DOCUMENT RESUME

ED 107 052 EC 072 696

AUTHOR Karnes, Merle B.; Zehrbach, R. Reid
TITLE A Comparison of Different Approaches for Educating Young Gifted Children. (RAPYD II Project).
INSTITUTION Illinois Univ., Urbana. Inst. of Research for Exceptional Children.
SPONS AGENCY Illinois State Office of the Superintendent of Public Instruction, Springfield. Gifted Children Section.
PUB DATE Jul 74
NOTE 188p.

EDRS PRICE MF-$0.76 HC-$9.51 PLUS POSTAGE
DESCRIPTORS Divergent Thinking; *Educational Methods; Exceptional Child Research; *Gifted; Intelligence Quotient; Kindergarten; *Open Education; *Program Evaluation; *Socioeconomic Status
IDENTIFIERS *Structure of Intellect

ABSTRACT

Evaluated were the effects of three different instructional programs (open education, structure of the intellect, and conventional contrast) on 56 bright kindergarten children of either high or low socioeconomic status (SES). Recognized experts evaluated the open and structured classes giving them positive ratings as being representative of the intended model (contrast classes were the regular kindergarten programs offered in the public schools which usually emphasized organized large and small group activities). The results included the following: a mean gain in IQ scores of four points with no significant interaction found among the class models or between high and low SES students, no significant difference in divergent thinking among class models but better performance by high SES children, existence of differences in question types used by teachers (with contrast teachers using a more cognitive memory type of question), no differences in performance among class models on the Illinois Test of Psycholinguistic Abilities though different scoring patterns were observed for high and low SES students, and slightly more positive program appraisals by parents of children in the open education program. (DB)

A Comparison of Different Approaches for Educating Young Gifted Children

(RAPYD II Project)

Merle B. Karnes, Director
R. Reid Zehrbach, Evaluator

Institute for Research on Exceptional Children
University of Illinois
Urbana - Champaign Campus

and

State of Illinois
Office of the Superintendent of Public Instruction
Gifted Children Section

July 1971

Acknowledgements

A project of the size and scope of RAPYD II could never be conducted without the support and cooperation of many busy individuals. Thus, the acknowledgements are of considerable importance. Without the help of the external observers--Lilian Katz, Bernard Spodek, June Stark, Faye Shaffer, and Richard Youngs--through their criticism and astute observations, many valuable pieces of information and a broad frame of reference would have been lacking.

Anyone who glances at the mass of data collected for this report can but realize the enormous amounts of time and energy needed to collect the data. Judy Luebke and Deborah Rugg deserve special praise for their development of instruments, coordination of data collectors and assistance in the preparation of the slide presentation that add to the evaluative activities of the project. Marilyn Lindholm, Mary Ludke, Billie Sue Squires, Denise Farkash, Cathy Healy, Ann Stark, Shirley Rawlyk, Andrea Neuberger and Nell Nunn helped identify the children and then faithfully participated in the gathering of data both within Col. Wolfe school and from numerous local schools The assistance of Mark Williams, Bernita Kemp, and Donna Ansel in the preparation of the slide presentations is gratefully acknowledged.

The analysis of the data occasionally presented problems that required expert review and assistance. Maurice Tatsuoka, Ira Langston and Austin Betts gave freely of their time and energy so that the results might be as meaningful as possible.

When data collectors in a project of this size begin to observe a classroom, they obviously must cause some interruptions. The head teachers, Bernita Kemp and Mark Williams, deserve full credit for smoothing out the procedures and reporting observations, problems and criticisms so that the best possible information could be obtained.

Janie Brewer and Pat Bernett not only made the final report very attractive through their careful typing, but also provided a critical reading that is so important after one feels that the writing is complete.

The children who came to a new and different school, and the parents who brought them, rain or shine, deserve a large measure of credit.

Still, with the cooperation and assistance of all of the above, the project could never have been accomplished without the full cooperation of the Superintendents of the Champaign Unit 4 schools, and the Urbana Unit 116 schools and the principals and teachers in each of the elementary schools. It was they, who in the end, helped us find the children and contact the parents as we started a project about which they had only the most essential information.

The continuous support of Dr. Keith Scott, Director of the Institute for Research on Exceptional Children was important to the conduct of this study.

Special acknowledgements are extended to the Illinois Office of the Superintendent of Public Instruction, Gifted Children's Section for their encouragement and financial support to conduct the research.

The director is especially indebted to R. Reid Zehrbach, who played a major role in the conceptualization of the research design, development of instruments, collecting of data, and writing of this final report.

Reading the above list of acknowledgements only serve to illustrate how the entire project depended not only on the cooperation, but the support and encouragement, of many individuals and groups of people. To all a sincere, "Thank you!"

Merle B. Karnes, Director

TABLE OF CONTENTS

RETRIEVAL AND ACCELERATION OF PROMISING YOUNG DISADVANTAGED

(RAPYD II PROJECT)

INTRODUCTION

The two persons who influenced our thinking most during the sixties were Bloom (1964), who stressed the importance of the early years in the development of intellectual functioning, and Hunt (1961) in his book, Intelligence and Experience, discussed at length the important role experiences play in fostering intellectual development. Like Bloom, Hunt earmarked the importance of the early years for helping each child more fully develop his potential. But, they did not focus specificially on the importance of developing the young potentially bright child.

In spite of the emphasis on developing young children in general, little attention, on a research basis, has been focused on children with high intellectual abilities of preschool age. Even less attention has been given to young children who demonstrate intellectual promise from low-income homes. Despite the fact that the early 60's were notable for emphasis on the identification and acceleration of giftedness and the middle and late 60's concentrated on the young disadvantaged child (Head Start), these two interests did not culminate in greater concern for the disadvantaged with high potential.

In selecting an approach for educating young gifted children, it is important to know what results can be obtained when different approaches are used. Some variables that seem to make a difference in promoting intellectual functioning are language processing skills, creative and productive thinking, social interaction, independence and attending behavior.

Currently there is considerable discussion as to the merits of an open classroom approach versus a more highly structured, teacher-directed approach. Thus, it seemed fruitful to determine the effects on important variables when young children of higher potential are provided with either a highly structured or an open classroom approach. This study, then, addressed itself to a comparison of the effects of two model approaches on young children, ages 4 and 5, from advantaged and low-income homes who were enrolled in an open classroom modeled after the British Infant School and a highly structured program using a model derived from Guilford's Structure of the Intellect.

CHAPTER I. HISTORICAL BACKGROUND

A few researchers in the country have designed studies to investigate the effects of different educational approaches on the development of young disadvantaged children. These studies have been reviewed by Karnes and Teska (1974). Among the comparison studies is that of Di Lorenzo and Solter (1968) who investigated the impact on advantaged and disadvantaged pupils of three different approaches -- a patterned drill (Bereiter-Engelmann), a responsive environment in a modified Montessori program and one designed to promote reading readiness and reading. Differences were found in favor of the more structured programs.

On the other hand, Weikart (1972) compared a Unit Based (Traditional), a structured language program (Bereiter-Engelmann) and a cognitive Piaget based program that he developed. All three groups made significant gains over the year but there were no significant differences among groups.

Van De Riet, et al. (1968) compared the effectiveness of two preschool programs (Learning to Learn and Traditional) and a Contrast group that received no treatment. The Learning to Learn group was superior to the Traditional and Contrast groups on 18 variables which included the Bender Gestalt, Peabody Picture Vocabulary Test, the Metropolitan Readiness Tests and the Illinois Test of Psycholinguistic Abilities.

Karnes, Hodgins and Teska (1969) compared five preschool programs--on Karnes (GOAL) program which used an instructional model derived for the ITPA, Bereiter-Engelmann patterned drill (DISTAR), Traditional, Community-Integrated (Traditional orientation), and the Montessori. The two experimental programs (GOAL and DISTAR) were consistently superior on all measures to the other three programs.

Of the nine comparative studies reviewed by Karnes and Teska (1974), differential effects are found in six. Generally, highly structured programs with a strong emphasis on language development have been significantly superior on standardized instruments. Interestingly enough, no one program has fully demonstrated superiority to all others. On the other hand, several programs such as Karnes, Weikart and Bereiter-Engelmann have demonstrated superiority over other programs on measures of intellectual functioning, language development and academic achievement (Karnes, 1973; Weikart, 1970). Bissell (1971) in reviewing successful and unsuccessful programs, states that there is a strong "specificity of effect," i.e. children learn those things which are specifically included in the curriculum by which they are taught.

In reviewing data on her program, both in the laboratory and in the field test sites, Karnes observed that the children who had had the highest initial intelligence quotients made somewhat less gains over time thus suggesting that this group of children may not have been sufficiently challenged to develop their potential. On the basis of this observation and a review of the literature, it seemed important to evaluate the effects of different approaches for fostering the development of low-income children of good potential. In reviewing possible approaches which seem to be the most likely to challenge young children with high potential, the two that seemed to have the most promise were the open education (Open Ed) and structured programs using an instructional model derived from Guilford's Structure of the Intellect (SOI).

The latter model (SOI) seemed appropriate because previous studies had indicated the structured approach to the teaching of young disadvantaged children had generally been effective. Since existing structured programs had not necessarily proved to be highly effective with potentially bright children, the addition of another component to the structured program seemed to be indicated. The SOI model provided the dimensions which focused on the development of creative and productive thinking more than other structured models. In addition, preliminary pilot testing of this model had been conducted and curriculum materials developed by Karnes and her associates which reinforced the beliefs that the SOI model is a viable one for promoting the development of bright young low-income children.

The second model which seemed to have merit for educating young potentially gifted low-income children is the open classroom model. Although open education has proven to be difficult to define (Katz, 1972, p. 2) some general statements seem applicable and acceptable to those defining open education. One of the more relevant statements is "open informal methods promise the co-occurring achievements of academic intellectual and personal growth in children" (Katz, 1972, p. 9). To the extent that this statement is valid, the open method would seem to be extremely relevant to the teaching of young low-income children. These children need to learn not only the academic and intellectual skills that will enable them to function well in their later schooling, but will also need to develop personal and interpersonal skills to enable them to understand and accept themselves and to interact positively with others. In spite of the fact that open education would appear to be an appropriate educational model for bright children, little is known relative to its effectiveness on a research basis. Katz (op. cit., p. 1) states, "A body of evidence that open informal education is effective is not available (underline by authors). . .nor is there as yet any counter evidence."

A third condition was introduced into the study to provide a comparison with the two experimental models. This condition consists of those programs presently being provided children enrolled in the regular kindergarten of two midwest communities. Although there were some differences within the Contrast group, as will be seen, there was also considerable similarity. The data from this group describes the effect of a third, more Traditional, model.

To add to the body of knowledge, it seemed logical to study on a resource basis the previously discussed models as they are applied to the education of young gifted children from a wide range of socio-economic homes. A careful consideration of the important aspects of a program led the researchers to focus on a comparison of the following general areas: language, teacher-child interaction, behavior problems, intellectual functioning, creativity, school readiness, social acceptance, time usage and space utilization. Essentially, the purpose of the research was to determine likenesses and differences among the two approaches in the above named areas and the approach currently existing in the school system.

CHAPTER II. METHODOLOGY

The research design primarily involves the use of a pre-post test approach. The instruments used were as follows: Stanford-Binet, Form L-M (Pre-post); The ABC Test (Pre); The Metropolitan Readiness Test (Post); Illinois Test of Psycholinguistics (ITPA) (Post); and the Torrance Test of Creativity (Post).

In addition to the concern for the summative effects as measured in the pre-post and post approaches, procedures were developed for observing the transactions that took place in the three different settings. Basically, observational instruments were developed to assess teacher and pupil language, social interaction patterns, social desirability, behavior problems, and classroom provisioning and organization (CORS). Each of these procedures are described in the Results and Discussion chapter.

Pupil Population

The children involved in this study were recruited from two school systems in the vicinity -- the Champaign Unit 4* and Urbana Unit 116* school systems. The chronological age of the subjects ranged from 4 to 5 at the beginning of the study. All children were enrolled in the local kindergartens during the fall of the school year. During the period from September 10 to October 15 all children were administered an ABC test in their local school. As soon as the child with a high ABC score was identified, parents were contacted, informed about the program and their permission obtained for the testing. After the Stanford-Binet, Form L-M, has been administered and the child was found eligible for the program, the process of random assignment was explained to the parent and their permission to include the child in any one of the three programs was obtained. Initial acceptance of the parents was high, however, as time passed and the children developed ties to their early kindergarten placement, there was some reluctance to move the child to another school, as could be anticipated. In general, however, the cooperation of the parents and children was exceedingly high. The first children entered the experimental classes on November 1, with all enrolled by December 1.

The children in the Champaign Unit 4 schools were administered the ABC inventory by their teachers or other school personnel, while the Urbana children were administered the inventory by graduate students from the University of Illinois. The ABC test raw scores were then recorded and used as one of the basis for the first stage of screening for admission.

The socio-economic status (SES) of the children provided an additional screening mechanism. Information on the father's (and mother's when appropriate) occupation was obtained and entered on the record card. Also, the father's (or mother's) educational level was also entered. Both variables were then rated according to a seven point scale (see Appendix A) developed by Hollingshead, Read and Redlich (1958) in which a high socio-economic status receives a "1" and a low socio-economic status receives a "7". These scores were then additionally weighted according to

---

* Our sincere thanks are extended to the principal, teachers and staff of both school systems for their full cooperation with this study. Their cooperation extends their long history of service to gifted and talented children which has had implications for all children in the state and the nation.

the original scale development by multiplying the occupation level rating by 9 and the educational level by 5 and the results added together so that each child had a summed SES score. Those children with a total score of 62 or more were considered to be of low SES status; those with a score of 61 or less were considered to be of high SES status.

Race and sex, in addition to the variables of ABC test score and SES rating, were also used in selecting children for project consideration. When the above basic data had been obtained, the subjects were divided into eight cells based on male/female, black/white, and high/low SES.

Since the ABC raw scores were found to be correlated with chronological age, the children were subdivided into 3-month-age intervals. The highest scores in each subcell were selected for additional screening with the Stanford-Binet, Form L-M (S-B).

All children who completed the initial screening were then given a Stanford-Binet by experienced psychological examiners. Children of low SES who attained an I.Q. of 100* or more and children of high SES who attained an I.Q. of 125* or more were judged to be eligible for consideration for placement in this project.

In the initial proposal, it was intended that the population be composed of approximately 45% disadvantaged, 55% advantaged, 50% male and 50% female, and at a 3 to 1 white-black ratio. To implement this intent, an attempt was made to find children who could be "blocked" as indicated in Table 1.

Table 1.

Proposed Composition of Classrooms

		Open Ed		SOI		Control	
		M	F	M	F	M	F
High SES	W	5	5	5	5	5	5
	B	1	1	1	1	1	1
Low SES	W	3	2	3	2	3	2
	B	2	3	2	3	2	3

As in all research projects, some unforeseen circumstances did affect the actual implementation of the project. First, the screening process itself was extremely lengthy and required communication with a large number of individuals and agencies. Second, although parents' approval for admission to the project was obtained early, before the child was given a Stanford-Binet, by the time that the final selection could take place, some parents had changed their minds and decided to keep their

*Based on a previous study conducted with a similar population (Karnes, Zehrbach, Studley, and Wright, "Culturally Disadvantaged Children of Higher Potential," Champaign, Ill. 1965).

child in the local school. A change was then made to speed up the process of informing parents. In this process, as soon as a population of children sufficient to fill one "block" of cells were identified, i.e. 15 white, high SES, males, the children were randomly assigned to one of the three conditions. This random assignment process held for most blocks. However, near the end of the screening process, sufficient children had been identified to fill only the cells in the Open Ed and SOI classroom. Each of these children was then randomly assigned with the next eligible child assigned to the control group. As a result, the children in the Open Ed and SOI classroom are judged to be randomly assigned while the children in the contrast group were randomly assigned, except for a few who were not, because of the process of assigning the last eligible child to the control cell.

One other note regarding communication with parents. All parents received an explanation of the program and were told that their child would be placed in one of three classrooms: Open Ed, SOI, or remain in the local district. The children of the few parents who did not agree to such a placement were not entered into the final selection process. Some volunteer effect, then, may have influenced the results, however, it should have affected the results equally.

Results of Screening

Table 2 indicates the children who not only were screened but remained in the class the entire year and were available for post testing.

Table 2.

Actual Composition of Classrooms

		Open Ed		SOI		Control	
		M	F	M	F	M	F
High SES	W	6	4	6	5	6	5
	B	-	-	-	1	-	1
Low SES	W	1	2	1	-	1	1
	B	3	4	3	3	3	1

Treatment Conditions

One of the current problems in evaluating programs is to have a precise definition of the program so that there is a clear understanding of its critical aspects. If the definition is clear then one should be able to determine if the program is consistent with what it purports to be. Thus the characteristics of one program are defined which used the SOI model in a structured program; a second was defined based on an adaptation of the British Infant School (Open Ed) and a third, the Contrast group, could only be defined pragmatically by the functioning programs in the Champaign and Urbana schools.

SOI Model

The head teacher in the structured program had received training in the use of the SOI model the previous year. In addition, the teacher studied the literature written on the Guilford models. He also had access to curricular materials in lesson plan format using the SOI model written in previous years and tested with four-year old low-income children. In addition, he was trained in the basic Karnes structured approach.

Basic characteristics of the SOI model classroom are as follows:

1. Children are grouped according to maturity into three groups of 6 to 7 each for three structured periods during a morning (20 minutes each) -- language arts, mathematical concepts, science and/or social studies, and creative and productive thinking (SOI model). Three areas of the room are set aside for structured periods. The larger areas were used for large group activities.

2. The activities are planned by the teacher and are teacher and aide-oriented.

3. Five adults, one certified teacher and four aides make up the classroom team. Inservice training of approximately one and one-half hours is to be provided daily. Appropriate instructional materials are chosen to implement lessons.

4. Positive reinforcement is felt to be a critical component of the program.

5. There is a strong emphasis on language instruction. Although only one period a day is given to language instruction, the teacher and aides are encouraged to foster language development throughout the program.

6. A game format is used in the direct instruction of the children. There is to be immediate feedback to the children as to the appropriateness or inappropriateness of their responses.

7. Children's interests are anticipated and they should be reflected in the activities preplanned by the teachers.

8. Lesson plans include behavioral objectives and criterion activities. Previously prepared lesson plans are to be adopted or modified to meet interests and needs of a group of children and individual children.

9. Directed play, art, music and movement, story period, and snack time constitute approximately sixty percent of the daily program.

10. Emphasis is placed on careful observation of children and appropriate programming.

11. Recordings of pupil progress are kept to help select or plan appropriat activities.

Open Ed Classroom

The following characteristics are representative of the Open Ed classroom.

1. Use of space and movement of persons, materials and equipment is flexible and variable; however centers of [illegible] are set up and changed as dictated by the interests [illegible] ildren.

2. Children are free to move about the room without asking permission and many different activities go on simultaneously.

3. Children's activities or pursuits are extensions or elaborations of their interests rather than activities selected by adults. The range of topics is wide and open-ended.

4. Teachers base their instruction on each individual child and his interaction with materials and equipment. Teachers plan instruction individually and pragmatically.

5. Teachers create a purposeful atmosphere by expecting and helping children to use their time productively and to value their work and learning.

6. Each day the whole group meets to listen to a story, hold an evaluation session and plan.

7. Teachers give suggestions, guidance, encouragement, information, directions, feedback, clarification to an individual child or groups of children throughout the day.

8. Teachers emphasize appropriate high standards of work.

9. Children voluntarily group and regroup themselves.

10. Informal talking between children is a vital activity.

11. Teachers observe the specific work or concern of a child closely and ask immediate, experienced-based questions.

12. Careful notes are kept on the children to plan and extend his experiences.

13. The time for any one activity is flexible.

14. Teacher-child interaction is likely to be initiated as often by the child as by the teacher.

15. The teacher's response to undesirable behavior is to offer the child interpretation. She is not likely to ignore the behavior or exact punishment.

16. One certified teacher and four paraprofessionals are assigned to the classroom of 22 children.

17. The content of math, language, art and science are integrated in the child's activities and projects whenever possible.

Contrast Group

The contrast group was derived from children enrolled in a variety of preschool programs. Although some DISTAR activities were used in one classroom and two classrooms somewhat resembled the Open Ed classroom, most tended to group around a more traditional approach. A typical day found the children engaged in large group activities such as circle games, story period and music during the first hour and a supervised free-play period involving centers of interest for the second hour. Snacks clean-up time and preparation for learning constituted the remainder of the time. More specific details are reported in the Results and Summary sections.

CHAPTER III. RESULTS AND DISCUSSION

The data will be presented in three sections basically organized around (1) Inputs, (2) Transactions and (3) Outcomes. The Inputs involve consideration of information relative to personnel and children. The Transactions section will deal with utilization of time and space, classroom qualities as defined by Walberg in the CORS scale; description of classrooms by external experts; Social Interaction Patterns; Behavior Problems and Management and Language Patterns--Teacher and Child. The Outcomes section reports pre-post data on the Binet and the Metropolitan Readiness Tests; post data on the ITPA and the Torrance Test of Creativity; a problem solving test; the parents' reaction to the project; two audio-visual presentations of the experimental classrooms and the lesson plans and activities.

Inputs

Classroom Personnel

Head teachers of the experimental classes were graduates of a master's level training program for young disadvantaged and handicapped children. The head teacher of the open classroom has had approximately 10 years of teaching experience at the elementary level prior to receiving training in early education. In addition, she had one year experience as a head teacher of a group where a structured approach involving the use of the SOI model was implemented with young bright disadvantaged and advantaged children. The teacher stated that her training and experience in early education, using a structured approach, enabled her to understand what children are able to learn at different developmental levels and from varying socio-economic backgrounds to the extent that she felt ready to initiate an Open Ed program.

The head teacher of the SOI model classroom was fully trained at the master's level in the early education of the disadvantaged and handicapped. It was his first year serving in the capacity of head teacher. He had demonstrated superior abilities in implementing the SOI model in a practice placement the previous year. It was felt that he was the best prepared of many candidates to implement this model.

Four graduate students in training were assigned as teaching aides to each classroom for one semester. A new group was assigned the second semester. Essentially they were considered paraprofessionals since they were not fully trained in early childhood. Psychologists and speech and language specialists were available to the program upon request.

As mentioned previously, children were selected from the kindergarten population of the Champaign Unit 4 and Urbana Unit 116 school system. An attempt was made to assign children randomly within blocks. This was accomplished with the exception that a few of the children in the Contrast groups met eligibility criteria but, for a number of reasons, had to be assigned without full randomization.

Pupil Characteristics

To determine if the groups differed on entry variables, a series of "t" tests were computed. The results are shown in Table 3.

Table 3.

Comparison of Groups on Entry Variables

Variable	Group Means			t		
	OPEN ED $\bar{X}$ (1)	SOI $\bar{X}$ (2)	CONTRAST $\bar{X}$ (3)	(1)-(2)	(2)-(3)	(1)-(3)
Sex	1.50	1.47	1.41	.16	.36	.52
Race	1.35	1.37	1.24	.12	.85	.75
CA (in months)	65.2	63.7	64.1	1.13	.28	.89
M.A. (in months) (initial Binet IQ)	78.4	76.9	83.9	.44	1.95[1]	1.43
S.B. I.Q.	123.5	125.1	134.2	.27	1.47	1.91

[1] (t .05 = 2.04/df. 3 2 tail)

As can be seen from Table 3, the three groups did not differ significantly from each other on the basis of sex, race, or C.A. Although they did not differ significantly on 2 tailed tests with regard to M.A. or IQ, the Contrast group tended to be somewhat higher on M.A. and IQ than the SOI group, and the Open Ed group. Of considerable importance to the understanding of the results is the fact that there were no significant differences between the Open Ed and SOI groups on any variable.

In summary, the Open Ed and SOI groups appear to be quite well matched on importan variables with a slight possibility of both differing somewhat from the Contrast grou

Additional pretest information available on the children include the ABC test results and, for the two experimental groups, the results on the Metropolitan Readiness Test. The results of the analysis of these test scores are found in Table 4.

A review of Table 4 reveals no significant difference between Open Ed, SOI or Contrast groups on the ABC test. One problem that did result is that the ABC test has a low ceiling. Thus many of the children who were in the top half of the group, chronologically, attained raw scores that were at the top or very near the top of the scale. Thus, the scores had limited predictive ability with regard to the S-B. Nevertheless the ABC test did do an adequate job of indicating those children who would likely attain high scores on the S-B. On the other hand, since only children who were at the top were tested, no information is available concerning how well children who scored somewhat lower might also have done.

In spite of the restricted range, comparison of the ABC scores with the initial Binet IQ's revealed significant relationships. ($p < .05$). The r between ABC score and M.A. = .30 and with I.Q. = .26. The correlation between ABC and C. A. (.11) was not significant.

Table 4.

Analysis of ABC and Metropolitan Readiness Test Scores

Variables	OPEN ED $\bar{X}$ (1)	SOI $\bar{X}$ (2)	CONTRAST $\bar{X}$ (3)	(1)-(2)	(2)-(3)	(1)-(3)
ABC	104.5	104.4	102.9	.02	.25	.23
Metropolitan Readiness						
#1	9.4	9.6	-	-.17	-	-
#2	10.3	10.8	-	-.75	-	-
#3	7.7	6.6	-	1.16	-	-
#4	12.7	12.1	-	.48	-	-
#5	12.6	11.33	-	.96	-	-
#6	7.6	6.2	-	1.24	-	-
Total	60.4	57.2	-	.61	-	-

Of passing interest is the high intercorrelations of the initial Metropolitan Readiness subtest scores. Among the 15 intra subtest correlations, the range was from .72 to .93 with the median of .85. These combinations are quite high when one might anticipate that somewhat different types of intellectual functioning should be assesse by the different tasks and by that fact that the scores were obtained from a homogenous population of children. (See Appendix B .)

Transactions

Too frequently educational research projects have focused on summative changes in a project without considering what actually occurs during the course of the treatment. One of the major emphases of this project was to collect data on the transactions (activities) that occurred during the course of the project. Since little is known about the actual functioning of an open classroom, it was anticipated that a careful description of the transactions might prove to be a worthwhile addition to the body of knowledge.

Description of Lesson Plans and Activities

The description of the transitional activities that occurred in the classroom was approached from three different points of view. First, the classroom teacher wrote lesson plans, kept records of activities, and recorded the aides and children's responses to activities. These records were then compiled as a part of the final report of the project. Second, 35mm audio-visual presentations were made of each of the classrooms to describe pictorially an overall impression of the two programs; and third, observers collected data on the activities of the project as it unfolded. This report is basically concerned with the classroom activities and its effects on childre

however it is important to place this report in the total context of the outcomes of the project. Consequently, a brief description is provided of the other major efforts of the project which relate to this section on transactions.

One of the major outcomes of the project was to be the evaluation on a series of lesson plans that had been prepared by Karnes for use in SOI model classrooms for young bright children. Initially some 150 lessons had been written with emphasis on the preparation of lesson plans that were in the Divergent Productive, Evaluative, Convergent Productive and Behavioral areas. As the project unfolded, the lesson plans that seemed most appropriate were selected by the head teacher and aides. Each of these selected lessons was taught to the children by at least two, and typically all three, aides. A report of the success or failure of a lesson plan was prepared by each individual who taught the lesson. On the basis of the reports, plans were either accepted as written, rewritten and then accepted, or rejected for further use. From this set of lessons 100 were selected for final submission. Of these 55 were Divergent Productive, 30 were Evaluative, and 15 were Convergent Productive. Each of the lessons has been prepared in the same game style format, and written with behavioral objectives and full directions for teaching the lesson.

Activities in the Open Ed classroom derived basically from the ideas of the children as they interacted with the teacher and the materials that she had provided. From the notes and comments kept throughout the year the 25 that were considered to be the most creative and the most fruitful with children were selected by the head teacher and written up for dissemination. The activities selected by the head teacher document not only the head teacher's thoughts and planning but also give illustrations of the children's work that was a result of the activity. These activities are also being submitted as a part of the final report.

The evaluation and undertaking of a program can often be enhanced through the use of other than technical reports. Thus, it was felt at the start that one of the more useful outcomes of the report would be to prepare two 35mm narrated slide film presentations on the project. One presentation was prepared on the SOI classroom and one on the Open Ed classroom. Each is from 15-20 minutes in length and, through pictures and narration, provides a clear insight into the functioning of each of the approaches. Both have been shown at state and national conventions and have been met with considerable approval. For a full picture of the project then, one needs to read the lesson plans and see the film presentations because each adds depth that is not usually available to the understanding of a program or research project. It is difficult to express in words the quality of a child's smile or the interest of a group of children as the strain to watch a teacher or another child in an exciting, interesting activity. This is the type of information that the films convey.

As stated earlier, in addition to the information provided by lesson plans and activities and the film presentations, data was also gathered through a variety of observational and standardized techniques. Since a description of the transactions was so important, it was felt that an attempt should be made to validate the fact that objectively different classroom models were being implemented. This was accomplished by gathering information on the use of time and space, the characterization of the classroom through the use of the Classroom Observation Rating Scale (CORS) and the reports of expert observers.

The second phase of the study of transactions focused on gathering information in the areas of social interaction, behavior problems and management, and language.

Time and Space

One of the most objective characteristics that differentiates between the SOI and the Open Ed model classrooms was intended to be associated with the use of time and space. According to the previously presented guidelines, children in the SOI model classroom were to be provided with three twenty-minute structured periods involving small groups of children (1 adult to 6 or 7 children) and large groups of children in art, music, story time, and directed play. In contrast, the Open Ed model classroom was to allow the children to use time and space in a much more flexible manner.

To implement the structured program, a schedule (See Table 6) was devised which included the three twenty-minute structures (language arts, SOI activities, mathematical concepts, science or social studies) and directed play, music, art, story time and snack. The first schedule that was adapted indicated the first structure started at 9:15 a.m. This schedule was followed for about eight weeks. It was then decided that some children were consistently missing snack because of complex bus schedules and bad weather. To cope with this problem more time was allocated for directed play and the snack was moved after the first structure. This schedule was followed somewhat flexibly in that the first structure typically started after the last bus had arrived but early enough to allow for the completion of the three structures during the morning. To verify this intent, data were gathered by a graduate student who carefully recorded the location of each teacher and child at five minute intervals. This student was unknown to any project personnel except the evaluator and collected the data on a day that was unknown to anyone including the evaluator. Although the data were collected only once, it was extremely consistent with the data collected through other observational techniques and therefore is considered to provide a valid and consistent picture of the two classrooms. The results of this observation are reported in Tables 7 and 8. Table 5 depicts a floor plan of each of the two model classrooms. Areas A, B, and C are small rooms approximately 8' x 8' with glass walls and a door that can be closed. Areas 1, 2, and 3 are subdivided portions of a larger room approximately 24' x 14'.

Table 5.

Classroom Floor Plan for Reading Purposes

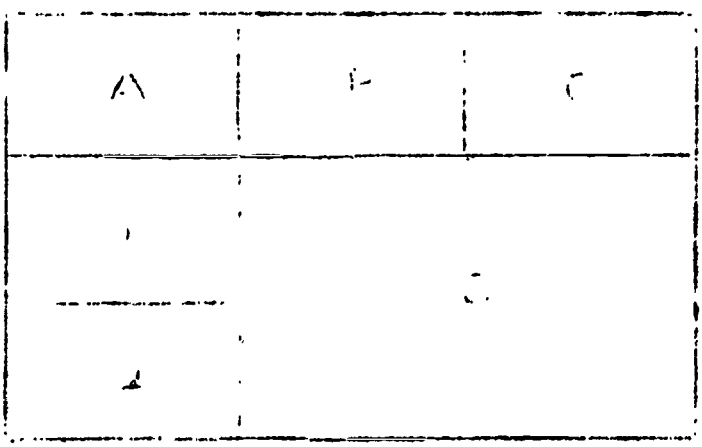


Table 6.

DAILY SCHEDULE

First Schedule

8:00 - 8:30	Set up classroom
8:30 - 9:00	Preplanning meeting
9:00 - 9:10	Snack
9:10 - 9:15	Clean up transition
9:15 - 9:35	Structure One
9:35 - 9:560	Music
9:50 - 10:10	Structure Two
10:10 - 10:25	Story
10:25 - 10:45	Structure Three
10:45 - 11:05	Directed Play
11:05 - 11:10	Clean up - get ready for outdoors
11:10 - 11:25	Outdoor play
11:25 - 11:30	Get children ready for home/lunch
11:30 - 11:45	Put away materials and straighten up classroom
11:45 - 12:30	Evaluation meeting

Second Schedule

Fair Weather		Bad Weather
8:00 - 9:00	Same as First Schedule	8:00 - 9:00
9:00 - 9:20	Directed Play	9:00 - 9:40
9:20 - 9:40	Structure One	9:40 - 10:00
9:40 - 10:10	Snack - Story	10:00 - 10:30
10:10 - 10:30	Structure Two	10:30 - 10:50
10:30 - 10:45	Music	10:50 - 11:05
10:45 - 11:05	Structure Three	11:05 - 11:30
11:05 - 11:30	Outdoor Play	
11:30 - 12:30	Same as First Schedule	11:30 - 12:30

Table 7.

SOI Model

TIME	1*	2*	3*	C*	B*	A*
9:00	3/1**	---	8/2	---	---	---
9:05	---	---	12/4	---	---	---
9:10	---	---	11/4	---	---	1/0
9:15	2/0	---	8/2	---	---	2/1
9:20	1/0	---	16/2	---	---	0/1
9:25	3/1	---	13/4	---	---	1/0
9:30	---	---	17/4	---	---	---
9:35	---	6/1	---	5/1	6/2	---
9:40	---	6/1	---	5/1	6/1	---
9:45	---	6/1	1/1	4/1	6/1	---
9:50	---	6/1	0/1	5/1	6/1	---
9:55	---	---	17/1	---	0/2	0/1
10:00	---	0/1	17/2	---	---	---
10:05	---	---	17/3	---	---	---
10:10	---	---	15/3	---	---	2/0
10:15	---	---	17/3	---	---	---
10:20	---	6/1	1/1	5/1	5/2	---
10:25	---	6/1	---	5/1	6/1	---
10:30	---	6/1	0/1	5/1	6/1	---
10:35	---	6/1	1/2	5/1	6/1	---
10:40	---	6/1	0/2	5/1	6/1	---
10:45	---	6/1	6/3	5/1	---	---
10:50	---	---	16/3	1/1	---	---
10:55	---	---	16/2	1/1	---	---
11:00	---	6/2	---	3/1	6/1	2/0
11:05	---	6/1	---	5/1	6/1	---
11:10	---	6/1	0/2	5/1	6/1	---
11:15	---	4/1	2/2	5/1	6/1	---
11:20	---	6/1	6/2	5/1	---	---
11:25	---	5/1	1/1	5/1	---	---
11:30	---	0/1	3/1	5/1	---	---

*Readings 1, 2, 3, C, B, and A refer to Table 5, Classroom Floor Plan for Reading Purposes

**In set, i.e. 3/1, first number equal child(ren), second number equals teacher(s)

Table 8.

OPEN ED Model

TIME	1*	2*	3*	A*	B*	C*
9:00	---	2/0**	10/2	---	---	2/1
9:05	2/1	---	7/1	1/1	2/0	2/1
9:10	5/2	1/0	6/1	---	---	2/1
9:15	4/1	---	6/1	1/0	---	3/2
9:20	3/1	---	7/1	---	2/0	2/2
9:25	4/1	1/1	4/1	---	3/1	2/0
9:30	2/0	0/2	11/1	---	3/1	2/0
9:35	2/0	---	10/1	---	3/1	3/0
9:40	2/0	---	8/2	---	---	8/1
9:45	1/0	1/0	8/2	---	---	8/1
9:50	---	4/0	6/1	---	---	8/1
9:55	2/0	1/0	8/2	---	---	1/1
10:00	4/0	---	6/1	---	---	2/1
10:05	2/0	1/1	7/1	---	---	2/1
10:10	3/1	1/0	12/2	1/0	---	2/1
10:15	3/0	1/0	10/2	1/1	3/1	---
10:20	2/1	---	13/1	---	3/1	1/0
10:25	3/1	---	12/1	---	2/1	1/1
10:30	3/1	1/0	13/2	---	---	1/1
10:35	2/1	2/0	11/2	---	3/1	0/0
10:40	2/1	---	10/2	1/0	3/1	0/0
10:45	2/0	1/1	12/1	---	3/1	0/0
10:50	1/0	---	15/1	---	2/1	---
10:55	1/2	1/0	14/1	1/0	1/0	---
11:00	---	4/1	13/2	1/1	---	---
11:05	1/0	4/1	5/1	2/1	---	6/0
11:10	1/1	2/0	9/3	---	---	6/0
11:15	2/1	---	13/2	1/1	---	2/0
11:20	5/1	---	12/3	1/0	---	---

*Headings 1, 2, 3, A, B, and C refer to Table 5, Classroom Floor Plan for Reading Purposes

**In set, i.e. 2/0, the first number equals child(ren) and the second number equals teacher(s).

The divisions in the larger room were arbitary but assisted by natural breaks and the use of dividers. Table 6 contains the raw data revealing the number of children and teachers in a given space in the SOI classroom. Thus, in Table 6, one can see that three children and one teacher (3/1) were in Area 1 at nine o'clock in the morning while eight children and two teachers (8/2) were in Area 3. Inspection of the table revealed that generally children were in a large group activity in Area 3 from 9:00 a.m. to 9:30 a.m., with the exception that occasionally children went to the bathroom or moved into Area 1 for a short time. (Area 1 had a bookshelf with an array of books and a rug on the floor.)

At 9:30 a.m. all of the children (17) and all of the teachers (4) were grouped in Area 3. This was a time, according to the classroom schedule, when the children were to assemble for a large group activity. From 9:35 a.m. until 9:50 a.m. it is easy to see that small groups composed of five to six children and one adult were meeting in Areas 2, C and B. At 9:55 a.m. there was again a return to a large group meeting which lasted until 10:15 a.m. From 10:20 a.m. one can again see that the classroom is organized into small groups interspersed with a large group from 10:50 a.m.-10:55 a.m.

A comparison of the above findings with the second SOI daily schedule reveals a congruency between the findings and the bad weather schedule (when the buses arrive late and forced the schedule to be late). In this case, the delay in getting started was not too great so that some time for directed play occurred at the end of the morning. Thus, the data revealed that the intended daily structured schedule was indeed being followed.

According to the delineated characteristics of the Open Ed classroom, space and time were to be allocated flexibly. To verify this intent, data were again collected on a random unannounced basis using the format described previously. The results are reported in Table 7. A review of the findings indicates a vastly different use of space and time. Area 1, for example, was populated with varying size groups ranging from five children and two teachers, to four children and zero teachers, to zero children and teachers during the two and one-half hour day. Furthermore, there was only one period during the day of ten minutes in length when the population remained the same, two children and zero teachers.

Another point is that at no time during the day were children in the Open Ed classroom in fewer than four areas. A comparison with the SOI classroom reveals that no more than three areas were evenly populated with children at one time and there were times when only one area was used. Thus, it can be seen that there was a much more flexible use made of space and time in the Open Ed classroom as compared with the SOI classroom.

Classroom Observation Rating Scale - Ideal and Observed

When the project was first conceived, it was determined that considerable effort would be expended to insure (a) that the classrooms did in fact differ and (b) that the differences would be consistent with the theoretical literature. At the time the project was started, very few instruments had been developed that met these criteria. One of the instruments that appeared to be most appropriate was the Classroom

Observation Rating Scale (CORS) by Walberg and Thomas. Since this scale was still in the experimental stage, permission was obtained from the authors who also provided their most recent scoring criteria.

The CORS is a scale that can be used either through observation of the classroom and/or asking the teacher to fill out a self report form based on the same items. (See Appendix C for the items.) When the scale is scored, the observations are broken down into eight sub areas. At the suggestion of the authors, however, three of the scales were summed together -- Seeking Opportunities for Growth, Assumptions and Self Perception. Thus, the data is reported in six dimensions. A description of the dimensions follows:

1. Provisioning for Learning. The teacher provides a rich and responsive physical and emotional environment. (Example: Manipulative materials are supplied in great diversity and range with little replication.)

2. Humaneness - Respect and Openness and Warmth. The teacher promotes an atmosphere of warmth, openness and respect for one another. (Example: The emotional climate is warm and accepting.)

3. Instruction - Guidance and Extension of Learning. The teacher acts primarily as a resource person who, in a variety of ways, encourages and influences the direction and growth of learning. (Example: The teacher bases her instruction on each individual child and his interaction with materials and equipment.)

4. Diagnosis of Learning Events. The teacher views the work children do in school as opportunities for her to assess what the children are learning as much as opportunities for children to learn. (Example: To obtain diagnostic information, the teacher closely observes the specific work or concern of a child and asks immediate experience-based questions.)

