ABSTRACT
            The material reported here was developed as part of a
systematic effort to develop techniques to evaluate the effectiveness
of a nationally implemented early childhood program. The Classroom
Attitude Observation Schedule technique has been implemented in a
number of school districts as a means of assessing program
implementation of the Tucson Early Education Model (TEEM). Teachers
have found this a useful way to learn more about the effects of the
program on the social functioning of children. The Children's
Language Assessment-Situational Tasks represents a new direction in
the assessment of children's language development at the preschool
and early elementary level. The developmental program has led to the
conclusion that this technique samples aspects of children's
development in a valid context, and provides information for teachers
which is applicable to improving the instruction of young children.
Situational tasks have proven valuable in the elusive task of
evaluating an innovative open classroom program. Future efforts will
be directed toward other areas of the TEEM program, such as the
development of cognitive skills through the cooking experience.
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NEW DIRECTIONS IN OPEN CLASSROOM
EVALUATION: SITUATIONAL TASKS

Robert K. Rentfrow

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Montessori Society, Granby, Colorado, June 17-21, 1975.

ACKNOWLEDGEMENTS

INTRODUCTION

The material reported in this presentation was developed as part of a systematic effort to develop techniques to evaluate the effectiveness of a nationally implemented early childhood program. The Tucson Early Education Model has been supported for eight years in delivering an innovative educational approach to 19 school districts through funds from the Follow Through Division, U. S. O. E. Additional early support was given by the Office of Child Development, which supported the implementation of TEEM in three communities at the Head Start level for three years. The longitudinal focus of Follow Through has permitted the development of a systematic evaluation program to assess especially the process dimensions which have heretofore eluded formal measurement.

The Tucson Early Education Model is a process-oriented educational system with four areas of program objectives for children: Language Competence, Intellectual Base, Motivational Base, and Societal Arts and Skills (Arizona Center for Educational Research and Development, 1974). These goals areas are met through an integrated classroom environment which emphasizes the orchestrated development of behaviors in children. Other process variables focus on individualization of instruction, the provision of a classroom environment that provides gratification for children, and use of modeling procedures to facilitate children's learning. This emphasis on a process approach to learning, as well as the focus on the whole child, lead to the description of the TEEM as on open classroom program (Newsweek, May 5, 1971).

The delivery system for TEEM relies on the "multiplier effect" to make a minimum of training time and effort produce maximum impact on children in the participating Follow Through communities. The system of educational services has three components at the community level: (1) classroom instructional staff, (2) parent liaison personnel, and (3) school psychologists.

5

Instructional, Psychological Services, and Parent Involvement field
representatives from the Arizona Center and their community counterparts
(program assistants, parent coordinators, and psychologists) play key roles
in the delivery system. They provide the vehicle for information transmission
among system components and the means for implementing the multiplier effect.

METHODOLOGICAL REVIEW

In view of the need to develop new evaluation strategies, we decided on
the development of situational tasks that would provide information about
process goals in the open classroom. A situational technique gathers informa-
tion within an ongoing classroom setting, so that the information reflects
the real-world behavior of children and teachers. An additional feature is the
introduction of environmental manipulation which puts performance demands on
the classroom members. Such events as fire drills or visitors naturally occur
in all classrooms. In this research technique, quasi-natural events are
simulated and used as opportunities to collect observational data on the
continuing behavior of classroom participants.

Situational tasks were described by Grimmett (1970) as useful procedures
to assess the effects of experimental programs on the attainment of connative
and motive behaviors in children. She notes the inadequacy of traditional
paper-and-pencil techniques for gathering information in these crucial areas
of child development. A situational task (which she calls "situational test";
1970) is defined as "a condition requiring an actual, adaptive response, rather
than a mere 'test' response . . . [and] . . . problem confrontation, the
resolution of which has some relevance for the 'real world'" (p. 12). These
techniques are especially appropriate for assessing children's social perform-
ance within the context where it was learned (i.e., in the classroom).

