A LINGUISTIC ANALYSIS OF DISADVANTAGED
KINDERGARTEN CHILDREN'S VERBAL
RESPONSES TO QUESTIONS

by

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CONTENTS

ACKNOWLEDGMENTS	ii
LIST OF TABLES	v
I. INTRODUCTION	1
Purpose of the Study	1
Definitions of Terms	1
Scope and Limitations	3
Need for the Study	4
Basic Assumptions	6
Hypotheses	7
II. REVIEW OF RELATED LITERATURE	9
Use of Questions in the Classroom	9
Classification of Questions by Types	9
Studies of Teachers' Questioning Practices	14
Questioning to Promote Thinking	17
The Effect of Teacher Questions on Student Behavior	20
Programs to Change Teachers' Questioning Behavior	23
Questioning Strategies for the Disadvantaged	30
Suggestions for Improving Questioning Strategies	34
Oral Language Development of Disadvantaged Children	37
Effects of the Environment	37
Importance of Group Processes	42

Differences Between Sexes	45
Studies on Vocabulary	48
Length of Verbal Responses	51
Studies on Fluency	56
III. METHODS AND PROCEDURES OF THE STUDY	61
Selection of Subjects	61
Sources of Data	62
Collection of Data	64
Treatment of Data	66
IV. PRESENTATION AND INTERPRETATION OF FINDINGS	69
Presentation of Findings	69
Total Word Count	69
Mean Length of T-Unit	72
Vocabulary Diversity	75
Interpretation of Findings	78
V. SUMMARY AND CONCLUSIONS	82
Summary of the Study	82
Conclusions and Recommendations	86
Investigator's Comments	88
BIBLIOGRAPHY	92
APPENDIX	107
A. SUMMARY OF BLOOM'S <u>TAXONOMY</u>	108
B. DESCRIPTION OF THE INSTRUMENT	110

LIST OF TABLES

Table	Page
1. Representative Question-Classification Systems	11
2. Changes in Questioning Behavior	24
3. Changes in Teaching Habits	25
4. Distribution of Groups	64
5. Unadjusted Cell Means for Total Word Count	70
6. Criterion and Control Variable Means	70
7. Adjusted Cell Means for Total Word Count	70
8. Analysis of Covariance of Group Scores for Total Word Count	71
9. Unadjusted Cell Means for Mean Length of T-unit	72
10. Criterion and Control Variable Means	72
11. Adjusted Cell Means for Length of T-unit	73
12. Analysis of Covariance of Group Scores for Mean Length of T-unit	73
13. Unadjusted Cell Means for Vocabulary Diversity	75
14. Criterion and Control Variable Means	75
15. Adjusted Cell Means for Vocabulary Diversity	76
16. Analysis of Covariance of Group Scores for Vocabulary Diversity	76
17. Summary of the Statistical Analysis of the Null Hypotheses	83

CHAPTER I

INTRODUCTION TO THE STUDY

Purpose of the Study

The purpose of this study was to analyze the verbal responses of disadvantaged kindergarten pupils to three categories of questions which were formulated by guidelines reported in Bloom's Taxonomy of Educational Objectives: Handbook I: Cognitive Domain. (9) The verbal responses were analyzed by checking the mean length of minimal terminable syntactic units, total word count, and vocabulary diversity. The differences which occurred between boys and girls composed another facet of the study.

Definitions of Terms

The following terms were defined in order to clarify the meaning of each as they were used in this study.

Disadvantaged kindergarten students--pupils in this study were enrolled in twelve kindergarten classrooms of the Lubbock Independent School District. Provisions for these classrooms have been set forth in House Bill Number 240, Acts of the Sixty-first Legislature of the State of Texas. (152) In order to be eligible for attendance under this bill, kindergarten pupils must be "educationally handicapped," which is defined as either/or: (152:2646)

1. A child who cannot speak, read, and comprehend the English language. He is unfamiliar with the common English language words that are necessary for normal progress in the first grade.

2. A child who is from a family whose annual income is \$3,000 or less.

Question--any intellectual exercise calling for a response. (59:2)

Minimal terminable syntactic unit or T-unit--a single predication together with any subordinate clauses that may be related to it. (39:20) It may be a simple or a complex sentence, but not a compound sentence. According to Loban (43:6), it may also be an answer to a question which lacks only the repetition of the elements of the question to satisfy the criterion of independent predication.

Garbles--words not included in the T-unit or minimal terminable syntactic unit. (39:6)

Vocabulary diversity--a count of the number of different words spoken. (92:490)

Total Word Count--the number of words in the language sample. False starts, abnormal redundancies, and non-communicative repetitions were not counted. The word "and" was also excluded when it was used to connect a series of sentences. (50:39)

Scope and Limitations

This study was restricted to an analysis of the verbal responses of seventy-two children who were enrolled in twelve kindergarten classrooms of the Lubbock Independent School District, Lubbock, Texas. Attention was focused upon the length of T-units, vocabulary diversity, and total word count. No attempt was made to evaluate usage, style, or kinesics.

Although the study was concerned with spoken structures, phonological analysis was not included. Pitch, stress, and juncture are recognized by the researcher, but were not chosen for utilization in the study. The investigation reported only total word count, vocabulary diversity, and mean T-unit length.

The type of stimulus for eliciting oral language consisted of slides prepared by the researcher. Specific, predetermined questions were asked each group of six kindergarten pupils. A limited time for answering questions was set. It is possible that allowing more time, changing group size, submitting different questions, or using a type of stimulus other than slides would have produced different results. The language samples did not necessarily show what the children might have done under other conditions or what they were capable of doing. The results show only how these

children responded verbally to selected questions during the period of testing.

Need for the Study

Recent research by Adams (137), Aschner (73), Bloom (9), Carner (81), Guszak (37), Pate and Bremer (116), Sanders (59), and Schreiber (150) has focused on classifying the types of questions teachers ask. According to Gall (96:711), there is now a need to develop taxonomies based on the type of questions teachers should ask. Davis and Tinsley (88:25) agree that specific understandings and skills involved in the use of classroom questions and the purposes of questions require major attention. By analyzing kindergarten children's verbal responses to various types of questions, it may be possible to understand more about the impact of questions upon young children's oral language development.

Corey (82:745) and Flanders (28:100) reported that in the classrooms they observed, over fifty percent of the verbal interaction was composed of teacher talk. By grade level, the amount of teacher talk varied slightly. Furst and Amidon note: (31:169)

Of the total interaction in first grade, teacher talk comprises 50%. Some decrease is evident in second grade where only 45% of the total talk is the teacher's. A slight increase to 47% occurs in the third with a continued rise to 52% in the fourth grade. In both fifth and sixth grades teacher talk comprises 49% of the total interaction.

As a result of the large amount of teacher talk, the verbal communication of pupils which occurs is primarily in response to the initiative of the teacher.

Hess and Croft (38:184), Phillips and others (54:83), Bromwich (11:6), and Frazier (94:8) all assert that the most effective means of promoting language development is to provide many opportunities for young children to interact on a verbal level. Hess and Croft (38:184) state: "The best teacher of language is the use of language itself." Petty and Starkey (53:4) agree:

Most important of all other environmental factors retarding language development as far as schools are concerned would appear to be the failure to provide situations which stimulate talking.

Classroom questions, in the opinion of Amidon (1), Bellack (6), and Smith (62), are the chief means of eliciting verbal responses; therefore, it is important to determine the types of questions which will bring about more pupil talk, and diminish teacher talk. It is necessary not only to encourage oral language usage but also to elicit superior and more diverse responses from children. By determining the types of questions needed to encourage this level of participation, the teacher will be able to promote higher cognitive levels of thinking. (14:iii)

Since talking is important to young children's language development, and questions are an important means of

eliciting verbal responses, it follows that the teacher's questioning strategies are extremely important in education. Despite this general recognition of the classroom teacher as the single most vital factor in the education of children, there has been a lag in the development of empirical means for evaluating teaching techniques. (2:3; 29:iii) Mackintosh (45:1) summarized the opinion of the National Council of Teachers of English, Association of Childhood Education International, International Reading Association, and Association for Supervision and Curriculum Development as she noted that there is a need to make careful appraisal of current practices in teaching children to express their ideas orally. In this study, questioning strategies and their effect upon kindergarten children's verbal responses were investigated. The results should be helpful to kindergarten teachers, to curriculum developers, and to preservice and inservice educators. In the words of Loughlin (111:481), "To question well is to teach well."

Basic Assumptions

Three basic assumptions were made in developing this study.

1. Verbal responses are an indicator of children's oral language development.

2. Kindergarten children are capable of responding to many different types of questions.

3. The teacher has the responsibility for selecting the types of questions which will be utilized in the classroom.

Hypotheses

The following hypotheses were tested:

1. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference in students' verbal responses to the three categories of questions when the criterion is total word count.

2. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference between male and female kindergarten students' verbal responses to the three categories of questions when the criterion is total word count.

3. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant interaction between sex and the three different categories of questions when kindergarten students' verbal responses are measured by total word count.

4. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference in students' verbal responses to the three categories of questions when the criterion is mean length of T-unit.

5. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference between male and female kindergarten students' verbal responses to the three categories of questions when the criterion is mean length of T-unit.

6. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant interaction between sex and the three different categories of questions when kindergarten students verbal responses are measured by mean length of T-unit.

7. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference in students' verbal responses to the three categories of questions when the criterion is vocabulary diversity count.

8. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference between male and female kindergarten students' verbal responses to the three categories of questions when the criterion is vocabulary diversity count.

9. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant interaction between sex and the three different categories of questions when kindergarten students' verbal responses are measured by vocabulary diversity count.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter is divided into two major sections. The first section reviews literature pertaining to the use of questions in the classroom. The second section reviews studies related to the oral language development of the young disadvantaged child.

Use of Questions in the Classroom

Skillful questioning is one of the most valuable techniques available to teachers for improving the intellectual climate of the classroom. Dewey (24:266, 268, 269), in How We Think, hypothesized that questions can arouse curiosity, create a feeling of need, or demand the use of facts in solving a perplexing problem; they constitute perhaps the best means of encouraging pupil-initiated activity, of providing for individual differences, and of guiding pupils in developing efficient habits of independent study. Questions serve the unique function of requesting a verbal response from another person. They invite participation in a verbal exploration of the world.

Classification of Questions by Types

In recent years, various systems of classifying questions have been proposed. Fraenkel (93:200) developed

a taxonomy which included categories for factual, descriptive, explanatory, and heuristic questions. Ladd (141:247) focused on the teacher's inquiry level. According to Decaroli (89:916), knowledge of J. P. Guilford's (99) operations component of his structure of the intellect model would enable a teacher to analyze his questions as to their convergent and divergent nature, as well as to their cognitive level. In a study of three- and four-year old children's communicative development and their responses to questions, Hooper (102:3) utilized questions of four types: yes-no, labeling, explanatory, and open-ended.

As shown in Table 1, Gall (96:709) indicated similarities between eleven different question-classification systems. The categories proposed by Adams, Aschner, Bloom, Carner, Clements, Guszak, Pate and Bremer, and Schreiber were selected as representative of the various methods for classifying questions. It appears that Bloom's Taxonomy best illustrates the characteristics which these systems have in common. Gronlund's (36:20) summary of Bloom's Taxonomy is presented in Appendix A of this dissertation.