5a. Seeking Opportunity to Promote Growth. The teacher seeks activities outside the classroom to promote personal and professional growth. (Example: The teacher has helpful colleagues with whom she discusses teaching.)

b. Assumptions - Ideas about Children and the Process of Learning. The teacher's assumptions about children, the process of learning, and the goals of education are generally humanistic and wholistic. Teachers are aware of and respect the child's individuality and his capacity to direct his own learning. (Example: Children are deeply involved in what they are doing.)

c. Self-Perception. The teacher is a secure person and a continuing learner. (Example: The teacher does (not) try to keep all children within her sight so that she can make certain that they are doing what they are supposed to do.)

The last dimension, 5a, b, and c are combined together at Walberg's suggestion.

6. Reflective Evaluation of Diagnostic Information. The teacher subjects her diagnostic observations to reflective evaluation in order to structure the learning environment adequately. (Example: The teacher keeps a collection of each child's work for use in evaluating his development.)

At the start of the project, the information available regarding the "ideal" goals for an American adaptation of the Open Ed approach could be based only on the theoretical literature. Consequently, the CORS scale was administered to the head teacher, the project director and outside consultants in an attempt to define the "ideal" ratings both for the Open Ed and SOI classrooms. The results of this investi gation are reported in Table 9 by sub-category.

Table 9.

Ideal and Observed CORS Mean Scores
for Open Ed and SOI Classrooms
(N = 3 - each column)

	OPEN ED			SOI		
	Ideal	March	May	Ideal	March	May
Provision	3.72	3.58	3.35	2.98	2.58	2.27
Humaneness	3.54	3.20	3.05	3.00	2.95	2.33
Instructive	3.64	3.20	2.94	2.50	2.90	1.89
Diagnosis	3.18	3.30	3.61	1.88	3.00	2.34
Assumptions Self Perc./Seeking	3.43	3.04	3.14	2.93	2.67	2.48
Evaluation	3.68	3.80	3.44	3.20	2.96	2.35

It is interesting to note that the differences specified by project personnel later were consistent with an unpublished doctoral dissertation by Evans (1977). She reported that the mean total score for other CORS scale was, when administered to British Open teachers - 160.8; when administered to U.S. Open Ed teachers - 163.17 and when administered to U.S. Traditional teachers - 112.46. These scores contrast with project personnel Open Ed classroom "ideal" scores of 155.2 and the SOI classroom of 122.3. The "ideals" established for this project, therefore, were similar to those established by other teachers and experts in the area.

"The rating scale is probably best used as a survey instrument. . .it is less reliable as a diagnostic measure for individual classroom." (Ibid, p. 28) Such appeared to be the case in the present project. The problems with the instrument seem to derive from several sources including:

(a) some of the items tended to be ambiguous and thus meant different things to different observers,
(b) some of the items were written to be scored negatively, but in the process they tended to confuse the rater and result in opposite ratings,
(c) the number of items in each of the sub-scales varied widely from provisioning (23) to self perception (1),

(d) the items were not always written in terms that would permit the observer to check an item without spending several days in the class to be certain to see the activity. (Does the teacher use tests to place the children?) In spite of the inadequacies, the scale does appear to present a reasonably valid statement of some of the ideals that one might espouse for such classrooms and thus help objectify attempts to demonstrate differences in classroom programs within the restricted range and limited sampling of items provided by the scale,

(e) the scale is weighted too heavily with provisioning items so that the overall score too strongly reflects differences associated with the observable content of the classroom.

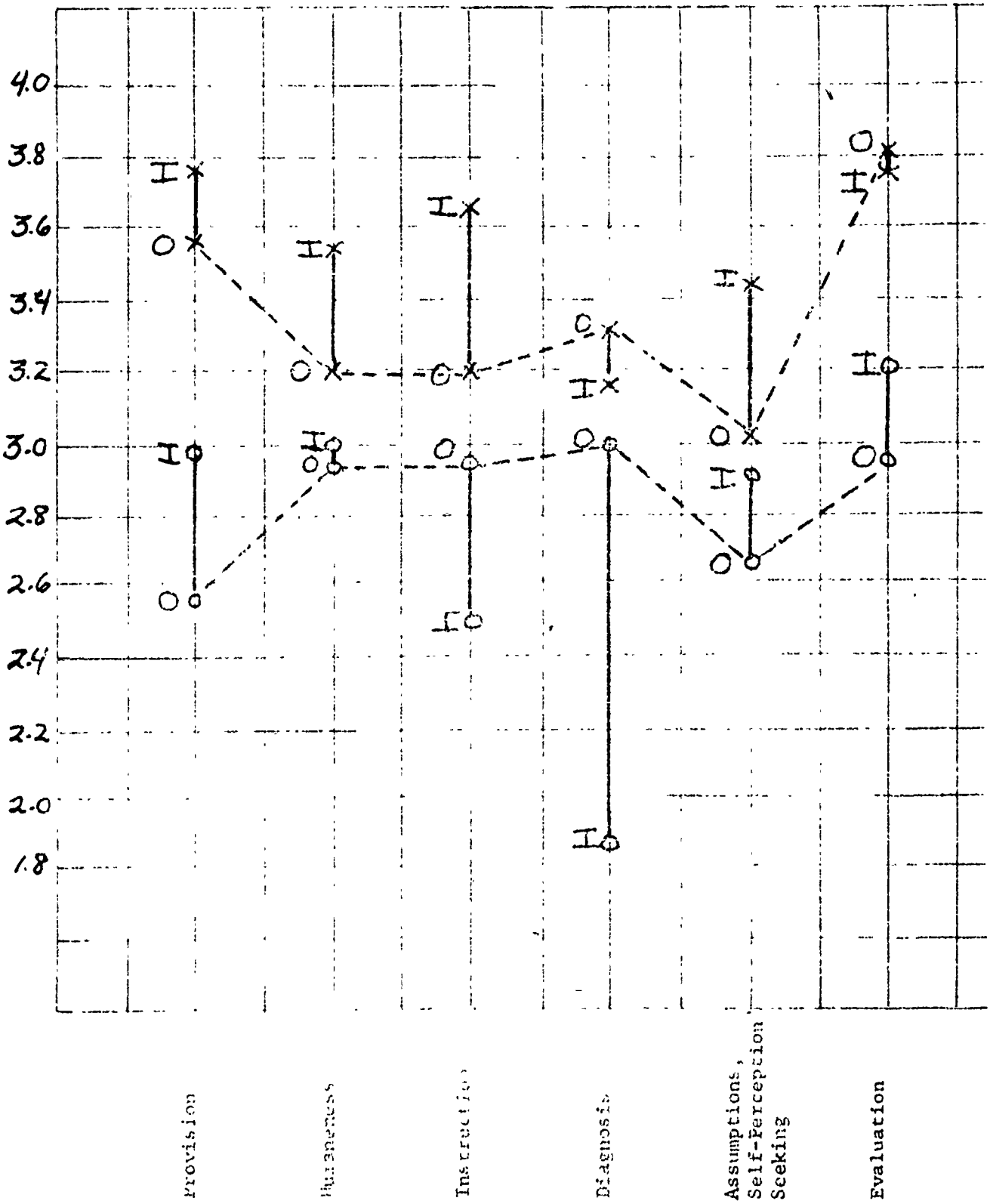
Interpretation of the scales and the findings is made difficult, from a statistical point of view, because of the limited number of responses, three to eight per any given cell, the limited number of observers, and the tendency to misinterpret some of the items. The results, therefore, are presented in a graphic form as a basis for guiding the discussion and to provide the reader some understanding of the probable differences between the two classrooms. In Graph 1, it seems apparent that there is a definite difference between the ideals established for the two classes. This difference occurs for each and every sub-scale. Differences between the two classrooms, from an ideal point of view, appears to be least on the "Humaneness" dimension with the greatest discrepancy on the "Diagnostic" dimension. This seems to be consistent with the underlying philosophies in that the teachers are expected to be warm and accepting and encouraging in the SOI as well as the Open Ed classroom. The difference between the two approaches seems to be greatest in the Diagnostic area. This is in part because the diagnostics in the Open Ed classroom are to be a function of the daily "give and take" of the teacher with the child where the materials the child is working on are to be used clinically. In the "ideal" SOI classroom the teachers are expected to make greater use of diagnostic type tests presented in a more formal, structured manner.

Another comparison may be made in the "Instruction" area. Here the "ideal" for the classrooms lies quite far apart. In the structured room, the teacher is expected to teach the children in small groups, organized according to the needs of the children, but at the direction of the teacher. The Open Ed teacher, on the other hand, is expected to provide almost the reverse--very little group work, very little formal instruction, considerable direct work with the child on projects and tasks that develop from his interests. In spite of the differences on the ideal, according to the observers, the two classrooms were fairly close together on the instruction dimension during the March assessment. A portion of this finding may have occurred because the SOI classroom entered a phase of working on some larger projects at about the time the data were collected. There was small group work and more larger group work where the teachers actually tended to work more individually with the children. In general, one might summarize the March data as indicating that there was a difference between the classroom, generally paralleling the set of ideal criteria.

Data from the May observations suggest some movement in most of the categories. For example, both classrooms tended to be slightly less well provisioned in terms of having new and different material where the child could quickly get at them. This seems to be supported by data obtained from the teachers' reports and the report of outside observers. Their reports indicate that the Open Ed classroom spend more time on large projects such as "Banking" and "Hair Dressing" which would seem to cut down

Graph 1.

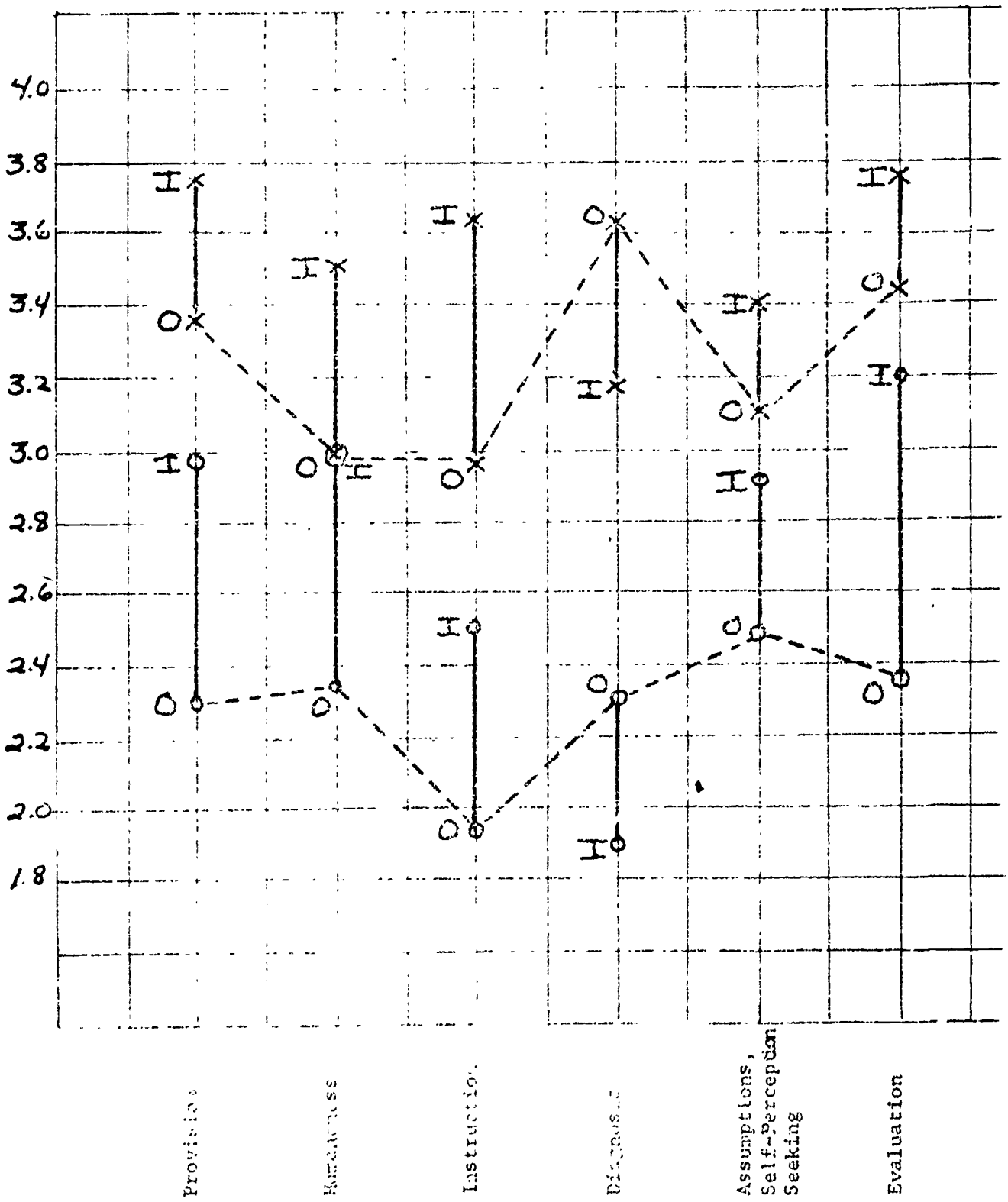
Comparison of Ideal versus Observed CORS
Scores for Open Ed and SOI Classrooms - March



Ix = Ideal Open Ed
Ox = Observed Open Ed
Io = Ideal SOI
Oo = Observed SOI

Graph 2

Comparison of Ideal versus Observed CORS Scores For Open Ed and SOI Classrooms - May



Ix = Ideal Open Ed
Ox = Observed Open Ed
Io = Ideal SOI
Oo = Observed SOI

on the variety of activities available to a child and caused the activity to be more "adult-like" requiring an "adult" level of difficulty rather than "child" level of difficulty. Further, these activities seem to be more completely under the direction and supervision of the teachers.

In the SOI classrooms, the limited provisioning seems to be partially attributable to the teachers' need to bring into the room the materials to be used that day in the structured lesson plans. Further, the head teacher commented that he was limited as to what could be brought into the room and displayed because the room was shared with an afternoon group of children who had different needs and desires and who needed much less stimulation than the bright children.

Both classrooms dropped in the area of "Humaneness" from March to May. Understanding the drop is made difficult because the label "Humaneness" is a partial misnomer. The scale includes such items as "Children group and regroup themselves voluntarily" and "The environment includes materials developed or supplied by the children." In the SOI classroom, there appeared to be less inclusion of items brought by children and less observable regrouping of children in the structures during the latter part of the year. In addition, there seemed to be less warmth and more attention to structures, so the drop resulted from two interactive reasons.

In the Open Ed classroom, there seemed to be a similar trend as the teachers took greater charge of the activities thus allowing less "humaneness" to affect the classroom. Nevertheless, there still is a considerable difference between the Humaneness scores of the two which appears to be a valid reflection of the classroom activities.

In the area of "Diagnosis," there seems to have been a tendency for the teacher to decrease the number of tests given and the use of tests for grouping. This scale, however, was always difficult to rate because of the lack of opportunity to observe the teacher conducting the activities mentioned. Thus, a part of these results may have been a reflection of lack of knowledge on the part of the observers

On the "Instruction" dimension, there was a clear difference between the Open Ed and SOI classroom in March. By May, the difference had increased with the scores of both classes dropping, but the SOI score dropping relatively more. The instruction dimension can be characterized by the emphasis on teachers grouping the children, making assignments to large groups of individuals and dividing the content into subject matter areas. The findings regarding the differences between the two classrooms are supported by the reports of the observers and comments of the teachers. Thus there was a significant difference between the rooms and a change in both between March and May.

In the area of Assumptions, Seeking, and Self Perception, little change was noted, with the teachers remaining relatively constant with regard to warmth, provision of clear guidelines for the class, encouraging children to spontaneously look at and discuss each other's works and receiving assistance from others.

And, finally, in Evaluation there was a perceived decrease in the teachers' keeping of written notes on the child's intellectual development and other historical information, in the collection of children's products and in using evaluational material to guide the instruction in the classroom. The greatest drop appears to

have been in the SOI classroom. As with Diagnosis, observation of the activities rated on the scale is difficult and often must be inferred from observation of related activities or talking with the teacher. Nevertheless, these findings seem to be appropriate in that much of the activities in the SOI classroom were determined by the basic structure of the lesson plans being evaluated, rather than the adaption and selection of lesson plans for the best fit between a child's needs and developing the lesson plans objective.

In summary, statistical analysis of the total CORS scale scores reveals a significant difference between the two experimental rooms. Analysis of the sub-scales which was hampered by small N's and weak scale construction nevertheless pointed to differences that will receive additional confirmation later in this report. The scales and the result of their use do seem to help provide one important dimension of understanding of the project. Many of the items in the scales suggest important areas for the observation of the project. Although outside observers find many of the items difficult to rate because the activities are not repeated at frequent intervals, or can be observed only through extremely careful perusal of the teachers' behavior, still the pattern of the findings and the gross difference between the class are consistent with the reports of the individual who watched the room for considerable lengths of time, from talking with the teachers, and from comparison of the items with observations by the evaluator and evaluation staff of the classes over time.

Observation and Judgments of Consultants

One method of valuing a program is to obtain the critical judgments of knowledgeable visitors. Each classroom was observed by several knowledgeable visitors and consultants. Immediately after their visit, they were interviewed by one or more members of the evaluation staff. Portions of these interviews were audio-taped and later transcribed. These tape scripts were then reviewed by members of the evaluation staff who summarized the reports. In each case the visitor was encouraged to (1) rank the project generally against whatever personal criteria he/she had for the program observed and (2) discuss the program's strengths and weaknesses, again according to his/her own personal values. In this way it was hoped to gather data on dimensions not already covered by evaluation procedures, as well as to support data being obtained by other methods.

SOI Model

The visitors to the SOI model were Dr. Richard Youngs, Associate Professor, Illinois State University and director of a project on the use of the S.I. model at the elementary level; and Dr. Faye Shaffer, Associate Professor, Southern Illinois University, expert on the S.I. model and programs for the gifted.

Dr. Youngs' Comments

A review of Dr. Youngs' tape script reveals that he feels the program "is probably better than most structured programs. It is as described in the (35mm) presentation. It is a structured-type classroom run on a fairly tight schedule."

When asked to discuss strengths, he responded that he "saw structure of intellect activities going on in some areas at certain times, deliberate structure of activities....First...this morning...(I) saw lots of divergent production in the semantic system. But, (I) didn't see this Guilford sort of questions carried forth in other content areas of math and language to the extent that might have made the lessons worthwhile....(I) liked the use of art activities for the children to be able to express one or more divergent activities/ideas that (they) might not be able to express verbally....(I) felt things were pretty warm--the teacher-pupil relationship was warm. Teachers were energetic. (I) saw some good independent behavior."

In his discussion of the weaknesses, Dr. Youngs tended to comment in the areas of (a) behavior management, (b) use of materials that are teacher-designed rather than coming from the children, (c) materials not readily available to children as much as in other classrooms, and (d) lack of encouragement of kids who can manage themselves well, who can work well independently, who can stretch out their attention spans... to develop further these areas. He noted that the structure may help by confining the children who are the problems. Yet "children need to wait for the teacher to initiate activities to a large extent." Similarly, he pointed out examples of how "...the activities were limited by time, needed to be more flexible....He felt there was a disjointedness about the day." Also he pointed out a need to "recognize children's level of development--academic and behavioral..." and to reflect level of development in the activities given to the children. He felt the program "was quite structured in terms of time, in terms of activities and lessons...(It) could be more desirous to be even more structured in the behavioral (control of behavior) area."

Dr. Youngs made the point that there ought to be "many different types of programs for many different kinds of children." Continuing, he indicated that the types of children that might most benefit from a structured class would be those "who have a lot of random and nonproductive sources and ways of operating and focus them into productive strengths. I think it is important for some kids to go through this stage before going into independent, open, sorts of things. I also think that it enables teachers to see more specifically what it is that kids need to (learn)'. The program is probably best for 'kids who need a fair amount of structure...have short attention spans...aren't very resourceful...are different in some critical SI cells... intellectual development slow...for whom bread and butter things are critical ."

Dr. Youngs in summary said that there then are two ways which we might look at this. "(First) From the point of the class that we observed today, what is theoretically possible...I think a great deal more might be done with the teachers, with the class, and the program to determine what philosophy or what theoretical basis is being used and how it's being used to chart intellectual development or cognitive development on the sequence of content development. It might do a lot more to spell out what the internal controls are, what sort of management behaviors are important; what sort of motivation is appropriate, but I do see reinforcement there....Those things that are well articulated (in the program) are understood (by the teachers) and readily apparent within the program. Now, (second) in terms of what one often sees in a class, in a very structured class, there are pernicious and oppressive things going on which really are done by tradition. I just have the feeling that those are <u>not</u> present in this class...not present. And so I say that (the class is) part way along to what's theoretically possible--compared to most, a good bit, along (the way)."

Dr. Faye Shaffer

Strengths -- "I was impressed with some things in terms of divergent thinking that (I) heard. (I) Don't think (that) you would hear that in all classrooms."

In response to a question, the evaluator noted that the groups were selected and then regrouped homogenously several times. Then, he asked, "Were the groups workable? "(My) One shot impression: The groups they had placed (them) in seemed to work very well. I'm sure that probably some day they will be switched around. The way they had them selected--regardless of the criteria you used--just from listening and watching, seemed to work very well within the groups. There were some kids, I guess in all groups, that appeared not to be involved in what was taking place within the lesson. I don't know if it was a matter of ability, or social types of things, or what have you. They're all beautiful, functioning very well in the group they were placed (in)."

Weaknesses -- "In the last session there were some things that I have questions about not directly related to Guilford - maybe you are just ignoring these things. One of them would be the use of an incorrect visual model ('bunnyr abbit - rather that bunny rabbit'). Also thought that the alphabet was ridiculous, it was up higher than an adult could see."

"Then (I) wondered about the disorder, clutter, that was not really a part of the ongoing activity; there seemed to be so much junk in the rooms. Then (I) felt these are impressions, that there was not always an awareness of the teacher of the individual needs of the children. There seemed to be in some of the groups, two or three children, who were dominant and very demanding, and other children, who were out here on the peripheral parts, were not brought in. The physical placement of children was not changed; the most vocal children were always near the teacher. I wondered why there wasn't any attempt to modulate voices or use the language patterns. Didn't quite understand what the reward system was and once the child was isolated from a group, how did he get back in."

"Wondered about when they played hokie pokie song, some of the older children were doing things like jumping and certain motor activities that I wasn't certain all of the kids could do--if some of the kids just couldn't do these things or whether they were just some sort of isolated resistance and didn't want to do them."

"I thought that you had either selected them or you had a group that was very similar, or that the teachers had decided. I didn't feel there was much attention paid to the individual differences."

"On the other hand, I have some question, the impression, that the teachers were not using and thinking of the structure of intellect on lessons that were not part of (the SOI structure)...that they were not familiar enough with the SOI to make use of it in all kinds of little ways--where you are responding to children...even when they were reading a story and made comments or kids made comments, this kind of thing."

"(I) Heard two groups on the same divergent questions (lesson plan). (The questions) are basically the same! In one group the question was posed and then the kids were asked to take off from that divergent question and then each child was asked to draw two ways somebody could do this. In the other, the question was posed

to the whole group and the whole group worked on the question. I wonder if you had a reason for the pattern; if doing it both ways had some advantage?" Later Dr. Shaffer continued,

"In one group the teacher asked the children how they could get money to go to the theatre if they didn't have money. And they were brainstorming ways. A second way was, what are two things Billy could do to earn money. Which is another question related to the first in that one of the kids was asked to answer individually by drawing two things. (Note) They're also changing content which I thought was excellent."

In another vein, Dr. Shaffer added, "What is the purpose of the three groups? Are they teaching the same lesson at a different time? This is the impression that I got. That you had three groups and they were all teaching the same lesson at different times."

Open Ed Model

Consultants to the Open Ed model were Dr. Lilian Katz, Professor, University of Illinois; Dr. Bernard Spodek, Professor, University of Illinois; and Mrs. June Stark, State Regional Service Center, O.S.P.I. Each of the above has considerable expertise in the area of open education, both from a practical and theoretical point of view. Each visited the project several times. The following are abstractions from their reports to provide an in-depth, non-statistical description of project activities.

Excerpts from Dr. Katz's First Visit

Dr Katz was asked, as were all of the visitors, to comment on the strengths and weaknessess of the program. In general, she declined to comment specifically on strengths and weaknesses because she felt she did not know it fully. Instead she made many remarks that reflected her own philosophy and approach to the open education approach as they pertained to the open education classroom. The following sectic attempts to paraphrase and abstract her many pertinent points in a way that may help others not only understand the program at hand, but also how an expert in the area of open education would judge a program based on this philosophy.

"When I first walked in it looked as if the children were busy. They seemed to be doing a large variety of activities. Many of the centers were not being used right away, but it seemed as if there was a great deal of freedom so that children could choose to go in; by that I mean there was a place for quiet reading in a separate room. I've seen so many open classrooms; this one looked as if it were well structured, well organized. The materials were at the level where the children could get them themselves without having to ask an adult to help them every step of the way."

"I asked to look at records, and felt they were very well kept."

"The children seemed outgoing and friendly and anxious to show me their work. I happened to be the same way so that was no problem."

"My big reaction, negatively, was that there were aides in there...that no more felt comfortable in that situation than the man in the moon. I have a feeling maybe aides should not be forced into a situation before they're ready, just as teachers should not be forced into closing their classrooms or opening it or anything else before they are ready."

"One of the people (A) who happened to be there the day I was there had been with the head teacher the first semester. Not only had she been there the first semester but she had done some preliminary planning with the head teacher before the semester even started. I watched (A) work with some of the children and it was interesting to note that when she first started she seemed very directive with the children and all of a sudden she put on a different hat and she was starting to ask good questions that made the children think...(I) think (A) is in a more structured classroom, now, but she made that transition beautifully...The contrast between (A) and the other aides was even more apparent and they were just not understanding."

"(You) won't ever see two classrooms that are the same. All depends on the personality and the interests and knowledge of the teacher...."

Evaluator: You've seen some schools in England and you've seen some schools in this country.

Katz: Not a lot.

Evaluator: Compared with those that you've seen, how would you rate this?

Katz: Can't answer that. Not on the basis of one visit. I could tell you but I don't think it would be very fair. I would say this...it was impressive because I've seen so-called open classrooms and there is no learning going on and they are fairly chaotic. None of that existed (here)....

Evaluator: How would you characterize the feeling in the classroom?

Katz: Felt there was a great acceptance on the part of the teacher for the individuality of the child. Guess what I am really saying is that I was impressed with the classroom compared to some of the others I've seen...Apparently there had been some ongoing, long term, activities at some time during the semester. Most of them had already terminated and properly so as it was near the end of the semester.

Evaluator: Did you notice any outstanding or anything that struck you as good?

Katz: Yes, didn't think children were forced to be in a group if they didn't want to. Again, we're back to (the) stress on respect of individuality, groups seemed to form naturally, children were permitted to be by themselves and not pushed....

Evaluator: One of the problems I think with open education is how does a teacher who is used to a closed classroom open up. What do you suggest beyond "when a teacher is ready she'll open up?"....I think there's enough information in the literature which suggests that if you have developed certain habits...you have to first undo your old habits before you learn new habits....

Katz: I only know some empirical evidence of teachers who have taught school for 15 or 20 years who have some magnificent open classrooms, and they were traditional teachers. I think opening up a classroom

> is not learning new sets necessarily, it's a new philosophy and its an inner growth within someone who begins to ask questions, who feels stagnated, who isn't enjoying the job, who really feels that they want to change, and enjoy what they're doing and enjoy the children and fit the needs of the children better. Start to ask questions about how to do it. It's a gradual, slow process. I don't think that a beginning teacher, with rare exceptions, is equipped because of their own stage of development to have a completely open classroom...The kind of job being done downstairs is so multi-faceted that I don't know how one person can do it. A head teacher in England does not have the responsibility of a classroom of children...(The head teacher) is doing more things than anybody that I've ever seen.

Dr. Katz - Excerpts From Last Visit, May 1973

"It's hard to know where to start. I guess I've been here four or five times. I've tried each time to stay pretty much the whole morning. The most important thing is the difference between the two semesters. It's just dramatic. The first semester they really had things going. It takes time to get something like this started and they really had the basic pattern of involving the kids and developing their abilities very nicely. Then with the new set of trainees and the new semester, it just isn't the same. Even today, it's not the same. The children are into things which are much too adult-oriented. The trainees this semester haven't really gotten the picture of how to interact with kids the same way. They're friendly and nice, but they come on too strong...."

"On the whole, looking at the two semesters, (the head teacher) has done an absolutely superb job getting things going. That's very difficult to do. She understands it completely, and she really knows what she's after. The whole idea of carrying the load of developing the classroom, and the kids, and the trainees, is much too big a load but she doesn't think so. I think it's too big a load...."

"Another big constraint she works with is the size of the space which is much too small. She does very well. I don't know how she can do it cause they're on top of each other, the adults and the children. But given those constraints she just does her job superbly well. She and I have talked a couple of times about holding the kids to the standards of work. There's too much writing of the children's that's sloppy. She's tried some things on that, but basically she has to get the trainees to. That would be one of the things she should develop next time...."

"The things that need to be done are working on the quality of the children's wor Another thing has to do with the authenticity of what the children do. Trying to increase the standards of what they're doing is genuinely responsive to where they are and what they're about, which goes along with what I was saying about concurrent validity. But in every other respect she's really got it. The kids have been doing a lot of writing, and this is another place where (in) most programs the kids don't get around to writing.

Evaluator: Do you think it's a little early or is it about right?

Katz: ...For some of them it might be. You can't make a general statement; some of those kids are certainly ready to do it. So...as long as you don't require it of everybody you're all right....

There are a couple of kids and (Y) is probably a best example of it He has a number of problems. We've talked quite a bit about him. It really requires very fine clinical skill to get what he thinks is expected of him. How to modify those expectations that he can provide, for a type kid of his age (is a problem). He could have been probably into some things that would have challenged him a bit more, but I've seen tremendous growth in terms of self assurance

Evaluator: Are there a couple of kids who stand out in your mind who seem optimal?

Katz: (T) is much more relaxed and much more tolerant than the other children. Remember I'm basing this on very few observations. One little girl, I believe her name is (D) was pretty clinging. You can hardly spot her now. She may have her moments. That's a tremendous growth....

The other thing that (the head teacher) and I have talked about is a very hard thing and also another one of those things that people have. How to keep the activities more authentic instead of phony or contrived....Seems to me these kids could have been involved in studying carefully the changes in the environment in the last four weeks. We went into a very dramatic spring, cause we do around here. There would have been direct observation of events in the immediate environment. So the important thing about that authentic problem is that it has what Bill Rohwer calls a concurrent validity Something that they are learning to observe at school and can go on observing when they go home. Concurrent validity is extremely important. Same with all the measurement things that they might have done. You can measure anything with any unit. If you do that in the classroom, then you do that when you go home. You want to avoid activities which are only useful in school....

Too many adults in the room. Today there were five of them with twenty-two children. That's too many. It's very difficult for the children to carry on and develop something with that many adults. The tendency is to do something. What might be done, if you still have a large number of trainees, is rotate them so that some of them are observing, so there are less adults in the room. It's a very small space to have so many adults. She basically got the idea of organizing the classroom, encouraging the kids to go on and elaborate on various activities.

There were all sorts of places where it got too adult-oriented. They had a bank this morning. I would have let it emerge on a much more imaginative level. I wouldn't have encouraged them to use real money....The restaurant thing they were doing fell apart becaus

Katz: ...For some of them it might be. You can't make a general statement; some of those kids are certainly ready to do it. So...as long as you don't require it of everybody you're all right....

There are a couple of kids and (Y) is probably a best example of it. He has a number of problems. We've talked quite a bit about him. It really requires very fine clinical skill to get what he thinks is expected of him. How to modify those expectations that he can provide, for a type kid of his age (is a problem). He could have been probably into some things that would have challenged him a bit more, but I've seen tremendous growth in terms of self assurance

Evaluator: Are there a couple of kids who stand out in your mind who seem optimal?

Katz: (T) is much more relaxed and much more tolerant than the other children. Remember I'm basing this on very few observations. One little girl, I believe her name is (D) was pretty clinging. You can hardly spot her now. She may have her moments. That's a tremendous growth....

The other thing that (the head teacher) and I have talked about is a very hard thing and also another one of those things that people have. How to keep the activities more authentic instead of phony or contrived....Seems to me these kids could have been involved in studying carefully the changes in the environment in the last four weeks. We went into a very dramatic spring, cause we do around here. There would have been direct observation of events in the immediate environment. So the important thing about that authentic problem is that it has what Bill Rohwer calls a concurrent validity Something that they are learning to observe at school and can go on observing when they go home. Concurrent validity is extremely important. Same with all the measurement things that they might have done. You can measure anything with any unit. If you do that in the classroom, then you do that when you go home. You want to avoid activities which are only useful in school....

Too many adults in the room. Today there were five of them with twenty-two children. That's too many. It's very difficult for the children to carry on and develop something with that many adults. The tendency is to do something. What might be done, if you still have a large number of trainees, is rotate them so that some of them are observing, so there are less adults in the room. It's a very small space to have so many adults. She basically got the idea of organizing the classroom, encouraging the kids to go on and elaborate on various activities.

There were all sorts of places where it got too adult-oriented. They had a bank this morning. I would have let it emerge on a much more imaginative level. I wouldn't have encouraged them to use real money....The restaurant thing they were doing fell apart becau

it was too adult-oriented. The adults laid a lot of things on the kids, mainly in ordering, eating and paying. Some of the kids are ready, but you have to wait and see what things are involved--go into a restaurant. This tendency to set up projects for groups. I can see how they can do that at this developmental stage in the open classroom. They need to go beyond that, a very delicate balance between providing things for individual children and knowing individual children and yet maintaining the group life....Was saying to (head teacher), it's really a fine art. It just takes time. As soon as you're moving children in groups around from one thing to another, you'll want to think about it carefully....That's a very fine clinical skill that must be developed. What kind of incidents: there was one this morning where one of the kids (Y) spilled hot chocolate. A trainee who was involved had to change his clothes, but she was (also) very concerned, and I think rightly so, about his fear. He apparently showed in the way he acted that he was afraid of getting into trouble. What she didn't do--as far as I can tell, because she didn't know how to do it--was to help him with that fear. If she knows him well enough, she could talk to him; she could make some tentative statements that he could either agree or disagree with, like, 'You're afraid your mommy will be angry'. If you make that statement with sufficient tentativeness, then the child can say, 'Oh no, it isn't that....' Those kind of clinical skills are essential if you are going to do this kind of teaching...

They're worried about (one of the little girls in the class) because she won't settle in on anything and she tends to jump around. You have to be very careful about children like that in this kind of classroom because it leaves itself wide open to this sort of wandering. You must do something about it because the ability to stay in something is an important skill, aptitude, or disposition. We talked about it a little bit and they were saying, 'Well this child wanted to,'--one of the activities she wanted was a beauty parlor. Fine. They were going to develop that. That was going to be a way to get this child absorbed in the future. Well, they did it and decided to squeeze in a little math and a little reading and so forth--'learning'. They call it 'learning'. So they put in some kind of a datebook so she could take appointments. They ruined it because what this child really was after was the opportunity to work with straight long hair....

In general, I'm just tremendously impressed with what (head teacher) accomplished. It's very hard, she knows what she's trying to do; she knows where she wants to go; she knows where she's lost ground or gained ground. I have complete confidence in her....

Evaluator: I perceive a problem. On the one hand, there are too many adults downstairs, yet I try to envision if (head teacher) herself, were alone down there, let's say with 25 kids. How would she keep track of everything, set standards, do all that she does?

Katz: I'm not sure she would ever get them done. That's hard unless the children have had some experience...but I don't think it comes down to between five people and one person as an optimum arrangement....

Evaluator: In England in the classes I saw they had just one teacher for betwee 30 and 40.

Katz: They are different (children). And they're different adults. The expectations are very different. I used to think at first that it wasn't so great, but the more I think about it, the more I've seen, the more convinced I am that I have to deal with it. We have a different starting point. You do know, I'm sure, that the English teachers complain bitterly about the size of their classrooms. It's not something they advertise; it's not a matter of choice....

It's certainly one of the best implementations I have seen. I've seen quite a few people try to do this. I think (the head teacher) is ranked as one of the best....

Evaluator: So you'd say if someone would say what's this program, you'd recommend that they see it as a good example? But, maybe there might be better ones around the country?

Katz: I don't know where they are. It's not a perfect example, but I think there's a lot more that has to be done. Which I've mentioned to you.

Evaluator: So you might say it's somewhere in the forefront?

Katz: Oh, yes.

June Stark, April 1973

Ms. June Stark is a representative of the State Regional Service Center with several years of service in the State Regional Service Center for the Gifted.

Ms. Stark began her report by indicating that there were several levels of open classrooms, one of which occurs when the teacher operates the classroom informally--integrating many ideas together. She indicated that there were many integrative activities going on in the open classroom--activities integrating math, science, and reading. Among these activities were the banking and restaurant activities. She indicated that many things were happening such as the menus that had been prepared for the restaurant with items priced differently so that change had to be made. One area that presented a problem for her was the concept of going to the bank to borrow money on which to eat. The implication was that the children should have placed the money in the bank first before drawing on it.

Another item that attracted her attention was the head teacher's hope that some of the children might recognize that someone else wanted to buy something but did not have enough money to purchase it. Her interest was focused on how the children would respond to this problem--whether or not the children would share.

Ms. Stark indicated, as did many of the other visitors, that she wishes she knew how a problem would resolve itself tomorrow. The idea being that, in an open classroom, things are never resolved neatly at the end of the day. In that way interest and problem solving are carried over to the next day and next week. Thus, it is important for the visitors and the teacher to be concerned about where does the class go from here, and how does the teacher encourage and support this developing process without fully imposing her own adult viewpoints on the children.

Ms. Stark commented that she "was glad to see that there were some children who were just being left alone." This comment was made in the context that since there were actually two activities going on at the same time, establishing an open classroom model and teaching graduate students, there was a lot of one-on-one attention. Thus, it was important to her and to the other visitors that the children had time to sit and think. Continuing in the same context, she felt that it was important that the teachers 'extend' and 'pick up' on the children's ideas, but it seemed to happen more here than in a typical Open Ed classroom because of the low teacher-pupil ratio. The reverse problem, that the teacher fails to pickup on an idea, is what typically happens in the usual Open Ed classroom.

Ms. Stark commented, "One of the most interesting and exciting things that happene to me this morning was the conversation that I had with the head teacher...who said that she had not been bored this whole year. There were times when she felt swamped and had problems, and didn't know how she was going to solve them. But, it had been an exciting year. The head teacher offhandedly mentioned the open classroom as offering as much opportunity to the teacher in some ways as it does for the kids. Well, somehow that hit me, because I think (we) have all kinds of data and books about how open classrooms actualize the child's potential and allow them to develop themselves; but, I thought in terms of Maslow's self actualization of teachers. Conventional class rooms don't allow that to happen. Teachers can have all the potential in the world, but there is something about the rigid structure and time schedule in whole bits that would never let that happen."

Continuing in the same vein, Ms. Stark noted the head teacher's reports of feelings of frustration at the beginning of the second semester when the new set of trainees didn't have the grasp of the open concepts, and were not able to implement them as well as the students of the first semester. The anticipation was that it might iron itself out in a few weeks but it took longer than that. The head teacher had indicated that she hoped that next year something could be done to cut down on the time Ms. Stark said, "I don't think that it will...I think there is something about the professional training in the area of special education which is kind of opposite to... a different ballgame than open education and in two or two and one-half months, if you develop teachers to the place where they can function effectively in this (open) kind of class, I think that remarkable. My experience in public schools has been that if you can do it in three months - wow, that's great."

At this point the evaluator pointed out that many felt that the head teacher was a unique teacher and that this year's group of trainees seemed to be a good group. Ms. Stark reported that the head teacher had also made similar comments about the trainees and commented, "that some people seem instinctively to have the human qualities which equip them to be classroom teachers. I think we need to have a lot more identification done and research into that kind of thing at the college, at teacher training levels.

To mesh that kind of people with the kind of classroom that they will be going into. I do think there are some very good quote 'traditional or structured teachers'."

In commenting on and comparing with her previous visits, Ms. Stark said that, "I see the same strengths that I saw before. I see a room which allows children to make lots of decisions for themselves. I see a room that you sense is a happy room, have a good feeling when you walk into that room. It's well organized as a physical layout. (The head teacher) has taken some space that has some real disadvantages and I think she has maximized the space. She has an adequate supply of things to work with." But, she continued, "the items are not expensive, they are what most teachers could have with the exception that there were more books for children than most teachers that I knew would have."

Changing to the area of fine arts, "I saw some very good art on the walls, (but) not all that much. And I still think that the head teacher has made a judgment in priorities that some of the fine arts kinds of things (do) not (provide) as valid an educational experience as the more cognitive kinds of things. There was an easel there but it didn't look like it had been used for a while. I think that the way time is structured, even if children were so included, there probably isn't that many blank spaces."

In commenting further about the concept of structure of time, Ms. Stark noted the "everyone does become involved in a reading activity sometime during the morning and they do have this waitress-restaurant-banking thing which takes some time when children might have done this (art) kind of thing. Also (the head teacher) has had quite a bit of training in movement that she feels comfortable with...but space problems have probably kept her from it. Also, she has had to make a professional judgment (not to do so much art) which I respect. But I think it also is reflective of the kind of judgment most American teachers would make."

