. The Reading Teacher, 1967, 21, 224-247.

Holt, J. How children fail. New York: Pitman, 1968.

Huey, E. G. The psychology and pedagogy of reading. New York: Macmillan, 1908.

Hutt, C. Exploration and play in children (1966), cited in Berlyne, D. E. Children's reasoning and thinking. In P. H. Mussen (Ed.), Manual of child psychology. New York: Wiley, 1970.

Manzo, A. V. Improving reading comprehension through reciprocal questioning. Unpublished doctoral dissertation, Syracuse University, 1969.

Maw, W. H., & Maw, E. W. Children's curiosity as an aspect of reading comprehension. The Reading Teacher, 1962, 15, 236-240.

Mihajlovich, A. I. A study of teachers' oral questions in selected reading lessons. Unpublished master's thesis, University of Alberta, 1968.

Minuchin, P. Correlates of curiosity and exploratory behaviour in preschool disadvantaged children. Child Development, 1971, 42, 939-950.

Mosher, F. A., & Hornsby, J. R. On asking questions. In J. S. Bruner et al. (Eds.), Studies in cognitive growth. New York: Wiley, 1966.

Postman, N. M. The politics of reading. In J. P. Kender (Ed.), Teaching Reading: Not by decoding alone. Danville, Ill.: The Interstate Printers and Publishers, Inc., 1971.

Potter, M. C. On perceptual reading. In J. S. Bruner et al. (Eds.), Studies in cognitive growth. New York: Wiley, 1966.

Russell, D. H. The prerequisite: Knowing how to read critically. In D. G. Schubert & T. L. Torgerson (Eds.), Readings in reading. New York: Thomas Y. Crowell, 1968.

Saunders, N. M. Classroom questions: What kinds? New York: Harper & Row, 1966.

Schwab, J. J. Inquiry and the reading process. Journal of General Education, 1958, 11, 72-82.

Siegel, S. Nonparametric Statistics. New York: McGraw-Hill, 1956.

Smith, N. G. Reading in the subject fields. In D. G. Schubert & T. L. Torgerson (Eds.), Readings in reading. New York: Thomas Y. Crowell, 1968.

Stauffer, R. G. Children can read and think critically. Education, 1960, 80, 522-525.

Strasser, B. B., Babcock, R. W., Cowan, R., Dalis, G. T., Cothold, S. E., & Rudolph, J. R. Teaching toward inquiry. Los Angeles, California: National Education Association Publications, 1971.

Suchman, J. R. Inquiry training in the elementary school. Science Teacher. 1960, 27, 42-47.

Surkes, S. Accelerating children's question-asking performance. Unpublished master's thesis, University of Victoria, 1971.

Torrance, E. P. & Radig, H. J. The ask and guess test: Scoring manual and rationale. Research Memorandum Ber-59-6, Minneapolis: Bureau of Educational Research, University of Minnesota, 1959.

Torrance, E. P. Torrance tests of creative thinking. Princeton, New Jersey. Personnel Press, 1966.

Torrance, E. P. Curiosity of the gifted child and performance on timed and untimed tests of creativity. Gifted Child Quarterly, 1969, 13, 155-158.

Torrance, E. P. Encouraging creativity in the classroom. Dubuque, Iowa: Wm. C. Brown Company, 1970.

Wallach, M. A. Creativity. In P. H. Mussen (Ed.), Manual of Child Psychology. New York: Wiley, 1970.

Yamamoto, K. Do creativity tests really measure creativity. Theory into Practice, 1966, 5, 194-197.

Yamamoto, K. Validation of tests of creative thinking: A review of some studies. Exceptional Children, 1965, 31, 289-299.

Yamamoto, K. Development of ability to ask questions under specific testing conditions. Journal of Genetic Psychology, 1962, 101, 83-90.

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

APPENDIX A

The Picture Stimulus

APPENDIX B

The Reading Stimuli
(Forms A, B & C)

Reading Material (Form A Gr. 3)
Vocabulary based on Stories of Fun and Adventure: Book One

Once upon a time there was a black and white hall. The floor was white. The walls were white with black marks on them. A boy was in the hall. A big bird cage hung behind him. A big bird with a hooked beak stood inside it.