Torrance and Myers (70), in Creative Learning and Teaching; Carin and Sund (14), in Developing Questioning Techniques; and Sanders (59), in Classroom Questions: What Kinds?; utilized Bloom's outline of educational objectives. Definitions of the categories from Bloom's Taxonomy, although altered slightly, are presented by Sanders: (59:3)

TABLE 1
REPRESENTATIVE QUESTION-CLASSIFICATION SYSTEMS (96:709)

Author	Classification				
	Recall	Analytic Thinking	Creative thinking	Evaluative thinking	Other
Adams	Memory	Ratiocinative (logical reasoning)	--	Evaluative	Associative, clarifying, neutral
Aschner	Remembering	Reasoning	Creative thinking	Evaluating	--
Bloom	Knowledge	Analysis	Synthesis	Evaluation	Comprehension, application
Carner	Concrete	Abstract	Creative	--	--
Clements	Past experience, process recall	--	Planning	Product judgment	Present experience, rule, opening, identification, suggestion, order, acceptance
Guszak	Recognition, recall	Explanation	Conjecture	Evaluation	Translation
Pate & Bremer	Simple recall of one item, recall-choice of multiple items	Principle involved, concept analysis	Divergence	--	Determination of skills abilities (demonstrate), skills demonstration (verbal), examples-singular, examples-multiple
Schreiber	Recall of facts, arranging facts in sequential order	Making comparisons, identifying supporting facts, drawing conclusions	Speculating on outcomes	Identifying main part & important parts, stating moral judgment, stating judgment based on personal experience, evaluating quality of source material, evaluating adequacy of data	Describing situations, defining & clarifying information, using globes, using maps, uncovering information & raising questions for study

1. Memory: The student recalls or recognizes information.
2. Translation: The student changes information into a different symbolic form or language.
3. Interpretation: The student discovers relationships among facts, generalizations, definitions, values, and skills.
4. Application: The student solves a lifelike problem that requires the identification of the issue and the selection and use of appropriate generalizations and skills.
5. Analysis: The student solves a problem in the light of conscious knowledge of the parts and forms of thinking.
6. Synthesis: The student solves a problem that requires original, creative thinking.
7. Evaluation: The student makes a judgment of good or bad, right or wrong, according to standards he designates.

The above categories are sequential and cumulative. Sanders (59:9, 10) stated that each category of thinking has unique elements but also includes some form of all lower categories.

Cognitive operations required in responding to the question types can be ordered on a scale of complexity from concrete to abstract or simple to complex. This hierarchical order of cognitive operations is typical of most of the question classification systems. For this reason questions should be classified at their highest level, although it may be difficult to ascertain whether a student has answered a question by using a high-cognitive level process or by using a low-level response.

Sanders and Bloom have commented on one aspect of question classification. Bloom (9:18, 20) proposed that the more abstract-level of complex-level operations cannot be performed until the prior steps have been completed.

Sanders (59:10) reported:

There are both simple and complex questions within each category. . . . The implication is that all teachers from the primary grades through graduate school will find it possible to use every one of the categories in their classes. The differences in the questions offered at various grade levels should be in the complexity of the thinking, rather than in the kind of thinking.

Shrable and Minnis utilized the levels of cognitive tasks specified by Taba and the categories in the cognitive domain suggested by Bloom to create a new system of question classification. Taba and Elkins (68:530) designated as levels of thought: grouping and labeling, interpreting information and making inferences, and predicting consequences. The Shrable and Minnis system is limited to three classifications of questions: (a) data recall, which includes Bloom's area of memory; (b) data processing, which contains translation, interpretation, analysis, and synthesis; and (c) application or generalization, which encompasses both application and evaluation. Shrable and Minnis (121:203) further defined the three groups:

1. Data recall cues the student to respond with a descriptive type statement. Recalling and reciting previously acquired information are typical tasks at this level.

2. Data processing involves the student in using data to show cause and effect relationships, to group, classify, synthesize, define, analyze, compare, contrast, and infer from data.
3. Application cues the student to do some divergent thinking, to make predictions, to develop theories, and to apply principles learned in other contexts.

The above classification system is the one which was utilized in this study.

Studies of Teachers' Questioning Practices

A pioneer study of teachers' questioning practices was made by Stevens. Her study, The Question As a Measure of Efficiency in Instruction (65), provided evidence that teachers did most of the talking in the classroom. She found that teacher talk, constituted largely of questions, emphasized memory more than any other cognitive activity and smothered pupils' expressions.

In recent years, considerable emphasis has been placed upon searching for ways and means of developing the teacher's ability to ask high-level, thought provoking questions. Davis and others (87:713) suggested that this renewed interest was provoked by three factors. First, midcentury attention was directed toward intellectual achievements, particularly after the Russians' launching of Sputnik.

A second development was the resurgence of interest in the direct study of teaching. Questions were recognized

as an important component of classroom language. One of the best known systems for examining verbal interactive classroom behavior is Flanders' Interaction Analysis. (1:121-140) The original ten category system has been expanded recently to include sixteen classifications for teacher-pupil behavior. (2:141-149) The new system enables the observer to classify questions according to type and level of abstraction.

The third factor influencing the current interest in teachers' questions has been the substantial progress in the analysis of cognitive operations. The work of Guilford (99) and of Bloom (9) has helped to identify cognitive processes in hierarchical complexity. These relatively new formulations, along with the current emphasis on the work of Piaget (55), have provided criteria for the analysis of thinking operations observable in the classroom.

Bellack and his associates (6:87) examined classroom interaction and reported that the core of classroom discourse is the response-expectant soliciting move followed by the expectancy-fulfilling responding move. It was demonstrated by Taba and Elkins (68) that teaching strategies and thought processes can be analyzed. All of these studies and their accompanying observational systems analyzed teachers' questions; yet, none of the studies focused attention directly on classroom questioning practices.

The work of Sanders (59) in Classroom Questions: What Kinds? was the publication which eventually became very influential. Sanders explained the categories of Bloom's Taxonomy so that the levels could be employed by teachers in evaluating their actual classroom practices.

More recently, Moyer and Dahlberg studied elementary teachers' questioning techniques. Moyer (142:147) found:

1. Teachers' questions and questioning practices do not involve pupils effectively in critical thinking activities.
2. Teachers are not prepared to develop and utilize the questioning process.
3. An insignificant relationship appears to exist between the question function and teaching experience.

The research of Dahlberg was directed more toward the cognitive level of teachers' questions. He (138:3344) concluded:

1. The level of professional preparation was not a factor in differentiating questioning behavior.
2. The cognitive level of questioning behavior was not differentiated by the total number of years teaching experience.
3. Subject matter taught did not provide a vehicle for differentiation.
4. Teachers instructing in different grade levels did not exhibit a significant variance in their questioning behavior.

Based on the studies of questioning strategies by Moyer and Dahlberg, it would appear that few teachers are practicing questioning techniques that will lead students to function in the higher levels of cognitive thought.

Despite related research, progress in raising the levels of teachers' questions has been slow. According to Ladd (141:247), the questioning practices of today's teachers are not significantly different from those of the teachers studied in the early part of this century. Gall (96:713) agreed that there has been no essential change. She (96:713) indicated that about sixty percent of teachers' questions require students to recall facts, about twenty percent require students to think, and the remaining twenty percent are procedural.

Questioning to Promote Thinking

There is wide agreement that teachers' questions are the means of eliciting pupil replies which show evidence of thinking behavior. Since studies of teachers' questioning practices have indicated the paucity of questions which require higher-level thinking processes, many educators have focused their investigations upon this aspect of classroom practice. (87:84; 105:102)

Teacher questions which require factual answers indicate to the child that his ideas are less important than what other people tell him. Lamb (41:32) asserted:

Teachers should ask questions that require thinking responses. . . . Unusual questions lead to deeper thinking. Deeper thinking requires greater communicative ability, and greater communicative ability means language growth.

It is the opinion of Taba and Elkins (68:524), that several problems have hindered the implementation of thinking as an educational objective. First, there is the problem of defining thinking in terms which are useful in planning effective teaching strategies. Second, there is the faulty assumption that reflective thinking is impossible until a sufficient body of factual knowledge is accumulated. Third, the presumption that certain subjects have thought as their automatic by-product still prevails.

Another problem concerns bridging the gap between learning and thinking. Bruner (79:184) has pointed out that one of the most important rewards of learning is to be able to use the knowledge which is acquired in thinking. Torrance and Myers (70:173) proposed that this gap is narrowed by utilizing questions that go beyond what has been learned.

In a study of 190 elementary school teachers, Pate and Bremer (116:419) observed that often insufficient thought is given by teachers to the purposes of their questions. It is important that teachers plan strategies of instruction, beginning with an identification of the kind of thinking behavior desired at a particular time. Wellington (130:472), Guszak (37:110-116), and Gantt (98:43) note

that teacher questions with well-founded purposes are a means of evoking an anxiety for learning and of putting in motion the process of critical thinking.

Currently, one of the goals of education is to teach the student to learn by discovery. In the words of Bruner (13:20), it is important " . . . to present the fundamental structure of a discipline in such a way as to preserve some of the exciting sequences that lead a student to discover for himself." Discovery helps the learner acquire knowledge which is uniquely his own because he has discovered it himself. This product may not be new to the world, but has been gained by the use of the student's own mind. Bruner (12:607) explains:

. . . I do not restrict discovery to the act of finding out something that before was unknown to mankind, but rather include all forms of obtaining knowledge for oneself by the use of one's own mind . . .

Discovery involves rearranging data internally or structuring it in order that the new concepts can be utilized in other situations. It is the teacher's task to use questions as a means of inducing thinking beyond the memory level, and thereby lead the learner to new discoveries.

Advocates of the discovery method recommend learning by doing. Sanders (59:7) hypothesized that a taxonomy of questions helps to clarify learning by doing as it demonstrates that a child can sit quietly at a desk and yet

engage vigorously in any one of a number of kinds of mental activities.

Research by Guszak (100:227-234) indicated that teachers of primary children spend much time stressing minute details, and that there is a decrease in literal questions at higher grade levels. The practice of having young children spend most of their time accumulating knowledge and little time thinking is questionable. Manson and Cleg (112:306) explain:

Training children to think ought not to be deferred but rather is to be encouraged from the outset of formal education. If higher-level questions are asked in simple language and if they concern reasonably familiar problems, the child can and should learn to cope with them. His inexperience with thinking is surely no justification for denying him the opportunity to learn to do so.

Getzel (32:249), in an analysis of the work of Guilford, pointed out the need for asking students questions which give them opportunity for divergent thinking. Convergent questions require only one simple answer, while divergent questions evoke a variety of responses involving fluency, flexibility, originality, and elaboration. Pate and Bremer (116:421) concurred that divergent questions are more demanding of the child's thought processes.

The Effect of Teacher Questions on Student Behavior

The influence of teacher questions on student behavior has been explored by a few educators. Gall (96:714)

reported that the most important research in this area was presented in the unpublished studies by Hunkins. Gall (96:714) explained his study:

The purpose of his research was to determine whether the variable of question type bears any relationship to student achievement. Two experimental groups of sixth-grade students worked daily for a month on sets of questions which were keyed to a social studies test. In one group the questions stressed knowledge; in the other, analysis and evaluation questions were stressed. Question types were defined in terms of Bloom's Taxonomy. Hunkins found that the analysis-evaluation group earned a significantly higher score on a specially constructed post-training test than did students who answered questions that stressed knowledge.

After exploring limitations of Hunkins' research design, Gall (96:715) concluded:

It seems to be a reasonable hypothesis . . . that if a group of students is exposed to certain types of questions and if their responses are monitored to improve their quality (rather than correctness), then they will be able to answer similar types of questions better than a group of students who have not had this exposure.