Evaluator: It's not quite the fine arts approach that we saw in England. It's maybe a product of our own.

Ms. Stark then commented on the books that were available, not only in the reading room but in the larger space near the plant activity, which she liked very much. The comment was that "maybe the books near the plant activity, which had to do with the observation of and the recording of plant growth, should have been limited to books on plants." Then she indicated that any printing, such as in plant records, that was done should have been of better quality so that is would provide a better model for the children.

Ms. Stark also described at length an incident that one of the trainees had reported to her. In the incident, two little girls had given another girl a snide-type of present that made the recipient feel bad. One of the teachers took the little girl aside and talked with her. In the meantime the other little girls themselves felt bad and gave the child another present and she became involved in an interactive activity. The important part of the whole interaction was the attention to the affective needs of the children. Ms. Stark further noted the head teacher "doesn't take sides with them but somehow seems to make something else out of it."

"Just in talking with her about something else, I was again struck by her ability not to moralize to kids. She allows them to clarify values, but she's not one to inflict hers on them. That again is rare teaching."

Dr. Spodek - Second Visit, May

Dr. Spodek visited the class about five days after Ms. Stark did. He provides a report that is similar to that of Ms. Stark, but the emphases are slightly different.

"In terms of my observations this morning, I was a little disappointed and I told her (the head teacher) about it. (I) think what happened in terms of movement from last time to this time is that the class has improved from a technical level, but (I'm) not sure that its become more open. (The head teacher's) reaction is that some of the things that she's doing today were not more open but that's a function of what they did and some of the pressures that she was feeling (internal). What I saw down there, the restaurant, bank, seems to have become a kind of an adult set-up. I talked with (the head teacher) in terms of how the ideas came and how do the kids know how to operate in a restaurant. The ideas came from the kids. But, essentially the teachers took it over. One of the tests of that is the only way that kids can go on is with lots of teacher direction in every one of the settings with teachers telling the kids what to do. Nowhere could a teacher pull out and then kids continue. I tried that by pulling (the head teacher) out...How do the kids know how to operate in a bank; how to operate in the future. Again, the source of knowledge is the teacher; they haven't operated in terms of going out and abstracting out of the environment, operating on that knowledge and constructing it. Reconstructing it themselves which is what should happen...if it were child-oriented."

"Probably those kids that would be involved would be those interested in doing it and others wouldn't. It would be a lot sloppier, a lot looser, wouldn't have all the outcomes that is going to have. The level of discourse would be the child's level; right now the level of discourse is at the adult level....Do have integration; lots of things are being tied together. So what would my criteria be? Locus of control, who controls the setting?"

"It's the teachers, not the kids, who are making the rules and the teachers, not the kids, who are enforcing the rules. It's not one kid saying to another, 'Hey, you're not doing it right.' ...(The head teacher) feels badly about it. Said was the wrong day to come in. In a way maybe it was good because it may be a caricature of what is going on otherwise."

"...The questions I put down for myself is whose view of the world is being affected in the activities down there. It seems to me that if you look at open education, you can evaluate it in terms of surface structure and deep structure using a Chomsky analogy. In terms of surface structure you've got all the right things there i.e. the room setup; it is a lot neater and cleaner and better organized than it was last time...got activities, all the surface structure is right but in terms of deep structure, which is the nature of the interaction process, you've missed. I think part of that again is a function of (head teacher's) concern for coverage. She wanted this to be a real payoff -- OK, and this is good but I think what has happened is took over."

Dr. Spodek then commented that there are three dimensions that have been used by James McDonald to describe different styles of education -- control, liberation, and social conforming. In the control dimension, one tends to specify behaviors, objectives, in social conforming, one tends to think of the "traditional nursery school, kindergarten, primary grades;" liberation tends to "be what you draw out from the kids how to help extend in terms of his goals and purposes....One problem you get into as you look (at the open classroom) the surface structure is liberation, but the deep structure is control."

Later, isolation was pointed out as the problem, not only of the teacher in the open education model classroom, but of any teacher attempting to set up a new program. Teachers in open education need to be able to discourse with observers, peers. The point was made that the head teacher was not a social isolate, but more of a professional isolate.

"One of the problems of the isolated teacher is retaining the confidence that her approach will work. The point was made that in one program when a teacher had been able to stick with her approach, the children were 'exploding into reading'...I think that it takes some times of seeing this and how it happens to have the faith that it is going to happen. Somehow you are afraid that maybe it's not going to work. Until you've gone through it a few times...You don't achieve a model like this in one year. I think that she has done awfully well. I think that (the head teacher) has probably gone about as far in one year as any open education teacher that I've seen. I think the next steps for her are not technical steps--(but) really a reconstruction of her own thought and approach.

Next Dr. Spodek commented on the problems of evaluating an open education approach. In particular he notes the variability of the open education classrooms. "They seem to vacillate more than other classrooms from open to more traditional and back again. Thus the need for more than one sample." In discussing how this might happen, he pointed out how the head teacher had repeated her concern about the end of the year and how "if she had had more time she would have done this and that." "I think the real concern for the kids has 'suckered' her into it (the concern for covering all the 'needed' things by the end of the year). I think that she is aware of it. I'm not judging as good or bad, but saying that it happened."

Dr. Spodek concluded with a discussion of the problems of observing and evaluating open classrooms, pointing out that the first stage was when we tried to describe the characteristics of open education. "Now we have gone into a number of observational scales. The real problem still seems to be to get observational techniques that get at the process of what is going on, the deep structure."

Social Interaction

The three different model programs were expected to present different social interaction patterns on such dimensions as the amount of time spent on activities and the different styles of teacher-pupil interaction patterns. To assess this area, a systematic observational procedure was used by project personnel. An expanded version of the procedure is presented in Appendix J . Briefly, the procedure uses a scanning technique whereby each child in the classroom is located and the type and quality of his social activities are recorded according to a predetermined format. A procedure that had initially been thought to be appropriate was tried and found to be ineffective in demonstrating differences between the two programs. Subsequently, a new instrument was developed with the first reliable data not available until February, three months after the classes were first started. The results of this data are used for the analyses. Further, to illustrate the difference between a pretest measure and later measure, the data is classified as "Interim" and "Post" rather than "Pre" and "Post".

The variables which were developed to help illustrate differences in classroom programming are divided into six broad areas: I - Child Independent; II - Child-Chil Interaction; III - Teacher-Child Interaction; IV - Small Group; V - Large Group; and VI - Quality of Interaction. The quality of interaction was drawn in part from Amidon (1967).

To collect the data, the observer, who had been trained in the use of the instrument, would position herself where she could observe as many of the children as possible in the classroom. She would then focus on an area of the room (as described previously), identify each child in the area, and rate his social behavior. After rating all the children in an area, she would then direct her attention to a new area and rate all children there. If two children were interacting together, they were rated at the same time. The classroom list was continued until all children had been rated. After a brief pause, the process would be repeated until one hour of data had been collected. All data were collected on a planned basis that was designed to reflect the classroom on different days, times of day, and days of the week.

Analysis of the data was obtained by dividing each of the scores on a child by the total number of observations made on that child. (The number of observations differed because of absences due to illness or weather.) The resultant scores were then transformed ($\phi = 2 \arcsin \sqrt{x}$) and analyzed through a 3 x 2 x 2 BALANOVA to determine to what extent there might be differences in social interaction patterns based on class model, SES and variable.

The results of the BALANOVA are reported in Table 10.

Table 10.

Results of the BALANOVA of Social Interaction of the Three Models

Source	df	Mean Square	F Ratio	Prob.
A - Classes	2	2.054	104.44	.00
B - SES	1	.003	.15	.70
A x B	2	.033	1.67	.20
D - Child	51	.020		
C - Variables	25	2.582	38.09	.00
A x C	50	.773	11.41	.00
B x C	25	.092	1.35	.11
A x B x C	50	.059	.87	.72
C x D	1275	.068		

Differences between the main effects associated with the social interaction pattern of the classes was significant (P = .00) as was the main effect differences associated with variables (P = .00). Of overriding importance, there was a significant class by variable interaction (P = .00).

It had been anticipated that there might be a significant difference in the way children from Hi as compared to Lo SES backgrounds might function in the different classrooms. Thus, there might have been a significant A x B interaction, but the result did not reach the level of significance (P = .20). Similarly, it was expected that there might be a difference in the way the children of Hi and Lo SES functioned socially, which would have been indicated by a B x C interaction. Again the result did not reach, although it approached, significance (P = .11). Since the children came from different backgrounds, it is possible that differences had existed among the children, but had disappeared by the time the data was collected, during the second part of the school year. Such a finding would have been important along with the finding of a change to a more homogeneous pattern of interest. On the other hand, there may have been no differences to start. Only a future study might provide the necessary data. Some support for the belief of a change in the child's behavior, however, remains because of the teachers' comments that the children did indeed make considerable changes during the first part of their school year.

Interpretation of the results beyond the general statements above is made difficult by (a) the large number of variables and (b) the problem that when each child's arcsin score was derived from the often small N for a child, there was an apparent tendency to understate the score. Since the purpose of the study was basically for descriptive and heuristic purposes, it seemed appropriate, once the basic findings had been assessed from an overall point of view, to present the data in a percentage format. This belief is supported because the differences, when they occur, are dramatic enough to not need the massive supporting statistical approach that would be required if differences were smaller. Further, it is possible to focus on the likely educational significance of differences as well as the statistica significance. Thus, the percentage data is reported in tabular format in Table 11 and graphic format in Graphs 3 and 4.

To develop an understanding of the data, it seems important to focus first on the general differences that did occur. It was the intent of the project to establis classroom programs that differed from each other and yet fit a theoretical model. In general, these goals were well obtained. Note, for example in Table 11 or Graph 3 the important differences in variables 1, 12 and 14. Basically these differences illustrate that the children in the Open Ed model classroom were engaged in independent manipulative behavior 18.6% of the time while the SOI children were engaged in similar behavior only 4.5% of the time. Of interest is the fact that the Contrast children were engaged in similar behavior an amount of time, 18.6%, that was identical with the Open Ed classroom. Looking further, it can be seen that the children in the SOI classroom were engaged in small group activities 30.5% of the time as compared with only 5.7% in the Contrast and 3.7% in the Open Ed. A third obvious characteristic difference reveals that the children in the Contrast groups were in large group meetings, attentively, 25% of the time while the SOI were in a similar activity 14.4% and the Open Ed only .4%. Comparison of the three groups in the Social Interaction Scale, then, clearly demonstrates differences between the rooms on these major variables.

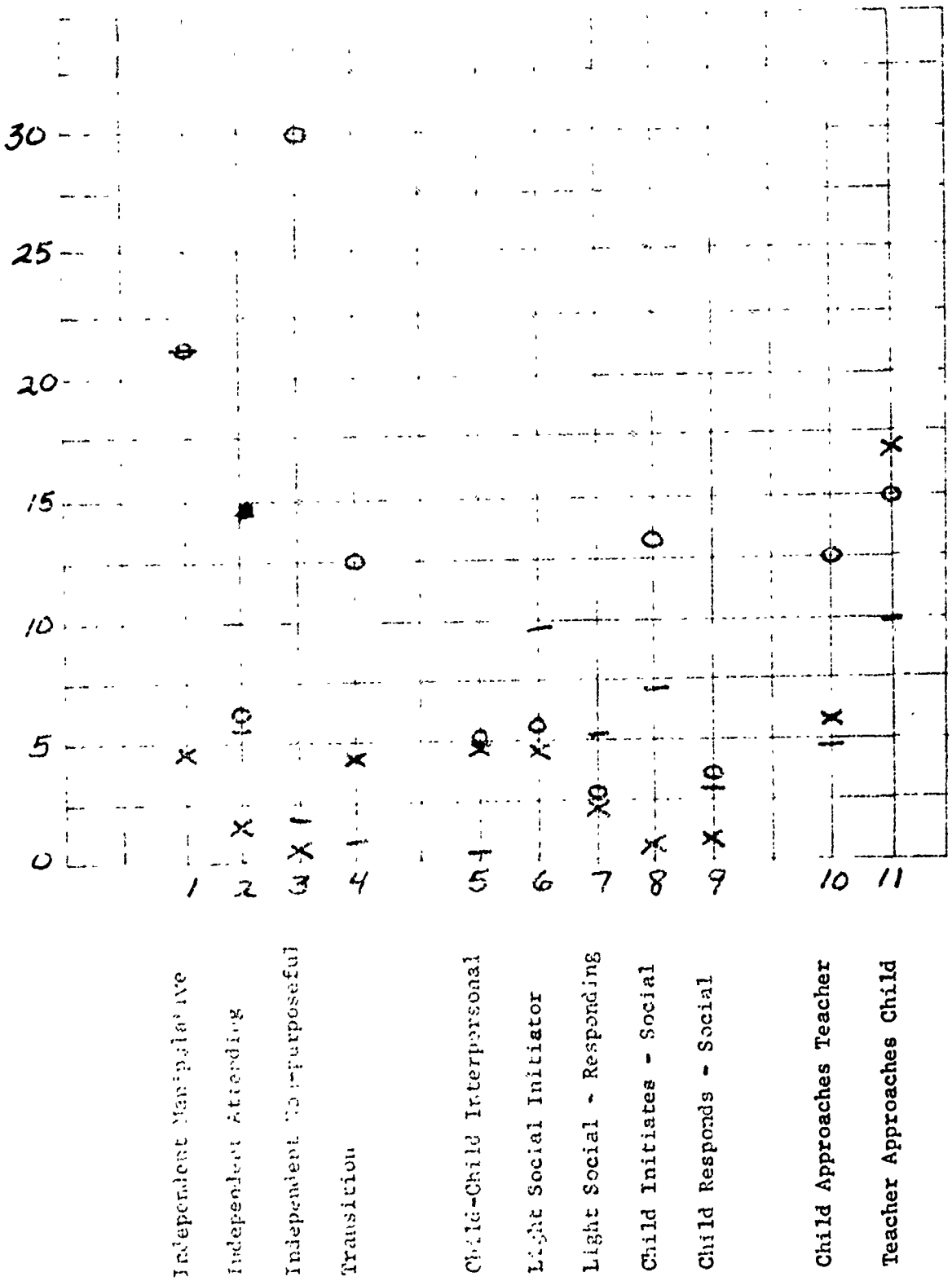
Table 11.

Percent of Observations in Each Cell Based on Total Number of Observations Per Class

	Open Ed	SOI	Contrast
	N = 20	N = 19	N = 18
1. Im Independent manipulative	18.6	04.5	18.6
2. Ia Independent attending	06.1	01.5	05.7
3. In Independent non-purposeful	03.0	00.5	01.9
4. Transition	12.5	04.2	00.8
5. CP Interpersonal Interaction	02.4	02.2	00.0
6. Total Light social-initiation	05.7	04.4	09.5
7. Light social respondent	02.7	02.2	05.3
8. Child-Child Manipulative (Init.)	13.5	01.8	07.2
9. Child-Child Manipulative (Respondent)	03.6	01.1	02.7
10. Child → Teacher	12.5	05.6	04.9
11. Teacher → Child	14.9	17.0	10.3
12. Small group attending	03.7	30.5	05.7
13. Small group - non-attending	00.3	05.9	00.0
14. Large group - attending	00.4	14.4	25.1
15. Large group - non-attending	01.8	03.6	2.2
16. Accepts feeling	00.4	00.3	01.1
17. Praises or encourages	05.0	08.5	09.9
18. Accepts or uses ideas	02.3	02.3	01.9
19. Asks questions	07.2	23.0	12.2
20. Lecturing	04.3	17.5	11.4
21. Giving directions	08.9	15.1	07.6
22. Criticizing or justifying authority	00.8	03.2	02.3
Total Number of Observations	776	730	263

Graph 3

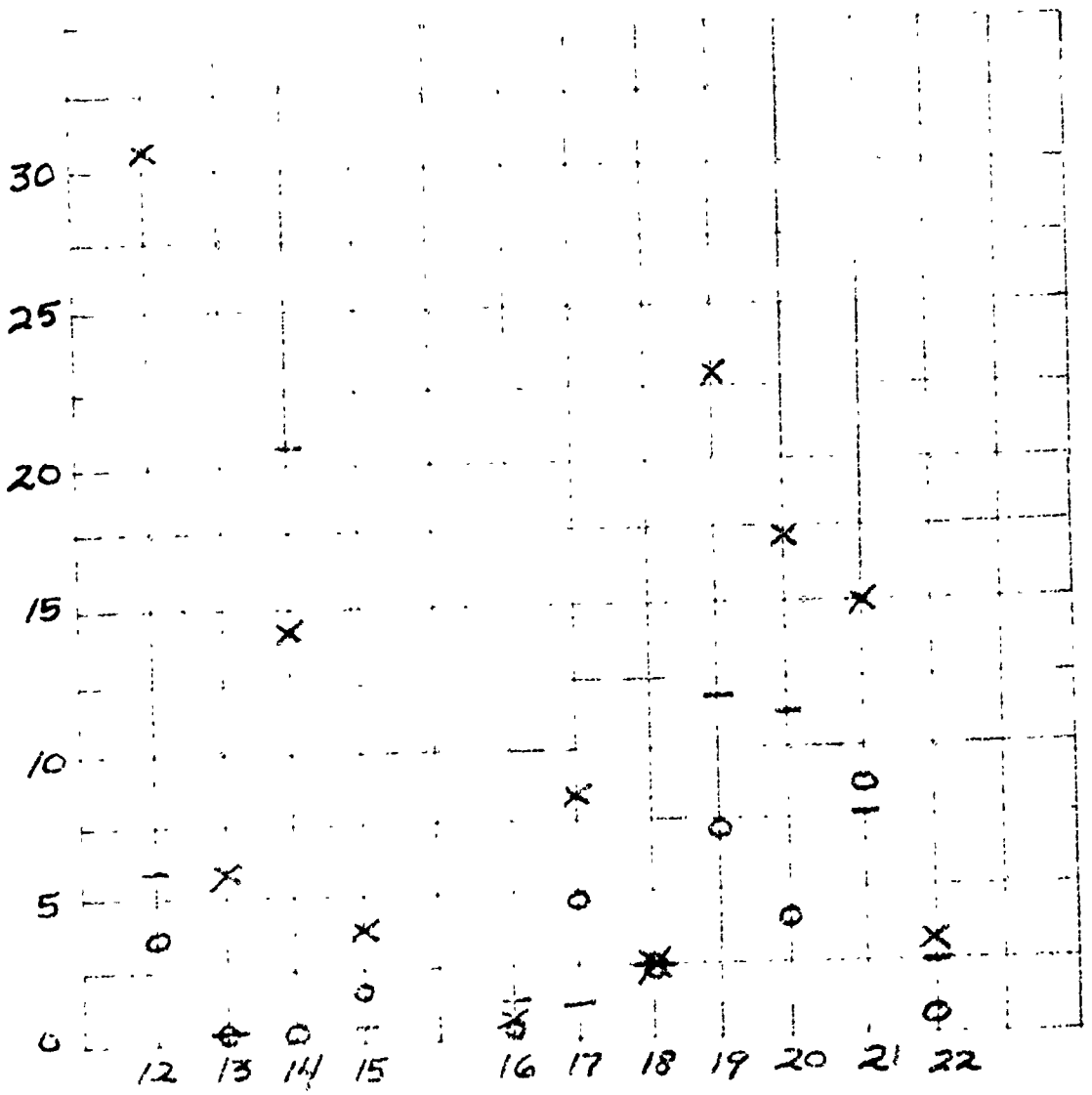
Percent of Social Interaction Scores in Each Category



X = Open Ed
O = SGI
• = Contrast

Graph 4

Percent of Social Interaction Scores in Each Category



Other concomitant characteristics of the classrooms were also of concern to the project. The following section provides a more detailed look at each of the variables which help to highlight some of the differences between the programs.

Child Independent Behavior

The first area where there is an obvious difference is in Section I - Child Independent Behavior. The percentage score for children engaged in independent manipulative activities in the Open Ed classroom is 18.6 as compared with the Contrast group score of 18.6 and the SOI of 4.5. Thus, there should be differing social climates in each of the different classroom models.

Within the Child-Independent area, the dimensions of "independent attending," "independent non-purposeful" and "transition" categories reveal additional differences. The Open Ed children engaged in significantly more independent activities than the Contrast group, while both differed from the SOI group. The SOI children were always least involved in this area except in "transition" where their scores were higher than that of the Contrast group. Children engaging in independent manipulative behavior, such as playing with a toy, working a puzzle, building a model or looking at a book were involved in a typical activity in the Open Ed and Contrast groups.

Child-Child Interaction

The next dimension concerns the child-child type of interaction of a social nature. Of interest here is that more social type interaction goes on in the Contrast classroom, 14.8% as compared with 10.8% in the Open Ed classroom and 8.8% in the SOI classroom. More children talked with each other in the Contrast as compared with the SOI classroom in a ratio of almost 2-1. One of the problems of interpreting data from this area was created when the initiator of an action could not be ascertained because the observer began taking data in the middle of an ongoing activity. Category 5 was usually marked if the observation occurred at a time when the initiator could not be ascertained. If it was believed that the initator or respondent could be ascertained, then the score was placed in categories 6 or 7. For some reason as yet unclear, the target children tended to be classed as initiators almost twice as often as they were classed as respondents. Thus it seems best to view results in this area from a total point of view, rather than placing too much emphasis on the sub-sections. Nevertheless, the amount of social interaction is obviously greater in the Contrast group than the SOI.

Child-Child Manipulative

Children also interact while in the process of building something rather than talking to each other. In this instance the Open Ed and the Contrast group reverse positions, with the Open Ed children working together much more (17.1%) than the Contrast groups (9.9%). The SOI children (2.9%) worked on joint projects least. Again there seems to be some discrepancy in the recording procedure, in that more children are listed as initiating an action rather than responding. The reason for this result is not clear. Thus, again, a total score in this area is considered to represent the best description of the classroom.

Child-Teacher Interaction

In every classroom there is considerable interaction between children and teachers. Who initiates this action, however, is of considerable concern to the proponents of the Open Ed approach who believe that their programs should be one in which a child should be as free to approach the teacher as the teacher is to approach the child. Variables 10 and 11 indicated that this goal was essentially met in the Open Ed room with children observed approaching the teacher 12.5% of the time while the teacher approached the children 14.9% of the time. Thus there is an almost equal ratio of approach behaviors. In the SOI classroom, on the other hand, the teachers approach the children almost three times as often as the children approached the teacher. Teachers then would appear to be in control of most approach behavior. The Contrast group lies somewhere between the other two with the teacher approaching the children almost twice as much as the reverse approach. Qualitatively then, all three classrooms are quite different on this dimension.

Small Group

Participants in small group activities was a major goal of the theorists of the SOI model. The results demonstrate a considerable difference between the three approaches with the SOI children in small groups 36.4% of the time while the Open Ed children were in one 3.9% and the Contrast group 5.7% of the time, Thus, there is considerable agreement between the intended characteristics of the theorists and the actual implementation of this model.

Large Group

The Contrast children were in large groups more than either of the other two groups with 27.4% of their time devoted to this endeavor. The SOI groups are next with 18% of the time while the Open Ed groups were in large groups only an indicated 2.2% of the time. Again each classroom fits its intended characteristic.

In summary, the model classrooms differ greatly from each other on a number of variables but, even more important, they also fit with the intents of each of the models. Thus, if differences occur between classrooms, some of these differences may be attributed to differences in the models. To characterize, the Open Ed class might be described as high in independent manipulative behavior and child initiation of interaction with the teacher and others; while the SOI contains many "small group meetings" and the Contrast group "large group meetings" and "light social interaction."

Quality of Teacher-Child Interaction

Classrooms might also be expected to differ in another way, that of the quality of the interaction between teacher and child. One way to compare classrooms is to look at the gross number of teacher-child interactions. As can be seen from the quality of interaction results, children in the SOI classroom are more frequently the recipients of teacher behavior whether it be "asking questions," "lecturing," or "giving directions". Much of this teacher behavior, however, is produced when the child is in small groups. Thus it may not be directed specifically toward the target child. The children in the Open Ed classroom, on the other hand, are the least frequent recipients of teacher behavior. The quality of the behavior, however, may be more important in the Open Ed classroom because when a child is the target, it is most likely on a one-to-one basis. The effect of the child then may be more direct and more potent.

Another method of contrasting classrooms is to compare across models on one variable at a time. Such a comparison indicates that there are no differences betweer the models on "accepts feelings". Each of the models is near 0%. On the "praise and encouragement" dimension, however, there is a difference between the models with the SOI and Contrast teachers offering almost twice as much praise and encouragement as the Open Ed model. Such praise, however, may have differential effects if it is given on a one-to-one basis in the Open Ed classroom, rather than in the small groups as in the SOI, or in large groups, as in the Contrast groups. More information needs to be gathered to clarify the likely effects on the children. Still, it is clear that teachers choosing one of these two models may need to practice or make certain they frequently use positive verbal statements.

The "acceptance or use of ideas" dimension does not appear to define differences between the experimental and Contrast groups. The Open Ed, SOI and Contrast groups all have nearly equal scores (2.3, 2.3, 1.9). Although one might expect the Open Ed teacher to have a higher rate of acceptance of ideas, that did not seem to be reflecte in the scores.

"Asking questions" seems to be a preferred activity of the SOI teachers in that children in the SOI classroom were the target of more than three times as many questions as the children in the Open Ed class and 50% more than questions asked the children in the Contrast group. Further, the SOI teacher and the Contrast teacher used this category more than any of the other categories. The SOI teacher seems to be structuring and teaching through direct questions while the Open Ed show much less of this behavior. (For an additional discussion of the types of questions that were used, see section on Divergency of Activities, page 93.

"Lecturing" also discriminated significantly between the SOI (17.5%), Contrast (11.4%) and Open Ed (4.3%). It would seem that the attempt to use a game format in the SOI classroom was not as effectively implemented as had been intended since the children were subject to information giving so frequently.

"Giving directions" also differentiates between the classes with the SOI highest (15.1%), Open Ed next (8.9%) and Contrast lowest (7.6%). If one looks only at what is occurring <u>within</u> a class then another difference appears. The Open Ed teachers, when interacting with children, "gave directions" most of any category. Although it is probably tied with "asking questions," such behavior would seem to be consistent with a "give and take" teacher-pupil interaction.

"Criticizing or justifying" authority was at a low level in all classes. It was highest (3.2%) in the SOI class where the small group interaction may have establishec a relationship which lead the teacher to justify authority.

In summary, as was stated earlier, the preceeding scale was developed to help describe the classroom setting and to report on differences between the classroom models. Its results appear to be describing valid differences, although the reliability might not be quite as high as one would desire. Nevertheless, differences do seem to be occurring in the areas of independent activity, child-child interaction, initiation of teacher to child and child to teacher interaction, time spent in small and large groups, and differential quality of teacher-child interaction. Further, the differences are basically consistent with the "intents" of the program models.

Language Behavior

The language development of children is obviously enhanced by practice in verbal expression. The opportunity to describe, discuss, argue, label, interact, all contribute to the growth of the child in the areas of language and intellectual functioning. If children have a greater opportunity to express their ideas in one model classroom, as compared with another, then one might expect greater growth in the children.

Measurement Problems

Attempts to assess language behavior faced two major problems: (1) "What dimensio should be used to study the behavior?" and (2) "How could the behavior be assessed?" The answer to the latter question posed more problems than had been anticipated. Initially, the plan was to have observers record in the observation booth using audio equipment. Although the system was adequate for general observation, its fidelity was not sufficient to make the discriminations needed to take language samples. Eventually it was decided to have the observer sit near the children in the classroom and write down all spoken language. After some experimentation it was found that the observer could sit near a group and listen for the target child's voice. With a little practice the observer could hear the target child and remember sentences while watching other children in the group or others nearby. The observers were instructed to sit quietly in the classroom, neither smiling nor frowning and to emit no response to a child's questions or other overtures. The children quickly learned to ignore the observer so that valid language samples could be taken without disrupting the class. (See Appendix E for instructions and sample forms.)

The collection of data was affected by several factors. During the fall, when the program was being started, several techniques for collecting data and several sets of variables were tried, considered and found wanting. Finally, some usable data was collected in December. Since this data was likely affected by the holiday season, it was not considered in the final analysis. The data used in the final analysis was, therefore, called Interim or Post, based in that it was collected in February and early March or April-May. During the April-May sessions, data was also collected from a Contrast group in the Champaign-Urbana schools. The Interim-Post test is discussed first, followed by a three-group comparison.

The first problem, "What dimensions should be used to study behavior," was resolved, although not with total satisfaction, by attempting to respond to several pressures. First, although there are a variety of approaches to the analysis of language, from a linguistic point of view, it seemed most appropriate to select dimensions that reflected the major thrusts. Second, the dimensions that were selected seemed to reflect dimensions that most teachers would be familiar with and concerned about. Third, selection of the dimensions was made, when possible, because of their relevancy to typical classroom language. In all, eight dimensions of language were selected--mean length of response, number of utterance/unit time, and syntax of sentence (question, declarative, imperative, negative, expletive, and non-simple sentence).

An attempt was made to determine the total number of responses made by each child during a structured period of time. One hour samples were taken of each child as he engaged in appropriate classroom activities. The samples were taken in a planned

format designed to reflect the activities of the classroom first and the activities of the child second. Thus, in the Open Ed and SOI classroom, one-hour time samples were taken during the 9-10 a.m. time slot in one classroom and the 10:15-11:15 a.m. time slot in the other classroom on the same day. This pattern was reversed on the following day. In this way the effects of days of the week, hour of the day, activities, and weather were randomized between the SOI and Open Ed classrooms. As a result, these findings are believed to fairly accurately depict overall children's language behavior in the classroom.

Obtaining language samples for the Contrast group classes in the cooperating school systems provided a somewhat different problem since there was only time to make one 1-hour observation per child. As a result, conferences were held with the school principal and/or the classroom teacher to determine the overall pattern for a typical classroom day. A typical day might include about one hour of large group activities, such as "show and tell", story reading, attention requiring games, followe. by about an hour of small group learning through playing activities. Once the pattern was identified, efforts were made to take the one-hour language sample so that it would roughly represent the times the child would be engaged in the various activities Further, since the language samples of the teacher were typically obtained in the same day, a pattern would be one-half hour child, one-half hour teacher, one-half hour child, one-half hour teacher. Thus, although the collection of the language samples from the Contrast may have differed somewhat from that of the other two models, the differences would appear to be minimal. Differences between groups then are likely to reflect valid differences.

Analysis of the Data

Analysis of the data was made, when possible, based on the independent variables of classroom model, Interim or Post measure, and Hi or Lo SES.

Mean Length of Response

Mean length of response (MLR) is reported to be highly related to the development of the child's language (Brown, 1967; McNeill, 1966) and the complexity level of his sentence structure (Hatch, 1969). Differences between classroom models and gains during the study, then, might have been reflected in changes in the MLR of the children. The results of the assessment of MLR is reported in Table 12.

As can be seen from Table 12, only one comparison between the Open Ed Interim and the Control group (with the Open Ed Interim having the longer MLR) is statistically significant. Since these groups differ with regard to time of year as well as model and since other comparisons that might explain some of these differences are not significant, interpretation of the finding is difficult and might best be attributed to chance. At least one question is raised by the results. Typically, the MLR becomes longer with increased age. The first Open Ed MLR, however, tends to be longer than the second. These means, then, although not statistically different, trend in the wrong direction. Since there was a change in the classroom atmosphere, as reported by the outside consultants, the question might be raised as to a possible relationship between the change in the classroom atmosphere and the apparent change in the MLR.

Table 12.

Analysis of the Differences in Mean Length of Response

	OPEN ED			SOI			CONTRAST		
	N	$\bar{X}$	(S.D.)	N	$\bar{X}$	(S.D.)	N	$\bar{X}$	(S.D.)
Interim	19	4.86	(.729)	19	4.52	(.641)			
Post	20	4.63	(.955)	19	4.74	(.887)	18	4.41	(.525)

t Test Comparisons

		2	3	4	5
Open Ed Interim	1	1.45	.94	.64	2.18*
SOI Interim	2	--	.37	.88	.41
Open Ed Post	3		--	.43	.78
SOI Post	4			--	1.47
Control	5				

*$t_{p\ .05/df = 30} = 2.04$

Responses Per Hour

The results of the analysis of possible differences in number of responses per child per hour are reported in Table 13.

Table 13.

Number of Children's Responses Per Hour

	OPEN ED		SOI		CONTRAST	
	$\bar{X}$	(SD)	$\bar{X}$	(SD)	$\bar{X}$	(SD)
Interim	101.4	(39.8)	76.6	(23.9)	--	--
Post	90.6	(41.1)	83.5	(29.8)	58.8	(25.7)

(Table continued on following page)

(Table 13 continued from previous page)

t Test Comparisons

		2	3	4	5	N
Open Ed pre	1	2.72	.83	1.56	3.84*	19
SOI pre	2	--	-1.29	.79	2.18*	19
Open Ed post	3		--	.61	2.82*	20
SOI post	4			--	2.70*	19
Contrast post					--	18

* = $p < .05$

$t_{.975/d.f.30} = 2.04$

$F_{max\ (20.5)} = 3.54$

$F_{\frac{s^2_{max}}{s^2_{min}}} = 2.96$

As can be seen from Table 13, the children in the Contrast (post) group made significantly fewer responses during the time that they were observed than did either of the other two groups on both the Interim and Post test. Thus these Contrast children appear to have less opportunity to practice oral language in their classrooms. Such a finding is not unexpected since the higher teacher-pupil ratio in the Contrast rooms would reduce the likelihood of a teacher being able to listen to each child.

The only other significant difference that was found was between the Open Ed Interim group and the SOI Interim group where the difference of 24.8 responses per hour was statistically significant. As can be seen there were no differnces between the Open Ed and SOI Post measures ($\bar{X}_{\text{Open Ed}} = 90.6$, $\bar{X}_{\text{SOI}} = 83.5$). It would appear that the amount of spoken language in the two classrooms, then, became more equivalent by the end of the year. It is again interesting to note the apparent drop in the Open Ed number of responses per hour which is contrary to expectancy and similar to the finding on the MLR data.

The average range of the children's utterances in the classrooms was approximately as follows: Open Ed 25-200, SOI 36-140, and Contrast 17-110. An F_{max} test of the variances was conducted to determine if there were any significant differences. The obtained F_{max} of 2.96 was less than $F_{max\ (20.5)} = 3.54$. Therefore, these variances were not considered to differ significantly.

Sources of Language Sample

Since the language samples were collected on a time sample basis, knowledge of the learning situations under which the samples were obtained might help clarify the study. Table 14 contains a breakdown of the total number of areas observed as categorized by activity.

Table 14.

	OPEN ED		SOI		CONTRAST	
	N	%	N	%	N	%
Uninvolved Wandering	27	(29.7)	--	--	--	--
Reading Development Struct.	18	(19.8)	38	(48.7)	9	(23.7)
Math	6	(6.6)	--	--	1	(2.6)
"Dress-up"	4	(4.4)	--	--	0	--
Art	15	(16.5)	--	--	3	(7.9)
MTS	10	(11.0)	--	--	10	(26.3)
Directed Play	5	(5.5)	27	(34.6)	1	(2.6)
Large Group	6	(6.6)	13	(16.7)	14	(36.8)
	91		78		38	

Note that an observation might consist of any number of responses from one to over one hundred. Nevertheless, since the data was collected on a large number of children in a large number of activities, the percentage figures provide an estimate of the amount of time spent by the children in each activity.

Since human behavior often changes, based on the activity in which an individual was involved, it was believed that language behavior might change with the activity. Table 15 provides a breakdown of the MLR by area for each of the model classrooms. A brief perusal of the average MLR by activity suggests relatively limited differences. A close comparison of the activities between the SOI and Open Ed models, however, does reveal some statistically significant differences. These differences are reported in Table 16. As can be seen in Table 16, the MLR in the SOI directed play (5.03) and in RDS (4.88) is significantly longer than the MLR for Open Ed "uninvolved wandering" (4.19) and the Open Ed RDS (4.16) and the SOI large group (3.99). Differences do occur then, associated with activity.

Children's Syntax

The mean length of response and the number of utterances per unit time are but two of many ways that language behavior can be assessed. Another procedure is to study the syntactical structure of sentences. To provide some insight into possible syntactical differences, each response was judged according to the following categories: (1) question, (2) declarative, (3) imperative, (4) negative, (5) expletive, and (6) non-simple structure. (A non-simple sentence is defined as any sentence constructed in any way other than "simple".) Since the number of responses provided by each child differed, a procedure had to be developed to provide a common base. This was done by dividing the number of utterances in each category by the total

Table 15.

Mean Length of Response of Post Test Scores
by Classroom Activity

		OPEN ED			SOI			CON
		No. of Subjects Observed	$\bar{X}$	S.D.	No. of Subjects Observed	$\bar{X}$	S.D.	No. of Subjects Observed
1	Uninvolved Wandering	14	4.19	1.01	0	--	—	0
2	Reading Development (Small Group)	9	4.16	.77	18	4.88	.650	9
3	Math	3	a	a	0	--	--	1
4	Dress-up	1	a	a	0	--	--	0
5	Art	8	4.85	1.86	0	--	--	3
6	Manipulative Toys (Small Group)	6	4.75		0	--	--	10
7	Directed Play	0	--	--	11	5.03	.666	1
8	Large Group	3	a	a	9	3.99	1.129	15

a - Too small to be meaningful

Table 15.

Mean Length of Response of Post Test Scores
by Classroom Activity

OPEN ED			SOI			CONTRAST		
No. of Subjects Observed	$\bar{X}$	S.D.	No. of Subjects Observed	$\bar{X}$	S.D.	No. of Subjects Observed	$\bar{X}$	S.D.
14	4.19	1.01	0	--	--	0	--	--
9	4.16	.77	18	4.88	.650	9	4.63	1.38
3	a	a	0	--	--	1	a	a
1	a	a	0	--	--	0	--	--
8	4.85	1.86	0	--	--	3	a	a
6	4.75		0	--	--	10	4.76	.70
0	--	--	11	5.03	.666	1	a	a
3	a	a	9	3.99	1.129	15	3.84	1.28

ingful

Table 16.

Comparison of Mean Length of Response of Post Test Scores by Classroom Activity

		N	$\bar{X}$	S.D.
1	SOI Directed Play	11	5.03	.666
2	SOI RDS	18	4.88	.650
3	Open Ed Art	8	4.85	1.86
4	Open Ed MTS	6	4.75	1.16
5	Open Ed Math	3	4.49	.037
6	Open Ed Uninvolved Wandering	14	4.19	1.01
7	Open Ed RDS	9	4.16	.77
8	SOI Large Group	9	3.99	1.129

Comparison of Means with t Test

		2	3	4	5[a]	6	7	8
1	SOI Directed Play	N.S.	N.S.	N.S.	—	2.38*	2.71*	2.56*
2	SOI RDS		N.S.	N.S.	--	2.34*	2.35*	2.61*
3	Open Ed Art				—	N.S.	N.S	N.S.
4	Open Ed MTS					N.S.	N.S.	N.S.
5	Open Ed Math					--	--	--
6	Open Ed Uninvolved Wandering						N.S.	N.S.
7	Open Ed RDS							N.S.
8	SOI Large Group							

* $p < .05$

[a]Not tested because of small N.

number of utterances for the child. The results, of course, were proportions. Consequently, the scores were changed using the arcsin transformation ($\phi = 2 \arcsin \sqrt{x}$). These scores were then used for calculation purposes.

Children's Syntax Style x Open Ed-SOI x Interim-Post

The summary table of the BALANOVA of syntactical data is presented in Table 17. The analysis focuses on three factors--classroom, Interim versus Post test, and syntax variables--with subjects the fourth and replication factor. Since no Interim scores were available from the contrast group, only the Open Ed and SOI scores can be reported in the first analysis.

Table 17.

Summary Table of BALANOVA of Syntactical Style, Open Ed versus SOI, and Interim-Post Test Arcsin Scores

Source of Variation	df	Mean Sq.	F	p
Between Subjects				
A - Open Ed-SOI	1	.000	.000	.992
D - Subjects within Groups	36	.028		
Within Subjects				
B - Interim-Post	1	.115	5.476	.024
A x B	1	.006	.274	.603
B x Subjects within Groups	36	.021		
C - Syntactic Variables	5	18.252	379.293	.000
A x C	5	.122	2.537	.030
C x Subjects within Groups	180	.048		
B C	5	.144	3.932	.002
A B C	5	.071	1.947	.089
B C x Subjects within Groups	180	.037		

As can be seen from Table 17 there is a very low probability of a main effect (A) difference between classes ($F = .000$, $p = .992$). However, of more importance, there is an A x C Interaction ($p = .03$) which indicates a significant difference

between the classroom in the syntax patterns of the children. Thus, it would appear that the pattern of the syntactical style used by the children in their daily activities did not differ based on the classroom in which they were located. More discussion of this finding is presented later.