The boy had bare feet. He wore thin, tight pants and a thin tight shirt. He had a tiny animal in his hand. There was a girl beside the boy. She wore a long scarf, a dress and a pair of long, loose pants that were tied just above her feet. Her feet were bare. Her eyes were dark and slanting. Her hair was dark.

Four dots at the centre of the mark formed a square. Crooked lines crossed through the square and pointed in four different directions.

There was a window in the wall a few feet ahead of the boy. It was shaped like a fat bell. Outside the window was dark night.

At the right of the window there were more marks on the wall. These were like strange numbers - a list of 3o's. In each number the 3 was printed twice as big as the zero. There was a long line from each zero that pointed back toward the 3. Above each zero was a short line. Above each short line was a dot.

Two pots stood below the window. The larger of them was tall and thin and

stood back against the wall. It had two long handles that pointed up to its tiny lid. In front of the tall pot stood a short, fat pot with three crooked little legs.

Reading Material (Form B, Gr. 4)
Vocabulary based on Happy Highways

Once there was a black and white hall. Its floors were white. Its walls were white with strange black marks on them.

There was a boy in the hall. A large bird cage hung close behind him. Inside the cage stood a large bird with a hooked beak.

The boy had bare feet. His pants and shirt were thin and tight-fitting. Beside him there was a girl. A long scarf waved about her body. She wore a dress and long loose pants that were tied at the ankles. Her eyes were dark and slanting. Her hair was dark as night.

On the wall near the boy was a mark. It looked like a huge, four-eyed bug.

There was a mark on the wall near the boy. The mark looked like a four-eyed bug. Four dots at the centre of the mark formed a square. Four crooked lines pointed out from the centre of the square.

There was a window in the wall. It was shaped like a bell. Outside the window was black night.

At the right of the window there were more marks on the wall. The marks looked like a list of 3o's. The 3 was very big and the o was very small. There was a long line on each o. The line pointed toward the 3. Above each o was a short line. Above each short line was a dot.

Two pots stood below the window. One

was a tall thin pot with long handles pointing up to its tiny lid. In front of the tall pot stood a short, fat pot with three short legs.

Reading Material (Form C, Gr. 5, 627)
Vocabulary based on Under Canadian Skies

The long black and white hall was a strange place indeed! Its floors were bare and white. Its white walls were marked with strange drawings and numbers.

There was a boy in the hall. Inside a large bird cage that was hung just behind him stood a large bird with a hooked beak.

The boy's feet were bare. His close-fitting shirt and pants were thin. He had a tiny animal in his hand. There was a girl beside him. A long scarf streamed away from her body. She wore a dress and long, loose pants, that were gathered at her ankles. Her slanting eyes were dark and her long hair was dark as night.

There was a mysterious mark, like a four-eyed spider, on the wall beside the boy. Four dots at the centre of the mark formed a square. Crooked lines criss-crossed through the centre of the square and pointed away in four different directions.

There was a window in the wall a few feet ahead of the boy. It seemed to have been carved, in the shape of a fat bell, into the white wall. It stood wide open into the pitch-black night.

At the right of the window, it seemed as if strange hands had been adding mysterious sums on the wall. A list of three 30's were printed in black, each with the 3 printed twice as large as the zero. From each zero, a line had been drawn back to the three. A short line had been drawn over each zero and a dot placed over each short line.

Just below the window there were two pots. The larger of them was tall and thin and stood against the wall. It had long, wavy handles that pointed up to its tiny lid. In front of the taller pot stood a short, fat pot on three crooked little legs.

APPENDIX C

Interview Procedure

APPENDIX C

Interview Procedure:

Tape record entire interviews.

1. For use with Stimulus A (non-reading):

   (a) after preliminary conversation intended to establish rapport, the interviewer states:

> I am going to give you a picture and as you look at it, I want you to think of all the questions you can about what you see in the picture. You may ask questions about any part of the picture. I will not be giving you any answers to your questions. I just want to see how many questions you can think of. Here is the picture. Now, remember, think of as many questions as you can about what is in the picture, about what is happening in the picture and about your ideas as you look at the picture.

   If, after a thirty-second pause, no more questions appear to be forth-coming, the interviewer will ask:

> Is that all you can think of?

   If the subject replies in the affirmative the interview is over.