In a recent research study concerning elementary school science instruction, Kleinman (110:164) found that teachers who ask questions which require more critical thinking tend to ask fewer questions in the course of a period. When fewer questions are asked by the teacher, there are more opportunities for pupils to talk. Providing more time for pupils to talk should enhance oral language development and promote problem solving. From their research, Gagne and Smith (95:18) state that:

The results appear to indicate that requiring subjects to verbalize has the effect of making them think of

new reasons for their moves, and thus facilitates both the discovery of general principles and their employment in solving successive problems.

Research conducted by Riehm (143:308) led to conclusions which disputed the statements of Petty and Starkey (53:4), Hess and Croft (38:184), and Frazier (94:8) regarding the importance of verbalization to oral language development. When the disadvantaged first-grade subjects were exposed to a program of supplementary verbal interactional experiences with their teacher, significant gains in oral language development were not shown.

In a study of the verbal behavior of superior teachers, Amidon and Giammatteo (72:284) observed:

The superior teachers asked twice as many questions that were broad in nature and demanded pupil-initiated talk. The average teacher tended to ask narrow questions that called for predictable responses. . . .

.
There were twice as many pupil-initiated statements in the classes taught by the superior teachers as in those taught by the average teachers. Pupils participated more than 52 percent of the time in the classes of the superior teachers, and about 40 percent of the time in the classes of the average teachers.

Pupil participation is an important factor to be considered when evaluating classroom discourse.

The study of Gallagher and Aschner (97:183) indicated that even a slight increase in the percentage of divergent questions yields a large increase in divergent production by students. The learners' higher thinking

processes closely follow the kinds of questions asked by their teachers.

A humanistic approach was taken by Torrance and Myers as they discussed the effect of teachers' questions on students' behavior. In their opinion, it is doubtful that any teacher is able to plan deliberately all of his questioning strategies. Torrance and Myers (70:204, 205) submit:

Although he may consciously try to lead his pupils to discover certain facts and then to form generalizations, much of what he does and how he reacts to pupils cannot be planned. A creative teacher, by definition, is intuitive and spontaneously flexible, and so we might expect that his success is attributable in part to those aspects of his behavior that arise spontaneously and that derive principally from what he is as a human being. . . .

.
Accordingly, you have a right to ask: "Why bother about questioning methodology if a teacher either has the 'magic' or hasn't?" The answer is a declaration of faith, one shared by anyone who hopes to help education in the United States become more humane. We are convinced that positive gratifying teaching experiences can affect attitudes, which in turn will affect behavior. In other words, experiences in the classroom that are satisfying for both pupils and teachers can significantly change the behavior of the pupils so that they learn to enjoy learning and thinking in school.

The effect of questions on student behavior must be analyzed by noting both cognitive and affective goals of education.

Programs to Change Teachers' Questioning Behavior

Research has indicated that there is a marked difference in the competence of teachers in the art of

questioning. (52; 72) However, only a few programs to improve teachers' questioning practices have been implemented. In 1938, Houston developed an inservice program which had as its goal changing teachers' questioning practices. Houston (103:17-28) utilized group and individual conferences, stenographic reports of each teacher's lesson, self-evaluation, and supervisory evaluation. A pre-training and post-training evaluation of eleven teachers indicated that most teachers were able to effect substantial changes in specific aspects of their questioning behavior. The modifications which were demonstrated are illustrated in Table 2.

TABLE 2
CHANGES IN QUESTIONING BEHAVIOR

Behavior	Pre-training	Post-training
Asked Questions Relevant to the Purpose of the Lesson	41.6%	67.6%
Student Participation	40.4%	56.1%
Asked Questions Requiring Student to Manipulate Facts	10.0%	18.0%

There was also a reduction in a number of bothersome teaching habits. These improvements are shown in Table 3.

A field test of an instructional program developed at the Far West Laboratory for Educational Research and Development to help teacher achieve changes in their questioning behavior was discussed by Gall: (96:717)

TABLE 3
CHANGES IN TEACHING HABITS

Habits	Pre-training	Post-training
Repetition of Questions	4.8	0
Repetition of Students' Answers	5.5	.6
Answering Own Questions	3.5	.3
Interruption of Student Responses	10.3	1.5

It is a self-contained, inservice training package requiring about 15 hours to complete. The minicourse relies on techniques such as modeling, self-feedback, and microteaching . . . to effect behavioral change. In a field test with 47 elementary-school teachers, the minicourse produced many highly significant changes in teachers' questioning behavior, as determined by comparisons of pre- and post-course videotapes of 20-minute classroom discussions: increase in frequency of redirection questions . . . from 26.7 to 40.9; increase in percentage of thought questions from 37.3% to 52.0%; and increase in frequency of probing questions . . . from 8.3 to 13.9. . . . There was also a reduction in frequency of poor questioning habits: repetition of one's questions (from 13.7 to 4.7 occurrences); repetition of students' answers (from 30.7 to 4.4 occurrences); and answering one's own questions (from 4.6 to .7 occurrences).

Zimmerman and Bergen (134:19-26) investigated teacher behaviors designed to elicit intellectual operations in children by focusing on teacher question-asking behaviors. The hypothesis that teachers would tend to ask significantly more questions in the cognition and memory category than in other intellectual operations categories was confirmed. The

experimental program significantly altered the question-asking behavior of teachers by reducing the incidence of cognition and memory questions and by increasing the use of perception questions.

Contradictory research exists on specifics of training programs for teachers. Wilson (145:992, 993) found that an unstructured inservice education program which had no predetermined procedure improved teacher-student interaction in the desirable categories significantly greater than a structured inservice program which controlled topics and manner of approach. However, teachers were more receptive to the structured program. Hill (140:2084) went a step further and concluded that a training time of ten hours was somewhat superior to shorter periods for improving questioning strategies.

In a 1969 study by Rogers (118:59, 60), seminars were conducted which focused upon the purposes and uses of varying cognitive levels of classroom questions with an experimental group of student teachers. Sanders' book, Classroom Questions, served as a guide for the subjects.

Videotapes and audiotapes, microteaching of peers, and role playing of alternate questioning strategies were utilized. Tapes of lessons taught by the student teachers were analyzed. The propriety of the question to the objectives set by the student for his lesson was stressed throughout the

seminars. Observers recorded the categories of the questions and the questioning sequence of the student teachers in both the experimental and contrast groups during a four-day unit taught after the completion of five seminars. Results of the study indicated that five of the seven cognitive variables were significantly different. The experimental group of student teachers asked significantly more translation, interpretation, analysis, synthesis, and evaluation questions than did the contrast group. No statistical differences were noted between the groups' use of memory and application questions. All subjects in both groups asked questions in the three lower categories of the taxonomy. Subjects in the contrast groups asked no analysis, synthesis, or evaluation questions.

Smith (144:4023) conducted a study with forty-six kindergarten teachers. The teachers attended eight hours of inservice sessions over a period of four weeks. Emphasis was placed upon teachers' question-asking behavior. Group I used a dialectical instructional method in which the experimenter shared control of the inservice events with the subjects. Group II used a didactic instructional method which maximized the experimenter's control of the learning events. Group III was a control group. Teachers in the dialectical group increased their use of high-level questions and decreased their use of low-level questions

significantly more than teachers in the didactic group on routine question scores.

The Science Curriculum Improvement Study program was used by Bruce as a means of improving the type of questions elementary teachers ask. He (78:163) found that the use of SCIS materials did cause the teachers to ask higher level questions. There was a negative correlation between the number of years of teaching experience and the change in the proportions of high-level questions asked. Bruce speculated that the years of experience may have conditioned the teachers to ask recall-of-fact and recognition type questions. He suggested that more experienced teachers receive guidance designed to reduce their rigidity in question-asking behavior and thereby free them to ask more high-level questions.

Susskind (151) held seminars with teachers to improve their questioning techniques. These seminars brought about a small but significant improvement in student responses. An instructional program for fifth-grade social studies teachers was conducted by Schreiber. After meeting for four one hour sessions in which the purpose of asking questions and guidelines for effective questioning practices were discussed, the subjects showed a decrease in the use of questions that required only recall of facts. There was an increase in the use of questioning techniques which required

pupils to describe, compare, define, clarify, identify, conclude, and evaluate. (150:155-156)

In conjunction with the Southwestern Cooperative Educational Laboratory, Bremer and Pate (146) engaged in a project designed to help teachers improve the quality of their classroom questions. Inservice-education institutes were held for experienced elementary classroom teachers in two widely separated areas of the state of Texas. At each location the second institute followed the first after an interval of about four weeks. The inservice meetings encouraged the participants to recognize that questions have many purposes, to utilize questions as a strategy in teaching, to develop skill in questioning, to increase divergent questioning, and to promote thinking skills of their students. Tape recordings of teaching sessions were made before and after the institutes. An analysis of the tape recordings indicated that the ratio of divergent questions increased from 18 per cent to 34 per cent. There was also an increase of 30 per cent in the amount of time spent by the individual pupil in response to the teacher's questions. (146)

There is an apparent need for more programs which will improve teachers' questioning practices. Katz (109:348) suggested that desirable teacher training should include ample time and opportunity for the trainee to

inspect, analyze, and refine habits while they are being formed.

Questioning Strategies for the Disadvantaged

Several authors have identified specific questioning strategies which are particularly effective with disadvantaged children. It is unfortunate when these children must restrict their efforts to responding only to memory questions. Sanders (59:11) says that there are simple questions which may be asked in each category of thinking. Disadvantaged learners often find education frustrating and lacking in interest. They can profit from experiences provided by teachers who ask questions from various cognitive levels.

After studying the responses of students enrolled in the Tucson Early Education Model, Zimmerman and Bergen (134:25) suggested that reducing teacher emphasis on cognitive questioning might be beneficial for disadvantaged children from a motivational standpoint. The disadvantaged child lacks verbal skill, and thus has much difficulty producing or retrieving verbally presented factual knowledge. It is discouraging to the child when he is confronted with extensive numbers of questions requiring responses which are absent from his repertoire. Teachers instead should capitalize on the motivation inherent in the child's success.

The key to successful teaching in disadvantaged-area schools, according to Bottom (75:56), is asking appropriate questions. He stressed asking questions on topics which are meaningful and interesting to students. Questions about controversial topics were used successfully by the teachers he interviewed as a means of getting children to think and to talk.

How teachers structure questions is an important consideration in working with young disadvantaged children. If a child is unable to tell a teacher about an object, the teacher might ask: "Is this a blue circle or a red square?" This type of question limits the problem and provides the language when the child is unable to respond. Ellis (91: 28, 29) describes this technique as dichotomous questioning. The structure of the question sets the level of the task required of a child.

Bereiter and Engelmann (7:115) propose that questions are valuable in working with preschool disadvantaged children because they call attention to specific parts of a sentence or a process and help to define them. They recommend that teachers use appropriate question-and-answer series to lead children to solutions. The children's difficulty in dealing with a series of questions should be recognized by the teacher. There should be more than one correct answer for each question in the series.

Probing questions were utilized by Gantt (98:12-16) in working with disadvantaged learners. The pupil's initial utterance was analyzed by the teacher in order to obtain cues to his thinking. The exchange was encouraged by the teacher's probing questions until the final pupil utterance indicated a trend toward improvement. While testing this technique, a variety of questioning strategies was utilized successfully with the first-grade subjects.