The second main effect (B) studied concerned differences associated with the Interim and Post collection of the language sample. According to the results there was a significant difference ($F = 5.476$; $p = .024$) on this main effect. However, there was also an associated significant (BC) interaction between the Interim and Post test factor and the syntax variables factor. No significant interaction was noted between the Interim-Post factor and the classroom (A) factor and the triple interaction only approached significance ($p = .09$). Since there was a significant interaction, the results of a test of the simple main effects was conducted and will be discussed later.

The third main effect (C) to be studied was that of the syntactic variables. As might be expected there was considerable difference ($p = .00$) between the syntactical structure of the sentences used in the classroom with obviously more declarative sentences used than any other type. (See Table 17.) Furthermore, as noted earlier, there was a significant interaction (AC) between class and variable ($p = .03$) and between Interim and Post testing ($p = .002$).

To help the reader understand the results, the cell means for the A x C interaction are reported in Table 18 and for the B x C interaction in Table 19.

Since there was a significant interaction between the syntactical style of the children in the Open Ed and SOI classrooms, a series of "t" tests were made to ascertain the possible locus of the difference(s). Only one significant difference was found in that the Open Ed children used more Imperatives than did the SOI children ($t = 2.12$). In addition, there was a trend for the SOI children to use more Declaratives than did the Open Ed children ($t = 1.94$). No difference was noted in the use of Negatives and Non-simple sentences. Translating the arcsin scores to percents, the Open Ed children used about 10% Imperatives while the SOI children used about 7% Imperatives. Similarly, children in the Open Ed room used about 59% Declaratives while the SOI used about 64%.

One other point of interest has to do with the use of questions. Approximately 12% of the sentences were Questions, as compared with an approximate 62% for Declarative sentences.

Children's Syntax Styles Interim-Post

Interpretation of the changes in the syntax between the Interim and Post test scores raises some question. For example, children would typically be expected to increase the use of Non-simple sentences as they grow older. The findings are in the reverse; that is, the children used fewer Non-simple sentences ($t = 3.88$) on the Post test. The change in percent is approximately from 13.5% down to 9%.

Another significant change ($t = 2.20$) occurred in that the use of Negatives increased. The approximate percentage increase is from 9% to 12%. Such an increase might have occurred because a child improved his self concept and learned to say

Table 18.

Children's Mean Arcsin Syntax Scores
For Open Ed vs SOI Classes

C		A_1 OPEN ED	A_2 SOI	Diff	t
1	Questions	.745	.671	.074	1.53
2	Declaratives	1.756	1.850	.094	1.94
3	Imperatives	.645	.542	.103	2.12*
4	Negatives	.614	.687	.073	.91
5	Expletives	.484	.461	.023	1.67
6	Non-Simple Sentences	.655	.690	.035	.72

* $t_{.976/df = 60} = 2.00$

Table 19.

Children's Mean Arcsin Syntax Scores
for Interim vs Post Test

C		B_1 Interim	B_2 Post	Diff	t
1	Questions	.697 + .635 =	.719 + .706 =	.022	- .532
2	Declaratives	1.833 + 1.888 =	1.772 + 1.811 =	.061	1.43
3	Imperatives	.624 + .597 =	.562 + .486 =	.062	1.23
4	Negatives	.604 + .615	.697 + .759	.093	2.20*
5	Expletives	.492 + .522 =	.462 + .400 =	.020	.46
6	Non-Simple Sentences	.734 + .759 =	.590 + .621 =	.164	3.88*

* $t_{.975/df = 60} = 2.00$

"no," because of an increased ability to discriminate, i.e. this is not a member of a set, or as a resistance to the authority of others. It is difficult, at this time, to attribute the change in negation to any specific cause.

When one looks at the percent of questions asked, there was no significant difference. Approximately 12% of both the Interim and Post sentences were questions.

Class x SES x Language Variables on Post Test Results

Since sentence style may well be a function of the background a child brings to school, and since one of the purposes of the study was to attempt to clarify the effect of the different program models on children from different backgrounds, an analysis on the Post test scores only was made comparing the socio-economic status with class model on the six different sentence styles. As can be seen from Table 20, there was no difference between the main effects associated with class (A) ($p = .58$).

Table 20.

Sentence Style Related to Class and SES
Analysis of Variance Summary Table

Source	df		Mean Sq.	F	p
	Num	Den			
Between Subjects					
A - Open Ed-SOI-Contrast	2	50	.007	.55	.58
B - SES	1	50	.051	4.06	.05
A x B	2	50	.008	.65	.52
D - Child (Subjects within Groups)	50		.012		
Within Subjects					
C - Syntactic Variable	5	250	12.447	272.33	.00
A x C	10	250	.071	1.564	.12
B x C	5	250	.085	1.875	.10
A x B x C	10	250	.027	.601	.81
C x D	250		.045		

On the second main effect, SES (B), there was a significant difference; also on the main effect associated with variable C. Since there were no significant interactions, it was deemed appropriate to look more closely at these differences. Mean arcsin scores are reported in Table 21.

Table 21.

Children's Mean Arcsin Sentence Style Scores by Class

	Variables	OPEN ED	SOI	Control
1	Questions	.73	.70	.65
2	Declaratives	1.73	1.80	1.86
3	Imperatives	.63	.49	.55
4	Negatives	.64	.77	.63
5	Expletives	.54	.41	.44
6	Non-Simple Sentences	.55	.59	.59
	TOTAL	.804	.793	.787

Table 22.

Sentence Style $\overline{X}$ Arcsin Score x SES of Children

	Variables	B_1 High SES	B_2 Low SES
1	Questions	.717	.673
2	Declaratives	1.803	1.799
3	Imperatives	.550	.566
4	Negatives	.681	.674
5	Expletives	.428	.495
6	Non-Simple Sentences	.667	.490
	TOTAL	.808	.782

There was no significant main effects difference with regard to class and the interaction A x C only approached significance ($p = .12$) . Still, the $\bar{X}$ cell scores for the three classes are reported in Table 22 for the benefit of the reader who may want to explore further. Again, it can be noted that by far most sentences are Declarative. If there were differences, it appears that the Open Ed children would use more Imperatives, the SOI more Negatives, and possibly the Open Ed more Expletives each relative to the other two conditions.

As can be seen from Table 22 the total $\bar{X}$ score for the Hi SES group (.808) is higher than the total $\bar{X}$ score for the Lo SES group (.782). This finding reveals that the Hi SES group tends to use comparatively more of the types of sentences studied than does the Lo SES group. The interaction between syntax and SES did not reach significance ($p = .10$). The means, however, are reported for the reader who wants to consider future studies. It would appear that possible interactions might occur in the area of Non-simple sentences with the Hi SES children using more Non-simple sentences than the Lo SES children and possibly more Expletives. Such would be consistent with the belief that children who score higher on tests of intellectual functioning use more Non-simple sentences.

To analyze the differences between syntactical variables on the C main effects factor, requires the use of the Newman-Keuls procedure. The results of this analysis are reported in Table 23. As can be seen from the lower portion of the table, all of the variables were significantly different from each other with the exception that Imperatives did not differ from Non-simple sentences and Negatives did not differ from Questions. Another understanding view of the table can be obtained from the lines at the bottom of the page which indicated that Declaratives were used more than Questions and Negatives, which were used more than Non-simple and Imperatives, all of which were used more than Expletives. Items in brackets did not differ from each other, but each section differed from all others in descending order.

In summary, then, as might be expected, the children did use many different types of sentences. In spite of the attempt to provide differential teaching, the children's language behavior did not differ strongly between classes although there was some evidence of minor differences. There was a difference between the Hi and Lo SES children but this was a general difference rather than a specific or interactional difference.

Analysis of Teachers' Language

Comparison of the classrooms was also made through an analysis of the language used by teachers. Tables 24, 25 and 26 contain the results of this analysis. In Table 24, it should be noted that there are 12 teachers in the Contrast group with either four or five in the other groups. The teachers in the Open Ed samples are the same for both samples with one addition, while the SOI teachers are the same. The collection of data on the teachers was made in a manner similar to that of the students, i.e. a one-hour time sample was taken to represent the typical activities of each teacher in the classroom.

A comparison of the $\bar{X}$ total utterances of the teachers in the different classes is reported in Table 25. The results of the analysis was difficult to interpret because the small N's required that any differential effects be extremely strong. Nevertheless, there is a significant difference between the Open Ed Interim teachers and both the SOI Interim and Contrast teachers. The difference between the Open Ed Post measure and the Contrast group approached significance.

Table 23.
Newman-Keuls Procedure

Differences Between Sentence Styles

$\bar{X}$		5 .4612	3 .5584	6 .5785	4 .6776	1 .6953	2 1.7975
5	Expletives		.0922	.1173	.2164	.2341	1.3363
3	Imperatives			.0201	.1192	.1369	1.239
6	Non-Simple Sentences				.0991	.1168	1.219
4	Negatives					.0177	1.1199
1	Questions						1.1022
2	Declaratives						

S_C = .02857 r =	2	3	4	5	6
$q_{.95}(r, 250)$	2.77	3.31	3.63	3.86	4.03
$S_C \; q_{.95}(r,250)$	.0791	.0946	.1039	.1103	.1151

		5	3	6	4	1	2
5	Expletives	-	*	*	*	*	*
3	Imperatives		-	o	*	*	*
6	Non-Simple Sentences			-	*	*	*
4	Negatvies				-	o	*
1	Questions					-	*
2	Declaratives						

5	3	6	4	1	2
.4612	.5584	.5785	.6776	.6953	1.7975
	N.S.		N.S.		

Table 24.

Analysis of Teachers' Total Utterances and MLR

		Total Utterances		MLR	
	N	$\bar{X}$	(S.D.)	$\bar{X}$	(S.D.)
Open Ed Interim	4	174.00	(28.012)	5.87	(1.080)
Open Ed Post	5	149.60	(22.47)	6.50	(.6410)
SOI Interim	4	123.00	(27.23)	7.73	(.385)
SOI Post	4	145.50	(41.81)	7.45	(.963)
Contrast	12	121.16	(29.95)	7.68	(1.138)

Table 25.

Comparison of the $\bar{X}$ Total Utterances of Teachers with t Test

		Open Ed Interim	Open Ed Post	SOI Post	SOI Interim	Contrast
		174.00	149.60	145.50	123.00	121.16
Open Ed Interim	174.00	--	1.46	1.13	2.61*[1]	3.10*[2]
Open Ed Post	149.60		--	.19	1.61	1.89
SOI Post	145.50			--	.90	1.28
SOI Interim	123.00				--	.06
Contrast	121.16					--

*[1] = $t_{.95}$/df = 6/ = 2.45

*[2] = $t_{.95}$/df = 14/ = 2.14

Table 26.

Comparison of Teachers' Language of Open Ed, SOI, and Contrast on MLR Scores

		SOI Interim	Contrast	SOI Post	OPEN ED Post	OPEN ED Interim
		7.73	-7.68	-7.45	-6.50	-5.87
SOI Interim	7.73	--	.08	.54	3.36*[1]	3.24*[1]
Contrast	7.68		--	.36	2.15*[2]	2.78*[2]
SOI Post	7.45			--	1.78	2.18
Open Ed Post	6.50				--	1.10
Open Ed Interim	5.87					--

*[1] = $t_{.95}$/df = 6/ = 2.45

*[2] = $t_{.95}$/df = 15/ = 2.13

A possible difference between the Open Ed and SOI groups total scores was also tested with a t test of the group data. The difference between the means (Open Ed = 161.8; SOI = 134.25) was not significant (t = 1.66).

Comparison of the MLR, another language variable of the teachers, through the use of a "t" test is reported in Table 26. It can be noted that there is a significan difference between the SOI Interim and both the Open Ed Post and Interim groups. Similarly, there was a difference between the Contrast group and the Open Ed Post and Interim groups. The difference between the SOI Post group approached but did not reach significance with the two Open Ed groups.

A comparison of the results from the two tables seems to be inappropriate. An overall comparison would suggest that the teachers in the Open Ed room are talking more, but using shorter responses than are the teachers in the SOI or Contrast groups. Of course, the samples are small but the trends seem to be there.

Teacher Syntax x Open Ed-SOI x Interim-Post Scores

Teachers' language might differ on variables other than MLR and frequency of responses. One particular change might be in syntactical structure. As a result, the teachers' language samples were analyzed to determine sentence structure on six dimensions--Questions, Declaratives, Interrogatives, Negatives, Expletives, and/or Non-simple structure.

Since the scores were based on the proportion of the responses in the category divided by the total number of utterances, the raw scores were transformed through the arcsin approach ($\phi = 2 \arcsin \sqrt{X}$). A BALANOVA was then calculated with the transformed scores and the results are reported in Table 27.

Table 27.

Analysis of Variance of Teachers' Language Sample Transformed Scores

	Source	df	M.S.	F	Prob.
A	Open Ed-SOI	1	.0006	.09	.77
B	Interim-Post	1	.0046	.65	.44
A x B		1	.0006	.08	.78
D	Teachers	13	.0072	--	--
C	Variables	5	3.9658	110.68	.00
A x C		5	.0259	.72	.61
B x C		5	.0228	.64	.67
A x B x C		5	.0656	1.63	.12
C x D		65	.0358	--	--

As can be seen in Table 27, no significant differences were found associated with the main effects of classroom model, or Interim-Post measures. The teacher dimension is a replication factor nested in both factors A and B.

A significant difference was found, as might be expected, between the types of variables ($p = .00$). Further, there was a tendency to approach a triple interaction (A x B x C: $p = .12$). In view of the small numbers of teachers per class (N = 5, or 4), it might be important to at least consider this possibility for future studies.

The transformed $\bar{X}$ scores are depicted graphically in Plot 1. As can be seen from the plot and the charts, the most often used sentence structure was Declarative ($\bar{X}$ arcsin = 1.57) followed by Questions (1.18), Non-simple sentences (1.00), Imperatives, (.71), Negatives (.41), and Expletives (.29).

Although the interaction was not significant, a review of the plots suggests possible interactions that might warrant further study. For example, the plot suggests that the Open Ed teachers decreased their use of questions and declaratives and increased their use of negatives between the Interim and Post samples. The SOI teachers, on the other hand, seemed to decrease questions but increased declaratives and showed relatively little change on the other variables. These observations tend to go along with some of the general observations made by the teachers about the change in the behavior of the aides in their classroom during this period of time. This approach may then be sensitive to actual classroom behavior and may indicate that there was relatively little difference between the two rooms in the teachers' syntactical construction of the sentences that they spoke.

Teacher Syntax and Three Classroom Models

In addition to the comparison of teacher language in two classroom models on an Interim-Post basis, as discussed in the preceding section, it was also possible to compare three models on Post tests by including the Contrast group. The results of this comparison are reported in Table 28.

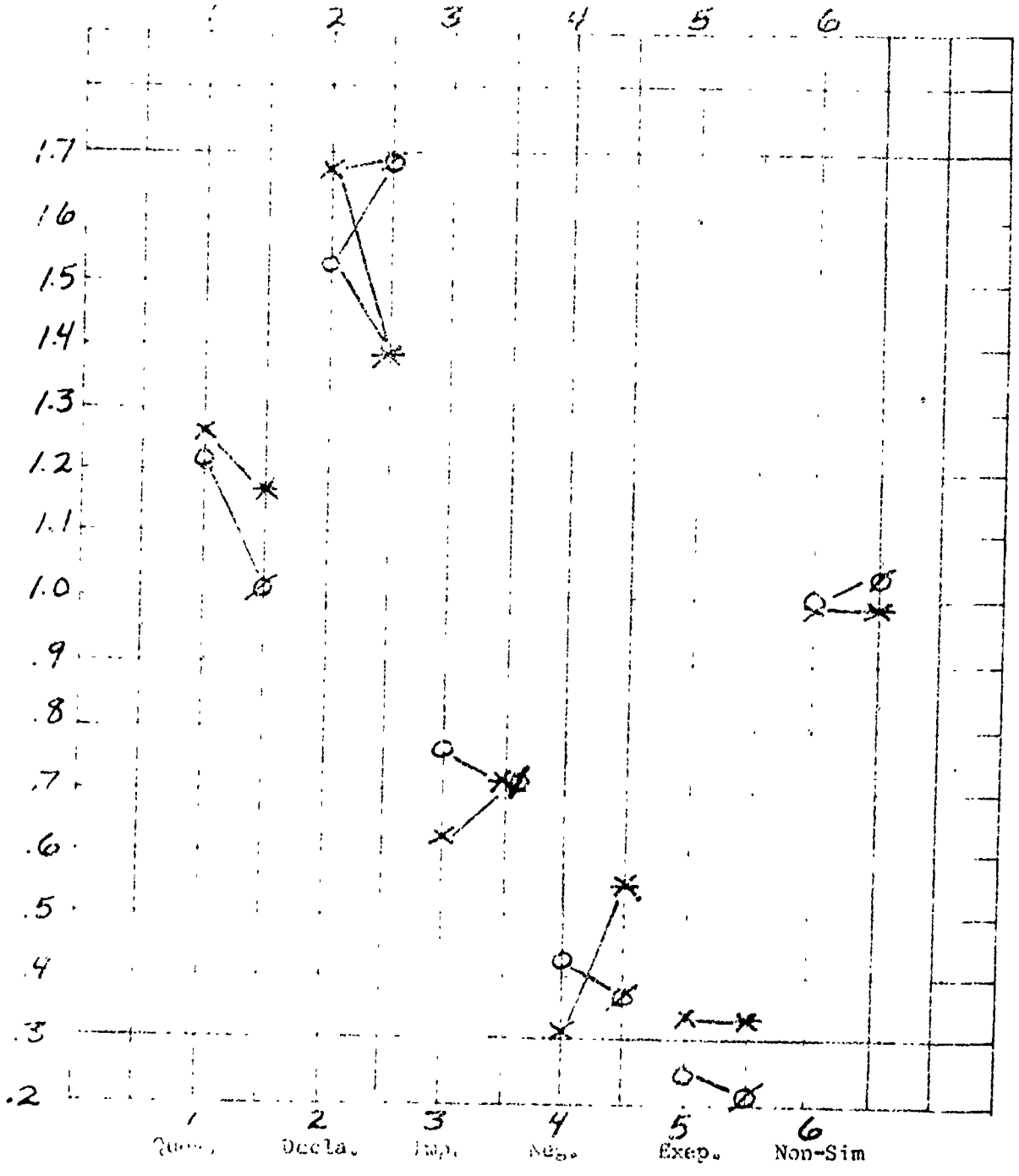
As can be seen from Table 28, there are no significant differences between the main effects associated with classroom model. Differences were found, however, in type of sentences used by the teachers ($p = .00$).

The mean scores by group are presented in Plot 2. From the plot and the table immediately beneath the plot, it is apparent that the teachers tend to use more Declarative statements (arcsin = 1.52, 47.5%) followed by Questions (1.14, 29%), Non-simple Sentences (1.02, 24%), Imperatives (.70, 12%), Negatives, (.44, 4.7%), and Expletives (.25, 1.5%).

One might then say that the language of the teachers was characterized by a considerable emphasis on Declarative sentences (47.5%) followed by Questions (29%). If one believes that either the Open Ed or the SOI classrooms should contain a considerably higher number of questions than the other model they would be disappointed.

Plot 1.

X = Interpreted Scores for Teacher Language Samples

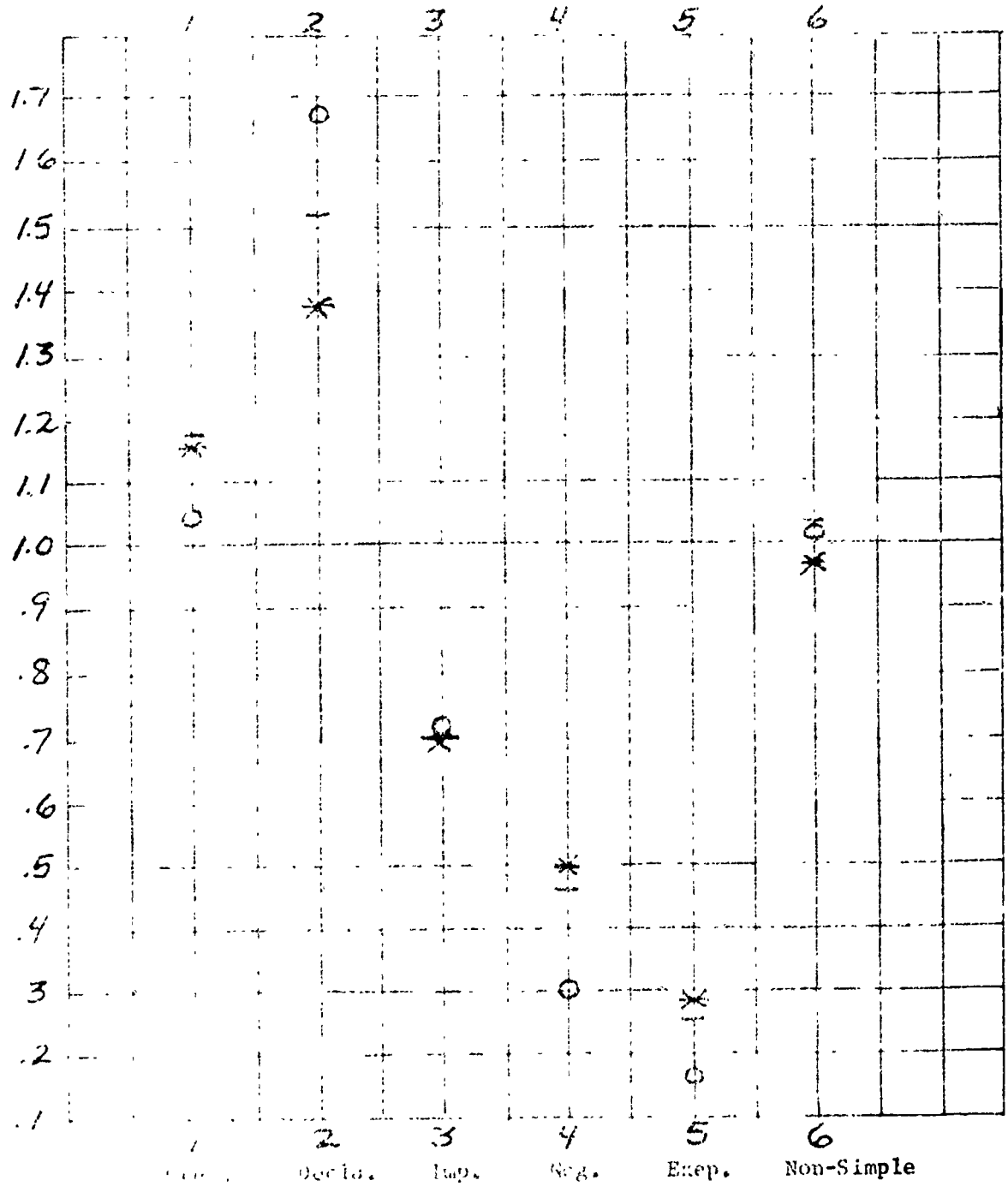


	1. Ques.	2. Occla.	3. Rep.	4. Neg.	5. Exep.	6. Non-Sim
X	1.21	1.67	.93	.51	.34	.98
O	1.42	1.51	.77	.43	.25	1.00
*	1.17	1.39	.72	.55	.34	.99
ϕ	1.06	1.69	.72	.37	.21	1.04

X Open Ed Interim
O SOI Interim
* Open Ed Post
ϕ SOI Post

Fig. 2.

Teachers' Transformed Language Syntax Scores by Class Model



	1. Open	2. Contrast	3. Imp.	4. Neg.	5. Exep.	6. Non-Simple
Open Ed	1.[illegible]	1.[illegible]	.7[illegible]	.50	.29	.97
30%	1.[illegible]	1.[illegible]	.7[illegible]	.[illegible]2	.16	1.02
Contrast	1.[illegible]	1.[illegible]	.7[illegible]	.4[illegible]	.26	1.04

* Open Ed.
○ 30%
\- Contrast

Table 28.

Analysis of Teacher's Transformed Language Scores for Open Ed-SOI-Contrast

Source	df	M.S.	F	Prob.
A - Open Ed-SOI-Contrast	2	.020	1.24	.31
C - Teacher	18	.016		
B - Variables	5	4.668	95.54	.00
A x B	10	.037	.76	.66
B x C	90	.049		

Comparison of the teachers' language with the children's language reveals a similar pattern. Altogether, children use fewer uestions (11.8% compared with the teachers 29%), make more Declarative (61% compared with the teachers 47.5%), make more Negative (11.1% versus 4.7%) and Expletive (5.1% versus 1.5%) statements and use fewer Non-simple sentences (8% versus the teachers 2.4%).

In summarizing the results of the study of the teachers' language, it seemed apparent that, in spite of the fact that the classrooms looked vastly different, the teachers' language patterns did not vary significantly between classes. A difference did occur, however, between the teachers and the child language patterns.

Behavior Problems and Management

Since the social structure of the classrooms differed, it was hypothesized that the children might present different types of discipline problems in the different settings. To evaluate this hypothesis, a procedure was developed whereby each classroom was observed using a 30-dimension observational instrument designed to characterize inappropriate pupil behaviors. The dimensions were developed from conversations with teachers and psychologists about problem behaviors that might affect the way a teacher needed to organize her room. Initially, the decision was to observe only problem behaviors, but soon an attempt was made to record pro-social behavior. The latter task proved to be more than could be accomplished during the project and was dropped. Only four pro-social type items in the observational instrument were retained in the hope they might provide some initial data for further studies (offer to help other child, quiet sitting - thinking, offer to help teacher, and reach agreement).

During the data gathering process, an observer would arbitrarily divide a classroom into identifiable sections by rugs on the floor, natural dividers, etc. Then she would observe each sub-area for 15 minutes. During this time she would rate all behavior observed in the area that met the listed criterion.

One of the problems in the collection of data was that the results would obviously be biased by the number of children who were in a given space at a given time, i.e. the more children, the higher the probability that one of the children would engage

in a classifiable behavior. To alleviate this problem a record was kept of the number of children x (times) the number of minutes in each area. One child in an area for five minutes plus two children for ten minutes would then yield 25 child/minutes of observation. The child/minutes were totaled and divided by 60 revealing that there were 171.4 child/hours of observation in the SOI class and 109.0 child/hours of observations in the Open Ed class.

The results of the observations are reported in Table 29.

In all, data was to be gathered in 30 categories. At the conclusion of the project, some of the categories had observed frequencies of only 0-1. These categories were deleted from the final analysis. The deleted included: "pinch," "bite," "scratch," "tear others' work," "physical threat," "refusal to share," "offer to help teacher," and "reach agreement."

Since it was possible that one difference between the classrooms might have been the gross frequency of occurrence of problems, a chi square analysis comparing the number of child/minutes of observation with the frequency of occurrence revealed a chi square of .2 which did not approach significance. Thus, there was no difference between the rate of behavior problems and the number of minutes of observation; or in other words, the more children were observed, the more problems would be observed.

Since there was no difference between the classroom on the rate of problem behaviors, a chi square analysis was computed on the data from the two classrooms on the 22 variables. The obtained χ^2 of 220.67 revealed that the two classrooms differe significantly on the type of behavior problem presented by the children.

To determine where the differences occurred, a one-way chi square analysis was conducted for each level. The results of these analyses are reported in the last column of Table 29.

Significant differences occurred in ten categories. Of these, the Open Ed children manifested significantly more problems in "pushing," "hitting," "social threat," "crying," "screaming," "refusal to clean up," and "uninvolved wandering." On the other hand, the SOI children manifested more problems through "redirecting conversation," "distracting noise," "distracting movement," and "leaving activity."

Comparison of the two [illegible] of behaviors suggests that the Open Ed children had the freedom to engage in more active behavior and, may, in fact, had to have engaged in gross behavior problems before the observer or the teacher was able to discover the inappropriate behavior from among the many other movements in an actual classroom. In the SOI classroom, on the other hand, the problems seem to be of the less overt type. Since the teacher was near the child and all the children were engaged in similar activities, a child did not need to/could not engage in very overt inappropriate behavior before being observed and controlled or redirected in some way.

A similar comparison can be made in the area of leaving an activity. When a child leaves an activi[illegible] in the SOI classroom, it is immediately apparent to all concerned since he is supposed to be engaging in the activity conducted by the teacher

Table 29.

Analysis of Children's Inappropriate Behavior

			Open Ed		SOI		
		Total freq.	Obs.	Exp.	Obs.	Exp.	χ^2
1.	Tattling	26	11	9.88	14	16.12	.73
2.	Inappropriate use of materials	77	34	29.26	43	47.74	1.24
3.	Horse play	48	15	18.24	33	29.76	1.07
4.	Redirecting conversation	33	2	12.54	31	20.46	-14.29*
5.	Refuse to follow directions	61	19	23.18	42	37.82	1.22
6.	Snatch	26	10	9.88	16	16.12	.00
7.	Push	33	26	12.54	7	20.46	23.30*
8.	Hit	70	46	26.60	24	43.40	22.82*
9.	Kick	9	5	3.42	4	5.58	1.18
10.	Tease	30	16	11.40	14	18.60	2.99
11.	Swear	6	0	2.28	6	3.72	3.68
12.	Social threat	65	34	24.76	31	40.30	5.65*
13.	Cry	15	14	5.70	1	9.30	19.49*
14.	Scream	29	14	11.02	15	17.98	19.06*
15.	Refuse to clean up	18	16	6.84	2	11.16	19.76*
16.	Inattention to activity	61	17	23.18	44	37.82	2.66
17.	Distract noise	116	12	44.08	104	71.91	-37.67
18.	Distract movement	83	9	31.54	74	51.46	-16.53*
19.	Uninvolved wandering	17	15	6.46	2	10.54	18.21*
20.	Leaves activity	44	9	16.72	35	27.28	- 5.75*
21	Offer to help child	12	7	4.56	5	7.44	2.11
22.	Quiet, sit, think	13	7	4.94	6	8.06	1.38
	Total	892	339		553		220.67
	Total child/hrs. observ.	109.0			171.4		

*$\chi^2_{.025/df = 11} = 5.0$

- = result reveals SOI class higher.

In the open classroom, on the other hand, the child may be expected by the teacher to engage in an activity. The child, however, may leave and wander about the room, ostensibly to obtain materials or the help of another child, when, in fact, he is leavin his expected activity and is not able to focus on the next task or activity. The Open Ec class teacher, then, is faced with discriminating the child who is wandering aimlessly from the child who is in need of help, from the child who is on his way to a new task or relaxing for a minute. Further, she must then decide how to intervene. She may, for example, choose to ignore the behavior and hope that the child will be attracted to something else in the room which she can then use to stimulate him or she may attempt to redirect him back to a task. Both differ somewhat from the task of the SOI teacher.

In summary, then, there is a significant difference between the two classrooms based on the style of behavior problems they manifest. Further, the behavior problems of the Open Ed classroom seem to be of the more obvious type while the SOI classroom are characterized by the more subtle type.

Teacher Response to Pupil Behavior

In every classroom, teachers are faced with the problem of controlling the inappropriate behaviors of children. Controlling procedures vary, obviously, from teacher to teacher and class to class. One teacher may use tokens, another may use a stern look, and a third may ignore. The question raised was, "Is there a characterist teacher response pattern associated with the different model classrooms?" To assess this area, an observation procedure was developed based on a pilot observation of the classrooms and the ideas of various school personnel. In all, some 17 different approaches were identified. These approaches were placed on a chart and were scored, when possible, after every notation of a pupil's inappropriate behavior. Each time that a child engaged in an inappropriate behavior and a teacher noticeably responded, her response was recorded. Some inaccuracies occurred, especially in the "teacher ignored" category because a teacher may well have been aware of a behavior an chose to "ignore" it covertly--that is, without letting the child learn that she knew. Such an "ignore" differs sharply from the teacher who conveys to the child that she is aware of an action and disapproves of it by "ignoring" it. "Ignore" then was recorded when it was apparent that the teacher had seen and chose to ignore an action (whether or not the child was aware).

After the data was collected, it became apparent that four of the categories were seldom used because of a 0 or 1 score in both the SOI and Open Ed classrooms. These four categories (threaten physically, distract child, ask group for a solution, and restrict child physically) were deleted from further analysis.

An initial study of the data and comments made by the observers suggested that the rate of teachers' responses to the children's problems differed between the two model classrooms. Consequently, the number of teacher responses noted in the Open Ed classroom (161) and the number of responses in the SOI classroom (435) were compared with the respective number of children's noted inappropriate behaviors of 339 and 553 respectively. The resultant chi square of 19.84 reveals that in fact there were significant differences in the rate at which teachers responded obviously to children's inappropriate behavior. (See Table 30.)

Since the children's rate of noted maladaptive behavior was related to the number of child minutes observed, a similar comparison was made of teacher responses. Again it was found that the teachers in the Open Ed classroom responded at a significantly slower rate ($\chi^2 = 13.45$) than did the teachers in the SOI classroom.

An attempt to understand the above two findings resulted in the observation that the teachers in the SOI classroom were always near the children. They were always observing closely what each child was doing. (See the records of teacher/pupil placement in the classroom on pp. 16-17). On the other hand, the teachers in the Open Ed classroom were often some distance from the child. As a result, a child could be across the room from the teacher or hidden behind a planter or bookcase where he could engage in inappropriate activity without being observed. A related problem was also observed in the teachers' use of the control procedure of "ignoring". As previously noted, it was somewhat difficult to tell when a teacher ignored an activity and when she did not see it.

Since many of the areas contain low frequency responses, a chi square analysis was conducted of the frequency with which teachers' responses occurred in the remaining 13 categories. An overall chi square was made comparing the frequency with which any type of observable teacher response (see Table 30) was made in the two classrooms. The obtained chi square of 125.07 was obviously significant ($X^2_{r\ .025} = 7.82$) and indicated that the two rooms differed in the number of teacher response to behavior manifested in the classrooms.

Next, a 2 x 13 chi square analysis was made to determine if there was any difference in the pattern of teacher response in the two classroom models. The obtained chi square ($X^2 = 78.19$) was again obviously significant when compared with $X^2_{.02} = 25.47$/ df = 13. Thus, there were obvious differences in the pattern of responses used by the teachers in the classroom.

A category by category analysis was made to determine where the differences occur. As can be determined from the X^2 column, the SOI classroom teachers tended to "separate the child from the group" more than the Open Ed teacher. On the other hand, the Open Ed teacher tended to "leave the situation," "mediate a dispute," and "redirect the child" more than the SOI teachers. These differences did occur in a patterned manner between the teacher behavior in the Open Ed and SOI model classrooms.

Finally, the question was asked, "Did the teachers differ from each other when the expectation was that the teachers would make equal responses in each category?" The findings (see $\chi^2_E = .50$) also reveal significant differences here. SOI teachers tend to separate the children from the group, remove the child from the area, ignore, issue imperative, threaten socially, offer choice of alternatives, and request "please" more than the Open Ed teacher. The teachers did not differ in the areas of removal of child's materials, leave situation, explain rules, explain logical consequence, mediate disputes or redirect child.

Comparison of the two analyses suggests that the SOI teacher responds much more directly to the child than does the Open Ed teacher. Further, the responses are much more frequent. For example, the SOI teachers issued three times as many "imperatives" (156-52), 4.9 times as many "ignores" (73-15), and 27 times as many "separate child

Table 30.

Analysis of Teachers' Responses to Children's Inappropriate Behavior

	OPEN ED			SOI		Total		
	Ob	Ex	Ex .50	Ob	Ex	Fre	χ^2	χ^2 Ex = .50
1. Separate child/group	2	15.13	28.0	54	40.87	56	-15.61*	48.28*
2. Remove child/area	2	4.59	8.5	15	12.41	17	2.00	9.94*
3. Remove child's material	5	3.78	7.0	9	10.22	14	.54	1.14
4. Ignore	15	23.77	44.0	73	64.23	88	4.43	38.23*
5. Leave situation	3	.81	1.5	0	2.19	3	8.11*	3.00
6. Issue imperatives	52	56.19	109.0	156	151.80	208	.43	52.00*
7. Explain rules	13	9.18	17.0	21	24.82	34	2.18	1.88
8. Threat socially	0	1.62	3.0	6	4.38	6	2.22	6.00*
9. Explain logical consequences	7	3.78	7.0	7	10.22	14	3.76	0.00
10. Offer choice of alternatives	2	4.59	8.5	15	12.41	17	2.00	9.94*
11. Mediate dispute	12	4.59	8.5	5	12.41	17	16.39*	2.88
12. Request "please"	12	13.78	25.5	39	37.22	51	.32	14.29*
13. Redirect child	36	19.18	35.5	35	51.82	71	20.21*	.06
	161		298.0	435		596		125.97

* $\chi^2_{.025/df = 1} = 5.0$

$\chi^2_{.025/df = 13} = 24.7$

Total $\chi^2_{/df = 13/} = 78.19$

from group" (54-2) as did the Open Ed class teacher. Thus, there is a difference not only in the pattern of teacher reactions to behavior, but also, and more importantly, a difference in the gross number of responses that a teacher needs to make in the structured, as compared with the Open Ed, classroom.

Sociometric Data Analysis

Sociometric interviews were given in each classroom to provide a better understanding of the social structure in each classroom. In addition, the sociometric data provides an independent but complimentary measure for the social interaction data.

The interview procedure used was an adaptation of the Forced-Choice Sociometric Interview by Margaret Jenne Dunnington (1954, 1957) and the Picture Sociometric Interview by Shirley Moore and Ruth Updegraff (1964). Both measures are specifically designed for nursery school children and therefore appropriate for kindergarten children. Colored pictures were taken of each child and mounted on a piece of 18" x 24 poster board for each classroom. Each child's name was printed below his picture. Pictures were used because young children may not be able to remember every other child and his name. Such a procedure has been used by Marshall and McCandless (1957). In interviewing young children, Dunnington cautions that each child should be tested before joining a group, preferably at the beginning of the day. The purpose is so that a child's choices would be based on accumulated responses rather than the immediate play group he was removed from prior to the interview. This procedure was followed as closely as possible for the first set of interviews in January. For the second set of interviews in May, this procedure was followed less closely because it was felt the children were older and would not be influenced as much by their immediate play group.

Each child was interviewed individually once in January and a second time in May. The interviewers first established rapport with the child and then asked him to name each child's picture. The interviewer helped the child with any names he could not remember. The child was then instructed to look over the pictures very carefully and find someone he especially liked to play with at school. After the first response was elicited, the interviewer asked for two more choices. For those names the child did not choose as his preferences, he was asked whether or not he would like to play with each of them. Children responded positively or negatively. Thus spontaneous positive choices and forced choices were recorded for each child. The responses were recorded and scored as follows: first choice, five points; second choice, four points; third choice, three points; positive response ("yes"), one point; negative response ("no"), zero points. An individual's total sociometric score is the algebraic sum of the points given to him by others in the class.

The data was analyzed using a clique analysis program. The program uses a procedure for clique detection using the group matrix developed by Harary and Ross (1957). The clique analysis program used a matrix in which a score of "zero" equaled the forced choice responses (0 or 1) while a score of one equaled the spontaneous positive choices (3, 4, 5). This analysis yielded one clique with three children for each classroom in both the pre- and post-test sessions.

In the pre-test session for the Open Ed classroom, the clique consisted of two white Hi SES females and one black Lo SES male. The clique for the post-test session consisted of the same two white females. The additional child, replacing the black male, was another white Hi SES female.

The clique analysis for the SOI classroom was identical for both sessions. The clique consisted of three white Hi SES white females. (SBIQ end, 138, 152, 144). It is interesting to note that the three girls were in the same small structure group throughout the entire year.

Across classrooms, then, cliques were for the most part, among white Hi SES females. The range of SBIQ scores is very small. Thus the cliques are composed of very homogeneous groups. The noticeable exception occurred in the Open Ed classroom in the first (pre-test) session with the inclusion of a Lo SES black male.

Factor Analysis of Sociometric Scores

In an attempt to gain a view of the sociometric data beyond that suggested by the clique analysis, a factor analysis was conducted on the sociometric scores of the children within each class. Two basic questions were posed: (1) what was the factor structure of the sociometric choices of the children during the interim portion of the school year and again at the end and (2) did there appear to be any difference/ change in the pattern between measurements.

The scores were initially analyzed using the Principal Axis Factor Analysis Approach then rotated using the Oblimax Rotation procedure. After the Principal Axis procedure is completed, it is necessary to decide how many factors should be rotated. Several procedures and criteria are available to assist in the selectin of the number of factors to be rotated. Careful consideration was given to the data on the "Eigen values," "percent of variance removed by a given factor," and "decrease in the amount of variance removed by the removal of each new factor." (See Table 31.)

In making the final decision, the basic criteria was a change in the shape of the curve associated with the removal of additional variance after the addition of each new factor. This is fairly clearly demonstrated in the Open Ed Post data which reveals that 25% of the variance is removed by the first factor, an additional 15% by the next factor. Then the next factor removes 10% of the variance and the next, 9.1%. The difference between the amount of variance removed by the third and fourth factor is only 1.2% (as contrasted with the difference of 4.7% removed when the second and third factor are compared). Thus, one can see that there would be a distinct change in the shape of the curve associated with the amount of variance removed by each additional factor. A similar procedure was followed for each set of data. The most serious problem seems to have arisen with the SOI Interim data where change in data is not as clear cut as in the other data. Two tentative cutting points were determined--one after the second factor and the other after the fourth factor. An Oblimax rotation was performed on each. (See Table 32.)