This paper will describe the development of two different situational tasks developed for evaluating the TEEM program. The extensive developmental effort has led us to an interest in disseminating these techniques to get wider feedback on their general usefulness to the field. The first technique is called Classroom Attitude Observation Schedule (CAOS), developed to assess children's development of an independent learning style. The second is the Children's Language Assessment-Situational Tasks (CLA-ST), designed to assess children's language development in a natural setting.

The task in developing CAOS was to devise an evaluation technique to assess how effectively, indeed, children do develop as independent learners within classrooms implementing the TEEM. A review of available literature indicated no extant studies with an adequate methodology to research "independent learning behavior" (Simon and Boyer, 1970). This led to a review of available observational research techniques with a view toward developing a totally new technique, or modifying existing procedures to this end. At this point certain minimal criteria were set to develop a novel evaluation technique. The following criteria were set: (1) the technique should reflect actual behavior of children; (2) it should be unobtrusive; (3) it should be valid with children from preschool through grade 3.

Systematic observation of social interaction has only recently achieved respectability as a tool in educational research. Initial work by White and Lippitt (1960) and Flanders (1966) indicated the potential of observational methods to gather information on previously unresearched variables of classroom process. The Classroom Observation Instrument developed by Stallings (1975) gathers information about the nature of classroom interaction, the type of activities and group patterns, and the quality of the physical plant (Stallings, 1972). Classrooms are observed over a three day period, for a total of 36

five-minute interaction sequences. A review of this procedure indicated certain features that would be adaptable to the task of assessing independent learning behavior in children. With the encouragement of COI developers, we built upon their initial instrument to meet our research goal.

The Classroom-Attitude Observation Schedule was designed to detect pattern shifts in selected process variables in a classroom during the absence of the teacher and other "controlling" adults. These variables are grouping patterns, types of classroom activities, and the occurrence of inappropriate behaviors. In order to investigate these patterns, the observation is divided into three phases. During the first twelve minutes (called Baseline phase), the observer records the activities of adults and children on the CAOS schedule; during the second twelve minutes (called Teacher Absent phase), the observer records the activities of children while the teacher figures are absent; during the third twelve minutes (called Reinstitution phase), activities of both children and the returned teaching figures are recorded. The total CAOS observation takes 36 minutes, and is described in Figure 1.

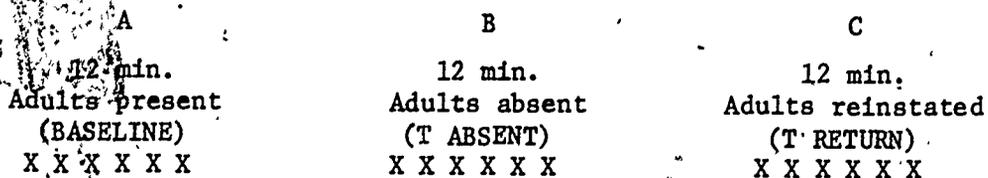| A	B	C
12 min.	12 min.	12 min.
Adults present	Adults absent	Adults reinstated
(BASELINE)	(T ABSENT)	(T RETURN)
X X X X X	X X X X X	X X X X X

Fig. 1. Phases of CAOS.

The observational technique counts children and adults engaged in the various classroom activities on a time-sample basis. All types of activities presumed to take place in the classroom are listed on the recording form (see Figure 2). Once every two minutes a clockwise visual scan is made of

the room by the observer. The observer remains stationary throughout the 36 minute period, as the scan begins and ends at the same point for each scan. Numbers of children and adults observed during that scan are placed in the appropriate cell, thus retaining grouping patterns in the recording. If inappropriate behavior is observed during this scan, it is also noted by its associated activity and in the appropriate two-minute scan period. Two more scans are made during the two-minute period to pick up incidents of inappropriate behavior, once at the end of the first minute, and again at the end of a minute and a half.

Insert Figure 2 about here

Procedures and categories from two previously developed instruments were synthesized to produce this particular procedure. Both of the parent procedures have been field tested and found reliable. As a preamble to each interaction recording period, the observer takes a "snapshot" which gives the foundation for the CAOS technique. Activity definitions used in COI have been redefined to make them more program specific to the Tucson Early Education Model.