Frazier (94:8) agreed with Gantt about the importance of using questions to elicit further response. Sometimes children have difficulty telling what they do know. Questions by the teacher or other children can elicit more information or ideas. Loban (44:225) stressed the use of "why" questions to encourage disadvantaged children to talk more.

Heider and others (135) reported an experiment in which lower-class and middle-class, white ten-year-old boys were asked to describe a picture of one animal out of a large array. Several essential attributes were identified. The frequencies of attributes named by the children were almost identical for the two groups. However, there was a significant social-class difference in the number of requests the listener had to make for more information before the picture was adequately specified--nearly twice as many requests to the lower-class children as to the middle-class

children. The lower-class children's performance was far superior to what it would have been if the amount of probing had been standardized for the two groups as it often is in the classroom.

In the Tucson Method of Language Teaching, questions are an important means for encouraging the disadvantaged children in the program to use language to express ideas. According to Lavatelli (42:105) four types of questions were developed by Hughes to promote skills in oral language:

1. Questions about the characteristics of objects children are observing in terms of shape, color and size . . .
2. Questions about the origin of an object . . .
3. Questions about the relation of the object to other objects . . .
4. Questions about taste, or the way something feels . . .

Categorizing, associating, and sequencing are stressed in the questions utilized by the teachers.

Taba and Elkins (68:72) cited the use of open-ended questions as an especially appropriate teaching strategy for use with disadvantaged children. Each child can respond at his own level, and in this way the teacher can help him build upon what he already knows. Open-ended questions are particularly suited to pre-primary children with a wide range of ability and experience. Each child can participate at his own level and contribute to the group's experience.

In fact, greater utilization of the techniques which have been discussed would be beneficial to all children, not only to those who are disadvantaged.

Suggestions for Improving Questioning Strategies

Since so many educational theorists have made suggestions about improving questioning strategies, it would be unfeasible to present all of them. Only a few representative ideas will be identified. All of the writers agreed that good questioning strategies are basic tools for the classroom teacher.

Grossier (35:21) summarized: "A teachers' questions should be (1) purposeful, (2) clear, (3) brief, (4) natural, (5) thought-provoking, (6) limited to scope, and (7) adapted to the level of the class." There should be a balance between simple recall and thought questions in every lesson. Time should be allowed for students to think before they are required to respond. The teacher should distribute questions as widely as possible, calling on non-volunteers as well as volunteers. There should be no penalties for incorrect answers.

Many of the comments of Grossier are restated by Loughlin. He (111:481-482) added that the teacher should encourage lengthy responses. Critical thinking should be stimulated. Questions such as: "Do you know . . . ?" and

"Who can tell us?" should be avoided. Students should be encouraged to comment on the questions and answers of classmates. The student's name should be called after the question is asked.

The well-known philosopher, John Dewey, proposed that questions should require students to use knowledge in dealing with new problems, rather than reproducing the material literally. Emphasis should not be on getting the correct answer. Questions are also suggested by Dewey as a means of prompting a review of what has been learned and as a way of arousing interest in problems yet to be solved. (24:266-267)

It is the consensus of authorities, Crump (84:659), Bradley (76:15), Sanders (59:6), Carin and Sund (14:161), and Torrance (127:35), that teachers should be acquainted with a means of classifying questions, either by levels or functions, in order to ensure that higher cognitive processes are tapped through questioning procedures. Knowledge of any one of the various systems should provoke the teacher to utilize a variety of questioning techniques.

Additional suggestions are offered by Crump. He (84:660) proposed that teachers should phrase questions concisely and eliminate the practice of repeating questions and answers. The latter time-consuming habit encourages poor listening habits and limited interaction. Pivotal

questions should be used to raise thinking above the factual recall level and to direct it toward overarching principles.

After analyzing the questioning practices of nursery school teachers, Haupt (148:289) made these specific suggestions:

If children are to . . . gain skill in handling increasingly complex thought processes, they require teachers who ask thoughtful questions and stimulate reflection and thinking. They need teachers who are able to pace their teaching acts from simple, descriptive, factual responses to responses which guide the child's search for understanding of processes, progression, causality, classification and so forth.

The research of Dauterman (86:29-32) also stressed the importance of sequencing and pacing questions carefully.

Flanders (28:300) asserted the need to free teachers from the pressure of covering facts, and to slow down the tempo of instruction so that intellectual skills are more likely to grow and flourish.

Johnson (108:147, 148) suggested that teachers videotape their teaching occasionally. When observing the tape, the teacher should note facial expressions which reveal disapproval when students do not respond with answers which have been predetermined as correct. Of course, verbal interaction should also be analyzed.

The advantages of group-oriented questions were stressed by Carin and Sund. Questions directed to a group, rather than an individual, keep the students alert and

involved. They also increase participation by inviting several students to show their readiness to answer. (14:31)

Oral Language Development of Disadvantaged Children

The importance of the development of oral language skills cannot be overestimated. Oral language is a major force in the forming of personality, the learning of other language skills, and ultimately in determining vocational and cultural status. The areas of oral language which are pertinent in this study are: effects of the environment, differences between sexes, importance of group processes, length of verbal responses, development of vocabulary, and studies on fluency.

Effects of the Environment

When literature regarding the effect of environment upon the language of disadvantaged children was reviewed, two different perspectives were apparent. One group of writers focused upon the shortcomings or deficits in the language capabilities of disadvantaged children. A second group, the proponents of the difference position, stressed that the English language has many different linguistic or dialect systems, none of which should be viewed as sub-standard.

The deficit theory was typified by authors, such as, Deutsch (23:215), Bloom and others (10:70), and

Crow (21:121), who reported that the effects of environment cause language development to be an area in which disadvantaged children demonstrate many deficiencies. Their conclusion was based mostly on evidence gained by contrasting children from low-income areas with their middle-class counterparts. Bereiter and Engelmann(7:4) also noted:

In practically every aspect of language development that has been evaluated quantitatively, young disadvantaged children have been found to function at the level of average children who are a year or more younger.

The difference position has emanated from the writings of Baratz (5), Shuy (60), Labov (40), and Stewart (66). Baratz (5:14) listed three assumptions made by linguists which are basic to their theory.

1. The linguist assumes that any verbal system used by a community . . . is a language and that no language is structurally better than any other language.
2. The second assumption of the linguist is that children learn language in the context of their environment.
3. The third assumption the linguist works with is that by the time a child is five he has developed language; he has learned the rules of his linguistic environment.

The language deficiency which has often been attributed to disadvantaged children may actually be difficulty in understanding and speaking a second dialect or language. This difficulty has been identified by Madeline Hunter (106:101) as one of the major debilitating factors contributing to the educational problem of disadvantaged children.

Some environmental factors have been proposed which may contribute to disadvantaged children's language problem. The home may not offer a large variety of objects which require labeling and serve as referents for language acquisition. This lack of physical objects in the home impairs children's ability to learn words, because words name things and actions within the perceptual range. Dale (85:779) and Ponder (117:772) suggest that experiential limitations will have a retardant effect upon vocabulary development. While it is true that disadvantaged children may have had experiences that more economically and socially fortunate children have not had, the breadth and depth of such experience is doubtful.

Opportunities for interaction with adults are likely to be fewer for disadvantaged children. Greene and Petty (34:93) proposed some possible reasons:

1. The ratio of children to adults is usually greater.
2. Parents are often too busy providing the daily necessities of life to be able to spend much time with their children.
3. The background of parents has usually not oriented them toward the kind of parent-child interaction which encourages language growth and ability to conceptualize.

For these reasons, disadvantaged children are denied one of the major sources of language experience. It is parents who usually give children names for objects and words to

describe them; who answer and ask questions; who point out similarities, differences, and relationships; who correct pronunciation, and enunciation; who develop the idea of order, sequence, and other concepts vital to readiness for learning in school. Deutsch (23:215) stated that the active verbal engagement of people who surround them is the operative influence in children's language development; consequently, disadvantaged children's lack of oral communication in the home handicaps their language development.

There is much controversy in professional literature regarding whether or not disadvantaged children are verbally impoverished. Frazier (94:6) said: "Even children from poor backgrounds are not as 'verbally destitute' as we once may have thought." In his opinion, these children can talk a great deal about things that are familiar to them. Black (74:466) took a conservative view on the subject when he summarized:

1. Culturally disadvantaged children understand more language than they use.
2. Culturally disadvantaged children frequently use a great many words with fair precision, but not those words representative of the school culture.
3. Culturally disadvantaged children frequently are crippled in language development because they do not perceive the concept that objects have names, and that the same objects have different names.
4. Culturally disadvantaged children learn less from what they hear.

5. Culturally disadvantaged children use fewer words with less variety to express themselves.

Ausubel (4:253) affirmed these ideas in his statement:

The language of the culturally deprived child is concrete, expressive, and informal, . . . showing signs of impoverishment mainly in its formal, abstract, and syntactical aspects.

The vocabulary of the child may include many words, but the words are peculiar to his particular neighborhood. Regardless of the viewpoint on verbal impoverishment, Cuban (22:107) observed that most educators seem to concur that disadvantaged children are more accustomed to learning by doing and seeing, rather than by talking and hearing.

Obviously, there are problems when the home teaches a different dialect or even a different language from that used at school. Bernstein (8:288-314) has referred to two kinds of language codes--a formal or elaborated code and a public or restricted code. The restricted code is used in everyday contact with close associates. This code may not require a sophisticated vocabulary or grammar nor a complicated syntax. Communication may be done largely through gesture and expression. All individuals have this restricted language capability. The elaborated language code has a more complicated syntax and a more accurate grammatical order. There is frequent use of impersonal pronouns are prepositions. This is the kind of language code which is increasingly important for learning as the child goes

further in school. A child who has learned a restricted language at home is likely to have difficulty in school, where an elaborated language is used and taught. Bernstein (8:306) reported that the child is likely to be bewildered and defenseless in the situation of linguistic change.

Although disadvantaged children use a restricted code, they may demonstrate a great deal of creativeness in language structure. Riessman (58:78) speculated that disadvantaged children are not restricted by verbal forms of communication, but tend to permit language to interact more with non-verbal means of communication, such as gestures and pictures.

Importance of Group Processes

Utilization of group processes in the classroom is imperative as a method for developing oral language skills. Mattick (113:134) asserted that the ability to relate to others is concomitant with talking to others; and the development of self-esteem, self-assertation, self-confidence, and self-control are inextricably intertwined with growth in cognitive functioning and thus with competency in communication. Hooper (102:1) and Labov (40:163) deduced that the social situation is the most powerful determinant of verbal behavior.

The importance of group processes to young disadvantaged students is explained by Torrance: (128:74)

Because preprimary children are just beginning to achieve controls, such as attention, delaying response while another is talking and the like, small group instruction probably makes more difference in preprimary education than at higher levels. Furthermore, since disadvantaged children apparently have more trouble than advantaged children in learning these controls, such methods are perhaps more important in instructing them than in instructing the more advantaged.

In reviewing major current innovative programs of preprimary education, Maya Pines (56:154) maintained that one of the most important common characteristics of all of the preprimary programs that have had some success in providing disadvantaged children with the skills they need in school is that the teacher works mainly with small groups and rarely ever with the class as a whole.

Lavatelli (149:13) concurred when she wrote:

The disadvantaged ought to have some time during the day when the child can be a part of a small group physically separated from the rest of the class under the tutelage of a teacher who will see that during that period children have a chance to listen, to respond, and to be responded to.