2. For use with Stimulus B (reading):

   (a) after a preliminary conversation, intended to establish rapport, the interviewer states:

> I am going to give you a story and, as you read it, I want you to think of all the questions you can about what

> you are reading. You may ask questions about any part of the story. I will not be giving you any answers to your questions. I just want to see how many questions you can think of. Here is the story. This is not a reading test so tell me when you cannot read a word and I will read it for you. Now, remember, think of as many questions as you can about what is in the story, about what is happening in the story and about your ideas as you read the story.

(b) the examiner is to strictly avoid giving procedural clues. Experience of a small pilot study indicates that some children are concerned about a correct "time" when they may begin to ask questions about a reading task. A question to be expected is:

> May I ask questions now, or not until after I have read the story?

To which the interviewer replies:

> Now and after reading or while you are reading, if you like.,

in order to make it plain that there is to be no time limit and no right or wrong way to approach the task.

(c) most subjects interviewed in the pilot study chose to read the entire selection before beginning to ask questions. In this case, as soon as the subject indicates that he has finished reading, the interviewer repeats:

> Now, remember, think of as many questions as you can about what is in the story, about what is happening in the story, and about your ideas as you read the story.

If, after a thirty-second pause, no more questions appear to be forth-coming, the interviewer will ask:

> Is that all you can think of?

If the subject replies in the affirmative, the interview is over.

APPENDIX D

The Judges' Manual

The Major Division

The major division separates questions that are restricted to the picture or story from questions that are expanded beyond the picture or story. Thus, the first step is to assign questions to one of the two categories, using R for restricted and E for expanded categories respectively. (A third category, Unjudgeable, will be discussed later.) Two main points will be helpful in the division of questions into restricted and expanded categories:

1. Restricted. Restricted questions are restricted to facts and/or time presented in the picture or story.

2. Expanded. Expanded questions are expanded beyond facts and/or time presented in the picture or story.

The following notes are important in clarifying the two main points listed above:

1. Facts. Facts "presented in the picture or the story" are any objects, events or characters that are shown in the picture or described in the story. In the restricted category, questions are restricted to facts (objects, events and/or characters) that are shown in the picture or described in the story. In the expanded

category, questions are expanded beyond the facts (objects, events and/or characters) that are shown in the picture or described in the story. In the expanded category, questions are expanded beyond the facts (objects, events and/or characters) that are shown in the picture or described in the story.

The division is described more easily for questions that are asked about the story. Questions which include the specific nouns used in the story are to be considered restricted, and nouns restricted for the picture are restricted for the story.

The division requires more explanation for questions that are asked about the picture. Questions which include certain nouns listed below are to be considered restricted.

NOUNS WHICH INDICATE RESTRICTED LEVEL

The Bird:

bird	cage	eye
budgie	chain	tail
canary	feathers	tooth
parrot	beak	feet
parakeet	wings	

The People:

boy	feller	people	thumbs	face
girl	guy	woman	shoulder	eyelashes
brother	lady	kids	skin	neck

The People (continued):

sister	gentleman	ankles	waist	ears
children	man	body	head	knees
wrist	teeth	feet	eyes	eyebrows
toes	chin	foot	spots	forehead
toenails	name	dot	cheeks	
fist	leg	elbow	mouth	
fingers	hips	hair	nose	

The object in the boy's hand:

animal	pup (puppy)	guinea-pig
bunny	rabbit	toy
dog	rat	
elephant	thing	

The drawings on the walls (left and right background):

picture	designs	drawings	threes	scribbling
story	marks	numbers	spider	symbols
figure	markings	patterns	sign	writing
dash	thirties	printing	scribbles	zeroes

The clothing:

blouse	fringe	trousers	suit	shoes
cape	hat	t-shirt	scarf	slacks
cloak	hat-wrapping	shirt	shawl	sleeves
coat	head-wrapping	top	wrap	suspenders
dress	jewelry	jacket	band	undershirt
belt	pants	jeans	socks	tassels

The Window:

bell	opening	hole	
black mark	window		

Pots (lower right corner):

container	lamp	sugar-bowl	handle
jar	lantern	tea-kettle	lid
jug	pitcher	tea pot	cover
kettle	pot	vase	dish

The Hall:

wall	indoors	inside	floor
hall	outdoors	outside	store
building	place	corner	
house	street	room	

The extension, by the questioner, of any noun listed above from plural to singular or from singular to plural is not sufficient to move an otherwise restricted question from restricted to expanded category.