Analysis of the two factor rotation revealed that five children had not loaded on either of the factors when the acceptance factor for loading acceptance was .50. The acceptance level was then reduced to .40 and rotated again. Examination of the four factor analysis then appeared to more fully explain the data in that only two children did not load on a factor after the fourth factor was removed.

Comparisons of the results for the SOI-Interim and Open Ed-Post results might lead to the opinion that the tables are similar and therefore a fourth factor should be extracted from the Open Ed classroom approach. Analysis of the data

Table 31.

Open Ed Interim

FACTOR	EIGEN VALUE	PERCENT VARIANCE	CUMMULATIVE PERCENT
1	4.03	21.21	21.21
2	2.73	14.40	35.61
3	2.56	13.49	49.11
4	1.90	10.02	59.14
5	1.67	8.81.	67.96
6	1.38	7.28	75.24
7	1.23	6.51	81.76
8	1.00	5.31	87.07
9	0.78	7.14	91.21
10	0.56	2.94	94.16

etc.

Open Ed Post

1	4.82	25.39	25.39
2	2.86	15.07	40.46
3	1.96	10.34	50.81
4	1.74	9.15	59.97
5	1.41	7.42	67.39.
6	1.27	6.72	74.11
7	1.10	5.82	79.93
8	0.92	4.87	84.81.
9	0.63	3.34	88.16
10	0.55	2.91	91.08

etc.

(Table 31 continued)

SOI Interim

FACTOR	EIGEN VALUE	PERCENT VARIANCE	CUMMULATIVE PERCENT
1	4.385	24.36	24.36
2	3.163	17.57	41.93
3	1.994	11.07	53.01
4	1.677	9.32	62.33
5	1.336	7.435	69.77
6	1.24	6.90	76.67
7	1.01	5.65	82.33
8	0.78	4.33	86.66
9	0.69	3.84	90.51
10	0.47	2.62	93.14

etc.

SOI Post

1	3.483	19.351	19.35
2	3.008	16.71	36.06
3	2.617	14.540	50.60
4	1.90	10.57	61.17
5	1.64	9.15	70.33
6	1.28	7.14	77.47
7	0.95	5.31	82.79
8	0.81	4.54	87.34
9	0.65	3.63	90.98
10	0.56	3.15	94.13

etc/

reveals, however, that all but two of the children load on one or the other of the two factors in the SOI Post data when the same factor loading criteria of .40 is used. Thus, it is felt that the two factor approach is appropriate for the Open Ed Post analysis while the four factor analysis is considered to be more appropriate for the SOI Interim data.

As a result of this review of the data, it appeared that the most parsimonious solution was to rotate three factors from the Open Ed Interim and the SOI Post data, two factors from the Open Post data, and four from the SOI Interim data.

Interpretation of the Factor Analysis of the Sociometric Data

Since two different assessments were made approximately four months apart, in January and May, it seemed feasible to attempt to determine possible changes in the classroom social choice patterns that might have occurred as a function of time in the classroom.

SOI Classroom

The initial analysis of the SOI classroom, as explained previously, resulted in four factors. An attempt to interpret the meaning of the factors was made in two ways: first, through a gross attempt to determine possible relationships with sex, race and SES variables, and the second through an attempt to have the teacher define from his knowledge of the children what such a factor structure might mean. (See Table 33.)

In the SOI classroom, Factor I seems to be fairly clearly defined by white, Hi SES children regardless of sex, three males and two females were included in the group. Factor II was defined by Hi SES females including one black Hi SES female. The third factor seems to be defined by Lo SES boys although one Lo SES boy was on the negative pole of this dimension. The fourth factor seems to fall within the Lo SES criterion in that all are of Lo SES, but the additional dimension of "sex" may have played a part in that the two girls are on one end of the dimension and the two boys on the other. Thus, it would appear that characteristics associated with SES and sex played major roles in the definition of most of the dimensions.

On the Post tests, as mentioned before, only three factors were selected as appropriate to explaining the data. Analysis of the SOI-Post sociometric data does not reveal a clear picture based simply on the basic data of race, sex and SES. First, it can be noted that there is considerable change in the factor structure. Factor I, for example, is now defined by two children each from the old Factors I, II and III and one not previously assigned. Similarly, the new Factor II contains two children from the old Factor I, one from II and one unassigned. The new Factor III contains one child from the old Factor I, three from II, one from III, and one unassigned--on the positive end, and three children from I and one child from II on the negative end of the dimension. Thus, there seems to have been considerable change in the factor structure of the class.

Further interpretation suggests that Post Factor I might be considered mainly composed of white children especially since the minus weight comes from a black Lo SES girl. The only lack of support comes from a Lo SES black male. Factor II might be explained as a white-black dimension since it is mixed on both sex and SES.

Factor III appears to be a sometimes bipolar dimension with the white, Hi SES children defining the minus end of the factor but since the plus end is defined on some other dimensions, the interpretation is not clear.

In summary, there may be some similarities that seem to hold up, but there has been considerable redefinition of the factors between samplings (January and May).

To help determine the reason for change, if possible, the head teacher was asked to try to interpret the reasons for the clustering without being given any information, or being reminded about the other dimensions.

According to the SOI head teacher's analysis of the Interim test results, Factor I may reflect the fact that three of the children, boys, were in the same structured class while the other two children may have played with members of the group. Factor II might have resulted from four children participating in the same structure with the fifth being an intellectual peer who played with the group at the beginning of the year. Factor III had contained four of the children in the same structure with the negative end of the dimension being an individual listed as an obnoxious member of the same structure. Factor IV found the two positive members in the same structure and intellectual peers with the characteristics of the members on the "minus" end a little less clear, one being of the same structure but a "slightly picked on" member, while the other "rode the same bus". Thus, generally the factor structure of the Interim factors tended to follow the children's participation in the structured activities.

The assessment of the Post Factor I results by the head teacher revealed that four of the five + members were white, Hi SES children who tended to play together when possible, with the membership of a fifth child on the plus end unaccounted for. The only minus member of the dimension was described as being rather mean so that some children might have feared her. Factor II contained three children who worked consistently on a project in the morning and were together a lot, while the minus end was described as a child who also came to school early but who caused trouble. The third factor contained the four minus children described as the "white middle class establishment" of the classroom, most of whom were in the same structure and who kept mostly to themselves. The plus end of the third factor is a little harder to define in that the children came from two different structures (4 and 2 respectively) with three children listed as "eating lunch together". From this rather sketchy account, one can hypothesize that what has occurred is that each of these three factors is determined by a group of children from the middle class background, on the one end, and one or more children from the Lo SES, typically listed as "troublemakers" on the other end. One might ask what are the additional characteristics that have helped the factors form in this manner. Is it that the opposite pole children are trying to break into these groups and that's how they have become somewhat identified with them, or is it that there is some other characteristic such as a mean-non-mean, productive-nonproductive or lunch-non-lunch dimension that has entered into the findings?

One thing further seems important. Although the children in the Post test of Factor I and II were described as loading at the minus end of the factor, their loadings are much less, -.4, as compared with the .68 to .97 loadings of the individuals defining the positive end of the factors. Thus, it may be that the "opposite" children do not hold their position nearly as strongly as the "top" children.

Table 32.

PRIMARY FACTOR PATTERN

SOI Pre (2 Factor)

Child	I	II
1	0.24	-0.54
2	-0.02	-0.05
3	-0.26	-0.06
4	-0.68	0.17
5	-0.93	-0.07
6	0.18	-0.30
7	-0.80	-0.35
8	-0.10	-0.68
9	0.13	-0.49
10	-0.89	-0.24
11	0.09	0.40
12	-0.08	-0.80
13	-0.10	-0.90
14	-0.94	-0.85
15	0.13	-0.05
16	-0.03	-0.82
17	-0.19	0.29
18	0.21	0.54

PRIMARY FACTOR CORRELATIONS

1	1.00	-0.31
2	-0.31	1.00

(Table 32 continued)

PRIMARY FACTOR PATTERN

SOI Pre (4 Factor)

Child	I	II	III	IV
1	0.13	-0.22	-0.04	0.52
2	0.19	-0.26	-0.68	-0.77
3	-0.25	0.02	-0.19	-0.01
4	-0.58	-0.07	0.10	-0.40
5	-0.98	0.11	0.08	0.27
6	0.01	0.10	-0.00	0.65
7	-0.68	-0.51	-0.10	-0.37
8	0.02	-0.84	-0.13	-0.32
9	0.08	-0.28	-0.15	0.26
10	-0.94	-0.04	0.05	0.30
11	0.18	-0.14	0.73	-0.40
12	-0.08	-0.80	0.27	0.21
13	-0.01	-1.02	0.09	-0.10
14	-0.95	0.01	0.02	0.11
15	0.11	-0.29	0.76	0.11
16	-0.03	-0.79	0.16	0.18
17	-0.21	0.10	0.70	0.10
18	0.36	0.10	0.03	-0.67

PRIMARY FACTOR CORRELATIONS

1	1.00	-0.22	-0.09	0.36
2	-0.22	1.00	0.27	-0.46
3	-0.08	0.27	1.00	-0.31
4	0.36	-0.46	-0.31	1.00

(Table 32 continued)

PRIMARY FACTOR PATTERN

SOI-Post

Child	I	II	III
1	-0.23	-0.14	0.45
2	-0.27	0.10	0.71
3	-0.21	0.96	-0.02
4	0.97	-0.01	-0.60
5	0.03	0.43	0.57
6	-0.30	0.11	-0.19
7	-0.12	0.80	-0.27
8	0.03	0.51	-0.65
9	-0.41	0.02	-0.41
10	-0.17	0.87	-0.34
11	0.08	0.07	0.62
12	0.69	-0.04	-0.79
13	-0.20	-0.44	0.38
14	0.94	-0.08	-0.44
15	0.50	-0.01	0.34
16	0.97	-0.07	-0.41
17	-0.17	-0.38	0.76
18	0.00	0.19	9.31

PRIMARY FACTOR CORRELATIONS

1	1.00	0.24	0.46
2	0.24	1.00	0.39
3	0.46	0.39	1.00

Table 33.

Comparison of Factor Loading with Race, Sex, SES

SOI Interim Post

	Loading	Race	Sex	SES
Factor I	.98	1	1	1
	.94	1	2	1
	.95	1	1	1
	.57	1	1	1
	.68	1	2	1
Factor II				
	.84	1	2	1
	.79	1	2	1
	.78	1	2	1
	.50	2	2	1
	1.00	2	2	1
Factor III				
	-.67	1	1	2
	+.73	1	1	1
	+.76	2	1	2
	+.69	2	1	2
Factor IV				
	+.52	2	2	2
	+.65	2	2	2
	-.76	1	1	2
	-.67	2	1	2

SOI Post Data

Factor I				
	+.97	1	1	1
	+.68	1	2	1
	+.93	1	1	1
	+.96	1	2	1
	+.50	2	1	2
	-.41	2	2	2
Factor II				
	+.96	1	1	1
	+.79	1	2	2
	+.86	1	2	1
	-.44	2	2	1
Factor III				
	+.71	1	1	2
	+.56	1	1	1
	+.61	1	1	1
	+.75	2	1	2
	+.41	2	2	2
	-.60	1	1	1
	-.65	1	2	1
	-.79	1	2	1
	-.44	1	1	1

One other thought was noted in reading the head teacher's report--it would appear that the Interim factors were determined by the "structure" that a child was in for at least three of the four factors. On the other hand, the Post test results seem to center more around the children's activities during the free play and lunch time activities. It would appear that the structured class, contrary to some of the beliefs about the ability to build up friendships across cultural lines within the small groups, may still have that potential, but the opportunity for the children to play together in the larger groups, and more free choice situations may override the experiences in the structure. An alternate hypothesis might be that the experience that the children had in the structure may have carried some negative connotations which encouraged the children to seek other friends when possible. These findings, of course, are subject to considerable reinterpretation because the structures themselves, over the year. tended to be organized along intellectual maturity dimensions. This, of course, lead to the placement of many of the higher SES children together and many of the lower SES children together within the structures. Again, when the children entered the free play environment setting, they may have been carrying some structured experiences with them.

Open Class

Interpretation of the factor structure of the Open Ed Interim (See Table 34) seems to pose more problems than that of the SOI, when the only additional information available is race, SES and sex. For example, among the children who determine Factor I (See Table 35) there are approximately equal numbers of white and black children, male and female and Hi and Lo SES. Some other variable, then, would seem to be intervening to define this factor. Factor II would appear to be rather clearly defined by white Hi SES males with the only different individual being one black Lo SES male who might well possess qualities that help others perceive him like the Hi SES male. The opposite pole seems defined by two females mixed as to SES and race. Factor III seems to contrast Hi and Lo SES females, with one Lo SES male being associated with the Hi SES females. The characteristics are not as neatly defined as in the Interim SOI data.

Analysis of the Open Ed Post test results reveals an important change from a three factor structure to a two factor structure. Factor I seems to be clearly defined by boys since five of five at the (-) end are boys, with four of the five being white and Hi SES. On Factor II, five of the six children on the (+) end are female although mixed as to race and SES membership. An attempt to define the other pole, if one exists on the first dimension is unclear from the limited data, since it contains two Lo SES children, one male and one female, one black and one white.

Interpretation of the above is difficult. One possible interpretation that might be offered is that some of the differences associated with SES that were found on Factor III in the Interim test measures tend to have disappeared and now the dimensions tend to conform to a simpler "male" basis and "female" dimensions with some unknown side dimensions. One could hypothesis that the Open Ed classroom thus has contributed to the breakdown of certain dimensions. Although, of course, additional study will need to be made.

After preparing the previous interpretation, based solely on the data at hand, a discussion was held with the classroom teacher. At first the structure was difficult to understand because the children were all described as playing with different

children on different days, being involved with different activities and generally not fitting any pattern, particularly the one suggested by the findings. After some discussion, however, it appeared that the dimensions of the Post test data might better be described as "usually engages in socially interactive play activities" and "usually engages in making things." Factor I, the "makes things dimension" contains five boys, all of whom are described as making many things and one boy on the opposite end of the factor, described as "very immature" and "lacking skill as a builder." The other person on the opposite end was a girl who built very few things. Thus the belief that the social choices were based on a builder, non-builder concept.

Factor II might best be described as a "social interaction" factor. Children who clustered together on this dimension tended to be those who frequently engaged in social interaction-type of games, playing doctor, store, hair dresser. Children on the other end of the continuum tended to be described either as shy (2) or, as a boy, who gets along well with the boys, but not the girls. Thus, there appears to be an inclusion-exclusion aspect to the dimension. Further support occurs when it is noted that the girl who was the non-builder in Factor I was described as a girl who sometimes played with the girls, i.e. was sometimes included in the games and at times was excluded. Thus she would appear to fall midway on Factor II and thus not be either highly included or excluded.

In summary, one might say that the early differences between the children based on race, sex and SES seemed to have been supplanted in the Open Ed classroom by the dimension of "building things" or "someone to interact with socially."

In summary, there appears to have been changes in the factor structure of both classes. In the Open Ed, the structure seems to have gone from one based on the typical race, sex, SES dimension to one based on "building things" or "someone to interact with socially." The SOI class seems to have changed from one based on race, sex, SES and, possibly, experience in structures to one which seems to be associated more with peer relationships based on large group activities and lesson structures. These findings seem to be consistent with the reports of the outside observers concerning the social clients of the classes.

There are some indications in the observers' records of some negative interactions between the trainees in charge of the structure in the SOI classroom, and the needs of certain children in the group. In the future, it would appear that even greater weight will need to be placed on the quality of the teacher-child interaction than it was possible to place in this study.

The data certainly point the way to the importance of the use of well qualified personnel, who are sympathetic to the needs of the children being served. This may be particularly important in the SOI room where the teacher and the children have to be able to set up a good learning situation. In the Open Ed classroom, the child may not develop a very good relationship with the teacher, but if not, then it would seem that he could learn from the other children, if the room is not completely inappropriate for learning. On the other hand, in the highly structured classroom, the teacher is able to work very closely with the child and get to know him intimately. If the situation is a warm, comfortable relationship and the experiences provided for the children are appropriate, then it would seem that there would be the opportunity for considerable growth. On the other hand, if the situation is not enhancing, then there exists the possibility for a negative relationship.

Table 34.

PRIMARY FACTOR PATTERN

Open Ed-Pre

Child	I	II	III
1	0.79	-0.00	0.06
2	0.47	0.47	0.15
3	0.63	0.41	0.21
4	-0.01	-0.24	-0.57
5	-0.20	0.18	0.62
6	-0.01	0.83	-0.34
7	0.16	0.26	-0.63
8	0.61	-0.06	-0.42
9	0.64	0.09	-0.01
10	0.01	0.30	-0.04
11	0.01	-0.04	-.51
12	-0.25	0.31	.05
13	0.69	-0.51	-0.10
14	-0.14	0.23	-0.70
15	0.79	-0.04	0.13
16	-0.02	0.75	-0.20
17	0.01	0.20	-0.05
1	-0.03	-0.54	-0.20
19	0.18	-0.29	0.55

PRIMARY FACTOR CORRELATIONS

1	1.00	0.21	-0.01
2	.21	1.00	.05
3	- .01	0.05	1.00

(Table 34 continued)

PRIMARY FACTOR PATTERN

Open Ed Post

Child	I	II
1	-0.85	0.23
2	-0.58	-0.27
3	-0.27	-0.59
4	-0.12	0.78
5	0.27	0.04
6	-0.72	-0.02
7	-0.01	0.71
8	0.02	0.47
9	-0.33	-0.25
10	-0.65	0.03
11	-0.08	0.79
12	0.58	-0.31
13	-0.16	0.63
14	-0.17	-0.49
15	-0.07	-0.52
16	-0.75	0.05
17	-0.26	0.42
18	-0.26	0.79
19	0.48	-0.16

PRIMARY FACTOR CORRELATIONS

1	1.00	0.36
2	0.36	1.00

Table 35.

Comparison of Factor Loadings with Race, Sex, SES

Open Ed Interim Post

Factor I	Loading	Race	Sex	SES
	+.79	2	1	2
	+.63	2	1	2
	+.61	1	2	1
	+.64	1	1	1
	+.69	1	2	1
	+.79	1	1	1
	+.47	2	2	2
Factor II				
	+.83	1	1	1
	+.80	1	1	1
	+.75	1	1	1
	+.47	1	1	1
	+.41	2	1	2
	-.51	1	2	1
	-.54	2	2	2
Factor III				
	+.62	1	2	2
	+.51	1	2	2
	+.55	2	2	2
	-.57	2	1	2
	-.63	1	2	1
	-.42	1	2	1
	-.70	1	2	1

Open Ed Post Data

Factor I				
	-.85	2	1	2
	-.58	1	1	1
	-.72	1	1	1
	-.65	1	1	1
	-.75	1	1	1
	+.58	1	1	2
	+.48	2	2	2
Factor II				
	+.42	2	2	2
	+.47	1	2	1
	+.78	2	1	2
	+.79	1	2	2
	+.63	1	2	1
	+.79	2	2	2
	-.59	2	1	2
	-.49	1	2	1
	-.52	1	1	1

Outcomes

Stanford-Binet Outcomes

One of the major concerns of the project was to enhance the intellectual functioning of these bright children so that they might be better able to use their abilities on intellectual activities. To assist in this assessment, each of the children was administered a Stanford-Binet, Form L-M, by a trained school psychologist before the child entered the study and again at the end of the study. As reported earlier, a comparison of the group on the "pre" data revealed no significant differences between the groups.

At the completion of the study, a BALANOVA was made of the pre and post test scores as divided by class and SES classification. The results of this analysis are reported in Table 36.

Table 36.

BALANOVA of Stanford-Binet
Pre and Post Test IQ Scores by Class and SES

	Source	df	Mean Sq.	F ratio	Prob.
A	Class (Open Ed-SOI)	2	615.29	1.94	.15
B	SES	1	17339.22	54.99	.00
A x B		2	766.20	2.41	.10
D	Child	50	317.23		
C	Pre-Post	1	399.80	3.93	.05
A x C		2	318.22	.31	.73
B x C		1	2.41	.02	.88
A x B x C		2	60.29	.59	.56
D x A		50	101.76		

As can be seen from Table 36, Factor C, the children did make significant gains ($p = .05$) between the pre and post test measurements. Further analysis of these main effect gains indicates that the mean scores changed from 124.4 to 128.4. This gain of four points, although significant, is not as large as is frequently found with carefully structured programs for Lo SES children. Further, it is not as great as is often reported--for older children--of test-retest gains of approximately six IQ points. On the other hand, since all of the children are bright and above the mean, regression to the mean would indicate a decrease in score. Thus, interpretation of t educational significance of these gains is difficult.

Another significant main effect was found between the Lo SES and Hi SES childre (Factor B) on their combined pre and post test scores. The mean for the Lo SES children was 113.3 and 139.5 for the Hi SES children. This difference is not unexpected in light of the method of selection of the children and the literature on

the I.Q. scores of children from Lo and Hi SES homes. Contrary to expectations, no other statistically significant differences were found between the classes or on any of the interaction dimensions.

Since one of the basic hypothesis was that children from Lo SES homes might do better in a structured classroom, it seemed appropriate to study the findings a little further. Although the results are not statistically significantly different, the Lo SES children in the SOI classroom attained a score of 104.4 on the Pre test and a score of 103.7 on the Post test, a difference of -.7. The Hi SES children, on the other hand, attained an I.Q. of 137.2 on the Pre test and a score of 142.8 on the Post test, a difference of +5.6. Similarly, the children in the Open Ed classroom gained, for the Lo Ses, 8.3, and for the Hi 4.0, while in the Contrast group the Lo SES gained 3.4 and the Hi SES 3.3.

Table 37.

Stanford-Binet Pre and Post Test
I.Q. Scores by Class and SES

	SES	Pre	Post	N	Total
Open	Hi	133.1	137.1	10	135.1
	Lo	114.0	122.3	10	118.2
	Total	123.5	129.7		
SOI	Hi	137.2	142.8	12	140.0
	Lo	104.4	103.7	7	104.1
	Total	120.8	123.3		
Contrast	Hi	141.8	145.1	12	143.4
	Lo	116.0	119.4	5	117.7
	Total	128.9	132.2		

SOI Analysis of Stanford-Binet

Since one of the major variables in the study was the use of the Structure of the Intellect, it might be anticipated that an analysis of measures of intellectual functioning using the SOI Model as a basis might yield important information. Since the dimensions in the Structure of the Intellect can be conceptualized as different from each other, it was deemed appropriate to compare the groups based on a test of the differences of each dimension.

Since the Stanford-Binet is considered to be an important measure of intellectual functioning and since procedures are available for scoring it according to the model, it was used as the basis for the analysis. Each Stanford-Binet was scored using a procedure developed by Tucker (1972) on the basis of the work by Meeker (1969). The results were then recorded and subjected to an analysis.

To help insure that possible, but unknown, differences did not contribute to differences, a one-way analysis of co-variance was used to co-vary with sex, race, and SES. The data on the means of the co-variants is found in Table 38.

Since each of the analyses is based on the same groups, the co-variants in Table 38 apply to each of the following analyses.

The results of a one-way ANACOVA for each of the major SOI dimensions on the S-B Pre-test scores is reported in Table 39. As can be seen from the table there are only two significant differences: (1) a difference in the homogeneity of regression for the cognition scores of the Open Ed and SOI classrooms and (2) a difference between the adjusted means of the "Systems" scores. Since these scores constitute two of twenty-eight possible differences, the findings may well be the result of chance factors.

From these findings, it was assumed that there were no differences between the experimental classes on the Stanford-Binet Pre test scores when subjected to a detailed analysis based on the Structure of Intellect model.

Since there was no difference on the Pre test scores it was deemed appropriate to conduct a similar analysis of the Post test scores. The results of this analysis are reported in Table 40. As can be seen from the reported results of the Post test, even the possibly random differences that occurred in the Pre test analysis are no longer present. Thus, there were no significant differences between the scores of the children from two classroom models when analyzed according to the SOI model. Further, in light of the overall pattern of lack of differences, it was not deemed necessary to compute all the possible comparisons with the Contrast groups in this area since any results would also likely be a function of random error.

Creativity

One of the goals of the study was to improve the intellectual functioning of the children in various cells of the SOI Model, but particularly with regard to the divergent production of responses because it is believed that one of the strengths of bright individuals should be the ability to think up multiple solutions to problems

To assess possible differences in the children's ability to think divergently, two approaches were used--the first, as reported earlier, was through a SOI analysis of the S-B, and the second through the "Torrance Tests of Creative Thinking." The tests were administered to the Open Ed, SOI and Contrast children only at the end of the study. No pre tests were given. This was a function of lack of time, and personnel, and the difficulty level of the test.

The Torrance Tests of Creative Thinking, Verbal Test, Booklet A were used with a few basic modifications. Briefly, five activities were administered as described by Torrance in the directions manual and scoring guide. The activities administered were Activity 1: Ask Questions; Activity 2: Guess Causes; Activity 3: Guess Consequences; Activity 4: Product Improvement, and Activity 7: Just Suppose. In addition, Activity 5: Unusual Uses was used but the stimulus object was changed from "cardboard boxes" to "tin cans". The reason for the change was that the Open Ed classroom had, throughout the year, made multiple uses of cardboard boxes in a variety of ways. Thus it was felt that the use of that item as a stimulus would inappropriately bias the test. The stimulus "tin cans" appeared to be similar in generality and could be scored in a similar manner.

Table 38.

Variables	OPEN ED ($N = 20$) $\bar{X}$	SOI ($N = 19$) $\bar{X}$
Race	1.35	1.37
Sex	1.50	1.47
SES	52.8	52.4

Table 39.

Results of One-Way ANACOVA x Variables on Pre-Test S-B Scores

Variables	OPEN ED $\bar{X}$	OPEN ED (Adj. $\bar{X}$)	SOI $\bar{X}$	SOI (Adj. $\bar{X}$)	Homo. of Regression F	ANACOVA Adj. Mean F
Cognition	6.83	(6.83)	6.85	(6.85)	3.82*[1]	.00
Memory	6.18	(6.18)	6.12	(6.11)	.37	.06
Evaluation	6.58	(6.58)	6.25	(6.25)	1.48	3.37
Convergent	6.83	(6.83)	6.36	(6.37)	2.98	3.13
Divergent	6.62	(6.63)	6.23	(6.22)	1.55	1.96
Figural	6.12	(6.11)	5.92	(5.92)	2.18	.72
Symbolic	6.11	(6.12)	5.88	(5.88)	.85	1.06
Semantic	6.73	(6.73)	6.67	(6.67)	1.42	.11
Units	6.54	(6.54)	6.41	(6.41)	1.02	.48
Classes	6.45	(6.45)	6.34	(6.34)	1.21	.20
Relations	6.90	(6.90)	6.74	(6.74)	1.67	.33
Systems	5.98	(5.97)	5.35	(5.35)	2.36	9.22*[2]
Transformations	6.76	(6.76)	6.43	(6.43)	2.61	1.62
Implications	6.81	(6.81)	6.57	(6.57)	2.34	.95

*[1] = $F_{.025\ (3,31)} = 3.59$

*[2] = $F_{.025\ (1,34)} = 5.57$

Table 40.

Results of One-Way ANACOVA x Variables on Post-Test S-B Scores

Variables	OPEN ED $\bar{X}$	OPEN ED (Adj. $\bar{X}$)	SOI $\bar{X}$	SOI (Adj. $\bar{X}$)	Homo. of Regression F	ANACOVA Adj. Mean F
Cognition	7.6	(7.6)	7.6	(7.6)	2.97	.03
Memory	7.2	(7.3)	7.3	(7.2)	.12	.19
Evaluation	7.1	(7.1)	7.1	(7.0)	1.70	.09
Convergent	7.5	(7.5)	7.3	(7.3)	1.71	.39
Divergent	7.7	(7.7)	7.2	(7.2)	.35	2.27
Figural	7.98	(7.9)	6.8	(6.9)	.56	1.11
Symbolic	7.2	(7.2)	6.8	(6.8)	1.10	1.58
Semantic	7.5	(7.5)	7.4	(7.3)	1.72	.86
Units	7.5	(7.6)	7.5	(7.5)	.79	.02
Classes	7.3	(7.3)	7.0	(7.0)	1.99	1.03
Relations	7.4	(7.46)	7.5	(7.49)	2.03	.00
Systems	7.1	(7.1)	6.7	(6.7)	.40	2.00
Transformations	7.6	(7.6)	7.2	(7.3)	.51	1.10
Implications	7.42	(7.5)	7.3	(7.4)	.57	.87

$F_{.025\ (3,39)} = 3.59$

All creativity tests were administered orally and individually by the trained examiners. Maximum time limits were always adhered to. The problems in testing these young children, however, tended to be the opposite, that is, the children had difficulty comprehending the task and then in maintaining interest and focus for the entire length of the time period. Thus, it was found necessary to use the arbitrary rules in the manual which indicates that "if a pupil obviously runs out of responses or can give no responses, go ahead to the next item," p. 9 (1966). As a rule of thumb, the examiner was instructed to wait at least one minute beyond the child's last response, maintaining a receptive, encouraging attitude, before going on to the next activity. Such a procedure seems to allow the tester to maintain interest, and involvement and to decrease discouragement on the part of the child.

All administration and scoring of the Creativity test was done by qualified psychologists. The manual provided the basic criteria for scoring. Since no norms were available in the "tin can" area, an approximation of these scores was made generalizing from the responses suggested by the cardboard boxes. Although some deviation may have occurred in the originality area, since the scoring was done by professional individuals with essentially no knowledge of what treatment procedure a child had received, the results are felt to be relatively unbiased.

Each of the activities was scored according to the three dimensions of Fluency, Flexibility, and Originality. Then all of the scores in each of these areas was added together to give a total Fluency, Flexibility, and Originality scores. These total scores were then used in the final analysis.

Basically the test proved to be somewhat difficult for many of the children. Out of a total of 324 possible scores of one or more in Fluency (each child times six possible opportunities to get at least one Fluency score), a zero score was received by 52, or 16% of the time. Similarly, children attained zero scores 57 of 324 opportunities (18%) of the time in Flexibility and 181 of 324 (56%) in the Originality area. Nevertheless, every child was able to get at least one Fluency and one Flexibility score, with two children scoring on at least three activities and the rest four or more. Thus, although the test proved to be difficult it appeared to be just above the point where it would have been inappropriate

One result of the difficulty level of the test, however, was to provide a positive skew to the scores. To make the scores present a more normal distribution, the square root was taken of each subject's score. This transformed score was then used as the basis for the analysis.

A BALANOVA was performed on each of the transformed scores with the main factors being classes (Open Ed, SOI, and Contrast), Hi-Lo SES, and each of the creativity variables. The results of the separate BALANOVA are reported in Table 41, A, B, and C. As can be seen from this table, there was no difference between any of the class models (Factor A) in the area of Fluency, Flexibility, or Originality with probabilities varying from .76 to .27. Thus, there is no evidence to support the belief that one class model provided significantly greater stimulus to divergent productive thinking than any other model.

Table 41.

Analysis of Transformed Creativity Scores

A. Fluency

Source	df	M.S.	F	Prob.
A - Class	2	.362	.27	.76
B - Hi-Lo SES	1	4.257	3.28	.08
A x B	2	.025	.02	.98
C - Fluency (Transformed)	48	1.298		

B. Flexibility

Source	df	M.S.	F	Prob.
A - Class	2	.313	.456	.64
B - Hi-Lo SES	1	2.824	4.116	.05
A x B	2	.091	.133	.88
C - Flexibility (Transformed)	48	.686		

C. Originality

Source	df	M.S.	F	Prob.
A - Class	2	1.218	1.35	.27
B - Hi-Lo SES	1	9.659	6.01	.02
A x B	2	.093	.06	.94
C - Originality (Transformed)	48	1.608		

A question that persists in the area of creativity focuses on the relationship between divergent productive thinking and the social background of the children. The the information presented in the analysis of Factor B - Hi and Lo SES is of value. The findings indicate that in the area of Flexibility and Originality, differences were found between the performance of the Hi and Lo SES children (Factor B) ($p = .05$/flexibility; $p = .02$/originality) while Fluency approached but did not reach significance level ($p = .08$). Thus, the Hi SES group did significantly better than the Lo SES group in both creativity areas. Thus, bright young children from Hi SES homes tend to do significantly better than bright children from Lo SES homes on the verbally based measures of divergent productive thinking contained in this study.

One question raised during the investigation concerned the possibility that one model program might stimulate one SES group more than another. Since there was no significant A x B interaction, there is no support for this hypothesized effect. Basically, then, there was no differential effect between SES and classroom models. Since only post-tests were administered, no statements can be made about possible differential changes although the lack of change found by other measures would tend to support the data that there would have been no differential change on these measures either.

Divergency of Activities

One of the main goals of the project was to ensure that children were provided with activities based on the SOI model which would help ensure a high degree of divergent and evaluation activities for the children. One way to assess the divergency of activities is to assess the types of questions used by the teachers. That is, do the teachers ask cognitive-memory, convergent, divergent, evaluative or class management types of questions?

The data was obtained by analyzing handwritten samples of teachers' language gathered during two one-hour periods of observing each experimental teacher and one hour of observing each Contrast teacher. Since the number of utterances for each teacher varied, a teacher's score in a category was the total number of questions in that category divided by the total number of utterances. Since the results then would be proportions. All scores were transformed using an arcsin approach before the statistical analysis. The results of a BALANOVA of the arcsin scores of the teachers' questions are reported in Table 42. As can be seen from Table 42, there is not only a significant difference between the main effects of the types of questions used, but also a significant type of question by classroom model (A x B) interaction. To help interpret the interaction, the obtained arcsin mean scores and equivalent percents are reported in Table 42 and plotted in Graph 5.

Examination of the graph reveals that the Contrast teachers employ what many will recognize as a typical pattern; that is high in the number of cognitive-memory type items; fewer, but a still important number of convergent questions, and very few divergent and evaluative questions. Of interest is the fact that the number of class management type of questions (Could you please shut the door?) is small.

The Open Ed model, in comparison with the Contrast group, used far fewer cognitive memory questions, a similar number of convergent questions, more divergent questions, and many more evaluative and class management questions.

Graph

Mean Ara.in scores of Style of Teachers' Questions

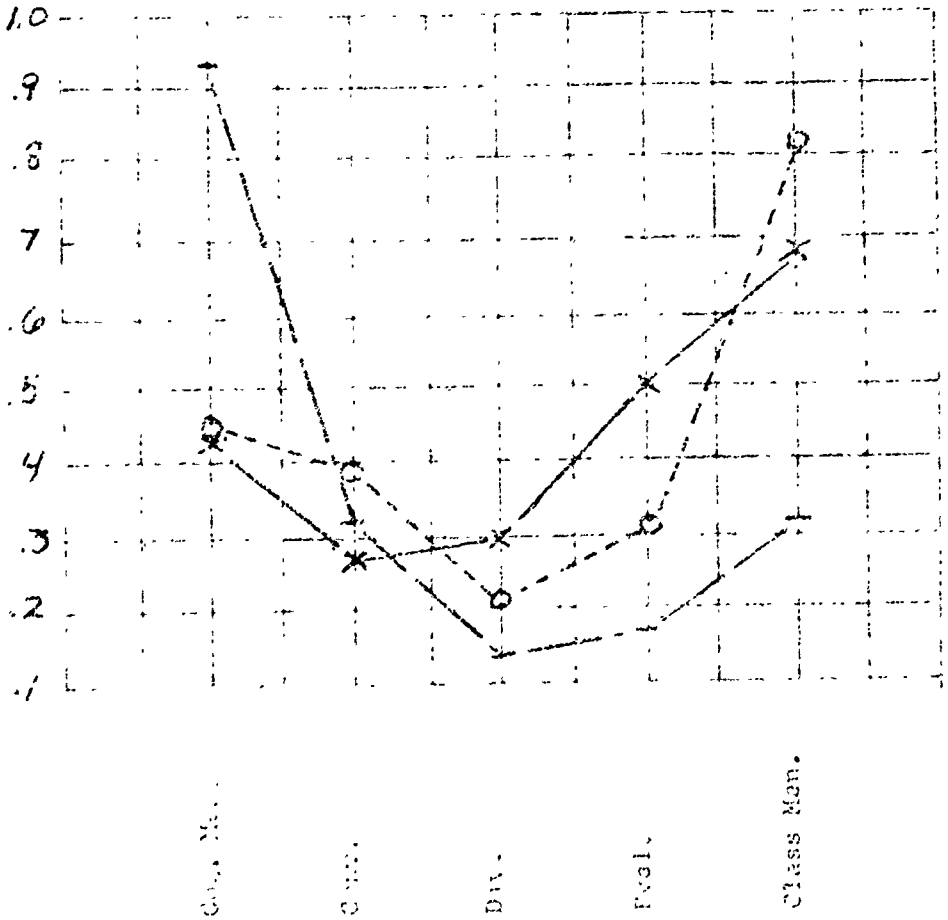


Table 42.

Results of BALANOVA of Arcsin
Scores for Type of Teachers' Questions

Source	df Num.	Den	Mean Sq.	F ratio	Prob.
A - Class, Open Ed, SOI, Contrast	2	26	.070	1.62	.22
C - Teachers	26		.043		
B - Type Questions	4	104	.990	30.55	.00
A x B	8	104	.486	15.01	.00

	Cognitive Memory		Convergent		Divergent		Evaluative		Class Management	
	Arc	(%)	Arc	(%)	Arc	(%)	Arc	(%)	Arc	(%)
Open Ed	.412	(4.2)	.277	(1.9)	.300	(2.3)	.502	(6.0)	.689	(11.7)
SOI	.453	(5.1)	.399	(4.0)	.210	(1.1)	.302	(2.3)	.319	(15.8)
Contrast	.939	(20.2)	.312	(2.4)	.138)	(0.4)	.168	(0.7)	.310	(2.4)

The SOI model teachers as did the Open Ed teachers, used far fewer cognitive-memory type questions. Contrary to expectations, they used more convergent questions and fewer divergent and evaluative questions. The SOI teachers, on the other hand, were highest in the use of class management types of questions. Since interscorer reliability is high (+.90) on this task and since the data was collected by written transcript from the teachers, little can be reflected upon the scoring procedure. On the other hand, differences in sampling might have resulted in the finding. A trend in the above direction was noticed during the beginning of the second semester and was discussed with the SOI head teacher. The teacher's comments indicated that the aides the second semester were different from the first semester (when initial data showed a reverse pattern). The head teacher did attempt to provide more in-service training, but the pattern apparently held through the final collection of data. Thus, the findings are considered to reflect the classroom activities and indicate considerable difference between the intended transaction and observed transaction.

Comparison of Teachers' Questions Within Type of Classroom Activity

In the preceding section, the style of questions teachers asked was compared with the classroom model in which they taught. Not only were the classrooms expected to differ by syntax, it was also thought they might differ according to the language in the small structure versus other activities and according to the style of question asked. This section, then, contains a report of an analysis comparing differences between activities within the classroom. That is, within the Open Ed and SOI classrooms, it was possible to observe teachers working with children in small groups on

structured academically-oriented activities such as reading skill development and math skill development as compared with other activities such as large group, independent manipulative behavior, etc. For the purposes of this analysis, the teachers' questioning behavior in the small structured setting was compared with their behavior in all other settings.

This analysis differs from the preceding analysis in several ways. First, since there was very little small group structured teaching in any of the Contrast classes, the scores of these teachers could not be used. Further, since a total of three of the observations made on the Open Ed (2) and SOI (1) classrooms did not include observations of a "structure," the data had to be deleted before analysis.

The results of the analysis are reported in Table 43.

Table 43.

Results of BALANOVA Arcsin Scores
of Teachers' Style of Questions
(Open Ed, SOI) in Small Structure vs Other

Source	df	M.S.	F	Prob.
A - Class (Open Ed, SOI)	1	.1709	5.49	.04*
D - Teachers	12	.031		
B - Small "structure"/other	1	.016	.11	.74
A x B	1	.071	.52	.48
B x D	12	.136		
C - Style of Question	4	1.33	15.48	.00*
A x C	4	.157	1.82	.14
C x D	48	.086		
B x C	4	.080	1.38	.26
A x B x C - Class x RDS/others x Ques.	4	.123	2.13	.09
B x C x D	48	.058		

*Significant at indicated level of probability.

As can be seen in Table 43, there is a significant main effects difference between the Open Ed and SOI class and a main effects difference among the style of questions used. There were no significant interactions although the triple interaction (class x small group x question) approached the level of significance (P = .09). Of specific interest is the fact that the anticipated difference between the small structure versus other teachers' language behavior did not approach significance.

A graph of the mean arcsin scores for teachers' questions is presented in Graph 6. Comparison of this graph reveals a figure that is very similar to Graph 5 although in the present analysis the class x question interaction did not reach significance ($P = .14$). On the other hand, since the main effects did differ it does reveal that the Open Ed teachers tend to ask more questions than do the SOI teachers when based on the total number of utterances of each.