The other instrument (Schedule for Incompatible Learning Behavior - SILB) (Grimmett, Underwood and Brackney, 1970), was originally developed for a study assessing the relationship of behavior settings to disruptive or inappropriate behavior. The inappropriate behaviors selected for coding in CAOS were:

    Hitting   Yelling
    Interfering   Throwing
       Leaving room without permission

These categories were developed and operationalized in consultation with classroom teachers. Initial studies indicated that these categories could be reliably rated by trained observers.

CLASSROOM ATTITUDE OBSERVATION SCHEDULE (CAOS)

Teacher _____ School _____ Community _____ Date _____ Observer _____ page ___ of 3
Time Started _____

	N.I.	I.A.	N.I.	I.A.	N.I.	I.A.	N.I.	I.A.	N.I.	I.A.	N.I.	I.A.	N.I.	I.A.	N.I.	I.A.	Total
A. Snack																	
Lunch																	
B. Group																	
time																	
Story/Sing																	
Dance/Music																	
C. Arith/Math																	
Numbers																	
Readng/Alpha																	
Lang. Devel.																	
D. Soc. Studies																	
Geography																	
Science																	
Nat. World																	
E. Games																	
Puzzles																	
F. Arts																	
Crafts																	
Sew/Cook																	
Pound/Saw																	
G. Blocks																	
Trucks																	
Dolls/Dressup																	
Playhouse																	
H. Play																	
I. Transitional																	
activities																	
J. Classroom																	
management																	
K. Out of room																	
L. Observing																	
Other																	
M. Wandering																	
Totals																	

N.I. = Number Involved
I.A. = Inappropriate Activity

Figure 2. CAOS Recording Form

PILOT STUDY

The pilot study was carried out in a middle-sized community in the Great Plains, which had a total of eight classrooms operating in their Head Start program (six of which used the TEEM model, and two using locally-implemented curriculum).

The purpose of the CAOS pilot study was to discover pattern shifts given the absence of classroom "controlling" adults. Such shifts could take many forms. The variables described below are those that might demonstrate controls which are largely adult-centered versus controls internalized by the children or imposed by the physical or behavior setting. A meaningful pattern would be one in which the variable increases or decreases during teacher absence and returns to the level exhibited during Phase A, when teacher returns in Phase C. A stable pattern, then, would be one in which all three phases look much alike.

The summary observation variables were:

1. Mean group size

2. Mean number of children engaged in an activity

3. Inappropriate behavior

4. Mean number of groups

5. Mean number of activities

Insert Figure 3 about here

The most conspicuous difference appeared with the summary variable inappropriate behavior. Analysis of this variable indicated that significant differences existed in both independent variables, group and phase, as well as the interaction between these variables (group: $p < .10$; phase: $p < .001$; group by phase: $p < .05$). Figure 3 gives graphic demonstration of the group-by-phase interaction.
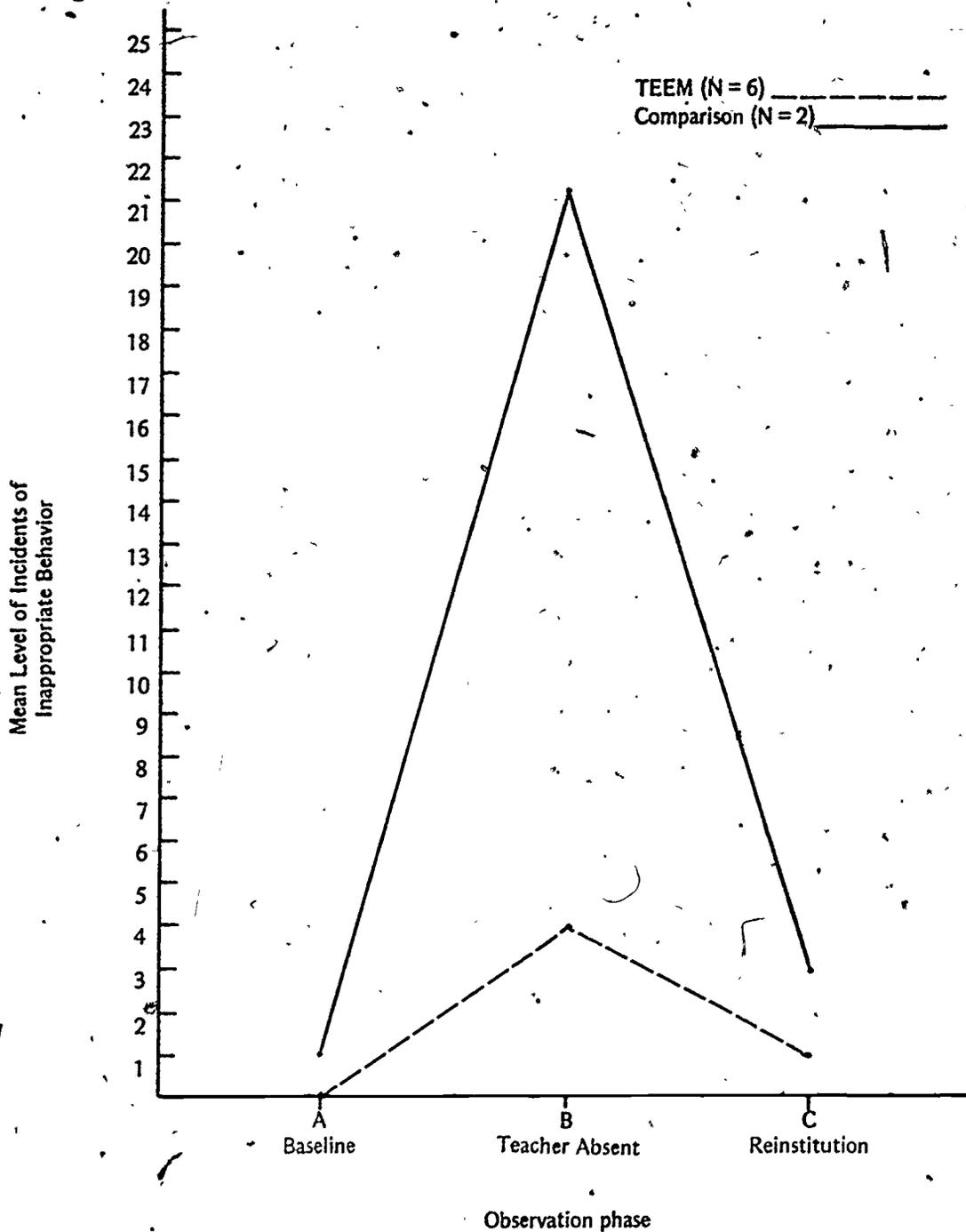
11

Figure 3. Incidents of inappropriate learning
behavior in TEEM and Comparison classrooms
across observation phases.

When proportion of adult participation in each of the five activity types was compared to proportion of child participation in the same activity types during the same phases, rank order correlation between adult participation and child participation in the low-rated classroom was -.27 (Figure 4). In the high-rated classroom the correlation between adult and child participation was .80. (See Figure 5.)

CONCLUSIONS - CAOS

The CAOS system is clearly sensitive to pattern shifts in some aspects of child behavior. The clearest pattern shift appeared with levels of inappropriate behavior. Children in the two comparison classrooms displayed more inappropriate behavior during the teacher absent phase than did the children in TEEM classrooms. The post hoc tests demonstrated no significant differences between level of inappropriate behavior in TEEM classrooms and Comparison classrooms during the teacher present phases. The differences between these two groups during teacher absent phase was significant.