Use of an indefinite pronoun by the questioner is not sufficient to move an otherwise restricted question from restricted to expanded category.

2. Time. Time "presented in the picture or the story" is considered to be restricted when the present tense is used to question about the picture; and when the past tense (as used in the story) is used to question about the story.

In making the major division between restricted and expanded categories of questions, the following four rules-of-thumb are important:

1. Where a question contains many restricted facts but one expanded fact drawn from outside the story or picture it should be assigned to the expanded category.

2. Where a question contains both reference to restricted and to expanded time drawn from before or after the frozen moment shown in the picture or described in the story, it should be assigned to the expanded category.

3. A short, simple question that contains no expanded facts should not be assigned to the expanded category simply because one verb used in that question is drawn from the expanded times.

PICTURE

	Facts		
Time		IN	OUT
	Present	Re	Ex
	Future	Ex	Ex
	Past	Ex	Ex

STORY

	Facts		
Time		IN	OUT
	Past	Re	Ex
	Future	Ex	Ex
	Present	Ex	Ex

4. A very powerful adjective or adverb may move an otherwise restricted question into the expanded category.

EXAMPLES

STORY: RESTRICTED CATEGORY

(Past tense + specific nouns used in the story, or stipulated on preceeding pages for picture = restricted.)

Where was the hall?

What were the strange marks?

What was the boy doing in the hall?

What was the boy doing to the animal?

Where was he going?

What were the dots on the wall for?

Where were the boy and girl going?

Was the girl going with the boy?

1. Restricted to facts and time presented in the story.

Is the girl going with the boy?

Are they running?

Are the pots heavy?

What is in the pots?

How long (high) (wide) is the hall?

How big (small) (heavy) is the cage?

2. Simple use of one expanded verb does NOT free a question from restricted category if facts are restricted.

Why does the bird have a hooked beak?

Why is the parrot in the cage?

Why is the girl wearing a cape indoors?

Why were the kettles below the window?

How old was the budgie?

How heavy was the toy elephant?

3. Nouns restricted for picture are restricted for story.

EXAMPLES

PICTURE: RESTRICTED CATEGORY

(Present tense + specific nouns stipulated on preceeding pages = restricted.)

Are they running?

Are they walking (moving) (fighting) (dancing)?

Is that a window?

Are they talking (singing) (shouting) (playing)?

Is the bird saying something?

Is the bird squawking?

Is the girl telling him something?

Is that a spout on the teakettle?

Is the parrot singing?

Is the parrot swinging back and forth?

Does it like (enjoy) (dislike) swinging?

What is holding it up?

Why was the parrot swinging like that?

Why were the pots on the floor?

Why did the girl wear the cape indoors if they were indoors?

Why were they wearing bare feet?

Was it night or day?

Why didn't they have any shoes on?

4. Simple use of expanded verb does not free a question from restricted category.

EXAMPLES

STORY: EXPANDED CATEGORY

Was it a castle?

Was it a palace?

Where was the existential hall?

What were the hieroglyphical marks?

What was the boy doing with the rhinoceros?

What was the boy doing with the exotic animal?

What was the mummified parrot doing?

Was this in Egypt?

What is in the antique vases?

Was the window really a tunnel (escape hatch) (hidden passage)?

5. A very powerful adjective may move an otherwise restricted question into expanded category - read many questions before attempting to judge on the basis of adjectives.

Was the boy hiding in the hall?

Did the boy steal the animal?

Was the girl there to warn him?

Was the parrot able to warn him?

Were the boy and girl escaping?

Was someone chasing them?

Were the marks on the wall warning signs?

6. Expanded facts include actions or events that are inferred or drawn from those shown in the picture or described in the story.

EXAMPLES

PICTURE: EXPANDED CATEGORY

Did they lose their shoes and socks?

Could they have lost their shoes and socks?

Will they be captured, do you think?

Will they get away?

Will they get outside the hall?

Do they ever let the parrot out?

Did they do the markings on the wall?