The statement of Lavatelli regarding the importance of the role of the teacher is reinforced by Weber. For effective verbal action to occur, in her opinion, the teacher must work with children in small groups. Weber submitted: (71:223)

A child cannot pin vocabulary to his new experience, cannot spurt ahead with new power of vocabulary, and cannot sort confusions, unless he has an adult nearby who knows his experience. The child needs an adult who tries to see with what piece of reality he is grappling and what insight he has had.

The adult must be able to determine any misconception which may occur because of a child's past perception.

Verbal interaction in the classroom, according to Mattick (113:142), should take place in the context of mutual trust and respect. The mutual trust and respect should be based on the teacher's genuine friendliness, unconditional acceptance, warmth, empathy, and interest. This is what makes language flow. The teacher can make it worthwhile and exciting for children to talk freely and can motivate them to acquire communication competency.

With the great emphasis on individualization of instruction, and attempts to make teaching-learning a one-to-one process, consideration should be given to the possible superiority for certain purposes of small-group instruction. Torrance (128:75) found in a recent research project that for five-year-old children optimum involvement occurred in groups of six. From personal experience in preprimary through graduate education, Torrance (128:74) related that generally he had greater success with small group instruction than with individual instruction.

In another study, Torrance (129:104-106) found that providing structure to the group task of five-year-old children seemed to increase the amount of planning and cooperative behavior and to reduce the amount of verbal and physical aggressiveness. Since five-year-olds apparently

are not ready to surrender enough of their egocentricity to accept the leadership of a peer, the procedure of structuring the task was more successful than structuring the group.

Flanders (28:401) stressed the importance of utilizing the group's ideas concerning learning activities:

When classroom interaction patterns indicate that pupils have opportunities to express their ideas, and when these ideas are incorporated into the learning activities, then the pupils seem to learn more and to develop more positive attitudes toward the teacher and learning activities.

In a 1972 publication, Teaching in the Early Years, Spodek (64:300) theorized that if the results of an educational experience are more a function of the human interactions that take place in the classroom than of any other element of the program, a position held by many practitioners in early childhood education, then it is possible that decisions about curriculum might make less difference than is generally supposed.

Differences Between Sexes

Early studies which analyzed the language development of preschool children were made by McCarthy in 1930 and Fisher in 1934. Both of these authors noted the superiority of girls over boys. Fisher (27:55) found that girls showed a consistent and clear superiority over boys in all items which showed developmental tendencies. There

was a tendency for girls to excel in the mean number of words per comprehensible remark.

In McCarthy's (48:152) study, girls excelled boys in the percentage of comprehensible responses at nearly all ages. A small, but consistent, sex difference was found in favor of the girls for the mean length of responses at six of the seven age levels studied. She (47:577) stated in a summary of her work that among American white children, the development of girls characteristically exceeds the boys in nearly all aspects of language.

In the late 1950s, Winitz attempted to control IQ, socioeconomic class, and family constellation with a population of 150 kindergarten children evenly divided by sex. He (132:377-383) found a slight difference favoring girls on length of response, number of different words uttered, and structural complexity. A similar study by Templin (69:114) found that differences between the estimated vocabularies of boys and girls were small and not statistically significant at any age level.

The research of Loban (43:89) indicated sex differences at the extreme ends of language measures. Boys in his study did very poorly in language when they were low in language ability, but excelled when they were high in language ability. The investigation of Riling confirmed the findings of Loban. She (136:87) observed: "When boys

do well, they do better than girls; when they do poorly, they are at the bottom of the heap."

In 1967, O'Donnell, Griffin, and Norris published the results of an extensive study of kindergarten and elementary school children's syntax. The differences between boys and girls in speech so fluctuated that no distinct, consistent pattern was indicated. About the only generalization warranted was that when the honors were not even, they more often favored the boys. The authors concluded:
(50:99)

Unlike earlier reports on children's language, but confirming more recent accounts, this study found in speech no evidence of linguistic superiority of girls over boys at comparable ages. It seems possible that changes in social, cultural, and educational environments have reduced differential behavior of the sexes. If there are . . . teachers who assume that they must naturally expect less language maturity in boys than girls in the same grade, they may need to reexamine their assumption.

Fox replicated part of the study of O'Donnell, Griffin, and Norris in 1970. She (92:495-496) reported no differences between sexes on measures of syntactic maturity and vocabulary diversity. The boys did not use dissimilar vocabularies in describing the same stimuli. It would seem from the results of the last two recent studies that boys are at least as fluent as girls and that syntactic maturity develops similarly for both sexes.

The unpublished research of Criscoe and Pels (147) indicated, however, that school might be more favorable for

girls. In a pre-test there was no significant difference between kindergarten boys and girls when word count was considered. Kindergarten boys were significantly higher than girls in sentence quality. Six months later on a post-test, there was no significant difference between boys and girls in sentence quality. The girls improved much more rapidly than the boys.

Studies on Vocabulary

Since this study utilized kindergarten pupils as subjects, the literature review was concerned with research relevant to the language development of kindergarten age children. Many attempts have been made to assess the total vocabulary of individual children at different ages, but certain difficulties arise. There is the problem of getting an accurate record of words used, and the difficulty of determining if the child understands the meaning of the word. It is only feasible to record total vocabulary when children are very young. Language samples must be utilized with older children.

The ambiguity of the word "vocabulary" creates a problem when the results of research studies are interpreted and compared. The speaking, writing, reading, and understanding vocabularies of the child may all be different. Surface verbalization does not necessarily indicate

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understanding. Methods of counting words may vary greatly. For these reasons, the findings of vocabulary studies are often inconsistent and should be utilized cautiously.

One of the earliest studies on the vocabulary of the young child was done by Madorah E. Smith in 1926. She (122:54) reported that vocabulary increased rapidly during the preschool period and dropped off at five to six years of age. The total number of words in the six-year-old's vocabulary was estimated to be 2,562.

Seashore (119:137), in a report published in 1948, and Mary K. Smith (123:344), in an investigation conducted in 1941; found that the six-year-old had an estimated vocabulary of 24,000 words. This higher estimate of the number of words in a six-year-old's vocabulary was substantiated by Templin's (69:113) replication of McCarthy's study. The results of a recent study by Shibles (120:46) also supported the larger estimate of children's vocabulary.

McCarthy (114:13, 15) pointed out that the increase in children's language could have been caused by:

. . . the advent of radio and television, fewer foreign born and bilingual children, the rise of nursery schools affording more opportunities for language stimulation outside the home for the formerly underprivileged groups of children, more leisure time for parents to spend with their children, reduced amount of time that children are cared for by nurse-maids of limited verbal ability, better economic conditions allowing parents even in lower income brackets to provide stimulating environments for children to be treated more permissively and to find greater acceptance in the modern home.

Although Loban's study was conducted in 1963, his estimate of vocabulary size was low when compared with other recent studies. He (44:37) reported that the kindergarten subjects in his study varied in vocabulary from 180 to about 5,000 words, with 3,000 words as an average.

Factors other than the size of vocabulary were considered by Fox and Loban. Measures of vocabulary diversity, in the research of Fox (92:495) indicated a developmental trend. A significant growth occurred between kindergarten and first grade. Loban (43:83) found at the kindergarten level that vocabulary and proficiency in language appeared to be related.

The effect of socioeconomic status on vocabulary has been investigated by several authors. According to Cazden (19:416), measures of vocabulary consistently yield social-class differences in the scores. Templin (69:148) in his study of 480 children between the ages of three and eight, discovered that test scores on oral vocabulary of children of high socioeconomic status were superior to those of low status children. Hill and Giammatteo (101:266) reported a correlation of .84 between vocabulary scores and socioeconomic rating. In her summary of several studies, John (107:821) noted that children from lower-class circumstances have a more limited vocabulary than do their middle-class age-mates.

A summary of investigations by Frost (30:281) concluded that the vocabulary growth of children in an Arkansas migrant school was insignificant beyond the ages of five or six. The child of five or six demonstrated essentially the same vocabulary level as the youngster of fifteen or sixteen. This suggests that schools are ineffective in promoting development of oral language skills for many disadvantaged children.

Length of Verbal Responses

Initially, language researchers measured the length of utterances by dividing responses into sentences. The early studies of Fisher (27) and McCarthy (48) used what they termed mean length of response which corresponded to mean sentence length. McCarthy compiled data from ten investigations of mean length of sentences for children one to nine years of age. She (47:551) said that mean sentence length is the "most reliable, easily determined, objective, quantitative, and easily understood measure of linguistic maturity."

MacGintie (49:694) noted in the Encyclopedia of Educational Research that this method of segmentation served as a general index of language maturity for many years, but presented certain problems when utilized by researchers. First, young children often string clauses together with

the word "and" to produce long sentences. Second, the term "sentences" was not defined consistently by investigators.

Strickland made use of phonological units, a division based on intonation signaling a terminal point. Each phonological unit contained one or more meaning or structural units. Phonological units were not an adequate measure of language maturity. Strickland (67:16) found that more variance in length occurred within than between grade levels. Some basic structural patterns appeared with great frequency at all grade levels.

Finally, Hunt adopted the technique of segmenting compositions into what he identified as minimal terminable syntactic units. He referred to these in abbreviated form as T-units. Hunt (39:20) described the units as consisting of one main clause with all the subordinate clauses attached to it. The T-unit, then, is equivalent to a simple or complex sentence, but a compound sentence would be regarded as composed of two or more T-units. The T-unit is equivalent to the communication unit employed by Loban (43:6) in his study of children's speech. This communication unit was also utilized in the research of O'Donnell, Griffin, and Norris (50) and in the study by Fox (92).

Hunt found a steady, statistically significant increase in mean length of T-units from one grade level to another. Inspection of individual ranges on this measure

showed less overlapping among groups than on any other measure explored. Hunt (39:31) decided that length of T-units was a better index of maturity than the length of sentences. The investigations of O'Donnell, Griffin, and Norris (50:98) and Braun and Klassen (77:1865), support the finding of Hunt that when fairly extensive samples of children's language are obtained, the mean length of T-units has special claim to consideration as a simple, objective, valid indicator of development in linguistic maturity.

Results of research regarding length of verbal responses were presented in early studies. Fisher (27:85) reported that the mean number of words per comprehensible remark increased steadily from 3.5 words for the youngest children to 9.5 words for the oldest. The youngest children were two-years-old, and the oldest children were five-years-old.

McCarthy (48:152) summarized her findings:

1. The mean length of response shows an increase with chronological age, an increase which is more rapid at younger age levels.
2. A small but consistent sex difference in favor of the girls for the mean length of responses appeared at six of the seven age levels.
3. The mean length of response shows clear differences from one occupational group to the other, each group maintaining its proper relative position very consistently.
4. Children who associate chiefly with adults show a much greater mean length of response than do those who associate with other children.

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5. As indicated by the mean length of response, the hearing of a foreign language in the home does not seem to be a serious handicap.

In more recent research, Braun and Klassen (77:1862) found highly significant differences were indicated among communities for T-unit length. The differentiation favored the monolingual communities.

Loban (43:82) discovered that during the first seven years of schooling, his subjects increased the average number of words spoken in communications units with each succeeding year. O'Donnell, Griffin, and Norris (50:46, 77) also noted that word length of T-units increased in oral expression with every advance in grade. The increments in grade one and grade seven were statistically significant. Except in the speech of fifth-graders, the percentage of short T-units (less than nine words long) decreased with every advance in grade level. Boys used slightly longer T-units in five of the six grade levels studied.