With the TEEM classrooms, children in the classroom rated lowest by the Head Start Director displayed more inappropriate behavior during teacher absence than did children in the high-rated classroom. It also held true that there were significant differences between teacher absent and teacher present phases in Comparison classrooms, while there were no significant differences between phases in TEEM classrooms. These comparisons also existed between the low-rated and the high-rated classroom.
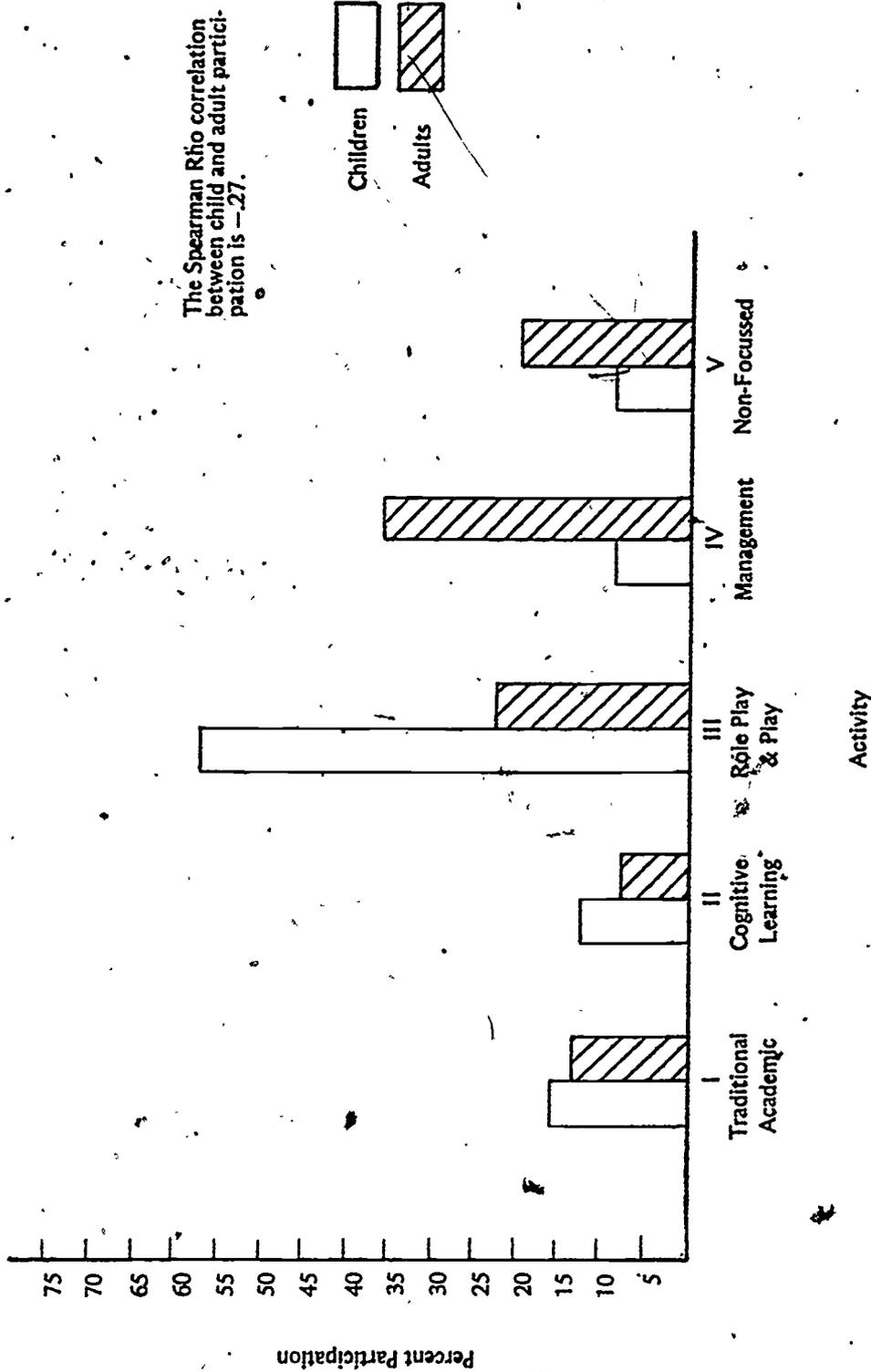
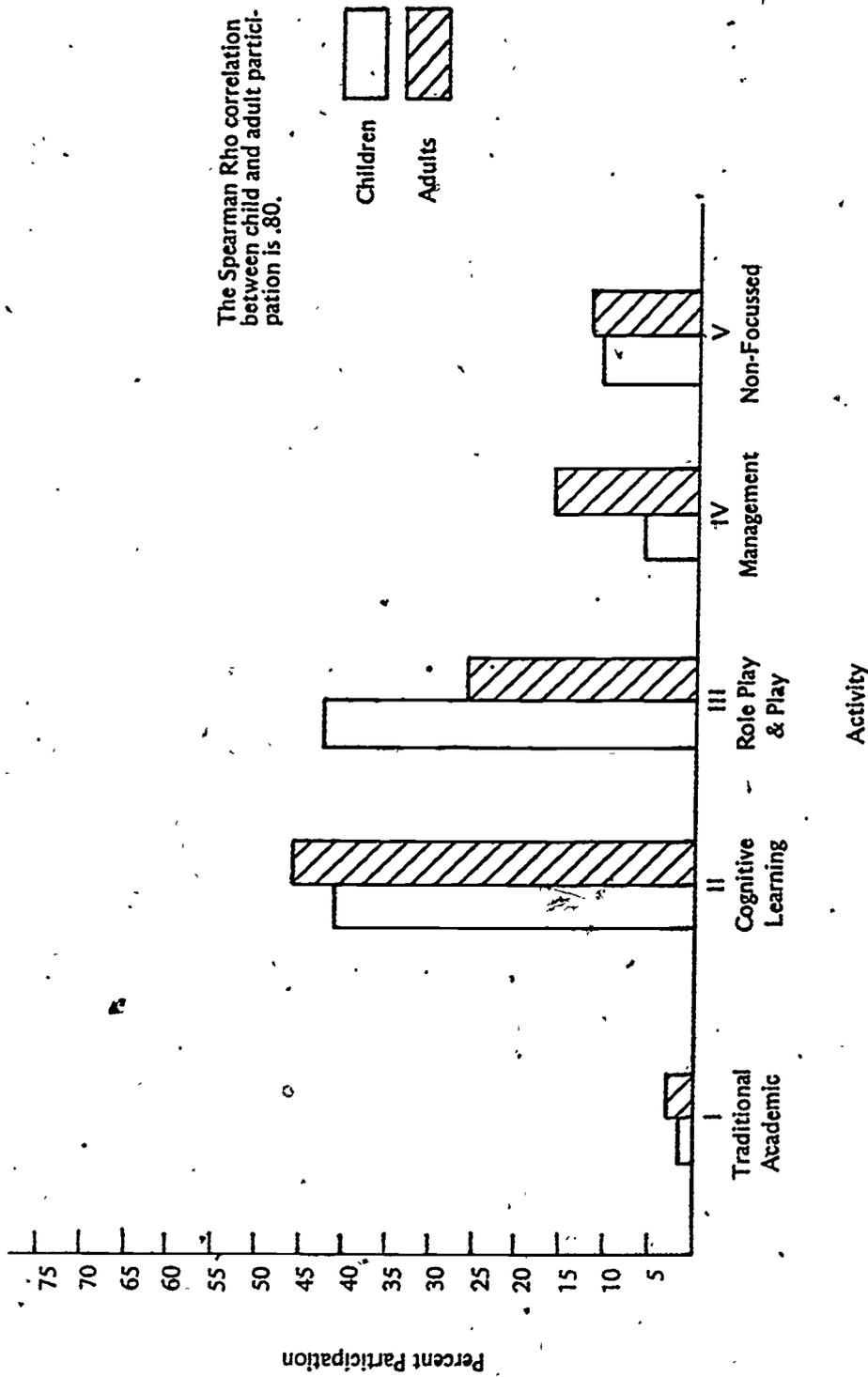Figure 4. Location of adults and children by activities in low-rated classroom.