Is the street paved or cobble-stoned?

7. Expanded in time before and/or after the frozen moment drawn in the picture.

Is there someone chasing them?

Who sold them the pots?

Who gave them the dog?

Where are their parents?

8. Expanded facts include characters not shown in the picture.

Is she hanging onto the parrot because she wants to take it and he doesn't want it?

Is he trying to hand her the animal and she doesn't want to touch it?

Is she making her hand a fist to get ready to hit someone?

Did they open the window so that they could get out?

Did they write on the wall because they are dumb and to warn each other?

9. Expanded facts include all reasons that are inferred to explain the events shown in the picture.

The Division Into Levels

Once questions are assigned to restricted or expanded categories they are to be assigned to levels one to three (restricted) or four or five (expanded).

A brief description with examples of restricted and expanded levels follows.

1. Level One (Inadequate Factual). All questions at Level One have one correct answer which was available to the questioner at the time when he asked the question.

EXAMPLES

STORY: LEVEL ONE

What color was the girl's hair (eyes)?

What color were the numbers?

What color was the hall (wall)?

How big was the pot with crooked legs?

Was the pot with wavy handles tall?

Was the animal in the boy's hand big?

Was the pot thin?

Were the pot's legs short and crooked?

Was the bird large?

Was the boy's clothing tight?

Were the girl's clothes loose?

Was it at night?

Who was in the hall?

Who was beside him?

What kind of a beak did the bird have?

Describe the bird (children) (pots) (hall)?

EXAMPLES

PICTURE: LEVEL ONE

What is the boy holding?

What is in the cage?

What is on the wall?

What is under the window?

What is written on the wall?

What are they wearing?

What are they wearing on their feet?

Is the girl wearing jewelry?

Is the boy wearing jewelry?

What is the picture of?

What are the people doing in the picture?

Are they dancing?

Are they playing?

Are they swimming?

Who is in bare feet?

How many feet altogether can you see?

Is there a door on the parrot's cage?

Does the girl have pants on?

Does the girl have a hat on?

Does the boy have a hat on?

Does the girl have a mark on her forehead?

2. Level Two (Restricted Factual). All questions at Level Two have one correct answer, but it was not available to the questioner at the time he asked the question. Level Two questions may be answered by giving a reason, or explanation or use for an object. Answers often begin with "because" or a prepositional phrase. Level Two questions often begin with: "Why", "How" and "How come".

EXAMPLES

STORY: LEVEL TWO

What kind of bird is in the cage?

What kind of animal did the boy have in his hand?

What kind of mark was on the wall?

What kind of four-eyed bug did the mark look like?

Why was the window shaped like a bell?

Why was there writing on the wall?

Why didn't the boy wear shoes and socks?

Why did the girl wear a scarf inside?

Were they inside or outside?

How come there was a list of numbers on the wall?

Who was the boy?

What was the boy's name?

Why were the girl's pants tied at her feet?

Why was she wearing both dress and pants, why not just a dress?

EXAMPLES

PICTURE: LEVEL TWO

Who are they?

Why does the girl look surprised?

Why does the boy look upset?

Why does the parrot look happy?

Why does the parrot look mad?

Why does the pot look special?

Why do the children look sad?

10. Absence of "look" in these questions would move the questions from level two to level three.

Is the parrot talking?

Is the girl saying something?

How old are the children?

How old is the parrot?

How old is the building?

What color is the bird?

What is the cage made of?

What are the pots used for?

What is the window used for?

Where is this?

How long ago is this?

Why are they running?

Why are they looking behind them?

Are they taking the parrot with them?

3. Level Three (Restricted Personal). All questions at Level Three show some personal involvement of the questioner in the picture or the story. These questions involve opinions, feelings, emotions, knowledge and value judgements of the questioner, his answerer or characters or objects shown in the picture or described in the story. Judges must not impute personal opinions, feelings, emotions or knowledge unless these are explicit in the question. If there is a choice between Level Two and Three, always select the lower level (2). However, all questions involving value judgements must be assigned to Level Three. The following words are to be taken as indicating value judgements:

bad	innocent	special
beautiful	poor	ugly
clean	pretty	valuable
dirty	rich	wealthy
good	shabby	wicked
important	significant	antique

The following words are not to be taken as indicating value judgements:

big	dark	little	strange	white
black	Indian	magic	unusual	old
colored	light	negro	weird	young

EXAMPLES

STORY: LEVEL THREE

Personal Opinions

Did the children like the hall?