In summary, then, there are differences between the Open Ed and SOI classes and the style of questions asked. There is no difference, however, in the teachers' questioning behavior whether it be in the small structure or some other setting.

Problem Solving

One of the goals of the Open Ed approach is to help children learn to become better problem solvers. Activities that involve children in the problem solving process are many and varied. Since success in problem solving was an expected outcome of the model programs, several individuals were asked to help define problem solving and suggest ways that it might be assessed. Dr. Marcia Scott of the Institute for Research on Exceptional Children had been working in the area and offered to assist in the assessment.

A variety of approaches to assess both social and cognitive areas were tried out and discarded for one reason or another. Two, "Comparison" and "Sorting", however, seemed to offer some promise. Dr. Scott and her assistant, thus, proceeded to develop and administer these two sets of tasks to the children in the two experimental classrooms. In the sorting task, the children were presented with pictures of 24 ink drawings of faces. The faces differed on five dimensions--color, presence or absence of hair, of nose, open or shut eyes and smile or frown. Each child in the two experimental classes, tested individually, was asked to find as many ways as he could to make two piles in which all of the pictures in a pile were alike in a certain way. If the child did not understand the task, he was provided with a series of "prompts" which did not enter into his score.

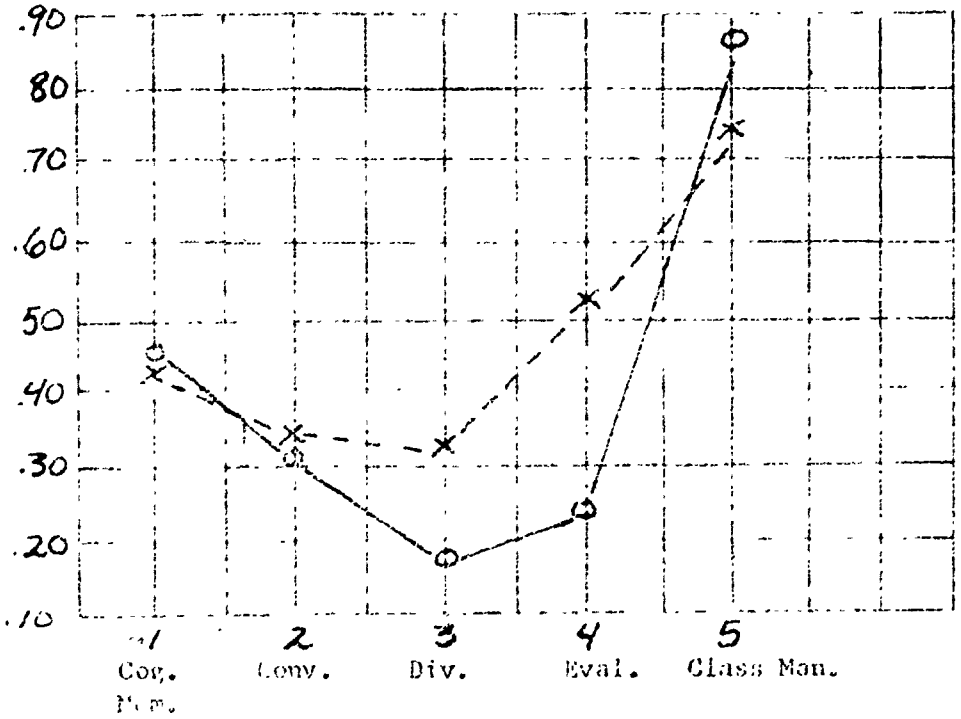
Since it was not certain how the results might be related to SES, race, or sex, the two classrooms were compared using a multiple analysis of co-variance controlling for the above variables. The results of the analysis are reported in Table 44.

As can be seen from the analysis, there was no significant difference between the two classrooms as measured on the problem solving sorting task. Since this task has some similarity with the ability to restructure a situation with that found in creativity, this finding of no significant difference is consistent with the findings of the creativity tests.

In the problem solving-comparison task, the children were presented pictures of objects and ask to identify and tell ways in which the objects were similar. For example, the children were shown a picture of a zebra and a tiger and asked to tell as many ways as possible in which the animals were alike. The children received prompts and were encouraged to find as many ways as possible. Again, a comparison of the scores was made using an analysis of co-variance. The results are reported in Table 44.

Graph [illegible].

Arcsin Scores of Teachers' Questions x Class



	Open Ed	SOI	Total
1. Cog. Mem.	.43	.46	.45
2. Conv. Prod.	.5[illegible]	.33	.3[illegible]
3. Div. Prod.	.34	.18	.26
4. Evaluative	.54	.2[illegible]	.40
5. Classroom Man.	.7[illegible]	.76	.62

X - Open Ed
O - SOI

Table 44 . .

Analysis of Co-variance of Adjusted Group Sorting Test Means

Source	Adj. Sum of Sq.	df	Adj. Mean Sq.	F ratio
Classes	1.42	1	1.42	.87
Pooled with one variation	48.76	30	1.62	

Adj. Coefficient	
Sep.	-.06
Race	-.25
SES	-.00

Adj. Group Means	
SOI	3.10
Open Ed	3.51

As can be seen from the results, there are no differences between the two classrooms in the problem solving ability of children--the children in the Open Ed classroom did just as well as the children in the SOI classroom. As mentioned before, it was not possible to give these tasks to the children in the Contrast group because of lack of time and personnel so no comparisons can be made with this group.

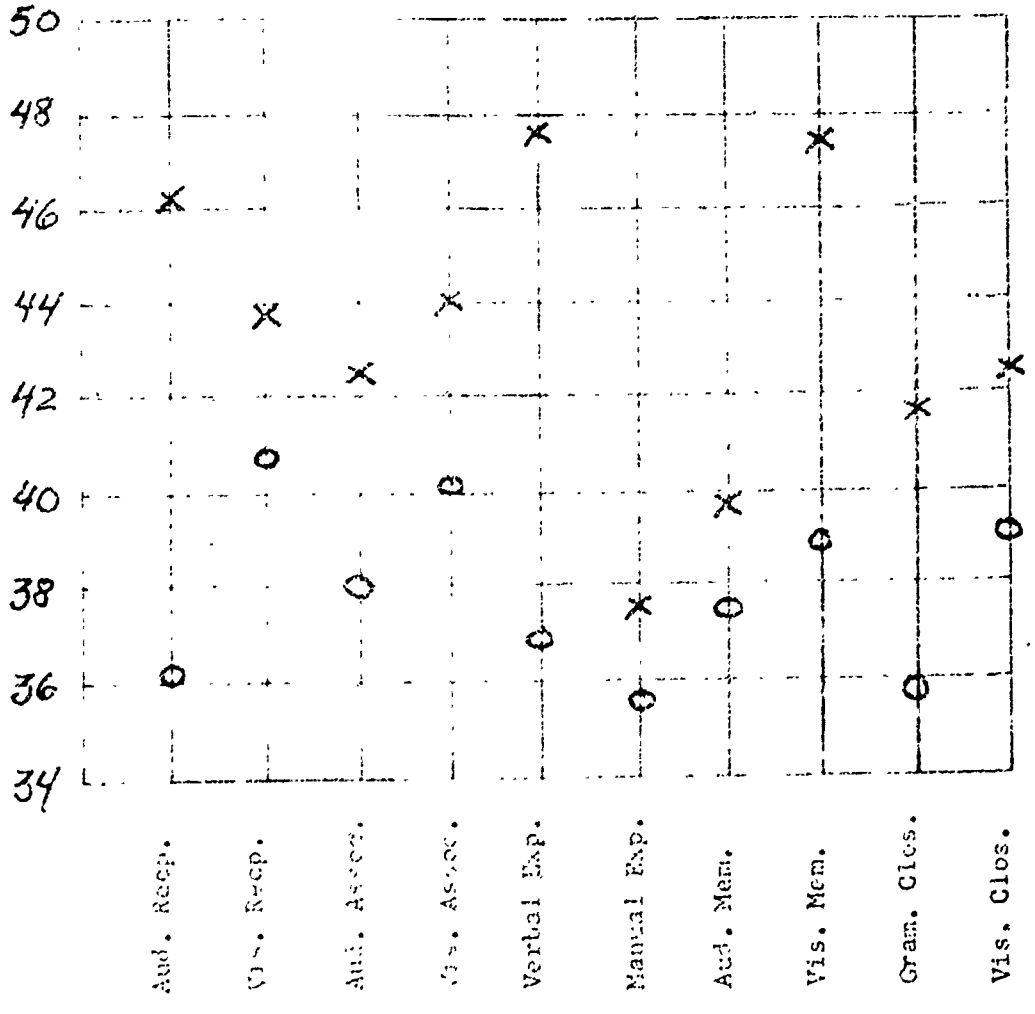
ITPA Post Test Results

The Karnes SOI model essentially focuses on the development of the Divergent, Evaluative and Behavioral abilities of children. Still, it was anticipated that the children in the SOI classroom which uses a format previously found to enhance the language abilities of children would also prove to be beneficial in this area. The Illinois Test of Psycholinguistic Abilities (ITPA) provides one measure of language abilities of children which can also be readily analyzed into areas related to the cells of the SOI model; hence it was expected that there would be a significant difference between the classroom models on the ITPA scores.

The ITPA test was administered to each of the subjects at the end of the project. The results of the analysis of the scaled scores is reported in Table 45. A review of the findings in the table reveals no significant difference between any of the class room models (A--Classes; p = .97). Thus, there was no support for the belief that the classrooms had differential effects on the language of the children. It can be seen, however, that three effects were significant beyond the .05 level. The main effects associated with SES (B), with the ITPA Variables (C) themselves and with the interaction (B x C) between these two variables. Thus it would appear that there is a

Plot 3

ITPA Post Test Scale Scores by Cell and SES



significant difference between the way that children function on the specific ITPA variables and their SES. Such a finding is consistent with the report of Karnes (1965) who found that children from Lo income groups tended to function differentially on the ITPA. A description of the various cell means is reported in Table 46.

Interpretation of the findings suggests that the Hi SES children did best in the areas of Visual Memory and Verbal Expression and least well in Manual Expression and Auditory Memory. Of importance is, that when the scores are interpreted from an individual point of view, the Visual Memory and the Manual Expression scores would be considered to be significantly different from the average scores ($\bar{X}$ = 43.3). Thus, they would be considered to be a strength and weakness report only. The Lo SES children, on the other hand, had essentially a flat distribution of scores with a difference of only 5.1 scale score points between the highest and lowest scores and a mean scale score of 37.5. To the extent that there was a trend toward a difference within the Lo SES group, it would appear that they did best on the visual items and least well on the auditory channel items with the exception of Manual Expression. However, there was little evidence of other than a flat distribution.

In summary, children from the Hi SES group did better than the Lo SES children on all of the ITPA subtests. The Hi SES children seem to do best on those items such as Visual Memory and Verbal Expression that are important for later school learning. The Lo SES children, on the other hand, demonstrated relatively little variation in their overall functioning, being below the Hi SES in all areas. In addition, the Lo SES children seemed to be weaker in the auditory activities, which are important for later school learning. The greatest discrepancy between any two of the Lo SES tests was between Auditory and Visual Reception. Such a finding may be a function of the difficulty of interacting with a new person, since Auditory Reception task is the first area tested on the ITPA , and/or the lack of the background information and ability to attend that goes with later school success. Obviously, additional effort, planning, and experimentation will be needed if the Lo SES children of higher ability are to ever approach or catch up with the Hi SES children.

Metropolitan Readiness Test Scores

One of the concerns of any early education program is the level of preparedness of the children to enter a reading program. To assess this area, the children were administered the Metropolitan Reading Readiness Test. Children in the Open Ed and SOI groups received the test on a pre- and a post-test basis. The children in the Contrast group were administered the test on a post-test basis only.

Comparison of the Open Ed and SOI classroom children on the initial results revealed no significant difference between the two groups. A comparison was also made of the differences between the two groups on a post-test basis. The results of this comparison are reported in Table 47.

As can be seen from the table, there are no significant differences in any of the comparisons on any of the sub-scales with the exception of one. The Open Ed children appeared to be preforming significantly higher than the SOI children on the Subtest #4. In view of the lack of difference on any of the other subtests, it would appear best if this were attributed to chance rather than some significant differences between the programs.

Table 45.

Results of BALANOVA Analysis of
ITPA Scaled Scores by Class and SES

Source	df	Mean S	atio	Prob.
A Class	2	5.54	.03	.97
B SES	1	3737.25	23.34	.00
A x B	2	302.80	1.89	.16
D Child	49		6.41	
C ITPA Variables	9	243.75	6.41	.00
A x C	18	26.87	.71	.81
B x C	9	141.94	3.73	.00
A x B x C	18	25.55	.67	.84
L x D	441	38.05		

Table 46.

Results of Analysis of ITPA
Post-Test Scale Scores by Cell

	Open Ed	SOI	Contrast		SES Group	
	N = 20	N = 18	N = 17	Total	Hi	Lo
1. Auditory Reception	40.8	40.4	42.3	41.2	46.1	36.3
2. Visual Reception	41.8	42.3	42.9	42.4	43.8	40.9
3. Auditory Association	39.5	42.7	39.1	40.3	42.5	38.0
4. Visual Association	41.1	42.7	42.5	42.1	44.0	40.2
5. Verbal Expression	41.6	42.0	42.2	42.0	46.8	37.1
6. Manual Expression	37.2	36.9	35.6	36.5	37.3	35.8
7. Auditory Memory	37.3	38.8	38.8	38.3	39.6	37.6
8. Visual Memory	43.8	42.5	43.7	44.0	49.2	38.7
9. Grammatic Closure	40.1	37.9	38.3	38.8	41.7	35.8
10. Visual Closure	41.0	38.7	42.8	40.8	42.4	39.2

Table 47.

Comparison of Group on Metropolitan
Readiness Post Test Scores

Metropolitan	Open Ed	SOI	Contrast	(1)-(2)	(2)-(3)	(1)-(3)
#1	10.5	10.2	10.5	.45	- .39	.06
#2	10.8	11.3	9.9	- .83	1.73	1.21
#3	9.2	8.8	9.8	.42	-1.00	- .56
#4	15.2	13.4	15.1	1.94	-1.47	.20
#5	17.7	15.8	16.5	1.21	- .40	.84
#6	8.4	8.2	8.3	.22	.12	.08
Total	71.8	67.7	70.8	.83	- .59	.24

In summary, the results of the reading readiness tests indicated that there were significant gains made by the children in all of the groups, but that no one group made significantly higher gains than any other. Thus, there did not appear to be any difference between the two groups on this outcome variable.

Parents' Reaction

The parents' reaction to the program was evaluated through a questionnaire sent to the parents after the children had completed about eight months of the first grade. The purpose of the questionnaire (See Appendix G) was to obtain the parents' feelings about the program and their reports of the teachers' reactions to the children's behavior in the first grade. To analyze the data, the responses were grouped into five parts: (1) Parents' report of the child's activities at home during kindergarten (items 1-8), (2) Parents' belief as to the general importance of the program (items 9-11), (3) Parents' perception of the child's preparation for first grade (items 16-19) (4) Parents' report of teacher's reaction to the child's performance in first grade (items 19-22), and (5) Parents' comments on various aspects (items 10, 12, 15, 23-26).

Questionnaires were sent to each of the parents and then followed up with telephone calls and letters in an attempt to obtain the broadest possible sample of information. In all, responses were available from thirteen of twenty-one parents from the Open Education classroom or 62%, eleven of eighteen parents in the SOI classroom or 64% and six of seventeen parents for 35%. In all, six parents had moved from the Open Ed and SOI classroom without leaving forwarding addresses. Many of these individuals were of the Lo SES income group. Efforts to contact many of these parents through community contacts, etc. revealed no addresses. The results, then, may be slightly biased by the level of response, especially from the lower income

group. Further, the belief is that those who failed to respond may have felt somewhat more negative than those who did reply. Since there were so few responses from parents of the Contrast group, no analysis could be made of their information.

Comparisons of the response of the parents of children from the Open Ed classroom as compared with the SOI model classroom revealed a significant difference. The parents of the Open Ed classroom reported significantly more positive comments, such as, "My child often told about his experiences in the classroom," "My child often worked on ideas and projects he learned in kindergarten," and "My child had many new and unusual ideas." None of the items in this section (items 1-8) were significantly different, in and of themselves, but there was a difference (obtained chi square = 8.63, chi square .975 = 7.4) when the eight items were viewed as a set of related items that reflected the parents' view of the children on dimensions indicative of positive growth in the children. Of interest is the fact that over 90% of the parents reported positive statements about their child's response to school as compared with less than 10% negative.

The parents were also asked whether or not all or only certain children should be placed in a program like the one in which their child had been placed. There was no difference between the classrooms with about 75% agreeing or strongly agreeing that they would like to have their child in a program like the one he was placed in and about 25% disagreeing with the idea. That is somewhat less positive than the statements that the parents made about the learning, creative ideas, and talking the children did in the home. Possibly, they did not want the children to talk so much. Also, of course, is the problem that the parents were responsible for driving their children to school, so a commitment had to be made to the program. None of these seemed to reflect the parents' feelings as expressed to program personnel so it is not clear why the lower reaction probably as an interaction of all of the above with some highly individualized perceptions.

Although the parents had differed in the amount of positive statements about the growth of their child and his activities during kindergarten, they did not differ when asked questions regarding the quality of the child's preparation for first grade. Over 90% of the responses, regarding whether or not their children had been well prepared for kindergarten, were answered affirmatively in each classroom, but no significant differences occurred between the rooms.

In the next section of the questionnaire, parents were asked to report on the comments that teachers had made about the progress of the children in school. Again, almost 90% of the reports from each classroom were positive with no significant difference between the classrooms on any of the items or the set of items.

In summary, the parents' reports of their children's progress in the program and in kindergarten were extremely positive and supporting, although the results may be slightly biased by a slightly low rate of returns, and the somewhat fewer responses from parents of the Lo income children, many of whom were unavailable because of frequent moves.

As a part of the questionnaire, the parents were asked if their children had been placed in any type of special program. Eight parents responded affirmatively (with no difference between classes - four and four). The parents who described the special program their child was in usually indicated some type of special advanced or experimental program such as a combination grade 1 and 2 program (4). The only other special program with more than one in it was speech with two children.

Table 48.

Parents' Responses to Questionnaire

		Positive		Negative
	Score	4	3	2-1
1. Does your child feel happy, approach school, pursue school project at home?	Open Ed	58	39	7
	SOI	36	42	8

$x^2 = 8.68$

		Positive		Negative
	Score	4	3	2-1
2. Is the program good for many/most children?	Open Ed	13	5	6
	SOI	10	7	5

$x^2 = N.S.$

		Positive		Negative
	Score	4	3	2-1
3. Was your child prepared for first grade?	Open Ed	27	10	2
	SOI	20	10	3

$x^2 = N.S.$

		Positive		Negative
	Score	4	3	2-1
4. What does the first grade teacher report about his progress?	Open Ed	27	15	6
	SOI	19	19	4

$x^2 = N.S.$

In addition to the rating scales, the parents were asked open-ended questions to obtain broad comments on the programs. One question was a request to "describe the child who should receive the program if all children should not." The responses were very sparse, but suggested that the Open Ed classroom might be better for the more organized, inquisitive child, while the SOI would be better for the child who was bright, but might need some additional supportive help.

Another open-ended question asked the parents to report on what they disliked about the programs. Again the comments were sparse. In the Open Ed classroom, one parent said, "Would you believe I can find nothing wrong." Another commented on the problem of bringing the child to school. Others (4) suggested that the program should have had a longer day. Some of the comments on the SOI classroom were similar to the above, except that there was no suggestion of a lengthened day. Several made comments on the busing problems, plus "the poor nutritional quality of the snacks" (same in both classes) and "not being taught to read."

When parents of the Open Ed classroom were asked to describe how they wished the program would have been different, they typically restated the remarks above. One parent, however, said more concentration on basic skills, and another indicated perhaps more parent involvement. In the SOI classroom, on the other hand, comments included "more emphasis on phonics," "careful consideration of ability when grouping children," "more humanism," "being more strict so he didn't talk so much when placed in larger groups" (so that he would be better prepared for larger group work in kindergarten).

In responding to the question on how the child had benefitted from the school program, several parents from the SOI room responded that their child had lost his shyness, and was now able to speak his mind (3). Other parents felt that their child's interest or ability to think had been helped (6). One parent felt that he could have learned just as much in public school, while another parent said that it provided an excitement that was missing in the public school.

In responding to a question as to how the child had been benefitted by the school program, parents of the Open Ed classroom also responded that the overcoming of shyness (2), learning to work independently (7), widening interest by four parents, and the warm and humanness of the teacher, especially the head teacher, by four and, finally, specific preparation in the subject matter areas of reading, arithmetic (2) and creativity (2).

Some interesting differences occurred when the parents were asked to comment on the children's preparation for school. In the Open Ed classroom, for example, differences seemed to occur based on the classroom that the child went into. For example, three parents said, "My child was well prepared for school, but the school wasn't prepared for him." In these instances, school was viewed as a let down for the child after his independent work in the Open Ed classroom. Similarly, one child was noted to "know things," but not be able to speak out in the group. This was a child who was originally reported as shy. Another parent indicated that it might be necessary to teach children from open classrooms about the "realities of the public school". In contrast to the above, several teachers commented to the parents about the child's "selfstartingness"--ability to work independently (7), also on the social interaction of the child (5), and interest in new work and ideas (4). On the other hand, the

Open Ed parents mentioned mild comments about being a little concerned about obtaining more help in reading, yet none seemed to be particularly concerned. For example, one parent said that her child was a little behind in reading at the start but this did not hinder her at all.

The SOI classroom parents responded to the same questions with the following results. Three (3) parents commented on their child's independence but in the somewhat different context of being able to choose between alternatives, and doing more than expected. In quoting comments by the teacher, the children tended to be doing well academically (6) with only one indicating that the child wanted to talk too much and disturbed other children.

In general, the comments of the parents as to what their child had learned tended to be in specifics, i.e. some things in science and music, reading, writing, color writing. Some mention was made in the social area such as independence, and his ideas are important with one comment that "some teachers are mean and others are nice and he must adapt."

In summary, there seems to be a feeling from the parents' answers that both programs did well by their children. There seemed to be a different affect reflected by the parents, with the parents of the Open Ed room reflecting a feeling of warmth, growth, independence, and the regular school not quite ready for their child; while the SOI parents appeared to be a little more traditional, more structured, and to focus on the specific learning of their children. The general feeling from both, however, was a positive support for the program that their child had been in. The only significant difference was that the Open Ed parents reported that their children did more significant positive things at home than was reported by the SOI parents.

As mentioned previously there were too few reports from the parents of the Contrast children to yield an appropriate sample. Of those reports that were received, the parents indicated positive growth and general good satisfaction with the program. Also, they felt that their children had learned how to get along with others and some of the basic skills. This section can not adequately reflect all of the parents' feelings, but indicate the need for careful complete information if there is to be a full evaluation of a project.

CHAPTER IV

SUMMARY

For the first time, a research effort has been directed specifically at evaluating the effects of three different models of preschool programs on bright young children from homes of both lower and higher socio-economic status. In that sense, this study is quite unique. It is also unique in the effort expended in evaluating not only the long term effects of the program on children but also in studying the conditions in the different model classrooms. The transactions in the classrooms were carefully studied in an attempt to more clearly understand possible interactions between each program and its effect on the children.

Background

In recent years considerable emphasis has been placed on the development of preschool programs that are directed toward certain theoretical procedures, diverse goals, and/or based on different sets of assumptions about how different children learn. Foremost among the varied approaches would appear to be ones involving a structured approach to learning, such as the Karnes "GOAL" Program and the Bereiter-Engelmann "DISTAR" Program. In sharp contrast to these programs which might be classe as externally structured programs or overtly structured programs is the Open Educatior (Open Ed) model in which the teacher provides a great deal of covert structure to the classroom. This structure is classified as covert, because it is introduced through the way the materials are supplied and presented, through the introduction of new materials that the child might explore, and through the social relationships which the teacher encourages. In comparison to the preceding programs, many others, called Contrast in this study, are based on principles of maturation which maintain that bringing children together, stimulating them by providing them with some structured experiences such as circle games, stories, question and answer activities, show and tell, and then allowing the children to acquire social skills and learn by playing together is a viable approach to learning. Three models, then, called the Structure of the Intellect (SOI), Open Ed, and Contrast models provide the basis for this study.

During recent years considerable study has been made of the effect of certain model programs on children from low income homes, homes which do not provide the intellectual stimulation that enables children to function optimally in school. On the other hand, parents of high income usually stimulate their children and prepare them for subsequent school success, nevertheless they may neglect to foster their development in some respects. Integration of children from varied backgrounds is thought to facilitate the development of all. Thus, it was deemed important to study the effects of the aforementioned model programs on children from both high and low socio-economic status homes.

The basic intent of the study was to observe, describe and provide data that would help others--teachers, administrators, and parents--decide for themselves the type of preschool program that they would like to work in, implement, or to have their child attend.

Children

The children selected for the study were from the Champaign Unit 4 School Distric and the Urbana Unit 116 School District. Initially, every kindergarten-age child in these two systems was administered an ABC Readiness Test. Then, children who attained the highest scores were retested on an individually administered measure of intellectual functioning (Stanford-Binet, Form L-M). The children with the highest scores for their sex, race, socio-economic level and chronological age were selected and randomly assigned to one of the three models. (Most of the assignments were fully randomized, with the exception that a few of the children in the Contrast group were assigned last.) All children met the basic criteria for selection.

During the selection process, parents were involved as quickly as possible after their child was identified as having attained a high score on the screening test. The parents were then informed of the different model programs and their permission to have the child placed in any of the programs was obtained before the child was assigne Without the help and continuing cooperation of the parents, the project could never have been accomplished. In fact, only a very few parents did not want their child to be in the study. And, of those that did not, the basis for the problem was most frequently a communication or transportation problem rather than resistance or a negative reaction.

From the screening activities the children placed in the programs were Open Ed - 20, SOI - 19, Contrast - 17. Comparison of the three groups on measures of intelligence, race, sex, and SES revealed no significant differences among the children in the three models.

The number of teachers assigned and working in the classrooms varied from model to model. In the Open Ed classroom one head teacher worked with four graduate students in training for each of two semesters. The head teacher worked in the classroom most of the time, demonstrating through her modeling and through discussions with the trainee-aides how an open model classroom should function. The effective teacher-pupil ratio was approximately 5-2.

In the SOI classroom, one head teacher worked with four graduate students in training for each of two semesters. In this classroom, the head teacher worked with the trainee-aides to help set up plans for the classroom and the carefully planned small group sessions which were a vital part of each day's program. Once the plans had been made, the head teacher most frequently observed the trainee-aides through a one-way mirror to insure that the activities were accomplished as planned. The effective teacher-pupil ratio in this room was about 3.5-19.

The Contrast group was formed of those classrooms in which the eligible "contrast" children were located in the Champaign and Urbana public schools. Although there was some variability between these classrooms, the typical room tended to be one in which one teacher worked with her full group of children for about an hour on circle games, the reading of stories, mathematic readiness activities and similar activities that could be conducted with large groups of children. Later in the sessio the teacher would typically have the children engaged in some type of loosely structured, play-based activities during which time she would circulate among the children talking, directing, raising questions.

One of the intents of the project was to provide the children with preschool programs that met the guidelines of specific models yet which differed among models. The first model was based on the work of Karnes in which a structured approach had been expanded through the use of Guilford's Structure of the Intellect to provide a different type of curriculum. Of specific interest was an attempt to increase the number of divergent, evaluative, and behavioral activities provided the children. These activities were to be provided during three 20-25 minutes small group learning sessions in which 4-6 children were taught by a teacher or an aide. Between the three daily structures, other learning-based activities were provided which included music, group games, snack, large motor activities. Most of the materials, supplies, and ideas for learning activities were derived from the lesson plans prepared by Karnes.

The Open Ed classroom was an adaptation of the British Infant School approach. It was characterized by a number of interest centers and displays of materials that stimulated the curiosity of the children. Activities were based on reactions of children to the materials and supplies arranged by the teachers. In addition, comments by the children were attended to and amplified by teachers. Learning was to occur through the interaction of the teacher and child with the child playing as important a role in the interaction as the teacher.

The Contrast classrooms were those as they existed in the local school systems. As stated previously most of these classrooms seemed to be organized around the concept of the children's being involved in organized, large group activities with a readiness focus during the first half of the session and a child interaction, play-oriented type approach to learning in the latter half of a session. Since time and personnel were limited, a complete set of basic data was obtained on all three groups with additional data obtained on the two experimental groups.

Many studies delineate intended program transactions, then proceed on the assumption that the program "intents" have been met and report the follow-up or post-test results. Since this was considered to be a pilot study and since all of the variables were not fully understood, it was deemed important to attempt to document or describe the actual happenings in the classroom before the results were presented. Consequently a number of measures were taken of such variables as the use of time and space in the classroom, the observations of recognized authorities, the language patterns of teacher and children, the behavior problems manifested by the children and the teachers' reactions to the children. The information derived from this evaluation of the transaction is felt to have added an important dimension to the study and the findings.

Time and Space

To assess the use of time and space, an observer made a record every five minutes of the use of the experimental rooms by recording the location of teachers and children using a map of the floor. The data obtained from these records strongly supports the belief that different uses were made of time and space in the Open Ed as compared with the SOI model. A clear pattern of children and teachers working in small and large groups and depicting the three 20-25 minute structures per day was clearly obtained on the SOI classroom. The Open Ed classroom, on the other hand, revealed a free flow of children and teacher from place to place with a wide use of all parts of the classroom throughout the session. Because of the large number of classrooms in the Contrast

group, similar data could not be obtained. But the reports of the classroom observers indicate that these rooms also differed significantly from either of the two experimental rooms with regard to the use of time and space. One obvious difference that could have contributed to the use of time and space is that there was usually only one adult in the classroom.

Observations of Recognized Authorities

One of the concerns was that each classroom represented the model it was supposed to be demonstrating. Experts who advocated each of the experimental models were identified. They visited the classrooms and then described their observation during recorded interviews. Briefly, the observers of the Open Ed approach were quite enthusiastic about what they saw--the development of the teachers, the children, and the activities. In general, the classroom was considered to be one of the outstanding examples of an Open Ed approach, particularly for a teacher supplementing the approach for the first time. Not all of the observations were without reservation. For example, the observers reported a difference between the first time they visited, during the winter, and the second time, which was later in the year, near the close of school. The observers noted a drift away from the "true" Open Ed approach in which there is a high degree of child input to the selection of an activity and the carrying out of the activity, to a position where the teachers picked up on children's ideas, then made them too "adult-like." The later activities usually require more adult input than was appropriate for optimal child development, according to the guidelines of Open Ed. This drift seemed to be a function of the head teacher's anxiety to make certain that the children had all the experiences that they would need before entering first grade, and the slow development of the aides working with the children during the second semester. In spite of the drift, the program was still rated as quite good at the end of the year. The Open Ed classroom was thus judged to have met the intent of the study and was felt to be well within the usual limits of acceptability.

In the SOI classroom, it was obvious that the teachers were following many parts of the stated model with regard to time, use of divergent activities and use of small group instructional procedures. Some criticism was leveled, however, at the teachers' approach to the disciplining of the children and the selection of activities for the children. It appeared that the teachers were a little naive in their handling of the children, not knowing quite how to cope with behavior problems and sometimes using inadequate techniques. In addition, it was felt that not quite enough effort was made in selecting and using activities that were appropriate for the children being taught. Thus, the SOI classroom was not rated quite as highly as the Open Ed classroom, from a judgmental point of view, yet it was still considered to be a good example of a structured approach to teaching young preschool children.

Since no one model was consistently used in the local school systems, the use of expert judges was not feasible. The graduate students who went from school to school collecting language and other data, however, seemed to be of a consensus that, from their point of view, most of the programs were from good to excellent representations of the models of the classrooms that they intended to represent. Only one was considered to be weak and none was considered to be poor. Thus, there appears to be some variation in the quality of Contrast programs, but most were judged to be in the "good to "very good" category and, thus, should have provided a "good" basis for making comparisons and judgments for this study.

Classroom Observation Rating Scale (CORS)

In addition to the judgments of observers, the experimental classrooms were rated on the CORS scale. This scale contains items that have been used in the evaluation of Open Ed classrooms in other situations. One of the major dimensions of the scale is that of "Provisioning the classroom for learning." This subscale attempts to assess the amount and quality of materials that the teacher makes available to the children. According to the ratings of the classrooms by observers, the two experimental classrooms differed significantly on the amount of materials being provided. The results indicated that the Open Ed classrooms was much more fully provisioned with a wide variety of materials. The SOI classroom, on the other hand, was provisioned with materials provided daily by the teacher. Each set of game-like materials were designed to involve and teach the concepts selected by the teacher for that day. The next day's material might be similar to or quite different from the first day's materials.

The second dimension of the CORS scales was "Humaneness." The items on this subscale attempt to assess the teacher's promotion of an atmosphere of warmth, openness and respect for others. The two experimental classrooms differed least on this dimension since both classrooms are supposed to provide warmth and understanding for each child. Some concern is felt about the use of the "humaneness" label for this dimension because it has scale items such as "Children group and regroup themselves voluntarily" which seems to be somewhat distant from the stated purpose of assessing warmth, although similar to the concept of "humaneness." In addition to finding that the classrooms were similar on this dimension, the findings also revealed that both classrooms seemed to be a little less "humane" in May as compared with March. During the second semester, both sets of teachers tended to assume more control of the classroom activities, apparently as a result of having new trainees in the room. The trainees required more attention and training particularly since it was approaching the end of the year when children would hopefully "know all that they needed to know before they entered first grade." Instead of being able to fully trust in the children's being able to progress in the Open Ed setting, for example, the teacher felt a need to "push" the children further by taking over a little more control.

The third dimension of the CORS scale is "Instruction." This subscale is supposed to describe the extent to which the teacher acts as a resource person who encourages growth rather than as a director of growth. Characteristic of the "Instruction" dimension is the teacher's emphasis on "grouping of children," "making assignments to large groups of children," and "dividing content into subject matter areas." In March, there appeared to be significant difference between the classrooms with the SOI classroom being characterized by the above items. By May, however, there appeared to be a significant drop in both classes with the Open Ed classroom engaging in more "grouping of children," "division of content" and "making assignments to larger groups of children" than had been observed previously. Nevertheless, there was a qualitative difference between the two experimental classrooms in that the assignments made to the children in the Open Ed room revolved around getting the children involved in one or two large activities such as the "bank." In this activity the children did many different things related to the "bank" such as clerk, customer, builder of the bank window. In the SOI classroom, on the other hand, each small group of children was involved in the same "game" or activity using the same materials and concepts.

The next dimension is "Diagnosis." This proved to be a difficult area for the observers to rate because many of the scale items concerned the testing of children. Testing activities occurred very infrequently in both of the classrooms, although both teachers used some tests and materials to understand the children. Since there was only limited testing in both classrooms, they seemed to differ more with regard to the "ideal" on this dimension, than in actual practice.

The fourth dimension is concerned with the "Assumptions" underlying the two programs. Differences were noted in this area both with regard to the "ideal" and the "observed." Interpretation of the differences is somewhat difficult. For example, the Open Ed classroom was reported to be similar to the SOI classroom in terms of the teacher being able "to talk to other teachers," "to discuss useful ideas," and "to use the assistance of someone in a supportive capacity." At the same time and on the same scale the Open Ed class was considered to be warmer and more accepting of the children than the SOI. Thus, this subscale, which is complex, may hide rather than clarify important differences between the two classrooms. One of the reasons for this difference lies in the basic concepts behind the scale. Here, the Open Ed teachers are viewed as needing to share ideas--to discuss problems with each other, much as they interact with the children in growth enhancing, idea sharing interaction. Interaction with peers for those using the SOI model is also deemed important, but the quality of the interaction would likely be different. For example, the interaction between SOI teachers might involve a rather formal and specific activity-oriented discussion while the Open Ed teachers might display a less formal, warmer and dialogue-type interaction.

The importance of having a supervisor talk over one's problems for an SOI teacher might stem more from a need to refer problems to an authority. The Open Ed teacher, on the other hand, might relate interactively with the supervisor working out problems and solutions on a mutually interactive basis.

In the present study there was considerable interaction between the SOI head teacher, peers and with the supervisor because one of the goals of the project was to develop and test curricular materials that could then be used by the teacher without referral to others. Thus, the interaction between the head SOI teacher and supervisor was fairly high, but for a different reason than the interaction implicit in the items of the Open Ed oriented scale.

The final dimension on the CORS scale is "Evaluation." Classrooms that score high on this dimension would be those where teachers collect considerable information, both anecdotal and performance samples, on the children and then use this information to plan for the provisioning of the classroom. Again, this is a fairly difficult dimension to study because of the lack of opportunity to observe the teacher engaging in these activities. In spite of the difficulties, there did appear to be a difference between the Open Ed and SOI classrooms with the Open Ed classroom making much greater use of the children's results to evaluate and plan future activities. In the SOI classroom more emphasis was placed on the providing of planned lesson plans so that they could be assessed with regard to interest of children, applicability and utility.

In summary, there were considerable differences between the classrooms as assessed by observers using the CORS scale. The greatest difference seemed to be that the Open Ed classroom presented the children with a much broader spectrum of ideas, materials, and activities than did the SOI classroom. A visual impression of the

classroom was one of "Look at all of the science, woodworking, role playing, reading, math, plants, boxes, etc. with the children and teachers moving freely from one to the next." The visual impression of the SOI classroom, on the other hand, was one of large and small groups of children working together on activities with the teacher or aide the focus of each activity and the children engaging with interest.

Social Interaction Scale

Visual impression, the opinions of observers, time and space allocations all indicate differences between the classrooms, but what were the children really doing? The Social Interaction pattern of the children was used to help provide additional information in this area. The Social Interaction Scale was used by an observer who would view each one of the classrooms, noting where each child was, what he was doing, and the teacher's response, if any, to the child's acts. On the Social Interaction Scale, children in the Open Ed classroom engaged in discussions with a teacher (27.4%) of the time, in independent manipulative behavior (18.6%), in work with another child on an activity (13.5%) or in transition from place to place (12.5%). Thus, there is a picture of a child engaged in much interaction with small numbers of individuals around an activity.

In contrast, the SOI children were observed in small groups (36.4%), in large groups (18.0%), and talking with the teacher (22.6%). Obviously, there were differences in activities, but the above figures do not tell the whole story. In interacting with the teacher, the children in the Open Ed classroom seemed to initiate the conversation at a rate that was about equal to the rate the teacher initiated the discussion with the children (12.5-14.9%). In the SOI classroom, the teachers initiated the discussion almost three times as often as did the children (17.0-5.6%). Thus, the interpersonal social situations differed significantly between the two rooms.

In comparisons with the above, the Contrast group offered a still different picture. In the Contrast room, the children engaged in independent manipulative behavior 18.6% of the time, which was identical with that of the Open Ed classroom. But the children talked independently with a teacher less than either of the other two groups, only 15.2%. Further, the teacher initiated much of the discussion (10.3-4.9%). With regard to participation in the large group activities, the Contrast was the highest (23.2%). Thus, the three groups in the study demonstrated greatly different social interaccion patterns.

Since the social interaction patterns are different, a logical question is, "Did the teachers respond differently toward the children?" The largest number of responses of teachers to children occurred in the SOI classroom with 68% of the observations resulting in the teacher responding to a child's action. Such a large number occurs because of the scoring system. In this system a child is viewed as being responded to when he is in a small or large group under the teacher's direction as well as when there is a one-to-one relationship between the teacher and child.

Since the children in the Open Ed classroom frequently work by themselves or with peers (32.1%), they do not have the same opportunity for a response from the teacher. The question then arose, "Did the teachers in each classroom respond differently?" The SOI teacher typically asked questions (23.0%), lectured (17.5%) or

gave directions (15.1%). Also she gave a considerable amount of praise and encouragement (8.5%). The Contrast teachers follow a similar pattern, but the amount of total time tended to be smaller. For example, the Contrast teachers asked questions 12.2% of the time while the SOI teachers asked questions 23.0% of the time. The decreased amount of teacher interaction in the Contrast classroom was apparently associated with the fact that these children spent a significant amount of time playing with other children, apart from the teacher.

The SOI and Contrast teachers differed from the Open Ed teacher who also "asks question" (7.2%) and "gives directions" (8.9%) but at a much slower pace than the other two. Also, there is a significant drop between these two areas and "lecturing" (4.3%). Further, the Open Ed teachers seem to do much less criticizing or justifying authority (.8%) than do the teachers in the SOI (3.2%) or the Contrast groups (2.3%). Thus, it was found that teachers in the three types of approaches did respond differently.