Figure 5. Location of adults and children by activities in high-rated classroom.

CHILDREN'S LANGUAGE ASSESSMENT-SITUATIONAL TASKS

The goal in developing CLA-ST was to devise a technique to assess child-ren's language development in a natural setting. Again, the instrument criteria were considered (see p. 3) in assuring a technique applicable over the early childhood period. Literature review indicated that a number of studies of children's language development had been completed, but they typically depended on children's writing. It was concluded that natural speech formed a much richer avenue for exploring language development than written products. Recent studies indicated that many seemingly non-verbal children really opened up when language was unobtrusively recorded on the playground (Conrad, Rentfrow, & Meredith, in press). Language development in the TEEM classroom is based upon the Language Experience Approach, in which the child's natural language is used as a base for evolving into formal standard English.

The CLA-ST was developed to collect language samples within a normally operating classroom The language is taken on a cassette tape recorder, which is placed at the foot of a small table. At this table, in a committee setting, four children are engaged with a teacher in an activity similar to those they encounter daily. The CLA-ST is broken into three segments: the first, with their own classroom teacher, utilizes a "mystery bag" containing 27 common household objects (15 minutes) (see Figure 8); the second, with a new adult (a staff research assistant), uses a set of eight picture cards that have no set solution (15 minutes); in the third, the children are left alone for five minutes with the tape recorder running, while the adult excuses herself briefly.

These three segments are intended to get different perspectives on children's language development. The first, with a familiar teacher, should resemble very closely their typical use of language in the classroom. The second segment assesses whether their language style is modified in the presence of an unfamiliar adult. During Task II (strange adult), the adult uses only a limited set of

artists brush (# ½)   Fizz-Whizz bottle cap   2 in. cube yellow sponge

snap beads (2)   red velvet ribbon (6 in.)   roll of #20 wire

4 in. utility candle   orange balloon   marshmallow

left hand mitten   12-in. yellow ruler   pink eraser

3 in. chain   spool of green thread   4 in. nail

sea shell   plexiglass (4 X 6 in.)   3 pipecleaners

rubberband (¼ in.)   sandpaper (4 in. square)   paper clip

red lead pencil   green button   metal brace

finishing nail   portion of egg carton   green washer

Figure 8.   Contents of Mystery Bag

prompts to reduce spurious influences on the children's language. These prompts
are given in Figure 9. The third segment seeks to simulate other studies of
natural language, and the children are left alone with the cards from Task II
and the tape recorder running.

The tapes are returned to the Arizona Center for transcription and
analysis. The information is first broken down into free flow format which
identifies teacher and child output. These transcripts are then submitted
to an analysis for basic language dimensions.

A pilot study was conducted in Spring, 1973, and a total of 96 classroom
units were sampled. Half of these were TEEM, and half were locally selected
Comparison classes. The tapes included equal number of first, second, and
third level children, and sampled four diverse school districts using the
TEEM program. Upon return, approximately 10% of the tapes were discarded as
being unintelligible.

The following matrix of language dimensions was selected for analysis:

LANGUAGE OUTPUT	Average Number Words/Child Average Response Length
LINGUISTIC DIVERSITY	Type-Token Ratio Form-Function Ratio Present Tense Verbs/Total Verbs Vocabulary Diversity
SYNTACTIC PERFORMANCE	Number of Complete T-Units T-Units (Totals and Types A, B, C) Child-Initiated Questions Frequency of Role-Playing (Session II only)

Figure 8. CLA-ST Analysis Variables

Coding procedures used a consensus approach. Twenty per cent of the tapes were
recoded and the resulting reliability for all language variables was 96%, with
a range of 100% to 79%.

TASK I — Unstructured Task with Teacher

Procedure: Teacher and children introduced
to "mystery bag" and given 15
minutes to interact.

Materials: Tape Recorder
Mystery Bag

TASK II — Structured Task with New Adult

Adult interacts with group for 15 minutes.

Materials: Tape Recorder
Set of cartoon cards

All cards introduced singly in
predetermined random order.

a) Introduction: "I have some pictures for
us to talk about."

Q. 1. What is happening in this picture?
Prompt 1. What do you think?
Prompt 2. Can you guess?

Q. 2. Is there anything you want to ask about this?
No prompt but do not answer questions. Reply
with, "I wonder", or "Hmmm", focusing on the
picture as though also questioning.

b) Transition phrase: "Now, let's do something different."