The developmental trend in syntactic maturity as measured by the mean word length in T-units found by O'Donnell, Griffin, and Norris was partially replicated in the study of Fox. She (92:495, 496) also observed an increasing mean word length of T-units with each succeeding year in school. Both studies reported a significant growth in mean T-unit length between kindergarten and first grade.

The effect of situation variables on length of verbal responses has been discussed in several studies. In an early study, Madorah E. Smith (122:182-212) found that children eighteen to seventy months old used longer sentences at home with adults than at play with other children. Presumably, the reason for this was that at home children gave fewer answers to questions, used fewer imperatives, and had greater opportunity for more connected discourse with less active play and less frequent interruption.

A comparison of a report by Strickland (67:26) with a study by Strang and Hocker (125:39) further suggested the influence that the situation can have on test results. These researchers used procedures similar to those employed by Strickland, except that in the latter study, speech was encouraged in the presence of an adult. Strang and Hocker collected speech samples from children engaged in their own daily activities. The mean sentence length of first-grade children in Strickland's study was about eleven words. In the Strang and Hocker samples of spontaneous speech of first-grade children, the mean sentence length was only five words.

In 1967, Cowan and others (83:191-203) presented elementary-school children of mixed socioeconomic status with ten colored pictures from magazine covers. The effect of the particular picture upon the mean length of response

was strong across all age, sex, socioeconomic class, and experimenter conditions. One picture of a group standing around a new car elicited significantly shorter responses. A picture of a birthday party elicited significantly longer responses. The other eight pictures were undifferentiated between the two extremes. Although the researchers could not specify the reasons for the results, they (83:202) did conclude that the assumption that magnitude of mean length of response is a property of the subject independent of his setting should be discarded permanently.

Studies on Fluency

Oral fluency is a part of language proficiency. Various measures of fluency have been utilized by researchers. Probably the most extensive are those of Loban. His measures were: (43:29)

1. The amount of language uttered by all subjects.
2. The subjects' freedom from mazes.
3. The extent of their vocabularies.
4. Their manner of speaking as quantified by two classifications of linguistic style, the ratings for fluency-hesitancy and for readiness-slowness of response.

Mazes in Loban's (43:8) study were defined as " . . . hesitations, false starts, and meaningless repetitions." Other researchers have not included studies of vocabulary and mazes with measures of fluency.

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. . . subjects, over a period of seven years, increase the amount of language they use in the same controlled situation and . . . gain an increase of smoothness in their expression. Those who are rated high on language ability appear to be superior to the total sample for fluency and readiness of response, and they use more words in each year of the study than do those low in language ability. The low group . . . despite the fact that it uses fewer words, is increasing the total number of words.

The research of O'Donnell, Griffin, and Norris confirmed the results of Loban's study. The results of their research (50:42) indicated that when oral responses are elicited under closely comparable conditions from a large number of normal children at varying grade levels, one may confidently predict a high positive correlation between advances in grade and gross increases in wordage.

Researchers are cautioned against using a gross word-count as the sole means of measuring language mastery in school age children. Matters such as propriety of word choice, pertinency of remarks, and general organization should also be considered. The study of O'Donnell, Griffin, and Norris (50:97) indicated that development of power to manipulate syntactic structures is very imperfectly reflected in comparisons of mean length of total responses at

various grade levels. Development of syntactic control, as measured by length of T-units, may be most clearly marked at stages where increases in total wordage are least notable, and vice versa. The length of total response is probably a function of complex interaction of many factors, among which control of syntax may be one, but one of quite limited explanatory significance.

The replication study by Fox did not show the same inverse relationship between significant growth in T-unit length and the amount of growth in number of words spoken which O'Donnell, Griffin, and Norris reported. Fox (92:494) showed that not only did a growth in mean length of T-units occur between kindergarten and the first grade at the one per cent level of significance, but also a significant growth at this same level occurred in the number of words uttered. Total word count also indicated a developmental trend through the other primary grades in her study. (92:495)

Situation variables influence the results of fluency measures. Wolman and others (133:536) evaluated two Head Start groups on total amount of communication. Measurable differences were found between the two groups. The results were attributed to structural differences in the programs, as well as to individual differences in children and teachers.

Cazden (17:87) reported upon unpublished research done by Stranberg and Griffith in 1968. They found that four and five-year-old children talked more spontaneously and in longer utterances about pictures they took at home of personally significant objects, than they did about pictures taken under adult direction during the period of orientation to the camera.

The influence of activities in the kindergarten on speech was further discussed by Cazden. (16:95) In amount of speech, housekeeping play and group discussion held the greatest potential for language usage, while play with blocks, dance, and woodworking held the least potential. Factors influencing speech were adult participation, something concrete to talk about, physical arrangements, and noise.

Of course, it cannot be concluded that children who do not talk cannot do so. Cazden (16:353) described a study which demonstrated that children who were initially equated on a measure of verbal ability differed greatly in their disposition to make verbal responses.

Socioeconomic background is one of the factors that results in differences in fluency. Ponder (117:772), Strang (124:38), and Olsen (115:554) observed that the language of the disadvantaged child may be less fluent. These children

often answer with a nod or a one-word reply for fear of not being able to respond correctly in the school culture.

Williams and Naremore (131:86) noted in their study that lower-status children had more of a tendency to supply the minimally acceptable response; whereas, their higher-status counterparts had a greater tendency to elaborate their remarks. Howard, Hoops, and McKinnion undertook an investigation of selected oral communication skills of kindergarten age children from varying socioeconomic backgrounds. They (104:38) found that children from higher socioeconomic groups displayed significantly more verbal facility than children from lower socioeconomic backgrounds.

CHAPTER III

METHODS AND PROCEDURES OF THE STUDY

This study was designed to analyze the verbal responses of disadvantaged kindergarten children to three types of questions. Language samples were examined to determine vocabulary diversity, total word count, and mean length of minimal terminable syntactic units. Differences of performance between boys and girls composed another facet of the study.

Selection of Subjects

The subjects for the investigation were seventy-two students enrolled in twelve kindergarten classrooms of the Lubbock Independent School District, Lubbock, Texas. Provisions for these classrooms have been set forth in Texas House Bill Number 240, Acts of the Sixty-first Legislature of the State of Texas. (152) To be eligible for attendance under this bill, kindergarten pupils must be "educationally handicapped." (152:2646)

In this study the researcher worked with groups of six subjects. In the opinion of Buschell, Wrobel, and Michaelis (80:237), using groups is less artificial than contriving conditions for experimentally isolated subjects. Each group was selected from a different kindergarten

classroom. The names of the teachers of the twelve classrooms to be utilized were drawn randomly by the Director of Elementary Education for the Lubbock Independent School District. The Director of Primary Education solicited and received written permission from the selected teachers and principals for the researcher to conduct the study. Principals and teachers were contacted, and a group of pupils from a single classroom was scheduled for each school day beginning February 28, 1973 and ending March 14, 1973. All data were gathered between 8:30 A.M. and 11:00 A.M.

The study utilized an equal number of male and female subjects who ranged in age from sixty-seven months to seventy-seven months at the time of testing. Subjects in each group were students in the same classroom and members of the same sex. The sex of the subjects and the type of questions to be utilized with each of the groups were assigned randomly before the investigation was begun. Upon entering the designated classroom, the researcher selected subjects for participation by drawing the names of either six girls or six boys.

Sources of Data

Criscoe and Pels (147) reported that of seven different media utilized in their study, the sequenced slide presentation was the most effective means of eliciting oral responses from kindergarten children. For this reason,

each group of six subjects was shown five slides prepared from illustrations found in the children's book entitled The Big Building by Janet Palmer. (51) Questions related to the slides were formulated to fit the three categories of questions.

Bloom's Taxonomy of Educational Objectives: Handbook I: Cognitive Domain was selected as the major means for analyzing types of questions. Gall (96:710) asserts that the Taxonomy best represents the commonalities that exist among question classification systems. Specific types of thinking are defined and encompassed in the Taxonomy. Since it would have been unfeasible to utilize all seven categories with subject matter suitable for kindergarten children's interest level and attention span, the study was limited to three classifications of questions. As suggested by Shrable and Minnis (121:203), the three categories were: (a) data recall, which includes Bloom's area of memory; (b) data processing, which contains the intellectual functions of translation, interpretation, analysis, and synthesis; and (c) application or generalization, which encompasses both application and evaluation.

Prior to the testing, a panel of judges examined the questions to ascertain whether the questions were similar in length and complexity and appropriate for kindergarten children. The judges determined that the questions which

were submitted fit the definitions outlined for the three categories. The panel included the Lubbock Independent School District Director of Primary Education, the L.I.S.D. Director of Elementary Education, an experienced kindergarten teacher, a professor of education who has studied Bloom's Taxonomy extensively, and the members of the researcher's doctoral advisory committee. Questions which were formulated and photographs of the illustrations are included in Appendix B of this dissertation. Table 4 indicates the number of groups, the type of questions, and the sex of the members of each group.

TABLE 4
DISTRIBUTION OF GROUPS

	Type I Questions	Type II Questions	Type III Questions
Male	2 groups of six	2 groups of six	2 groups of six
Female	2 groups of six	2 groups of six	2 groups of six
Totals	4 groups of six (n = 24) (n = 72)	4 groups of six (n = 24)	4 groups of six (n = 24)

Collection of Data

Before the members of the group were taken from their classroom, all students in the room were shown a slide presentation. These slides were prepared by the researcher from illustrations in the children's book, Up Our Tree, by

Leslie Gray. (33) The children were asked questions about each slide. After concluding the slide presentation, the researcher explained to the group that six students would be taken to another room to be shown additional slides.

When the six subjects were seated in the room designated for testing, the researcher stated: "In your room I showed you some slides, and you answered questions. Now I am going to show some new slides. After you see each picture, I will ask questions. You can help me by answering the questions." A slide was then projected, and the first question was asked. If the children failed to answer or if their attention wandered, questions were repeated once. After a single repetition of the question and a fifteen second period of silence, the researcher asked the next question. As suggested by Smilansky (61:146), a fifteen minute time limit was set for the language sampling. This allowed students approximately three minutes to respond to the two questions formulated for each slide. The actual amount of time spent on each question was determined both by the children's responses and by the time limit. If the children's silence indicated that they had completed their answer, the full period of three minutes was not utilized. Tape recordings were made of the language samples.

After the completion of the group work, the Peabody Picture Vocabulary Test, Form B was administered to each

subject, individually, by the researcher. The birth date of the subject was obtained from the classroom teacher. The subject's age in months was then computed and recorded.

Treatment of Data

The mean length of T-unit, a total word count, and a diversity of vocabulary word count were selected as the means for analyzing the data. This choice is supported by the research of Hunt (39), Loban (43), and O'Donnell, Griffin, and Norris (50). They report that the T-unit or communication unit is an effective index of language development. Increased T-unit length reflects syntactic maturity. O'Donnell, Griffin, and Norris (50:77) indicate that in oral language the average number of words in T-units increases with chronological age.

Chan (20:127), McCarthy (46:108), and Carroll (15:203) hold that language development can be reliably ascertained by measuring the amount of language per unit of time, thus yielding a quantitative measure of talkativeness. Loban (43:29) observed that subjects in his research study spoke more words in each of the succeeding years.

Riehm (143:308) and Fox (92:490) used a vocabulary diversity word count in their research. Fox (92:490) states that the simplest and most often used measure of vocabulary diversity is a count of the number of different words spoken. The word count method was utilized in this study.