Did the children want to stay in the hall?

Feelings

Did the bird enjoy swinging?

Why did the bird want to go with the children?

Emotions

Was the girl surprised?

Why was the boy upset?

Why was the parrot happy?

Was the girl unhappy?

Why was the girl screaming?

Why was the boy scared?

Knowledge

What is the girl trying to tell the boy?

Can you see an opening in the cage?

What is the parrot trying to say?

Value Judgement

Are the children poor?

Is the parrot's cage dirty?

Are those pots antique?

EXAMPLES

PICTURE: LEVEL THREE

Personal Opinion

Would you say that the man has no shirt on?

Do you get the idea that the parrot wants out?

Feelings

Is the parrot enjoying his swing?

Does the animal want to get away from the boy?

Emotions

What is the parrot mad at?

Is the girl surprised?

Knowledge

What do you think is happening in the picture?

Do you think the people are dancing or running?

What kind of home or street do you think it is?

Value Judgement

Are the children wealthy?

Do their clothes make you think they are poor?

Do you suppose she is talking to him?

Is the writing important?

What is significant about the mark in the left-hand corner?

What is significant about the size of the three in the upper right-hand corner?

4. Level Four (Expanded Factual). These questions exactly parallel Level 2 questions in the restricted category.

EXAMPLES

STORY: LEVEL FOUR

Was it a castle?

Did the bird have a short neck like a puffin?

If the dots were summed up and subtracted from the three's what would the calculation be?

EXAMPLES

PICTURE: LEVEL FOUR

Did they lose their shoes and socks?

Is there someone chasing them and they are just going to get caught?

Is the parrot telling them that someone is coming?

Do the marks warn them that someone is coming?

Are their parents maybe hunting for them?

Where were their parents?

Are they looking everywhere for their parents?

5. Level Five (Expanded Personal). These questions exactly parallel Level Three questions in the restricted category. Included in "personal knowledge", "opinions" or "feelings" are all personal reasons that are inferred to explain the events in the picture.

EXAMPLES

STORY: LEVEL FIVE

Would you say that this story reminds you of the Arabian Nights or another fairy story?

What do you think stands out more than anything else in the story?

Do you think these were oriental children?

EXAMPLES

PICTURE: LEVEL FIVE

Is she hanging onto the parrot because she wants to take it and he doesn't want it?

Is she making a fist to get ready to hit someone?

Is the parrot mad because the lady is hanging onto its cage and rocking it?

Would you say that the bird is in such a bad temper that it is rocking its cage all by itself and nobody has bumped into it?

In what city do you think this happened?

The Unjudgable Questions

Several questions may be unjudgable for the following reasons:

1. The question is ambiguous and could not be resolved without further information.

2. The meaning is unclear. The questioner, especially in questioning about the picture may not have exactly expressed what he was referring to in his question.

Judges are to note, however, with regard to ambiguity caused by use of pronouns, wherever a pronoun appears without antecedent in that question the judges may refer back one question only in order to establish a firm antecedent.

EXAMPLE

What was the boy doing?

Was he running?

What was the parrot doing?

Was it swinging?

Where was this hall?

Was it haunted?

APPENDIX E

Tables A - F

TABLE A

NUMBER OF QUESTIONS ASKED IN RESPONSE TO PICTURE VERSUS READING STIMULI BY SUBJECTS IN GRADES 3 - 7

Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.
230	140	63	42	206	36	93	36	172	57
176	52	60	38	90	31	43	31	160	43
120	44	49	32	58	28	36	27	132	43
74	40	43	31	33	28	27	23	76	34
37	35	39	31	27	27	27	22	71	34
28	29	32	30	25	27	26	21	57	33
25	26	31	30	24	26	25	20	46	32
22	23	30	28	24	23	24	19	45	32
22	22	29	25	22	22	21	17	43	27
22	19	28	25	21	21	20	16	39	26
17	17	27	25	20	19	17	14	38	22
17	12	24	20	19	17	17	14	38	21
MDN 13	11	22	18	18	17	15	13	24	15
12	11	19	15	17	14	15	13	21	14
10	10	18	14	16	13	14	12	18	13
10	10	14	13	14	12	13	11	13	11
9	9	14	12	11	7	13	11	12	11
9	8	12	11	9	7	12	11	11	10
7	8	11	9	8	6	12	11	10	9
7	6	6	8	8	6	11	9	10	8
6	5	6	8	8	5	10	6	10	6
6	4	5	8	7	5	9	6	9	6
6	4	4	7	6	4	8	3	7	6
5	3	4	6	6	3	7	2	6	4