Behavior Problems

Since there was such a difference in the social interaction patterns of the two experimental classrooms, the question was posed, "Is there a difference in the types of behavior problems manifested by the children in the two programs--ones which teachers should be prepared to solve?" An observational scale was developed to assess the different types of behavior problems presented by the children. An observer divided the classroom into classroom floor space and small areas and then observed in each area for a specified period of time. The result indicated significant difference in ten areas. The Open Ed children manifested significantly more problems in "pushing," "hitting," "social threat," "crying," "screaming," "refusal to clean up," and "uninvolved wandering." On the other hand, the SOI children manifested more problems through "redirecting conversation," "distracting noise," "distracting movement," and "leaving the activity." Comparison of the two sets of problems suggests that the Open Ed children, who were free to move about the room, had to present grosser behavior problems than did the children in the SOI classroom, before they were noticed. On the other hand, since the children in the SOI classroom typically worked under the direct scrutiny of teachers in small groups or large groups, a much smaller movement would be distracting and catch the eye of the teacher. Comments from teachers in the SOI classroom indicated that they felt a need to keep alert to the activity of children so that they might prevent the more obvious problems rather than to let them occur and then react. The teachers in the Open Ed classroom did not reflect such a belief.

The question then arose, "Once a problem occurred, how did the teacher react?" To assess in this area, a scale was developed which included 17 different approaches that a teacher might use to encourage more desirable behavior. These responses range from "ignoring" to "physical restraint."

Analysis of the results of this part of the study revealed that the teachers in the SOI classroom responded significantly more often to the children than did the teachers in the Open Ed classroom. This finding again seemed to be related to the fact that the children were typically close to each other. The teacher was in charge and she had to make some response to undesirable behavior. The Open Ed teacher might be across the room. Then she might either not see the behavior or she might "see" it and choose to ignore it without letting the child (or the observer) know that the behavior had been noticed and unobtrusively ignored. Not only did the teachers in the SOI classroom differ from the Open Ed room in the amount of responses, they also differed in the type of response. Typical responses by the SOI teachers tended to be

to "separate the child from the group," "remove the child from the area," "ignore," "issue an imperative," "threaten socially," "offer a choice of alterrative" and "to request, 'please.'" On the other hand, the Open Ed teachers tended to "leave the situation," "mediate a dispute," and "redirect the child."

Thus, it can be seen that the SOI teacher responded more directly to the childre and more frequently whereas the Open Ed teacher responded fewer times and less directly. Teachers planning to use one of the above approaches may well consider the style of behavior control that they would most like to use and then consider this as one of the variables in their selection of the type of classroom that they want to establish.

Social Choice

One consequence of the different social and behavioral patterns of the two class rooms might well be expected to be a difference in the sociometric choices of the children. To assess this area, including possible changes, each of the children were evaluated sociometrically during the middle of the year and again at the end. The results of the interim tests revealed the typical sociometric pattern of young girls as being more socially restricted than the boys. Further, variables such as socio-economic status, race and sex seemed to play an important role in who expressed a desire to play with whom. By the end of the year, the sociometric pattern in the Open Ed classroom seemed to have changed. The children seemed to be defined on two factorial dimensions that suggested that they were being judged as to whether or not they were the type of person who would "build things" or the type that would "interact in social types of games." This finding is extremely interesting when it is noted that much of the time the children in the Open Ed room were engaged in either independent manipulative behaviors or some type of socially interactive behaviors.

In contrast to the Open Ed classroom, the first sociometric choices of the children in the SOI classroom seemed to have been affected by the "structure" in which they worked. This effect may have resulted because the children were in the structure for several months before the data were gathered. By the time of the post testing, however, the choices seemed to have changed so that their choices were based on what the children did in the less structured activities. The structures, which had been thought to be a way of changing some of the interaction patterns, did not apparently do so as strongly as might have been supposed. On the other hand, since the children's grouping in the structures changed somewhat during the year, it may be that some of the friendships made during the early part of the year continued even though children participated in different structures.

In summary, the sociometric choices of the children initially seemed to be consistent with the literature. Yet, by the end of the year, the children in the Open Ed classroom seemed to be judging children as to whether they would be "someone who would build something" or "someone with whom to interact." While the sociometric structure of the SOI classroom is not as clear, by the end of the year social choice patterns seemed to be based on vestiges of SES, race and the placement in a structure plus the opportunity to interact in non-teacher structured situations.

Language

Since the development of good language patterns and verbal expressive ability is so important at the preschool level, considerable effort was given to the assessment of the language of not only the children but the teachers as well. One-hour long samples were made of the children's language in the Contrast rooms and two-hour long samples were made in the experimental rooms of both the children's and teacher's language. These samples were then scored on a number of dimensions.

One of the typical dimensions used in the measurement of language is Mean Length of Response (MLR). Comparison of the scores among all of the samples reveals the MLR of the children differed with the activity. For example, children engaged in "directed play" in the SOI classroom and in "reading development structure" differed significantly in the length of their response when compared with the children engaged in "uninvolved wandering" and "reading development--small group" in the Open Ed room or in the large group activities in the SOI classroom. No differences were found between any of the other groups. Apparently the children were challenged to use, or used longer response in the former as compared with the latter.

Differences in the patterns of language might also be found with regard to the number of times each hour that a child talked. Here, the Contrast children were found to talk significantly less than the children in either the Open Ed or SOI samples, interim or post. The only other difference is that the children in the Open Ed interim sample talked more frequently than did the children in the SOI interim measure. This difference disappeared by the time of the post-test sample.

Differences did occur, then, between the classroom in MLR and frequency of response. A reason for the low rate of children talking in the Contrast group seems clear since the teacher-pupil ratio (1-25) would prevent the teacher listening to children. A rationale for the difference between Open Ed and the SOI sample is not as clear, particularly when it is noted that the difference between the groups at the interim sample disappeared by the post testing when the mean scores moved closer together.

Another way to assess language is to determine the syntactical structure of the sentences being used. Each of the utterances of the children were classified as to "Question," "Declarative," "Imperative," "Negative," or "Expletive" and as to whether or not it was a "non-simple sentence." Analysis of the findings revealed a significant difference in the type of sentence that was used regardless of class--i.e. many more declarative sentences were used than any other type of sentance. Further, significant interactions were found between the style of sentence and the classroom. The children in the Open Ed classroom tended to use more "imperatives" than did the children in the SOI classroom while children in the SOI classroom tended to use more declaratives than in Open Ed.

There was also a significant interaction between the time the samples were made--"interim" versus "post"--and the style of sentence used. The children used significantly more "negatives" and fewer "non-simple" sentences during the "post" as compared with the "interim" samples.

The complexities of interpreting the language behavior of the children can be exemplified through an analysis of the changes in the language of the children in the Open Ed group between the interim and post measure. Typically, there should have been an increase in MLR, an increase in the use of non-simple sentences, an increase in the number of responses per unit of time and an increase in the number of questions asked. Although the findings are not always statistically significant, the trend tends to be in the reverse in each of the above areas. One hypothesis might be that the children were encouraged to talk more and with greater length of response during the fall when the observers reported that the class was most "open." Then during the second semester when the children were faced with greater structure in the program, as the teachers assumed more responsibility for the activities and made them more "adult-like," the children found it necessary to regress to simpler language to cope with the new problems.

In the SOI classroom, the children tended to show an increase in MLR, an increase in the number of responses, and an increase in the number of questions asked. There was not an increase in the number of non-simple sentences; in fact the opposite was a trend.

Observation of the language of the children and comparison with the findings regarding the general condition of the classroom as reported by the observer has raised some questions. Although the findings are certainly not definitive, it would appear that more might be learned through continued, better controlled studies in this area.

An attempt was made to determine if children from Hi and Lo SES developed differently in the different model classes. This analysis revealed no difference between classes by SES, but did reveal a difference in the syntactical style of children from Hi as compared with Lo SES. Basically it appeared that the Hi SES children used more non-simple sentences and fewer expletives than did the Lo SES children. Such a difference may be related to the fact that non-simple sentences are related to abstract thinking and typically children of Hi SES are discouraged from using expletives more than Lo SES children.

An attempt was also made to analyze differences in teacher-language behavior. Differences were found between the SOI interim teachers versus Open Ed interim teachers and the SOI interim versus Contrast teachers. In general, the findings suggest that the Open Ed teachers talked more frequently and used shorter sentences during the middle of the year, than they did by the end of the year.

The syntactical structure of the teachers' language was also analyzed. No significant differences were found except, as one would expect, between the different types of sentences with, of course, the largest number of sentences being declarative sentences followed quite closely by questions. This contrasts with the children's language where by far the majority of the sentences were declarative sentences. It was thought that there might be a difference in the language the teachers used that was associated with the type of class they were teaching. Specifically, it was thought that a teacher might change between the small structured group and a large group. Analysis revealed no significant difference in the syntactic style between large or small group or between class models.

In summary, then, although it has previously been demonstrated that there was a considerable difference between the classrooms in terms of the social interaction styles, the behavior problems and the teachers' reactions to behavior problems, there was essentially no difference in the syntactic style of language used by the teacher and limited difference in the language of the children.

Outcomes

Considerable effort was expended on developing a study that would fairly carefully depict what actually occurred in the classrooms as the study unfolded. It was anticipated that such data would help explain the outcomes of the study. Differential outcomes were expected to derive from differences in the classroom models and their effects on the intellectual functioning of the children, especially some differential effects on the Hi as compared with the Lo SES children. To help assess these outcomes, each child was administered the Stanford-Binet, Form L-M (Pre and Post); Torrance Test of Creative Thinking; ITPA; the Metropolitan Readiness Test; two problem-solving tests and a measure of divergency of questions.

Analysis of the Stanford-Binet results reveals several significant differences including a general gain for all the children between the pre- and post-test of an average four I.Q. points. Such a gain is important because the tests were given far enough apart to negate the test, retest problem. Further, children who have been selected as being above the mean would be expected to regress to the mean, i.e. decrease their scores between the pre- and post-test. Thus, these gain scores are against the expected regression effect. On the other hand, the gains of four I.Q. points are not as large as has been previously been observed in the literature when disadvantaged children are provided with good programs where gains of 10 points or more might be expected. These gains of 10 points, however, were made by children who were below the mean where regression effect would be to increase their score. Thus, the present outcomes in all classes warrants careful consideration.

Since it was hoped the study would produce differential effects on Lo and Hi SES children on the Stanford-Binet, an analysis was made on this dimension. No significant interaction was found between any of the class models and SES. Therefore, none of the models attained a superior position.

Since one of the purposes of the study was to enhance the divergent productive thinking of the children in the SOI classroom, two measures of divergency of thought were made. The first was the Torrance Test of Creative Thinking. In this test, children were asked to think of a variety of answers. There was no significant difference between the class models in any area--fluency, flexibility or originality. There was a significant difference, however, as one might expect between the Hi and Lo SES groups in the areas of flexibility and originality and a trend for them to be different in the area of fluency.

The Stanford-Binet was also analyzed by sub-function to determine if there was a difference in the intellectual functioning of the children according to the SOI model. After breaking the functioning down into 13 different categories such as unit, classes, divergent production, convergent production, an analysis was made. No significant differences were found between any of the class models.

Divergent production, evaluation, and convergent production questions were also expected to appear in the language that the teachers used in the different structures within the SOI model classroom. A significant difference was found

between the classes and the types of questioning that were characteristic of that class. For example, in the Contrast classroom, the teachers used a high number of cognitive memory type questions, a small, but still important number of convergent questions and very few divergent and evaluative questions. Very few questions of the class management type were asked. In comparison, the Open Ed classroom teacher used far fewer cognitive memory type questions, asked a similar amount of convergent questions and many more divergent, evaluative and class management questions.

The SOI classroom teachers, as did the Open Ed teacher, used far fewer cognitive memory type questions. Contrary to expectation, they also tended to use more convergei production questions and fewer divergent production and evaluative questions. They were highest of all three groups in the use of class management questions. There was some indication that the trainees during the first semester used more evaluative and divergent questions than those of the second semester. Inservice training was apparently less effective with the second semester group. Thus, contrary to some expectations, the Open Ed classroom teacher apparently used more of the divergent and evaluative form of questioning than did the SOI classroom.

In previous programs, children provided with a structured curriculum similar to that provided in the SOI model classroom made gains in language development as measured by the Illinois Test of Psycholinguistic Abilities (ITPA). Thus, the test was administered to all of the children. No differences were found between classes on the ITPA. Differences were found between the functioning of the children from Hi and Lo SES. Children from Hi SES tended to do best in the areas of Visual Memory and Verbal Expression and least well in Manual Expression and Auditory Memory. The children from the Lo SES tended to have a flat distribution of scores with any difference being possibly somewhat better performance on visually based items.

On the Metropolitan Readiness test, the children made significant gains between the pre- and post-test measures. No difference was found, however, between the classes on the various parts of the test or the total score.

Problem-solving was another area that was examined during the study. In one task, the children were asked to sort a series of drawings on different dimensions. The more dimensions the child was able to discover and use in the sorts, the higher his score. No differences were found between the classes on the number of sorts that the children were able to use. In a similar comparison, or abstracting activity, the children were asked to find as many ways as possible that two animals were alike. Again there was no difference between the classes. This activity seemed to require a flexibility of thought that is similar to that on creativity tests. The failure to find a difference, thus, is similar to the finding on the creativity test.

One important aspect of any program is the reaction of parents to the program. The reaction of parents to the present program was ascertained during the year through verbal reports of teachers and parents. In the spring of the year following the project, when the children were nearing the end of their first year in school, a mail questionnaire was sent to all parents. Too few responses were obtained from parents of the Contrast group children to permit analysis (N = 6). Significant differences were found between the parents of the children in the Open Ed room as compared with the SOI classroom. Parents of the Open Ed classroom made significantly more positive comments such as, "My child often worked on ideas and projects gained through his experiences in kindergarten." Although the results were significantly different, the total differences were small. In addition, both sets of parents were generally quite complimentary about the program and happy that their children had been in them.

When asked whether or not all children should be placed in a program like the one their child had been in, there were no differences between classes with about 75% saying that each felt that all children should have a similar program. Almost 90% of the parents in both programs said that their children had been well prepared for school and that the teachers had reported positive things about their children.

Conclusions and Implications

The following delineates some conclusions and implications that can be drawn from the findings of this investigation.

1. This study seems to indicate that there are viable, identifiably, different, but effective approaches to educating young gifted children. Significant gains were made by the children in each of the models. One of the possibly unforeseen experimental problems was that the head teacher of the SOI classroom, although well trained, was still a first year teacher. In spite of this fact he was able to mount an effective program for young children using a structured approach. The head teacher in the Open Ed classroom, on the other hand, was an experienced teacher who had been successful in a structured classroom the previous year and then sought the additional challenge of the Open Ed approach. To accomplish her goal she engaged in many additional hours of preparation including nights and weekends. Through her efforts she was able to implement a very successful open education program--one in which children were busily engaged in meaningful activities the great majority of the time.

   a. Thus, inadvertently the project may have demonstrated that an appropriate match of the teacher and the model can help in the provision of successful programs for children.

   b. Another implication of the above findings is that greater attention will need to be given to the personal-professional maturity of the teacher. Future research should concentrate on controlling the variable of teacher maturity.

   c. Still another implication of this study is that research might be conducted on the degree of teacher maturity required to effectively implement a given model.

2. There is some indication that the language patterns of teachers varied by model and that the children's language in some ways reflected the teachers' language. More extensive study needs to be conducted in this area.

3. According to the Open Ed classroom teachers, the children made considerable progress in engaging in self-directed activities and independent behavior. This statement is supported by the reports of parents who indicate that the children do more things at home, learned at school, than the parents of the children of the SOI model. Reports of the knowledgeable observers also indicated they observed the child's ability to persist to task, especially during the middle of the year. Several Open Ed parents commented on some mild problems when their children entered first grade and found them faced with a more structured teacher-directed class. Implications of this series of findings would seem to include the following:

   a. Greater emphasis needs to be placed on the development of assessment instruments to be used to determine the social development of children in the Open Ed programs. Presently the available tests and measurement instruments are not sensitive enough to get at these important differenc

b. Assessments need to be made of the effects of changing from an Open Ed program to a structured program on the social-emotional development of young children.

4. Comments from authorities indicated that although they saw some divergent and creative responses in the structures of the SOI classrooms, the teachers did not generalize the approach used in the one structure to other structures or other learning situations during the day. Reports from the head teacher and evaluative observers indicated that more of this behavior occurred during the first semester than during the second semester. The difference was attributed to the fact that the first semester trainees received significantly more preservice training on the SOI model than the second semester trainees. The implication is that general implementation of the SOI model requires very careful and systematic preservice and inservice training.

5. In the SOI model classroom the children and teachers were in close and constant interaction, especially during structured periods. There was no opportunity for either the teacher or the child to leave a threatening situation as could occur in the Open Ed classroom. Consequently, the teachers of any SOI classroom need to receive special training on the implications of working within such a highly interactive and potentially positive or negative situation. One of the strengths of the SOI model apparently is the structure it provides a child who had little internal structure. On the other hand, the open classroom provides the child with more freedom to chose his activities and this lends itself well to the child who has well developed internal controls.

a. Thus, it would seem important to consider individual differences among children and match the child with the appropriate approach.

b. Also, it would seem highly possible that a given child might function best in a structured approach at one stage of his development and in a more open approach at another stage of his development. Match the child with the appropriate approach at a given time is a difficult task. To complicate the problem attention must be given to matching the teacher with the most compatible approach.

c. Techniques need to be developed to assist administrators in the proper placement of both children and teachers.

6. Results of the assessment of these young children's development in creative thinking indicate that they are just beginning to function at the lowest levels on the available tests. Continued efforts need to be made to develop measures for preschool children in this important area.

7. The findings from this study indicate that a high turnover of the adults in a classroom has an inhibiting effect on the children's progress. Therefore, unless trainees, aides or volunteers can consistently be a regular part of the staff throughout the year, it may be ill advised to use them as part of the teaching staff. One alternative, however, may well be more intensive preservice and inservice training of those who may not be in the classroom for long periods of time.

8. This study endorses the importance of using a multi-dimensional approach in the assessment of any educational program. Such a need should become readily apparent when one looks only at the language data or the behavioral data or the pre-post Stanford-Binet data and attempts to derive implications from any one piece of information. It is the total interaction of all of the data that has highlighted the interactions and made possible the conclusions and implications of the study.

References

Amidon, E. J. & Flanders, N. A. The role of the teacher in the classroom. Associatic for Productive Teaching, Minneapolis, Minnesota, 1967.

Bissell, J. S. The cognitive effects of preschool programs for disadvantaged childre Unpublished manuscript, National Institute of Child Health and Human Development June, 1970.

Bloom, B. S. Stability and change in human characteristics. New York: John Wiley & sons, 1964.

Brown, R., Cazden, C. & Bellugi, K. The child's grammar from I to III. In J. P. Hill (Ed.), Minnesota Symposium on Child Psychology, Vol. 2, Minneapolis: University of Minnesota Press, 1967.

Di Lorenzo, L. T. & Salter, R. An evaluative study of pre-kindergarten programs for educationally disadvantaged children: Follow-up and replication. Paper presented at the Annual Meeting of the American Educational Research Association, February 10, 1968.

Dunnington, M. J. "Investigations of Area of Disagreement in Sociometric Measurement of Preschool Children." Child Development, 28, 1957. Pp. 93-103.

English, H. B. & English, A. C. A comprehensive dictionary of psychological and psychoanalytical terms. New York: Longmans, Green, 1958.

Harary, F. & Ross, I. C. "A procedure for clique detection using the group matrix." Sociometry, 20, 1957. Pp. 205-215.

Hatch, E. Four experimental studies in syntax of young children. Inglewood, California: South. Wes. Reg. Lab., 1970.

Hollingshead, A. B., & Redlech, F. C. Social class and mental illness: A community study. New York: John Wiley & sons, Inc., 1958.

Hunt, J. McV. Intelligence and Experience. New York: Ronald Press, 1961.

Karnes, M. B. Evaluation and implications of research with young handicapped and low-income children. In J. C. Stanley (Ed.), Compensatory Education, Ages 2-8: Recent Studies of Educational Intervention. Baltimore: The Johns Hopkins University Press, 1973.

Karnes, M. B., Hodgins, A. S., & Teska, J. A. Investigations of classroom and at-home interventions. Vol. 1. Research and development program on preschool disadvantaged children. Final Report. Bethesda, Maryland: ERIC Document Reproduction Service (ED 036 663), 1969.

Karnes, M. B. & Teska, J. A. The effects of research-based intervention on the development of young children. In J. J. Gallagher (Ed.), Review of research on exceptional children. Reston, Virginia: Council for Exceptional Children, (in press).

Karnes, M. B., Zehrbach, R. R., Studley, W. M., & Wright, W. R. Culturally disadvantaged children of higher potential: Intellectual functioning and educational implications. Champaign, Illinois: Champaign Community Unit 4 Schools, September 1, 1965.

Katz, L. "The developmental stages of preschool teachers." El. Sch. J., 1972, Vol. 73, 1, pp. 50-54.

McCandless, B. R. & Marshall, H. R. "A picture sociometric technique for preschool children and its relation to teacher judgments of friendships." Child Developmer 28, 1957. Pp. 139-147.

McNeill, D. Developmental Psycholinguistics. In F. Smith & G. A. Miller (Eds.), The Genesis of Language. Cambridge, Massachusetts: MIT Press, 1966.

Meeker, N. A. The structure of intellect: Its interpretation and uses. Columbus, Ohio: Charles E. Merrill, 1972.

Moore, S. & Updegraff, R. "Sociometric status of preschool children related to age, sex, nurturance, giving, and dependency." Child development, 35, 1964. Pp. 519-524.

Resnick, L. B. Teacher behavior in an informal British Infant School. School Review. November, 1972. Pp. 63-83.

Sears, R. R. A theoretical framework for personality and social behavior. Amer. Psych., 1951, 6, 476-483.

Torrance, E. P. Torrance Tests of Creative Thinking. Princeton, New Jersey: Personnel Press, 1966.

Tucker, J. A. Structure of intellect analysis for the Stanford-Binet, Form L-M. Record Analysis Form, 1972.

Van De Riet, V., Van De Riet, H., & Sprigle, H. The effectiveness of a new sequential learning program with culturally disadvantaged preschool children. J. of School Psychol., 1968, 7, 5-15.

Walberg, H. J., & Thomas, S. C. Characteristics of open education: Toward an operational definition. Newton, Mass.: TDR Associates, Inc., 1971.

Warner, W. L., Meeker, M., & Eels, K. Social class in America: A manual of procedure for the measurement of social studies. Chicago: Science Research Associates, 1949.

Weikart, D. P. Relationship of curriculum, teaching, and learning in preschool education. In J. C. Stanley (Ed.), Preschool programs for the disadvantaged: Five experimental approaches to early childhood education. Baltimore: The Johns Hopkins University Press, 1972. Pp. 22-66.

Weikart, D. P., Deloria, D. J., Lawser, S. A., & Wiegerink, R. Longitudinal results of the Ypsilanti Perry Preschool Project. Report for Project No. 2494, Grant No. OE 4-10-085, Office of Education, U. S. Department of Health, Education and Welfare, August, 1970.

Withal, J. & Lewis, W. W. Social interaction in the classroom. In N. L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, 1963. Pp. 683-714.

APPENDIX A

Appendix A

RAPYD II

Procedure for Determining Socio-economic Status

Take the names of all of the children assigned to you to the school and determine, from school records, insofar as you can:

1. The occupation of the parent. It will be necessary to have as much information as possible, i.e. not that the individual works at the university, but as a professor, janitor, cook, or electrician.

2. To the extent that it is possible, you should try to obtain information about the educational level of the parent. Sometimes the school teacher or principal will know whether the parent is not a high school graduate, is a high school graduate, or has had some college. This information will be quite useful if you can get it easily, without upsetting anyone.

We should/must have as much as can be obtained from the school regarding residence and occupation, however.

Scaling a parent's occupation*

Education rating ( ) x 5 = ____

Occupation rating ( ) x 9 = ____

Total rating is ____

Ratings for occupation are as follows:

1. Executive and proprietors of large concerns. Major professionals (M.D., dentist, college professor, lawyer).

2. Managers and proprietors of medium-sized business and lesser professionals (ministers, newspaper editors, librarians, high school teachers).

3. Administrative personnel of large concerns, owners of small independent business, and semi-professionals (elementary teachers, optometrists, social workers, college students).

4. Owners of small business, clerical, sales workers, and technicians.

5. Skilled workers (carpenters, electricians, radio-TV repairmen, firemen, policemen).

6. Semiskilled workers (taxi and truck drivers, night watchman, gas station attendant, waitress).

7. Unskilled workers (ADC, heavy labor, odd jobs, janitor, scrub woman).

*Based on Hollingshead, etc. al., "Social class and mental illness," pp. 390-397.

Education rating:

1. Graduate professional training.
2. Standard college and university graduate (4 years).
3. Partial college training (at least one year but not complete).
4. High school graduate (includes G.E.D.).
5. Partial high school (10 to almost 12).
6. Junior high school (7-9).
7. Less than seven years.

Education rating of father if in home; of mother if not.

APPENDIX B

Appendix B

Correlation Matrix

Race, Sex, Pre- and Post Stanford-Binet and Metropolitan Readiness and ABC

	Initial						N = 56							Post				
										Metro.							Metro.	
	Race	Sex	CA	Ma	IQ	ABC	1	2	3	4	5	6	Total	1	2	3	4	
	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17	18	1
2	05																	
3	11	-21																
4	-35	-18	73															
5	-67	-09	-05	62														
6	-16	04	11	30	26													
7	-14	03	-13	-10	05	05												
8	11	13	-14	-24	-15	04	86											
9	-09	24	-15	-09	04	09	74	79										
10	-16	04	-09	-05	05	11	85	85	86									
11	-09	01	-08	04	05	15	86	83	86	93								
12	-21	02	-09	-02	09	31	80	72	75	82	89							
13	-11	08	-12	-08	03	13	93	91	88	96	97	87						
15	-39	-13	-02	31	51	12	39	13	18	26	34	35	30					
16	-10	-18	02	19	25	39	34	33	34	28	40	41	39	50				
17	-22	-17	03	26	34	29	20	00	08	14	20	30	17	62	48			
18	-37	-13	-05	17	33	14	10	02	17	29	23	16	18	48	40	43		
19	-32	-10	-03	27	41	25	28	11	39	36	44	46	35	71	49	65	52	
20	-23	-09	00	28	41	31	25	04	18	17	32	42	25	58	47	56	28	7
21	-35	-16	-01	32	49	31	31	11	28	33	41	44	34	82	67	79	64	9
23	-23	-10	21	00	29	29	05	07	11	10	20	24	13	17	25	32	04	2
24	-51	-16	11	63	78	31	07	-14	02	12	17	21	09	54	31	70	28	5
25	-50	-15	05	55	76	15	02	-17	-07	07	07	08	02	40	20	19	26	4

Appendix B

Correlation Matrix

Sex, Pre- and Post Stanford-Binet and Metropolitan Readiness and ABC Prescores

Initial										N = 56	Post									
				Metro.									Metro.							
CA	Ma	IQ	ABC	1	2	3	4	5	6	Total	1	2	3	4	5	6	Total	CA	MA	IQ
3	4	5	6	7	8	9	10	11	12	13	15	16	17	18	19	20	21	23	24	25
73																				
05	62																			
11	30	26																		
13	-10	05	05																	
14	-24	-15	04	86																
15	-09	04	09	74	79															
09	-05	05	11	85	85	86														
08	04	05	15	86	83	86	93													
09	-02	09	31	80	72	75	82	89												
12	-08	03	13	93	91	88	96	97	87											
02	31	51	12	39	13	18	26	34	35	30										
02	19	25	39	34	33	34	28	40	41	39	50									
03	26	34	29	20	00	08	14	20	30	17	62	48								
05	17	33	14	10	02	17	29	23	16	18	48	40	43							
03	27	41	25	28	11	39	36	44	46	35	71	49	65	52						
00	28	41	31	25	04	18	17	32	42	25	58	47	56	28	74					
01	32	49	31	31	11	28	33	41	44	34	82	67	79	64	91	80				
21	00	29	29	05	07	11	10	20	24	13	17	25	32	04	25	20	23			
11	63	78	31	07	-14	02	12	17	21	09	54	31	70	28	56	57	59	07		
05	55	76	15	02	-17	-07	07	07	08	02	40	20	19	26	42	43	41	24	88	--

APPENDIX C

Appendix C

Scoring of the Classroom Observation Rating Scale (CORS)

The CORS has 50 items with a possible high score of 200. It also has eight part. that collapse into six scales. It has 18 reverse scored items. This results in a challenge to the scorer and would-be interpreter. See Figure A. The following steps have been found to be an efficient method for obtaining a grand total and sub totals for this set of scales:

1. Use Transparency #1* to get the true score of each item. First, as follows: all items have values 1 2 3 4 next to them. One of these has been marked (i.e. 1 2 3 4) by the observer. If there are no numbers on the transparency simply record the marked score on the score sheet. If there is a number on the transparency it means that the item is a reverse scored items (the transparency is to be marked (i.e. 4 3 2 1). The transparency scores will cover up the 1 2 3 4 on the CORS and thus replace it. Simply record the number on the transparency which corresponds to the mark made by the observer. This sounds complicated; but just try it. Lay the transparency on the first page lining up items #1, 3, 5, 10 and 11 with the appropriate lines. Record the mark either on a 1 2 3 4 basis or the 4 3 2 1 of the transparency. Do the same for pages 2 and 3. For page 4 and items 45 and 49 the transparency is put side ways. You now have all 50 items with their true values on one score sheet. These added together give a total for the scale. A sample sheet has been provided for you to practice on.

   A corrected score can be given for the total CORS in which the rater did not complete some items. This is accomplished by dividing the total score by the number completed on the scale and then multiplying that result by 50. However, it is not recommended because the items usually skipped are those that cannot be observed such as those in the evaluation subscale. This correction method in effect weighs the provisioning items which are already almost half the scale (24/50) even more. Noting the number of skipped items next to the total gives an indication of the amount of knowledge the person has about the room.

2. Next, obtain the subscale scores. There are separate sheets to record the scores for each subscale as well as separate transparencies.

   Since the subscales have varying numbers of items in each, the actual total is of little value for comparison with the other subscales. Therefore, the mean is taken for <u>each</u> subscale by adding the total value of the marked scores and then dividing this score by the number of items that were marked on that subscale.

---

*Transparencies can be prepared from the data provided on page 3 by using a sheet of plastic for an overhead projector and a marking pen.

CORS - Key to Rating Scale and Questionnaire

#	Key	Theme	#	Key	Theme
1	-	P1	26	-	D5
2	+	P7	27	-	D6
3	-	P4	28	+	I2
4	+	P11	29	-	D2
5	-	P13	30	+	A
6	+	P1	31	-	I8
7	+	P14	32	-	I1
8	+	P15	33	+	D2
9	+	P2	34	-	I2
10	-	P9	35	+	E4
11	-	P7	36	+	E
12	+	P3	37	+	A
13	+	P3	38	-	H9
14	+	P10	39	+	H9, 4
15	+	P10	40	+	H10
16	+	H3, 4	41	+	I3
17	-	P1	42	+	P12
18	+	P15	43	-	E1, 2
19	+	H3	44	+	S11
20	-	P14	45	-	S, P7
21	-	P6	46	+	S5
22	+	I	47	+	E5
23	+	P1	48	+	E6
24	+	P4	49	-	A17
25	+	P	50	+	A1, 2

ID _____

1. _____

2. _____

3. _____

CORS

School _____

Classroom _____

Teacher _____

QUESTIONNAIRE

Instructions: For each of the following statements, circle the number which most closely expresses your estimate of the extent to which the statement is true of your own classroom. If the statement is absolutely not the case, circle "1"; if it is very minimally true, chose "2." If the statement generally describes your classroom, choose "3"; if it is absolutely true choose "4."

		no evid.	weak infreq.	mod. occas.	strong freq. evid.
P 1.	Texts and materials are supplied in class sets so that all children may have their own.	1	2	3	4
P 2.	Each child has a space for his personal storage and the major part of the classroom is organized for common use.	1	2	3	4
P 3.	Materials are kept out of the way until they are distributed or used under my direction.	1	2	3	4
P 4.	Many different activities go on simultaneously.	1	2	3	4
P 5.	Children are expected to do their own work without getting help from other children.	1	2	3	4
P 6.	Manipulative materials are supplied in great diversity and range, with little replication.	1	2	3	4
P 7.	The day is divided into large blocks of time within which children, with my help, determine their own routine.	1	2	3	4

Taken from Walberg, H. J. & Thomas, S. C. Characteristics of Open Education: Toward an Operational Definition. Newton, Mass.: TDR Associates, Inc., 1971.

f# 1105

		no evidence	weak infrequent	moderate occasional	strong frequent evidence
P 8.	Children work individually and in small groups at various activities.	1	2	3	4
P 9.	Books are supplied in diversity and profusion (including reference books, children's literature).	1	2	3	4
P 10.	Children are not supposed to move about the room without asking permission.	1	2	3	4
P 11.	Desks are arranged so that every child can see the blackboard or teacher from his desk.	1	2	3	4
P 12.	The environment includes materials I have developed.	1	2	3	4
P 13.	Common environmental materials are provided.	1	2	3	4
P 14.	Children may voluntarily use other areas of the building and schoolyard as part of their school time.	1	2	3	4
P 15.	Our program includes use of the neighborhood.	1	2	3	4
H 16.	Children use "books" written by their classmates as part of their reading and reference materials.	1	2	3	4
P 17.	I prefer that children not talk when they are supposed to be working.	1	2	3	4
P 18.	Children voluntarily group and regroup themselves.	1	2	3	4
H 19.	The environment includes materials developed or supplied by the children.	1	2	3	4
P 20.	I plan and schedule the children's activities through the day.	1	2	3	4
P 21.	I make sure children use materials only as instructed.	1	2	3	4
I 22.	I group children for lessons directed at specific needs.	1	2	3	4
P 23.	Children work directly with manipulative materials.	1	2	3	4

		no evidence	weak infrequent	moderate occasional	strong frequent evidence
P 24.	Materials are readily accessible to children.	1	2	3	4
P 25.	I promote a purposeful atmosphere by expecting and enabling children to use time productively and to value their work and learning.	1	2	3	4
D 26.	I use test results to group children in reading and/or math.	1	2	3	4
D 27.	Children expect me to correct all their work.	1	2	3	4
I 28.	I base my instruction on each individual child and his interaction with materials and equipment.	1	2	3	4
O 29.	I give children tests to find out what they know.	1	2	3	4
A 30.	The emotional climate is warm and accepting.	1	2	3	4
I 31.	The work children do is divided into subject matter areas.	1	2	3	4
I 32.	My lessons and assignments are given to the class as a whole.	1	2	3	4
O 33.	To obtain diagnostic information, I observe the specific work or concern of a child closely and ask immediate, experience-based questions.	1	2	3	4
I 34.	I base my instruction on curriculum guides or the text books for the grade level I teach.	1	2	3	4
E 35.	I keep notes and write individual histories of each child's intellectual, emotional, and physical development.	1	2	3	4
A 36.	I have children for just one year.	1	2	3	4
H 37.	The class operates within clear guidelines, made explicit.	1	2	3	4

		no evidence	weak infrequent	moderate occasional	strong frequent evidence
H 38.	I take care of dealing with conflicts and disruptive behavior without involving the group.	1	2	3	4
H 39.	Children's activities, products and ideas are reflected abundantly about the classroom.	1	2	3	4
H 40.	I am in charge.	1	2	3	4
H 41.	Before suggesting any extension or redirection of activity, I give diagnostic attention to the particular child and his particular activity.	1	2	3	4
P 42.	The children spontaneously look at and discuss each other's work.	1	2	3	4
E 43.	I use tests to evaluate children and rate them in comparison to their peers.	1	2	3	4
S 44.	I use the assistance of someone in a supportive advisory capacity.	1	2	3	4
S 45.	I try to keep all children within my sight so that I can be sure they are doing what they are supposed to do.	1	2	3	4
S 46.	I have helpful colleagues with whom I discuss teaching ideas.	1	2	3	4
E 47.	I keep a collection of each child's work for use in evaluating his development.	1	2	3	4
E 48.	Evaluation provides information to guide my instruction and provisioning for the classroom.	1	2	3	4
A 49.	Academic achievement is my top priority for the children.	1	2	3	4
A 50.	Children are deeply involved in what they are doing through the day.	1	2	3	4

APPENDIX D

Appendix D

Social Interaction Scale
by
R. Reid Zehrbach and Judith Luebke

Background

Social interaction simply defined is a relation between persons such that "the behavior of either one is stimulus to the behavior of the other." (English & English, 1958). Sears (1951) defined a related concept, the dyadic unit, as "one that describes the combined actions of two or more persons." The research in social interaction most often deals with how people behave in relation to other people.

Historically, three principal streams of influence have shaped the research on social interaction in the classroom. These include: education, clinical and social psychology. The influence from within education has centered on teacher characteristics, child development and impersonal conditions of learning. The influence from the mental hygiene movement centers around the following two assumptions: (1) a child must be in a reasonable state of adjustment to make optimum use of school learning experiences, and (2) a child's state of adjustment is subject to modification as a result of what happens to him in school. The influence from studies of group life on social psychology centers around the assumption that interaction influences emanating from the group itself bring about changes in the behavior of individual members of the group.

The 1950s showed a beginning of heightened activity in research on social interaction in the classroom. Researchers were beginning to capitalize on the view of the classroom as a social environment in which learning and instruction occurred. The early research, however, focused on what Withall & Lewis call "monadic" variables (p. 708). In the analysis of examining and quantifying these variables, they focused on the teacher's training and experiences, SES and I.Q., the goals of the school and community and the materials provided to help achieve those goals. Withall & Lewis state that the examination of such variables has tended to be unrewarding and stable--that researchers have tried to examine social processes and interactions through static means. They are quick to add that variables in the learning situation interact with each other in kaleidoscopic complexity and that specification of the interactions and outcomes is extremely difficult.

Withall & Lewis (p. 710) suggest that future research on social interaction in the classroom give increasing attention to careful development of theories of the classroom interaction as a dynamic process in which the teacher is an important part, but not the total determiner of the outcomes of learning. Thus, it is evident that social interaction is a complex process which must be viewed as a function of a network of factors involved in a change process rather than as a permanent cause and effect relationship.

Social Interaction

The development of the social interaction scale began with two basic questions: (1) What are the social interaction patterns like within each classroom? and (2) How can we describe what goes on in the classroom?

The basic questioning began with observations of who each child was talking with: the teacher or another child. The intent was to record who a child was talking with: an intellectual peer, as a teacher or follower. Quickly it appeared that this procedure was not going to describe the classroom interactions. Consequently additional dimensions was added. One set of dimensions were added to code what the child was doing in independent activities. The rationale for this category comes from the Open Ed literature which suggests that one goal should be for each child to be able to function independently on an activity. If so, we should see increased amounts of time engaged in independent behavior.

Another rationale from the Open Ed literature is that children should learn from each other - peer contact. If such behavior is actually engaged in in an Open Ed school, then there should be some way on assessing it. Thus, the scale was revised to include such a dimension relating to the quality of peer contact, i.e. parallel play, interactive play, etc. The four categories include: (1) Parallelplay - two children are engaged in the same activity, non-verbal, (2) Light social, (3) Task related, and (4) Heavy social. Another dimension that seemed to demand measurement was the quality of the teacher-child interaction. This derives from the Open Ed literature in the "Humaneness" dimension. Much is owed to Amidon and Flanders (1967) who provided some of the definitions for the seven items taken from dimensions that are used to describe the quality of the teacher-child interaction--accepting feelings, ideas, giving facts, information, directions, criticism, praise, ask questions, lecturing.

The scale also permits describing the situation in which the child is found, i.e. math structure, snack, which should permit the identification of larger patterns of behavior in the future.

Some of the other scales and dimensions that were found appropriate to tap were: Amidon and Flaners - Interaction Analysis; and Resnick - Teacher Behavior in Informal Setting.

Procedure

The basic procedure used in the study is time sampling. In this approach, the room is surveyed at stated intervals and a recording is made of the activities of each person in the class at the time that he is first observed. By following the child's activities for 5-30 seconds, it is usually possible to clarify the understanding of the activities and record. Typically a room can be surveyed in 7-10 minutes, then after a break can be resurveyed.

The scale has been developed to the point where it can be fully and reliability used. Reliabilities, for example, can be reached between 60 and 90% agreement, depending upon the type of observer and familiarity with the scale and classroom. One of the basic scoring problems can be alleviated if the observers will first, help each other locate the target child and, when both have located the child, signal to start the observation. Such a practice is not needed, of course, when only one person is observing.

An alternative to recording an observation immediately would be to locate the child, then, timed by a stop watch, record the child's action at the end of a stated period of time - 10 or 15 seconds. This latter procedure would allow the observer to

"tune in" on the activity before being required to record the action. Such an approac' would lengthen the time needed to make the observations but would likely produce somewhat more valid assessments of the actual activities. Still the present procedure yielded results that were more than valid for the purpose for which they were to be used.

Once a child is located and his behavior categorized, a score of 1 is entered on the record form. If appropriate, a score is also entered for the teacher's contribution to the action, i.e. what was her response. Once all appropriate marks have been entered for one child, the observer moves to the next child. Typically, all children in one area of the room are observed before moving to another area. All children in the room are observed once before the observer moves on to the next round of observations of the room.