The tapes of the language sample were transcribed, typed, and checked by the investigator. False starts, abnormal redundancies, and noncommunicative repetitions were marked for exclusion. A total word count which included T-units and garbles was made for each sample. As suggested by O'Donnell, Griffin, and Norris (50:33), conventional word division as represented in dictionary entries was honored generally, but two special rules were adopted to make the count more uniform. Contractions were regarded as two words, and compound words were given the count indicated by the number of bases involved.

In analyzing the sample for vocabulary diversity, inflectional forms, contractions, and compound words, whether written in dictionaries as one-word, multiword, or hyphenated, were counted as one word. Each different word on the transcript was circled and counted.

The T-units were circled on the transcript. The number of T-units and the total number of words in each T-unit were noted. The mean length of the T-unit was determined by dividing the total number of words in T-units by the number of T-units.

The research design utilized was a multiple classification analysis of covariance. Popham (57:223) reports that analysis of covariance allows the researcher to study the performance of several groups which are unequal with

regard to important variables as though they were equal. The initial differences between the groups are adjusted with one or more control variables. The control variables in this study were the ages of the subjects in months, and scores on the Peabody Picture Vocabulary Test, Form B. (25) The Peabody Picture Vocabulary Test, according to Evans (26:339), estimates roughly a child's verbal intelligence. Cowan and others (83:200) indicate that age, sex, and class are major factors affecting the mean length of response. Age was used as one of the covariants, and class was held relatively constant due to the standards set up by the state of Texas limiting enrollment in kindergarten to the "educationally handicapped." The selected research design gave results for each sex.

When the F ratio utilized in the multiple classification analysis of covariance indicated that there were significant differences between the independent variables, the data were analyzed further by Duncan's (90) New Multiple Range Test. This statistical technique isolated the differences among the means which were significant. In this study the Duncan's New Multiple Range Test indicated the categories of questions which were most likely to increase total word count, vocabulary diversity, and mean length of T-unit. The data were processed by IBM computer number 360/50.

CHAPTER IV

PRESENTATION AND INTERPRETATION OF FINDINGS

Data gathered for this study were divided into three parts for the purpose of presentation and interpretation. The first section describes the verbal responses of subjects to questions as measured by total word count. The second section presents the findings which resulted from examination of mean length of T-units. The results of the vocabulary diversity analysis are presented in the third section.

Presentation of Findings

Total Word Count

Table 5 shows the unadjusted cell means for male and female subjects on three types of questions when the dependent variable was total word count. Since means for each group were utilized, the control variables for the groups were also averaged. As shown in Table 6, the mean scores were adjusted statistically to compensate for differences on the control variables of age and Peabody Picture Vocabulary Test (25) scores. Adjusted cell means for each sex are reported in Table 7.

The multiple classification analysis of covariance technique described by Popham (57:243-253) was used to compare the adjusted mean scores. Results are shown in Table 8.

TABLE 5
UNADJUSTED CELL MEANS FOR TOTAL WORD COUNT

Questions	Female	Male	Mean
Type I	58.5	57.1	57.8
Type II	169.6	69.5	119.6
Type III	88.8	127.5	108.1
Mean	105.6	84.7	

TABLE 6
CRITERION AND CONTROL VARIABLE MEANS

Questions	n	Criterion		Control	
		Total Word Count Adjusted	Total Word Count Unadjusted	PPVT	Age
Type I	4	42.1	57.8	41.3	72.5
Type II	4	143.7	119.6	38.5	71.3
Type III	4	99.6	108.1	44.0	71.3

TABLE 7
ADJUSTED CELL MEANS FOR TOTAL WORD COUNT

Questions	Female	Male	Mean
Type I	46.8	37.5	42.1
Type II	173.7	113.7	143.7
Type III	127.0	72.2	99.6
Mean	115.8	74.4	

The computation revealed that there was a significant difference among mean scores for the three types of questions. No significant difference was found between the means for males and females or for the effect of interaction.

TABLE 8
ANALYSIS OF COVARIANCE OF GROUP SCORES
FOR TOTAL WORD COUNT

Source of Variation	df	Sum of Squares	Mean Square	F Ratio
Questions	2	14,603.91	7,301.96	11.79*
Sex	1	2,599.47	2,599.47	4.20
Interaction	2	1,520.03	760.01	1.23
Within	4	2,477.58	619.40	

*Significant beyond the .05 level.

In order to determine the category of questions which produced a significant difference for total word count, Duncan's (90) New Multiple Range Test was employed. Type II questions and Type III questions composed a homogeneous subset; that is, there was no significant difference between their means. Type I questions were found to be significantly different from the subset of Type II and Type III questions regardless of sex. Analysis of the adjusted cell means in Table 7 indicates that the difference was characterized by a lower total word count for Type I questions.

Although there was no significant difference between the mean scores for male and female subjects, it should be noted that the total word count for females was higher than that of males on all three types of questions. For subjects of both sexes, the number of words spoken was largest when

they responded to Type II questions, and smallest when they answered Type I questions.

Mean Length of T-Unit

The unadjusted cell means for mean length of T-unit are shown in Table 9. In order to compensate for initial differences on the control variables of age and Peabody Picture Vocabulary Test scores, the mean scores were adjusted statistically as presented in Table 10. Adjusted cell means for each sex are reported in Table 11.

TABLE 9
UNADJUSTED CELL MEANS FOR MEAN LENGTH OF T-UNIT

Questions	Female	Male	Mean
Type I	3.5	4.4	3.9
Type II	7.3	5.8	6.5
Type III	6.4	6.8	6.6
Mean	5.7	5.3	

TABLE 10
CRITERION AND CONTROL VARIABLE MEANS

Questions	n	Criterion		Control	
		Mean Length of T-Unit Adjusted	Unadjusted	PPVT	Age
Type I	4	4.0	3.9	41.3	72.5
Type II	4	6.8	6.5	38.5	71.3
Type III	4	6.2	6.6	44.0	71.3

TABLE 11
ADJUSTED CELL MEANS FOR MEAN LENGTH OF T-UNIT

Questions	Female	Male	Mean
Type I	3.8	4.2	4.0
Type II	8.0	5.7	6.8
Type III	7.1	5.2	6.2
Mean	6.3	5.3	

The adjusted means were compared by using the multiple classification analysis of covariance technique. Results of the analysis are shown in Table 12. The differences among means for types of questions were found to be significant beyond the one per cent level. There was no significant interaction, and no significant difference between mean scores for male and female subjects.

TABLE 12
ANALYSIS OF COVARIANCE OF GROUP SCORES
FOR MEAN LENGTH OF T-UNIT

Source of Variation	df	Sum of Squares	Mean Square	F Ratio
Questions	2	16.03	8.01	25.17*
Sex	1	0.63	0.63	1.97
Interaction	2	3.27	1.64	5.14
Within	4	1.27	0.32	

*Significant beyond the .01 level.

Since the main effect for types of questions was statistically significant, Duncan's (90) New Multiple Range Test was utilized to determine the category of questions which produced the significant difference in mean length of T-units. Type II and Type III questions formed a homogeneous subset indicating that there was no significant difference when these two variables were compared. Type I questions were found to be significantly different from the subset of Type II and Type III questions regardless of sex. When measured by mean length of T-unit, responses to Type I questions are significantly shorter than responses to Type II or Type III questions.

Although there was no significant difference between the mean scores for male and female subjects, the adjusted cell means in Table 11 indicate that the mean length of T-unit on Type I questions was greater for males than for females. On both Type II and Type III questions the mean length of T-unit recorded for females was greater than the mean length which was tabulated for males. Regardless of sex, Type II questions produced T-units with the greatest mean length. The shortest mean length for T-units was recorded when male and female subjects responded to Type I questions.

Vocabulary Diversity

Table 13 shows the unadjusted cell means for male and female subjects when the dependent variable was vocabulary diversity. As shown in Table 14, the mean scores were adjusted statistically to compensate for initial differences on the control variables of age and Peabody Picture Vocabulary Test scores. Adjusted cell means for each sex are reported in Table 15.

TABLE 13
UNADJUSTED CELL MEANS FOR VOCABULARY DIVERSITY

Questions	Female	Male	Mean
Type I	17.15	16.3	16.7
Type II	26.7	16.0	21.4
Type III	15.0	23.9	19.5
Mean	19.6	18.7	

TABLE 14
CRITERION AND CONTROL VARIABLE MEANS

Questions	n	Criterion		Control	
		Vocabulary Adjusted	Diversity Unadjusted	PPVT	Age
Type I	4	16.6	16.7	41.3	72.5
Type II	4	22.1	21.4	38.5	71.3
Type III	4	18.8	19.5	44.0	71.3

TABLE 15
ADJUSTED CELL MEANS FOR VOCABULARY DIVERSITY

Questions	Female	Male	Mean
Type I	17.1	16.1	16.6
Type II	27.8	16.4	22.1
Type III	17.0	20.6	18.8
Mean	20.6	18.7	

The multiple classification analysis of covariance technique was used to compare the adjusted mean scores. Results of the analysis are shown in Table 16. The computation revealed that there was a significant difference among mean scores for the three types of questions. There was also statistically significant interaction. No significant difference was found between the means for males and females.

TABLE 16
ANALYSIS OF COVARIANCE OF GROUP SCORES
FOR VOCABULARY DIVERSITY

Source of Variation	df	Sum of Squares	Mean Square	F Ratio
Questions	2	51.94	25.97	7.29 ^a
Sex	1	4.36	4.36	1.23
Interaction	2	73.15	36.58	10.27 ^b
Within	4	14.25	3.56	

^aSignificant beyond the .05 level.

^bSignificant beyond the .05 level.

When the results for all types of questions were averaged, the effect of significant interaction was produced. Analysis of Table 15 suggests that the interaction effect was created because male and female subjects differed greatly in their responses to specific types of questions. For example, on Type I questions, there was no significant difference; on Type II questions, the average was higher for females; and on Type III questions, the average was higher for males.

Duncan's (90) New Multiple Range Test was the technique utilized to locate the category of questions which produced the significant difference for types of questions. In order to prevent the interaction effect from interfering with results, scores for males and females were analyzed separately.

One homogeneous subset containing Type I and Type III questions was located for female subjects. Type II questions were found to be significantly different when compared to the subset which contained both Type I and Type III questions. Vocabulary diversity scores were significantly higher for females in response to Type II questions. There was no significant difference between the lower scores reported for Type I and Type III questions.

When the scores for males were subjected to Duncan's Test, two homogeneous subsets were isolated. One subset

contained Type II and Type III questions. The second subset included Type I and Type II questions. These results implied a significant difference between Type III questions and Type I questions. Analysis of Table 15 indicates that the difference was characterized by higher vocabulary diversity scores in response to Type III questions and by lower scores in response to Type I questions.

Interpretation of Findings

Interpretation of the findings of this study indicates the following:

1. Both male and female subjects spoke the fewest number of words when they responded to data recall questions. Data processing and application questions produced a significant increase in the total word count.

2. Although there was no significant difference in the verbal responses to data processing questions and application questions, data processing questions resulted in a larger number of words spoken for both males and females. The mean number of words spoken for data processing questions was 143.7. Application questions resulted in an average of 99.6 words.

3. When results for all three types of questions were averaged for each sex, females scored the larger total word count. The mean for males was 74.4 as compared with

115.8 for females. This difference was not found to be significant.

4. The mean length of T-unit was shortest when male and female subjects responded to data recall questions. A statistically significant increase in the mean length of T-unit was recorded when subjects responded to data processing or application questions.