TABLE B

NUMBER OF QUESTIONS ASKED AT LEVELS 1 - 5 IN RESPONSE TO PICTURE VERSUS READING STIMULI BY SUBJECTS IN GRADE 3

Level 1		Level 2		Level 3		Level 4		Level 5	
Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.
37	49	45	39	17	11	121	23	28	3
31	42	45	23	12	2	59	7	19	0
29	34	16	9	6	1	47	3	7	0
24	28	14	9	1	1	20	1	3	0
21	26	13	5	1	1	4	1	0	0
19	25	12	4	1	0	4	1	0	0
12	21	7	3	1	0	4	1	0	0
11	20	6	3	1	0	3	1	0	0
8	9	3	3	1	0	2	0	0	0
7	9	3	3	1	0	1	0	0	0
7	8	2	2	0	0	1	0	0	0
7	6	2	1	0	0	1	0	0	0
MDN.									
6	6	2	1	0	0	1	0	0	0
6	5	1	1	0	0	1	0	0	0
5	5	0	1	0	0	1	0	0	0
5	3	0	0	0	0	1	0	0	0
4	3	0	0	0	0	0	0	0	0
4	2	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
2	1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

TABLE C

NUMBER OF QUESTIONS ASKED AT LEVELS 1 - 5 IN RESPONSE TO PICTURE VERSUS READING STIMULI BY SUBJECTS IN GRADE 4

Level 1		Level 2		Level 3		Level 4		Level 5	
Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.
44	34	49	31	3	0	13	12	2	0
24	28	28	31	3	0	11	5	0	0
13	26	26	26	3	0	11	4	0	0
12	25	22	23	2	0	8	2	0	0
10	17	20	23	2	0	7	2	0	0
8	13	17	23	2	0	6	1	0	0
8	11	14	23	1	0	5	1	0	0
6	9	12	11	1	0	5	0	0	0
5	7	12	10	1	0	3	0	0	0
4	4	8	9	1	0	3	0	0	0
4	2	8	8	0	0	1	0	0	0
3	1	8	6	0	0	1	0	0	0
MDN.									
3	1	7	6	0	0	1	0	0	0
3	1	6	4	0	0	1	0	0	0
3	1	6	3	0	0	1	0	0	0
2	0	4	3	0	0	1	0	0	0
2	0	4	3	0	0	1	0	0	0
2	0	3	3	0	0	0	0	0	0
1	0	2	2	0	0	0	0	0	0
1	0	1	1	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

TABLE D

NUMBER OF QUESTIONS ASKED AT LEVELS 1 - 5 IN RESPONSE TO PICTURE VERSUS READING STIMULI BY SUBJECTS IN GRADE 5

Level 1		Level 2		Level 3		Level 4		Level 5	
Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.
12	18	87	31	9	1	81	3	5	4
12	13	49	28	5	1	31	2	5	0
10	12	28	28	3	0	24	2	1	0
9	8	18	23	3	0	9	2	0	0
8	7	16	22	2	0	8	1	0	0
6	6	16	20	1	0	7	1	0	0
5	4	15	16	1	0	5	1	0	0
5	3	13	16	1	0	4	1	0	0
4	2	12	15	1	0	4	0	0	0
4	1	12	14	1	0	3	0	0	0
3	1	10	13	1	0	2	0	0	0
3	1	9	10	0	0	2	0	0	0
MDN.									
2	1	8	7	0	0	2	0	0	0
2	1	6	6	0	0	1	0	0	0
2	0	5	4	0	0	1	0	0	0
2	0	5	3	0	0	1	0	0	0
1	0	4	2	0	0	1	0	0	0
1	0	3	2	0	0	1	0	0	0
1	0	2	1	0	0	0	0	0	0
1	0	2	1	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