At the end of the day, or as appropriate, the student scores are obtained by dividing the total number of observations into the raw score for each category. It is best if the total number of possible opportunities to be observed is fairly large so that wide variances will not be noted for an individual item. Observation obtained over several hours or days would seem to provide the best basis for the scores.

Detailed Description of Observation Categories

I. Child Independent - when a child is by himself
- no interaction with teacher or another child.

Im - Independent Manipulative
The child is working by himself with manipulative objects.
Such activities include:
painting
working with paper and/or pencil
playing games (by one's self)
sawing wood
mopping floor
fixing and eating snack (if alone)
washing hands (alone)
looking at self in mirror (alone)

Ia - Independent Attending
The child is listening or watching what others are doing. He is not engaged in any manipulative activity, but in the judgment of the observer, is aware of what is going on around him. There is no verbalization by the child during this time.

In - Independent Non-Attending
The child is not watching or listening or engaged in manipulative activity. He is observed as daydreaming or wandering around the room with no observed purpose--random activity.

T - Transition
Changing from one activity to another; when a child has just finished one activity and is moving into another; moving around the room, gathering materials to work.

U - Unobservable behavior
Observer cannot see or hear to record

II. Child-Child Interaction - Child-child interaction is the second type of interaction. As its title implies, it is the interaction that occurs between two or more children.

When Child-child interaction occurs, a record is kept of who each child interacts with. (Each child is given a number and this number is recorded, together with the frequency count, in the appropriate category.)

Within child-child interaction four categories are used to assess the quality of the interaction.

CP - Parallel Play
This category is recorded when two or more children are engaged in the same activity. They are working close to each other, e.g. side by side, across from each other. There is no verbal interaction. Nearness or propinquity is a key factor.

Light Social Interaction
This category includes banter, jibes, friendly name calling, comments on weather, etc. The interaction is not task related. Examples of this interaction include:
"Look, it's raining out."
"You're a nut."
A borderline example includes, "I like your work." This is classified as light social interaction when it is a single comment in passing. If the conversation continues and is task related, it is not recorded as light social interaction.

Child-Child Manipulative
Two or more children are talking with each other while working/playing with some type of manipulative object. Example: two boys making a boat.

Child-Initiator. When the child being observed is the obvious initiator of the activity--takes the lead in the activity.

Child-Respondent - When the child being observed is the follower, takes directions from another child.

III. (C → T) Child initiate to Teacher
The child initiates interaction with a teacher usually in the form of a question or a comment. Examples of this category include:
"Look at Polly."
"Mary, can I go outside?"
"Can I use the knife?"
"I don't understand this."

(T→ C) Teacher initiate to Child
The teacher initiates interaction with a child usually in the form of a question or a comment. Examples of this category include:
"May I help you?"
"Tell me more about this."
"Put away the materials you used."
"How many red circles can you find?"
This category is to be recorded when there is a one-to-one teacher-child interaction with the target child.

Small group activity is recorded when the target child is part of the group of two to eight children.

IV. Sa - Small group attending
Child is in a small group (3-7 children). He is with the group, doing what they are doing or paying attention to what is happening. The child is "on task."

Sn - Small group non-attending
The child is doing something other than what the group is doing. This includes daydreaming, distracting behavior, or unnecessary talking to other children, etc.

Large group activity is recorded when the target child is part of a group of nine or more children.

V. La - Large group attending
Child is in large group listening to or doing what the group is doing. He is "on task."

Ln - Large group non-attending
Child is in large group doing something other than what group is doing. Includes daydreaming, distracting behavior, etc.

The quality of T-C interaction is measured by seven categories taken from Interaction Analysis Scale (Amidon & Flanders, 1967). They include the following:

VI. Teacher-Child Interaction

Ti - Teacher-initiated talk

1. Accepts feeling - Teacher accepts and clarifies the feeling tone of children in a non-threatening manner. Feelings of the child may be positive or negative. Used when child is expressing emotion; includes no expression of teacher value.
Example: understands children's feelings,
"I know you're angry but...."
"I can understand how you feel."

2. Praises or encourages - The teacher praises or encourages student action or behavior. It also includes jokes that release tension, but not at the expense of another individual; nodding head or saying "un hum?" or "go on." Encouraging by giving value to an idea. This category includes any positive type of judgment the teacher makes or approval of an action. Examples are:
"This is a good idea."
"I like what you are saying."
"Continue, I'd like to hear more."

3. Accepts or uses ideas of students - The teacher clarifies, builds, or develops ideas suggested by the student. The category refers to restatements or clarifications of pupils' contributions, no indication of personal feelings about student. Example:
"I think I understand what you are saying...."

4. Asks questions - This category is recorded when a teacher asks a question about content or procedure with the intent that the student answers.

   It is questioning in order to get an answer from a pupil or group of pupils.

   It may be a question followed by a period of silence meant to be answered or a restatement of the original question.

   This category is recorded when the teacher calls on a child by name. The effect of the question on pupils is the main criterion for this category. If the question is straight forward, it belongs in this category. Examples include:
"John, what time is it?"
"What is the rule about running in the room?"
"How many children have birthdays in April?"

5. Lecturing - According to Flanders this is the most frequently used of all categories.

   This category is recorded when the teacher gives facts or opinions about content or procedures and expressing his own ideas, often in the form of a rhetorical question.

   The teacher is trying to communicate his own thoughts in the form of an idea or rhetorical question.

   This category also is recorded when the teacher is telling or reading a story.

6. Giving Directions - When a teacher gives directions, commands, or orders in which a student is expected to comply, this category is recorded. Examples include:
"Please sit down." (simple direction)
"Clean up."
"Line up at the door."
"Put your name on your paper."
"Stand in line."

7. Criticizing or justifying authority - This category includes statements by the teacher which are intended to change student behavior from non-acceptable to acceptable pattern.

References

Amidon, E. J. & Flanders, N. A. The role of the teacher in the classroom. Association for Productive Teaching, Minneapolis, Minnesota, 1967.

English, H. B. & English, A. C. A comprehensive dictionary of psychological and psychoanalytical terms. New York: Longmans, Green, 1958.

Resnick, L. B. Teacher behavior in an informal British Infant School. School Review, November, 1972. Pp. 63-83.

Sears, R. R. A theoretical framework for personality and social behavior. Amer. Psych., 1951, 6, 476-483.

Withal, J. & Lewis, W. W. Social interaction in the classroom. In N. L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, 1963. Pp. 683-714.

APPENDIX E

APPENDIX E

Language Kit

1. Data Sheet for Children and Teachers
2. Score Sheet for Children
3. Score Sheet for Teachers
4. Rules for Scoring Data
5. Rules for Scoring MLR
6. Measures of Language Structure (Non-simple versus simple sentences)
7. Summary Sheet for Classes

Recording Procedures

1. Enter classroom and record every sound the target person utters to the best of your ability.

   - Position self so that can hear and see lips of target person.
   - Practice remembering what is said and then write it down as you have time. Remember that a child will pause before he says something else so that you will have time to catch up with the writing. (Teachers are a little harder to do.)
   - Try not to stare at the target child. Look at a child nearby.
   - Do not interact with the children. Maintain a placid face. The children will soon learn to leave you alone if you do nothing.
   - If the words come too fast, draw lines to indicate the number of words being said with an occasional word as a reminder. You will often be able to fill in the gaps at your next recording pause.
   - At the end of each session be certain to go back through your records and correct handwriting, fill gaps. It is a must before the next recording session. (If can't fill gaps at least have number of words.)

2. Scoring periods.

   a. Go through and number each utterance. Follow the scoring guidelines for determining what is an utterance. (Page 6)

   b. Arrange utterances on the form according to the situation using the number of the utterances to locate it in the record. For example, if a child gives three utterances in art (1, 2, 3), and then goes to the bathroom for utterances 4, 5 and back to art for 6, 7, the form would show 1, 2, 3, 6, 7--4, 5. (Situation Page 5)

   c. Count the number of words as found on page 6. = LU (preparatory to computing MLU.

   d. Determine if utterance is Question, Declarative, Imperative, Negative, or Expletive.

      Question--the utterance asks a question, "Do you want to go to snack?"
      Declarative--Is a statement, "This is red"; can also be a single word "orange."
      Imperative--Is a command, "Stop it," "Sit down," "Put the food on the table. (Has an implied you as the subject.)

Negative--Anything with a not, or negation in it. A double negative is usually considered a negative.
Expletive--Exclamation, "Wow," "Groovy," "Yeah."

e. Determine simple or a non-simple sentence. (Page 8) Use non-simple because there are many types of non-simple sentences and we have not discriminated among them.

f. For teachers same procedure except determine if sentence is "positive" or "negative." At the present time everything is negative--neutral--except positive items. Positive--any pleasant positive statement made, "I like that," "You did good," should be positive, reinforcing for the child.

Computation Procedures

1. Add all of the categories, by category.

2. Compute as per directions on page 5.

3. (Note there are subtotals and totals by situation.)

SITUATION	Time	VERBALIZATIONS OF CHILD FOCUSED ON

	Time	VERBALIZATIONS OF CHILD FOCUSED ON

#1117

Date _____ Child _____ Model _____ SES _____ Race _____

Utterance	Situation	Q	D	I	N	Ex	Simple/complex	Length of utterance	

For Children's Verbalizations

RULES FOR SCORING DATA

MLR -- See Form A for specific rules for scoring MLR (e.g. definitions of a response and standards to determine how words should be counted). Normally, fifty consecutive utterances are analyzed for MLR. For our purposes, we want the MLR for all of the utterances observed in an hour's period of time. The rationale for this use of the MLR can be found in the rationale folder. Because we are not collecting our MLR in the way that most linguists do, we may not be able to compare our data with any norms. When the final summary is written for RAPYD, Dr. Zerhbach should be careful to note how we used the MLR differently than is usually done.

NDW -- This is the number of different words used. To obtain the NDW, write down the number of different words used. It is easiest to do this if you first write the alphabet down the side of a scratch pad. Then, as each new words appears, write it down next to the letter of the alphabet that it corresponds to. Finally, add up all of the words you have written down.

NS/total utterances -- this is the ratio of non-simple sentences to the total number of utterances. This ratio should be carried out three decimal places and later recorded in percentiles.

#WDS/hr This is simply the total number of words spoken during the hour's observation.

Q -- number of questions in comparison with total number of utterances. This will be a ratio which should be computed to the third decimal place and put down as a percentile.

D -- number of questions in comparison with total number of utterances. Compute as above.

I -- number of imperatives in comparison with total number of utterances. Compute as above.

N -- number of negatives in comparison with total number of utterances. Compute as above.

EX - number of explitives in comparison with total number of utterances. Compute as above.

For scoring children's verbalizations, first follow the above procedure. Then, in the SOI model, do a separate mlu, dnw, ns/total utterances, Q, D, I, N, Ex. for each of the folllowing: structure, large group, directed play. Count snack time as directed play.

For Open Ed, do a separate mlu, ndw, ns/total utterances, Q, D, I, N, Ex. for each of the following activities that the child may be engaged in during the hour's observation:

1) reading alone rd
2) reading with others rds
3) woodworking ww
4) dress-up d
5) science s
6) math m
7) art a
8) snack sn
9) manipulative toy(s) alone mt
10) manipulative toy(s) with others mts
11) general meeting gm
12 Uninvolved wandering

Form A

RULES FOR SCORING MLR

Definitions of a response:

A response is considered a separate unit if it is marked off from the preceding and succeeding remarks by pauses.

A remark is considered finished if a child comes to a full stop, either letting the voice fall, giving interrogatory or exclamatory inflection, or indicating clearly that he does not intend to complete the sentence.

When one simple sentence is followed immediately by another simple sentence with no pause for breath, the two are considered to comprise one sentence if the second statement is clearly subordinate to the first.

Remarks connected by interjections and conjunctions, such as "and, uh, er" are considered as separate remarks if the remarks appear to be clearly enumerative. E. g. "The girl, er....the, boy, um...." Each is a single remark.

Standards to determine how words should be counted:

Contractions of the subject and predicate like "it's, you're" are counted as two words.

Contractions of the verb and negative like "can't" are counted as one word.

Hyphenated words and compound nouns, particularly proper nouns that are not hyphenated but function as single words and as names of single objects, are counted as singl words. E. g. "merry-go-round, Mother Goose,"

Each part of a verbal combination is counted as a separate word. E. g. "have been playing" would be counted as three words.

"Lookit" is counted as one word if it occurs alone and functions simply as "Look;" followed by an object, it is counted as the two words "look at."

Each of the following is to be counted as one word: oh boy, my gosh, darn it, dog-gone it, all right, maybe, giddy-up, someone, lighthouse, birdhouse, high school, ain't.

Each of the following is to be counted as two words: oh yes, oh no, oh gee, let's see, on to, Christmas tree, kinda, oughta, hafta.

The following repetitions do not count: When the same word is repeated several times; when a phrase is repeated and at least one different word is not added; a contraction and then repetition with a verb phrase are still considered repetitions and only one is counted.

Repetitions of words used for enumerative purposes and for starting a new thought unit are not penalized for repetition. E. g. "That's a bear, there, that's a bear there, that's a bear there." (pointing as he speaks.)

Words not completed by the child should be recorded as though they were completed. E.g. "I th- (think)--I know he's going home."

Noises should be counted only when they are considered to be an integral part of the sentence. E.g. count all words in "The lion says 'grrr'."

Interjections not considered dictionary items and functioning solely to connect words or phrases should not be sounded, e.g. uh, er but do count utterances which serve as words such as "uh-huh" for "yes."

All colloquialisms and neologisms should be counted: "wham, whoops, yike, ya, yippee, teensy-weensy, naw, yeah," etc.

Rules for obtaining responses:

Use opening remarks in such a way as to stimulate conversations.

Do not use questions which would elicit naming responses.

Obtain 60 responses and discount the first 10, as a usual rule.

Measures related to length and complexity of oral language

Mean Length of Response			Mean Five Longest Responses		Structural Complexity Score	
Age	Mean	sd	Mean	sd	Mean	sd
3.0	4.1	(1.3)	7.89	(2.27)	34.3	(18.3)
3.5	4.7	(1.0)	9.06	(2.14)	40.6	(17.9)
4.0	5.4	(1.5)	10.51	(2.74)	51.6)	(20.1)
4.5	5.4	(1.3)	10.76	(2.66)	50.4	(24.1)
5.0	5.7	(1.5)	11.73	(3.43)	56.9	(21.5)
6.0	6.6	(1.3)	12.27	(2.39)	70.1	(22.7)
7.0	7.3	(1.0)	13.57	(2.16)	71.8	(18.5)
8.0	7.6	(1.6)	14.15	(2.85)	77.7	(33.8)

Reference: Templin, Mildred C. Certain Language Skills in Children, Their Development and Interrelationships, (Child

Classify each remark made by the child tested, placing it in one of the divisions below. Assign the appropriate weight to each of the remarks and total th values to obtain the Structural Complexity Score. Comparison with the norms is valid only when the score is based on 50 remarks.

Classification of Remark	Weight
Incomplete responses, 1a and 2	0
Simple sentences as described in 1b and 1c	1
Simple sentences with two or more phrases, or with a compound subject or predicate and a phrase, 1c(1)	2
Compound sentences, 1d	3
Complex sentences, 1d, and elaborated sentences as describes in 1c (2) and 1c (3)	4

With 50 responses, the SCS can range from 0 to 200.

Use the following system for classifying children's remarks with regard to their structural (grammatical) complexity:

1. COMPLETE RESPONSES

   a. Functionally Complete but Structurally Incomplete Response. Examples: single-word sentences, names, expletives, most responses to questions, where omitted words are implied.

   b. Simple Sentance without Phrase. Example: "He has a dog."

   c. Simple Sentence with Phrase, or with Compound Subject, Object, or Predicate. "He has apuppy with black spots." "The boy and the girl have sleds."

   d. Complex and Compound Sentence. "When he pushes her, she slides down."

   e. Elaborated Sentence.
      (1) Simple sentence with two or more phrases, or with compound subject or predicate and a phrase.
      (2) Complex sentence with more than one subordinate clause, or with a phrase or phrases.
      (3) Compound sentence with more than two independent clauses, or with a subordinate clause or phrases.

2. INCOMPLETE RESPONSES

This category, nor formally subdivided, includes fragmentary or incomprehensible responses: "well--not this--but"

Resporses without: Verb, subject, introductory "there," pronoun, preposition, conjunction.

Responses interrupted by changes in form: "We have--my brother has a motorcycle."

Sentences left dangling: "He wants to...." "She said that she..."

If a response is complete except for an article, consider it complete. Sentences otherwise complete beginning with "but," "and," and "then"... consider complete. Those beginning with conjunctions "because," "cause," and "for" should be considered incomplete.

Information taken from Diagnostic Methods in Speech Pathology, by Johnson, Darley, Spriestersbach.

Student ______________________ Race ____________ SES ___________ Model ____BIS____

		First Observation	Second Observation
________	mlu	________	________
	ns/total utterances	________	________
	ndw	________	________
	Q	________	________
	D	________	________
	I	________	________
	N	________	________
	Ex	________	________
________	mlu	________	________
	ns/total utterances	________	________
	ndw	________	________
	Q	________	________
	D	________	________
	I	________	________
	N	________	________
	Ex	________	________
________	mlu	________	________
	ns/total utterances	________	________
	ndw	________	________
	Q	________	________
	D	________	________
	I	________	________
	N	________	________
	Ex	________	________
________	mlu	________	________
	ns/total utterances	________	________
	ndw	________	________
	Q	________	________
	D	________	________
	I	________	________
	N	________	________
	Ex	________	________
	# wds/hr		

ADDITIONAL COMMENTS ON CHILD'S LANGUAGE

Teacher _____ Race _____ SES _____ Model BIS

		First Observation		Second Observation
STRUCTURE	mlu		Pos.	
	ns/total utterances			
	ndw			
	Q			
	D			
	I			
	N			
	Ex			
LARGE GROUP	mlu		Pos.	
	ns/total utterances			
	ndw			
	Q			
	D			
	I			
	N			
	Ex			
DIRECTED PLAY	mlu		Pos.	
	ns/total utterances			
	ndw			
	Q			
	D			
	I			
	N			
	Ex			
TOTAL	mlu		Pos.	
	ns/total utterances			
	ndw			
	Q			
	D			
	I			
	N			
	Ex			
	# wds/hr			

ADDITIONAL COMMNETS ON TEACHER'S LANGUAGE

APPENDIX F

Appendix F

EVALUATION OF INAPPROPRIATE BEHAVIOR IN RAPYD

by

R. Reid Zehrbach, Billie Sue Squires & Marilyn Lindholm

I. Statement of Purpose

II. Evolution of Evaluation Scale

III. Explanation of Scale

IV. Training Guide

V. Reliability (not included)

I. Statement of Purpose

The most important consideration in evaluating inappropriate behavior in the thre classroom models of the RAPYD project is to determine if types and frequency of behaviors are a function of the classroom model, the teacher, or the child. To answer this question, it is first necessary to postulate what types of behavior could be considered inappropriate in each of the three models. Getting out of a chair and walking away, for example, would not be considered inappropriate in the Open Ed classroom where the child is free to move from one activity to another, but leaving a chair and walking away could be considered inappropriate in the small classroom situation of the SOI classroom.

Certainly there are behaviors that would be inappropriate in all three classrooms--pinching, kicking, refusal to clean up, refusal to share, withdrawl from the activity. Yet some inappropriate behaviors are distinct to each model. The instrument or scale used to evaluate inappropriate behavior must contain both widely recognized and more distinctive forms of inappropriate behavior.

In addition to including varied categories of inappropriate behavior, the evaluation form must show the frequency of each type of behavior. The instrument should then contain a checklist of inappropriate behaviors which the evaluator will record across specified time intervals. The form can also show if types of behavior are characteristic to areas of each classroom by providing space for the evaluator to record the number of the area and the activity in which the behavior occurred. And to help determine the degree of influence of the teacher on the frequency and type of inappropriate behavior, the evaluation form should include a list of teacher response behaviors. To allow for the influence of the child's background and personality, the form must provide enough room to record the child's name.

Further, the over-riding practical problems of developing an instrument, specifically the amount of information an observer can record and the limiting size of the form itself require the selection of distinctive categories of inappropriate behavior and teacher response.

A final consideration in developing an evaluation scale is inherent in the subject itself. Since inappropriate behavior is behavior of low frequency, the evaluator must be prepared to monitor the whole classroom or to design a sampling schedule that will result in an accurate picture of the classroom.

An accurate scale for evaluating inappropriate behavior and reliable data can help to answer broader questions concerning the nature of each classroom model. Does a child respond to the structure of the classroom by displaying fewer inappropriate behaviors or does the choice of activities in the Open Ed model tend to decrease the frequency of inappropriate behaviors? What type of teacher response behavior decreases the amount of inappropriate behaviors? Do the children show a shift over the year from physical behaviors to more social behaviors? Are there clusters or patterns of inappropriate behavior that are peculiar to each classroom? The evaluation instrument should be able to supply insight into these basic questions.

II. Evolution of Evaluation Scale

The first form for evaluation of inappropriate behavior had three behavioral dimensions: child, children's reactive and teacher response. The basis for a three dimensional look at inappropriate behavior was the idea that behavior is purposeful and results in a reaction by the teacher and other children. This proposed scale should show that the bullying child, the crybaby and the scolding, oversolicitious teacher, for example, play roles in maintaining the inappropriate behavior sequence. The major failing of this approach was that it emphasized the function of the teacher and neglected the effect of the classroom model. In addition, it is very hard to observe distinct behavior sequences from the point of reference of an observation booth. And, too, children's reactive responses would have to encompass a large number of possible behaviors.

A second scale was developed and tried out. But this too had problems.

Finally, a third scale was developed that essentially focused on negative behaviors. Time sampling procedures were used to make certain that all parts of the room were covered and that all individuals, teachers and children had an equal opportunity to appear in the results. In this approach, the observer would watch a predetermined portion of the classroom for five minutes, then proceed to the next area until all parts of the floor area had been observed. The activity was then repeated; equal time samples were obtained for each classroom.

Observing the classrooms for equal amounts of time, however, does not equate the rooms because the opportunity for a child to obtain a score depends upon his engaging in inappropriate behavior when he is being watched. To allow for differences, the number of minutes that children were in an area being watched was also recorded. Thus, an estimate of the number of child/minutes is obtained which was used to correct for differences in the amount of time that a child was available for observation. For example, if one child remains in an observed area for the entire five minute time period, the number of child/minute recorded would be one times five or five child/minutes. If three children enter an area being observed and stay for two minutes each, the total child/minutes would be three times two or six child/minutes. This figure is recorded at the bottom of the child behavior checklist for each time interval.

On the final form, it was not enough to record simply the area in which the behavior took place. Another variable, activity, was added to determine if types and frequency of behavior were characteristic of a situation. In the Open Ed classroom, for example, reading activities take place in all parts of the classroom. Simply recording the area does not itemize the activity involved. A code was worked out to include this data in the scale: "ww" signifies woodworking, "sn" denotes snack, "rd" reading alone, "rds" reading in a group. In the SOI classroom, the code was somewhat easier to make: "dp for directed play, "stl" for language structure, "stg" for Guilford structure, "s" for story, "m" for music.

And finally, a method for taking data off the evaluation form was designed to eliminate countless recording sheets. The evaluator would record data on a transparency placed over the evaluation form and then transcribe the data to record sheets.

The evaluator would complete each day's observation with an anecdotal, one-paragraph summary of the classroom. The final evaluation form then will denote child behavior, area observed, activity, teacher's reaction, amount of child/minutes involved and time period in the class schedule.

III. Explanation of Scale

The final scale is divided into two major parts: child behavior and teacher behavior. The first scale, child behavior (see Figure 1) has five categories: inappropriate physical behavior, inappropriate verbal behavior, inappropriate use of materials, inappropriate behavior as a member of a group and positive behavior.

The first category denotes <u>physical</u> behavior. Every type of behavior in this category is behavior involving the child and another person, either another child or a teacher.

pinching biting hitting scratching pushing kicking	---	aggressive behavior directed <u>toward</u> another person with actual physical contact made in the manner noted by the term.
tearing another child's work	---	the physical action of actually tearing another peer's work.
snatching	---	grabbing materials or objects from another person, but not destroying them.

The second category of inappropriate behavior deals with <u>verbal</u> behavior. Again this category is concerned with behavior directed toward another person.

teasing	---	to annoy by irritating social acts or remarks, as by poking fun at one's peers.
social threat	---	child expresses intent to hurt a peer socially, i.e. "I won't invite you to my party," "If you do that I won't be your friend," "I'm going to tell the teacher."
physical threat	---	covers physical actions, "I'll slap you," "I'll knock your blocks over."
crying	---	can be a response to a direct physical attack, imagined insult or frustration.
screaming	---	involves anger on the part of the child as in a temper tantrum.
tattling	---	one child tells another child or teacher something about a third child with the anticipation of producing a negative response toward the third child.
redirects conversation	---	child changes the content to something new other than that being discussed in the classroom, i.e., "Teacher, do you know what happened at home last night?" If the conversation has some relevance to the subject being disuccsed, then it is not considered to be redirecting.

Figure 1.

Class
CHILD BEHAVIOR (_____ min) (Start ____ End ____) (_____)
Time inverval Time span Date

	Area												
I.	pinching												
	biting												
	hitting												
	scratching												
	pushing												
	tearing other's work												
	snatching												
II.	teasing												
	swearing												
	soc. threat												
	phys. threat												
	crying												
	screaming												
	tattling												
	redirects conversation												
III.	inappropriate use of materials:												
IV.	refusal to clean up												
	refusal to follow directions												
	refusal to share												
	inattention to activity												
	leaves activity												
	distracting noise												
	distracting movement												
	uninvolved wandering												
V.	quiet sitting, thinking												
	offer to help teacher												
	offer to help another child												
	reach agreement without teacher												

Figure 2.

Class

TEACHER BEHAVIOR (_____ min.) Start___ End___)(_____)

	Time Inverval			Time Span			Date					
Area												
I. separate child from group												
remove child from area												
restrain child physically												
remove child's materials												
ignore												
leave situation												
non-verbal response												
issue imperative												
explanation of rules												
threaten phys.												
threaten soc.												
explain logical consequences												
offer choice of alternatives												
mediate dispute												
request, "Please..."												
II. distract child												
redirect child												
ask group for possible solution												
CHILD-MINUTES												

The third category is inappropriate use of materials. Here the child is not directly involved in a two-person interaction but is involved with his physical environment. The child who throws crayons, writes on the wall, tears up a book, displays an obvious misuse of materials, falls into this category. To evaluate borderline examples, the observer should look for the teacher's reaction to the behavior. This section on the form allows space for the evaluator to note the materials misused.

The fourth category deals with the child as in conflict with the purpose of the group. Standing up and walking around, for example, during story time would be behavior that is in conflict with the purpose of the group. Behavior in this category reflects the child's responsibility to the group; a child benefits from being a member of a group and is expected to assume some responsibility in the group

refusal to clean up	---	child refuses to clean up when asked to do so by the teacher. Only includes children approached directly by teacher. Does not include child who says, "Let me finish this one more," and then does clean up; nor does it include standard "gripe" remark, i.e., "Aw, do I have to?", "I wanna do some more," "Now!?" when followed by positive action.
refusal to follow directions	---	when asked to do something, declines, ignores the directions, or does the opposite of the direction given.
refusal to share	---	child declines to share in the use of materials, i.e., sharing crayons when asked to do so by another child or the teacher. This can also denote refusal to take turns playing games and with toys when asked to do so. When acceptable, social negotiation occurs it doesn't count as a refusal. Example: "I just got it. Let me play five minutes and then you can/or we'll trade."
inattention to activity	---	when a teacher-directed activity is in progress in which the child should be participating or listening and the child is not. Obvious inattention to the best judgment of the observer. You have to be cautious of children looking out the window, etc., but answers the question when called on. This is a difficult area to score. Score only when obvious.
leaving activity	---	actual physical withdrawal from the activity, child leaves without immediate involvement in another activity.
distracting noise	---	covers any sound a child makes that interferes with the activity. Observer should key on the teacher's reaction and the reactions of the children in immediate area. Any time a child is distracted by another child a problem is scored.

distracting movement	---	jumping, wiggling, standing, running, actions that are counter to the purpose of the group and distracting to the members of the group. Any time a child is distracted by another child.
uninvolved wandering	---	considered inappropriate in the Open Ed as well as other models. Child does not settle on an activity, enters the area being observed without a purpose, wandering in, doesn't become involved in an activity.

The fifth category on the scale contains a few areas of positive behavior. Quiet sitting and thinking is an important aspect of the Open Ed model.

quiet sitting and thinking	---	not wandering around, actively absorbed in quiet study.
offer to help teacher	---	when the child verbally expresses a desire or willingness to help the teacher: "May I help you carry it/put the things away/clean it up?"
offer to help another child	---	when the child verbally expresses a desire or offers to help another child: "I will help you carry it/put the things away/clean it up."
reach agreement without teacher	---	children often turn to an adult to mediate a conflict; more significant if children settle dispute or work on solutions themselves.

The final item at the bottom of the evaluation form provides a rough estimate of the child/minutes in each area during the observation time. Each observation period will be five minutes in length. The rough estimate of child/minutes is computed and totaled at the end of each period. Following is a brief example.

Total observation time period--5 minutes

Child A	1 child times 1 min.	= 1 child-min.
Child B	1 child times 2 min.	= 2 child-min.
Child C	1 child times 3 min.	= 3 child-min.
Child D	1 child times 1 min.	= 1 child-min.
	Total child-minutes in area	7 child-min.

Teacher Behavior

The second major part of the evaluation scale is the section on teacher behavior. This sheet is further divided into two categories of teacher reaction behavior. The first category denotes an actual or potential physical reaction to the child's behavior

separate child from group	---	the child is asked/told to move from direct participation in activity but able to remain (stated or implied) in a position to participate auditorally/peripherally in the activity. "Move your chair back away from the table."
remove child from area	---	the child is asked/told to leave the area of an activity entirely. "Go to the _____ room/seat (and stay there)."
restrain child physically	---	teacher holds child, preventing child's movement.
removes child's materials	---	teacher moves child's materials out of reach of child.
ignore	---	teacher is aware of the behavior but does not respond to the problem.
leave situation	---	teacher physically withdraws from conflict, leaving children to settle dispute.
nonverbal response (new category being tested)	---	record actual response: touch, smile, frown, stand beside, etc.

Verbal reactions are listed under the second category of teacher behavior.

issue imperative	---	"Don't do that" or "Stop that."
explanation of rules	---	teacher states in one or more utterances, the "why" of the rule. "We don't run because people are working and we might cause them to spill paint/tear paper/bother them.
physical threat	---	teacher threatens verbally to take an action which will cause actual physical contact with the child. "I'll hold you in that chair if you don't sit there."
social threat	---	teacher threatens to withhold or perform a social or affective act/behavior. Example: "I think your mother and I should discuss this if the (inappropriate behavior) continues."

explain logical consequences	---	teacher explains or tries to help the child arrive at a logical consequence of what might happen if he continues present behavior. Example: Running in the room with sharp, pointed scissors. "What might happen if you would fall?" Differ from the explanation of rules in that the child must state or restate at least one implication.
offer choice of alternatives	---	"You may do the work with us or you can move your chair outside," or "Can you go outside by yourself or do you want me to help you?", "You can use the crayons or you can play with the beads." Here the key is if the teacher offers the child a reasonable choice of alternative actions.
mediate dispute	---	teacher attempts to mediate dispute, trying to determine who did what first and mete out some form of punishment.
request, "Please..."		"Please stop doing that," or "Would you mind movin that toy away from that area," "Could you let Jimmy use the crayons for awhile?" Involves some redirection but with an implicit social command.
Distract child	---	teacher distracts the child who is advancing on another child by some immediate, on-the-spot actio such as handing the child a toy or other materials concerns an immediate shifting of the child's attention.
redirect child	---	teacher suggests other activities at the time of conflict such as, "Why don't you go over and push the other swing?" The teacher suggests another activity away from the scene of the dispute.
ask group for possible solution	---	teacher refers solution of problem to the group either at the time of the inappropriate behavior or later in a class meeting.

IV. Training Guide

The first step in training is to read the rationale paper on evaluation of inappropriate behavior. It is also required that each evaluation trainee read the staff presentation on the Open Ed model. To gain an understanding of the basis for the Open Ed model, it is also important to read current literature describing the open classroom. A reading list will be provided. The philosophy of the Open Ed classroom greatly influences the methods of dealing with a child's inappropriate behavior and the types of behavior that are considered inappropriate.

Secondly, the evaluator must learn all the children's names and the teachers' names. The evaluator must also memorize the activity codes for each model. Become familiar with the items on the scale, what is meant by each item, on both the child list and the teacher list. Practice computing child-minutes on a scrap piece of paper.

How to Use the Scale

1. Look at the RAPYD observation schedule (Figure 3) to determine which classroom you will be watching this day. For example, if today is Monday of Week 1, you will be watching the Open Ed model.

Figure 3.

RAPYD OBSERVATION SCHEDULE

	Monday	Tuesday	Wednesday	Thursday	Friday
WEEK 1	Open Ed	School and Record Data	Open Ed	SOI	SOI
	Monday	Tuesday	Wednesday	Thursday	Friday
WEEK 2	SOI	Open Ed	School and Record Data	SOI	Open Ed

2. Look at the floor plan map (Figure 4) and observation time schedule of the classroom you will be observing. Following through with the first example of the Open Ed school model, the observation time schedule begins at 9:00 in the bathroom (A) for five minutes. Then you observe the science room (B) for another 5 minutes, then the silent room (C) for 5 minutes, then each of the areas in the large room (1, 2, 3). You will be using a cassette tape recorder and a cassette tape with five minute bleeps recorded. An earplug is provided with the tape recorder.

To record on the Child and Teacher Record Form (Figure 5), you will need a 3M transparency felt pen. Using the felt pen, mark at the top of each time-interval column, in the space labeled "Area," the order you will be observing each area.

3. Record the identifying information at the top of the form: class, time interval used (5 minutes), the beginning of the time span, and the date.

4. In the booth, you will need:

a. preprogrammed tape recorder and tape, earplug,
b. 3M felt pen for transparencies,
c. scratch paper to figure child-minutes,
d. evaluation scale for reference,
e. clip board with class sheets for transcribing data,
f. kleenex or damp cloth for erasing marks on scale, and
g. the maps and activities code and scale resumes.

5. To begin observation, start the tape recorder and focus on the first area. Let's say that in the first 5 minute period you are watching the bathroom and one child comes in and washes his hands for a minute and leaves. Next, after about a minute, three children come in to feed the turtle and Sam pushes Mary. The teacher enters and attempts to mediate the dispute. All children leave. You find the category (Figure 6) labeled "pushing" and write "Sam" in the first column. The children were engaged in a science activity so you write "sc" after Sam's name. On the teacher side of the scale (Figure 7) you located the category "mediate dispute" and write the teacher's name and "Sam" underneath in the first column.

Figure 4.

Open Ed Model

Bathroom (A)	Science (B)	Silent (C)
1	2	
		3

Observation Schedule

9:00 - 9:20 Bathroom (A)
Science (B)
Silent (C) 5 min. in each, total 15 min. plus 5 min. break to reorganize.

9:20 - 9:40 Area 1
Area 2
Area 3 5 min. in each area, total 15 min. plus 5 min. reorganization

repeat sequence 9:40 - 10:20

repeat sequence 10:20 - 11:00

Figure 5.

Child Behavior Record Form

Class (5 min.) Time interval (Start ____ End ____) time span (_____ ____) Date

CHILD BEHAVIOR Area	A	B	C	1	2	3	A	B	C	1	2	3
I. Pinching												
Biting												
Hitting												

Figure 6.

Child Behavior Record Form

Scratching												
Pushing	Sam sc											
Kicking												
Tearing other's work												

Figure 7.

Teacher Behavior Record Form

Explain logical consequences												
Offer choice of alternatives												
Mediate dispute	Sarah-Sam											
Request, "Please..."												

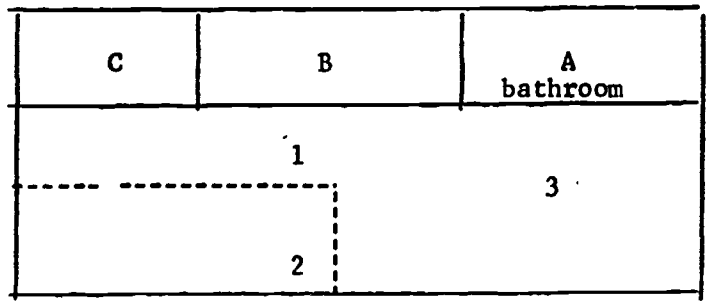
In some classrooms, the group of children under observation may be too large or the frequency of behaviors too rapid to permit accurate recording. In such instances the room should be arbitrarily divided into smaller units. For example, if the teacher has the children seated in front of her during a story time, the group can be divided into thirds or fourths and the observer's attention focused on the third or fourth sub-group. To assist in this division, it is recommended that a permanent part of the classroom be used as a guide, i.e. a painted line on the floor, the edge of a rug, the change in colors in the pattern of linoleum on the floor, etc. All children on one side of the line or in one sector will be observed; all children outside the sector will be ignored for observational purposes. When such a procedure is followed, one portion of the group should be observed for the selected time period (five minutes, then another portion of the group observed for five minutes, etc.) unti all of the group has had a chance to be observed, when the process will start over, as long as necessary. See Figure 8.

CAUTION: Keep careful track of the number of children under observation at each time and the number of minutes in the observation so that a factor (number of child-minutes) can be computed and used to correct the finding.

At the end of each session record the summarized behavior on the Summary Record Form.

Figure 8.

Structure of the Intellect Model



Activity Code, Open Ed Model

rd	reading alone
rds	reading in a group
ww	wood working
hk	housekeeping
d	dress up
sn	snack
m	math
a	art
sc	science
mt	manipulative toys alone
mts	manipulative toys in a group
gm	group meeting
wr	writing
cu	clean up
sw	sewing

Activity Code, SOI

sn	snack
stl	structure-language
stm	structure-math
stg	structure-Guilford
m	music
s	story
dp	directed play
rd	reading alone
sc	science

References

Amidon, E. J. & Flaners, N. A. The Role of the Teacher in the Classroom. Association for Productive Teaching, Inc., 1040 Plymouth Building, Minneapolis, Minnesota. 1967.

Bijou, S. W. "Methodology for an Experimental Analysis of Child Behavior," reprinted from Psychological Reports, 1957, 3, 243-250, Southern Universities Press, 1957.

Bijou, S. W., Peterson, R. F., Harris, F. R., Allen, K. E. & Johnston, M. S. "Methodology for Experimental Studies of Young Children in Natural Settings," reprinted from The Psychological Record, 1969, 19, 177-210.

Hall, R. Vance. Managing Behavior, Behavior Modification: The Measurement of Behavic H & H Enterprises, Inc., P. O. Box 3342, Lawrence, Kansas, 1971.

APPENDIX G

Appendix G

Parent Questionnaire

Please read each of the statements then answer by circling the appropriate letters that indicate your response.

(SA if you strongly agree, A if you agree, D if you disagree, and SD if you strongly disagree with the statement.)

PART I - Last year in kindergarten

1. My child often came home feeling happy. SA A D SD

2. My child often told about his experiences in kindergarten. SA A D SD

3. My child displayed a positive attitude about going to kindergarten. SA A D SD

4. My child often worked on ideas and projects he learned in kindergarten. SA A D SD

5. My child increased his ability to think up solutions to problems. SA A D SD

6. My child came home from kindergarten and asked a lot of questions. SA A D SD

7. My child had many new and unusual ideas. SA A D SD

8. During the year, my child grew in his ability to choose between alternatives. SA A D SD

9. I believe that all children should be placed in a kindergarten program like my child received. SA A D SD

10. I believe that only certain children should be placed in a program like my child received. Yes ___ No ___

    If yes, please describe the type of child that should receive this type of program.

11. If I had the opportunity, I would want my child in the program again. SA A D SD

12. The things I liked least about the RAPYD II kindergarten program were

    _____

    _____

13. I wish the program last year had been different in the following ways.

_____

_____

14. I feel that my child's placement in kindergarten last year was beneficial in the following way.

_____

_____

15. The things I liked best were _____

_____

PART II - After watching my child's progress in first grade

16. I feel that my child had been intellectually very well prepared for first grade. SA A D SD

17. I feel that my child had been socially very well prepared for first grade SA A D SD

18. This year in first grade, my child displayed a positive attitude toward school. SA A D SD

19. This year in first grade, the teacher said my child often thought up new ideas. SA A D SD

20. This year in first grade, the teacher said that my child was able to work independently. SA A D SD

21. This year in the first grade, the teacher said that my child was able to communicate his ideas to other children. SA A D SD

22. This year in first grade, the teacher said that my child was able to make good choices between alternatives. SA A D SD

23. Was your child placed in a special class or did he/she receive special help during the first grade? Yes _____ No _____

If yes, please describe the type of class or help. _____

_____

24. This year in first grade, the teacher said that my child _____

_____

25. To prepare my child for school, I wish the kindergarten had taught him

_____

_____

26. Some of the important things that he learned during kindergarten were

_____

_____