5. Regardless of sex, data processing questions produced the greatest mean length of T-unit. There was no significant difference between data processing and application questions; however, the mean length of T-unit for data processing questions was 6.8, and the mean length of T-unit for application questions was 6.2.

6. When the results for all three types of questions were averaged, females used longer T-units. The mean for males was 5.3 words, and the mean for females was 6.3 words. This difference was not large enough to be significant.

7. The type of question which was utilized created a significant difference in children's vocabulary diversity scores. Since results for males and females differed greatly, significant interaction was produced.

8. Females recorded their lowest vocabulary diversity scores on application questions. Although the mean score for responses to data recall questions was slightly

higher, there was no significant difference between data recall and application questions. A significant increase in the number of different words spoken was noted when females answered data processing questions.

9. Males responded with the greatest number of different words when answering application questions. For male subjects there was a significant difference between the scores recorded for data recall questions and for application questions. Data recall questions produced the lowest vocabulary diversity scores.

10. Vocabulary diversity scores for females were higher than results recorded for males. The average number of different words spoken by females when answering all three types of questions was 20.6. Males averaged 18.7 different words.

11. With the exception of vocabulary diversity scores for females, data recall questions produced scores which were lowest on all variables for either male or female subjects. When the results for males and females were averaged, the lowest scores for total word count, vocabulary diversity, and mean length of T-unit were created by data recall questions.

12. Excluding vocabulary diversity results for males, scores were highest on all variables when either male or female subjects responded to data processing questions.

Averaging the scores for both sexes indicated that scores were highest on all measures of performance when subjects answered data processing questions.

13. Females' performance was superior to that of males in all areas of this study. However, none of the differences were found to be statistically significant.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary of the Study

The purpose of this study was to analyze the verbal responses of disadvantaged kindergarten pupils to three categories of questions which were formulated by guidelines reported in Bloom's Taxonomy of Educational Objectives: Handbook I: Cognitive Domain. (9) The verbal responses were analyzed by checking the mean length of minimal terminable syntactic units, total word count, and vocabulary diversity. The differences which occurred between boys and girls composed another facet of the study.

The subjects for the investigation were seventy-two "educationally handicapped" students enrolled in twelve kindergarten classrooms of the Lubbock Independent School District, Lubbock, Texas. There was an equal number of male and female subjects. Twelve groups which included six subjects, either all males or all females, were shown a sequenced slide presentation. Each group was asked data recall, data processing, or application questions which were designed to relate to the five slides. Verbal responses to the questions were recorded on magnetic tape and analyzed by the investigator.

Results for each sex and scores for each category of questions on the variables of total word count, vocabulary diversity, and mean length of T-unit were compared utilizing the multiple classification analysis of covariance technique. The control variables were ages of the subjects in months, and scores on the Peabody Picture Vocabulary Test. (25) When the results of the multiple classification analysis of covariance were found to be significant, the data were submitted to Duncan's (90) New Multiple Range Test. This technique indicated the specific category of questions which produced the significant difference.

Nine null hypotheses were assumed in order to evaluate the experiment. The level of significance for rejecting the null hypotheses was the .05 level, with the .01 level being considered highly significant. Table 17 presents a summary of the statistical analysis as it related to the nine null hypotheses.

TABLE 17
SUMMARY OF THE STATISTICAL ANALYSIS
OF THE NULL HYPOTHESES

Null Hypotheses	Level of Significance
1. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference in students' verbal responses to the three categories of questions when the criterion is total word count.	.05

TABLE 17--Continued

Null Hypotheses	Level of Significance
2. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference between male and female kindergarten students' verbal responses to the three categories of questions when the criterion is total word count.	NS
3. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant interaction between the sex of kindergarten students and the three different categories of questions when the verbal responses are measured by total word count.	NS
4. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference in students' verbal responses to the three categories of questions when the criterion is mean length of T-unit.	.01
5. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference between male and female kindergarten students' verbal responses to the three categories of questions when the criterion is mean length of T-unit.	NS

TABLE 17--Continued

Null Hypotheses	Level of Significance
6. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant interaction between the sex of kindergarten students and the three different categories of questions when the verbal responses are measured by mean length of T-unit.	NS
7. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference in students' verbal responses to the three categories of questions when the criterion is vocabulary diversity count.	.05
8. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant difference between male and female kindergarten students' verbal responses to the three categories of questions when the criterion is vocabulary diversity count.	NS
9. After statistical adjustment for initial differences in verbal intelligence and age, there is no significant interaction between the sex of kindergarten students and the three different categories of questions when the verbal responses are measured by vocabulary diversity count.	.05

Conclusions and Recommendations

The findings of this study suggest the following:

1. Disadvantaged kindergarten children are able to answer questions from all categories of questions; therefore, there is no valid reason for teachers to ask questions in the classroom which require only simple recall of factual material.

2. The verbal responses of disadvantaged kindergarten children in this study showed a significant increase in total word count, mean length of T-unit, and vocabulary diversity when they answered data processing questions. This possibly indicates that the type of questions asked by the classroom teacher can have an influence on kindergarten children's oral language development. Teachers should be encouraged to elicit superior and diverse responses from pupils.

3. Disadvantaged kindergarten children's scores on total word count, mean length of T-unit, and vocabulary diversity were significantly low, .05 level, when they answered data recall questions. This suggests that asking questions in the data recall category decreases the pupils' desire to talk and increases the time the teacher talks. If the most effective means of promoting oral language development is providing opportunities for young children to interact on a verbal level, then it is necessary for

teachers to ask questions which give children a chance to talk more.

4. Disadvantaged kindergarten pupils were able to answer questions in the application category which included evaluation and divergent questions. The averaged scores for application questions were higher on all measures of performance than results for data recall questions. This seems to indicate that teachers who wish to increase oral language facility should ask more application questions than data recall questions.

5. The sex of the student does not significantly influence his ability to respond to different types of questions. Although there was no significant difference between the performances of males and females, the scores for females were higher. For this reason, teachers should examine their techniques carefully. There is the possibility that the responses made by girls are more acceptable to female teachers, resulting in more encouragement given to females than to males in the classroom. Further research might provide a solution to this problem.

6. Since the types of questions asked in the classroom do seem to have a significant effect on disadvantaged kindergarten children's verbal responses, inservice education programs for teachers should be conducted in order to improve questioning strategies. Undergraduate teacher

preparation programs should also stress development of skills in this area.

7. The subjects in this study talked most when asked data processing or application questions. Since disadvantaged children need every opportunity to develop verbal skills, it is particularly important that teachers of disadvantaged children strive to ask the types of questions which will encourage optimum oral language usage.

Investigator's Comments

As a result of this study, the writer has developed several impressions which cannot directly be attributed to the statistical analysis of the data. However, these impressions were the result of observing many disadvantaged kindergarten children as they responded to different types of questions both in the classroom and in the testing situation. The viewpoint of the researcher may be helpful to other educators as they study questioning strategies.

First, in the opinion of the writer, working with small groups was an effective means of eliciting verbal responses from disadvantaged kindergarten pupils. Questions asked in a small group seemed to be less threatening to individual pupils. Children who had been quite vociferous during the group testing were, by contrast, often very quiet and withdrawn when the individual tests were .

administered. Membership in a group appeared to give some children protection, to stimulate them to think beyond their initial responses, and to encourage them to add their ideas to the opinions of peers. This is in accord with the ideas of Torrance and Myers. (70:245)

A second impression concerned the influence of classroom climate on the children's verbal responses to questions. Language flowed readily in classrooms where there was an atmosphere of mutual respect. In these rooms, language, although linguistically different, was unconditionally accepted. Adults displayed interest in the children and talked with them about their activities. The teachers showed concern for the quality of thought in the classrooms; yet, it was obvious that they also realized the importance of maintaining an emotional atmosphere which would affect, positively, the learning that occurred. These teachers made it worthwhile and exciting for children to talk freely. It seemed to the writer that children from such environments responded with greater verbal facility than pupils from classrooms which were less supportive.

Pupils' reactions to application questions created the third impression. Subjects did not seem to answer application or divergent questions as spontaneously as they did data processing and data recall questions. In several instances, the children seemed uneasy when they were asked

to express their own ideas. Several reasons might be proposed to explain this phenomenon. Disadvantaged children may be members of large families with limited opportunities for verbal interaction with adults. It is possible that the children, both at home and at school, are more accustomed to receiving instructions than to voicing opinions. Hopefully, in the kindergarten classroom pupils will have the privilege of interacting with adults who ask questions which require thoughtful answers. The use of open-ended questions with many correct answers would give all children opportunities to be successful. Such experiences would enable children to develop confidence and skill in answering all types of questions.

Finally, many writers have indicated that disadvantaged children have difficulty producing and retrieving factual knowledge. In fact, the disadvantaged kindergarten pupils in this study were less verbal when answering data recall questions. The writer would like to set forth the hypothesis that disadvantaged kindergarten pupils do better when facts are given, and they are asked only to apply and process the knowledge. Although further research would be needed to verify this point, results of this study partially support such an implication.

Through this study, the writer became aware of deficits in research related to questioning strategies. Most

investigations seemed to focus on data regarding the relative frequencies with which various types of questions were asked and on methods for assessing classroom interaction. Hopefully, future researchers will strive to locate the types of questions which teachers should ask in order to achieve their educational objectives. If questions can produce changes in pupil behavior, then it is important to identify the questioning strategies which will have the desired influence on behavior. The writer believes that the findings of this study may enable teachers to select questions for disadvantaged kindergarten children which will be effective in eliciting verbal responses, thereby enhancing oral language development.

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APPENDIX

A.	SUMMARY OF BLOOM'S <u>TAXONOMY</u>	108
B.	DESCRIPTION OF THE INSTRUMENT	110

APPENDIX A: SUMMARY OF BLOOM'S TAXONOMYDescriptions of the Major Categories in the Taxonomy of Educational Objectives: Cognitive Domain. (36:20)

1. Knowledge. Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.
2. Comprehension. Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.
3. Application. Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.
4. Analysis. Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.
5. Synthesis. Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in the area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

6. Evaluation. Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgements are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgements based on clearly defined criteria.

APPENDIX B: DESCRIPTION OF THE INSTRUMENT

Picture 1

Type I Questions

1. How many children are in the picture?
2. What are they wearing?

Type II Questions

1. Who is working harder?
2. How are their clothes different?

Type III Questions

1. What do you think the boys will build?
2. Why isn't one boy playing with the blocks?

Picture 2

Type I Questions

1. What are the boys doing?
2. What shapes do you see?

Type II Questions

1. What will they do with more blocks?
2. How is the boy in blue helping?

Type III Questions

1. Why did the boy in the blue decide to help?
2. What would you do next?

Picture 3

Type I Questions

1. Tell me about the boy who is putting the block on top.
2. What is the other boy doing?

Type II Questions

1. Why do they need a chair?
2. How is the block he is putting on top different?

Type III Questions

1. Why is the boy in the red shirt standing on his toes?
2. How could the boy in the white shirt use the chair?

Picture 4

Type I Questions

1. What are the boys doing?
2. What have the boys built?

Type II Questions

1. How has the building changed?
2. What happened to the blocks that were on the floor?

Type III Questions

1. Why is he pulling on the boy's shirt?
2. What do you think will happen next?

Picture 5

Type I Questions

1. Who came to see the building?
2. Tell me about the building.

Type II Questions

1. Why are the teacher and the little girl smiling?
2. How do the boys feel now?

Type III Questions

1. What will they build next?
2. What will the little girl do?