Q. 3. Which picture comes first?
Why?

Cards introduced in pairs, in
predetermined random order.

Q. 4. What happens after this card?
Prompt. Can you guess?
What do you think?

c) Transition phrase: "Now here are three cards."

Q. 5. What story do these pictures tell?
Prompt. Can you guess?
What do you think?

Cards introduced in trios, in
predetermined random order.

Q. 6. How can you change these cards to tell a new story?
Prompt. What's the story now?

Transition to "alone" phase: "I have some work to do with
my papers. You can play with the cards for a few minutes
and then we'll go back to class."

TASK III — Children left alone for five minutes after Session II

Materials: Cards and recorder left,
any other materials available in room.

Figure 7. Children's Language Assessment—Situational Tasks: Description of Tasks

19

Table 1 summarizes the results from the pilot study. Due to loss of tapes, ANOVA procedures were not usable. Thus, sign tests were applied to these data. The results indicate that TEEM children were especially productive in terms of using more words over sessions, having a more diverse vocabulary, and asking more questions. Comparisons were especially strong in terms of T-Unit Type A (functionally complete, structurally incomplete).

The results from the pilot study indicated that the CLA-ST is a useful technique for sampling children's language. Another study has been initiated to further develop the technique and to develop validity information. This study is ongoing this year, and language samples have been collected in 20 classrooms in a rural Applachian school district. Validity data was collected using samples of children's dictation. A conference held at the Arizona Center this Spring, with Dr. Cazden of Harvard University, has led to a revision of the linguistic variables and improvements in the analysis program.

The success of the CLA-ST has led to the development of teacher materials to help classroom staff collect discrete samples and apply them to children's learning problems. These materials are due to be completed this Fall (Conrad, 1975).

		SESSION I			SESSION II			SESSION III			# of Signs Favoring TEEM			
		1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	Total
LANGUAGE PERFORMANCE	Average # words per child	+	+	−	+	+	+	+	+	+	3/3	3/3	2/3	8/9
	Average response length	+	−	−	+	+	0	+	+	+	3/3	2/3	1/3	6/9
LINGUISTIC PERFORMANCE	Type-Token ratio	0	+	0	+	+	−	+	0	+	2/3	2/3	1/3	6/9
	Form-Function ratio	+	+	+	+	+	0	+	+	0	3/3	3/3	1/3	7/9
	Ratio of present tense verbs to total verbs	+	−	−	−	−	+	+	+	+	2/3	1/3	2/3	5/9
	Vocabulary diversity	+	+	−	+	+	+	+	+	+	3/3	3/3	2/3	8/9
SYNTACTIC PERFORMANCE	# of T-Units	−	+	+	+	+	+	0	+	+	1/3	3/3	3/3	7/9
	Type of T-Units: A	+	+	−	−	0	+	−	0	−	1/3	1/3	1/3	3/9
	B	+	+	0	−	−	+	+	−	+	2/3	1/3	2/3	5/9
	C	−	−	−	+	+	+	−	+	+	1/3	2/3	2/3	5/9
	Frequency of child-initiated questions	−	+	+	+	+	+	+	−	+	2/3	2/3	3/3	7/9

INTERPRETIVE CODE:
+ Difference favoring TEEM
− Difference favoring Comparison
0 No difference

Table 1.   Sign Test Analysis of Language Study Data

CONCLUSION

The CAOS technique has been implemented in a number of school districts as a means of assessing program implementation of TEEM. Teachers have found this a useful way to learn more about the effects of the program on the social functioning of children.

The CLA-ST represents a new direction in the assessment of children's language development at the preschool and early elementary level. The development program has led to the conclusion that this technique samples aspects of children's development in a valid context, and produces information for teachers which is applicable to improving the instruction of young children.

Situational tasks have proven valuable in the elusive task of evaluating an innovative open classroom program. Future efforts will be directed toward other areas of the TEEM program, such as the development of cognitive skills through the Cooking Experience.

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