TABLE E

NUMBER OF QUESTIONS ASKED AT LEVELS 1 - 5 IN RESPONSE TO PICTURE VERSUS READING STIMULI BY SUBJECTS IN GRADE 6

Level 1		Level 2		Level 3		Level 4		Level 5	
Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.
43	28	16	26	11	3	14	8	3	0
35	19	14	23	4	1	12	5	1	0
19	16	11	14	2	0	9	4	1	0
19	16	11	10	1	0	7	2	1	0
17	15	11	9	1	0	6	1	0	0
14	11	11	8	1	0	5	0	0	0
13	11	8	8	1	0	4	0	0	0
11	11	7	7	1	0	4	0	0	0
8	10	7	6	1	0	3	0	0	0
7	10	6	4	1	0	3	0	0	0
6	6	6	4	0	0	3	0	0	0
6	4	5	3	0	0	2	0	0	0
MDN.									
6	3	4	3	0	0	2	0	0	0
5	2	4	2	0	0	2	0	0	0
5	2	3	2	0	0	1	0	0	0
4	2	3	1	0	0	1	0	0	0
1	1	2	1	0	0	1	0	0	0
1	1	2	1	0	0	1	0	0	0
1	1	2	0	0	0	1	0	0	0
0	1	2	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

TABLE F

NUMBER OF QUESTIONS ASKED AT LEVELS 1 - 5 IN RESPONSE TO PICTURE VERSUS READING STIMULI BY SUBJECTS IN GRADE 7

Level 1		Level 2		Level 3		Level 4		Level 5	
Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.	Pic.	Rdg.
67	47	63	30	37	4	40	8	19	1
67	34	47	26	24	3	35	6	16	0
27	31	27	24	15	2	22	5	5	0
26	28	25	23	6	1	21	3	4	0
23	26	20	14	5	1	20	2	2	0
22	22	20	11	5	1	11	1	1	0
14	12	18	11	5	0	8	1	1	0
9	8	15	8	4	0	7	1	1	0
8	7	15	6	3	0	7	1	1	0
7	6	10	5	2	0	5	1	1	0
6	5	10	5	2	0	5	0	0	0
6	5	9	2	1	0	5	0	0	0
MDN.									
5	5	9	1	1	0	4	0	0	0
5	4	7	1	1	0	3	0	0	0
5	2	7	1	1	0	3	0	0	0
4	2	5	1	1	0	2	0	0	0
4	2	5	1	1	0	2	0	0	0
4	1	4	1	0	0	1	0	0	0
4	0	4	0	0	0	1	0	0	0
3	0	2	0	0	0	1	0	0	0
2	0	1	0	0	0	1	0	0	0
2	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

TABLE G

NUMBER OF UNJUDGEABLE QUESTIONS
ASKED IN RESPONSE TO PICTURE VERSUS READING STIMULI
BY SUBJECTS IN GRADES 3 - 7

Gr.3		Gr.4		Gr.5		Gr.6		Gr.7	
Pic	Rdg	Pic	Rdg	Pic	Rdg	Pic	Rdg	Pic	Rdg
20	35	8	10	20	9	8	5	12	10
14	10	7	5	5	9	5	5	7	8
11	6	6	5	4	8	5	4	6	7
9	5	5	4	4	7	4	4	5	6
7	5	5	3	4	3	3	4	5	5
5	3	5	3	3	3	2	3	3	4
3	3	4	3	3	2	2	3	3	4
3	2	4	2	2	2	2	3	2	4
3	2	3	2	2	1	2	3	2	2
2	1	3	2	1	1	2	2	2	2
2	1	3	2	1	1	2	2	2	2
2	1	3	2	1	1	2	1	2	1
2	1	3	1	1	1	0	1	1	1
1	1	3	1	1	0	0	1	1	1
1	1	2	1	1	0	0	1	1	0
0	1	2	1	1	0	0	0	1	0
0	0	1	1	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
85	78	70	50	54	48	45	42	55	57

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QUESTION-ASKING RESPONSES RELATED TO PICTURE VERSUS READING STIMULI AT SELECTED ELEMENTARY LEVELS

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