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ABSTRACT

Monthly testing based on a counterbalanced matrix sampling plan in one psychomotor, three affective, and five cognitive areas provides a continuous picture of the development of native American children enrolled in three distinct curricula. Of the nine scales, one showed negative, two showed insignificant, and six showed significant positive changes. When compared with national norms, the results suggest that all three curricula have strong remedial effects across a broad range of important areas of preschool learning. (Author)

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CONTINUOUS PROGRESS EVALUATION OF AMERICAN INDIAN PRESCHOOLERS

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Monthly testing based on a counterbalanced matrix sampling plan in one psychomotor, three affective, and five cognitive areas provides a continuous picture of the development of American Indian children enrolled in three distinct curricula. Of the nine scales, one showed negative, two showed insignificant, and six showed positive changes. When compared with national norms, the results suggest that all three curricula have strong remedial effects across a broad range of important areas of preschool learning.

The Los Angeles Indian Community

The 25,000 Native Americans in Los Angeles[1] outnumber all but the three or four largest tribes in the United States and represent an urban concentration more than twice as large as that in any other city in the country. Most are members of families supported by a semi-skilled or unskilled heads of household. Approximately 10% are unemployed and a similar number are enrolled in trade schools or in one of the colleges or universities of the area. The adult population is relatively young, and their children are, for the most part, of preschool and elementary school age (Fuchs & Havighurst, 1972).

The majority of these American Indians maintain their traditional cultures and make frequent visits to their reservations. Accustomed to small kinship groups, living in low-rent housing associated with high crime rates, mistrusting non-Indians, educationally deprived, and politically powerless, urban Indians tend to have limited but intense relationships with a small circle of relative and friends. They have difficulty relating to and obtaining services

[1]This figure from the 1970 census probably seriously underestimates the actual Indian population of Los Angeles. Peter Snyder of the UCLA Anthropology Department uses a figure of 75,000 while C. L. White, et al, estimate in *Regional Geography of Anglo American* (1974) that 100,000 Indians live in Los Angeles.

from municipal, state, and federal agencies in the cities. Traditionally, the Bureau of Indian Affairs has worked hard to relocate Indians in the cities and then has refused to provide them with any services.

Under the leadership of Sandy Gibbs, a Creek and Sac-Fox, Tribal American Consulting Corporation was formed in 1971 to develop programs to meet some of the Needs of the Los Angeles Indian community. Preschool education was selected as the priority concern. The Corporation directors felt that this was the most strategic point for improving Native American education, that American Indian preschool children in Los Angeles were not served by existing programs,[2] and that chances for significant success in this area were higher than with other possible programs. The Corporation was awarded a one-year grant by the State of California to operate a preschool for 90 children beginning in 1972. The school is now well into its third year, and has expanded to include a daycare center and two additional preschools with a total enrollment of approximately 175.

Preschool Programs for Indian Children

The basic purpose of the preschool program is to enable Indian children to succeed in public school. Typically, Indians drop out of school by the fifth grade. Many recommendations have been made as to how to improve Indian education, but no data consistently support any particular set of ideas. In this situation it seemed appropriate to design a school with a number of alternative models of instruction. Children from a single community and meeting the requirements for enrollment in the compensatory education program represented a fairly consistent socioeconomic group. Randomly assigned to various instructional models, they would be the source of information useful

[2] In 1974, only six American Indians were enrolled in preschool programs operated by the Los Angeles County Unified School District.

in selecting the best approach to preschool education for urban Indian children. This new approach, of course, might turn out to be a combination of the instructional models that would be tried.

To this end, the school staff set out to establish three distinct instructional models. Common to all three classes would be a ratio of seven students to teacher or aide and a set of goals appropriate to the overall purpose of preparing the children for public school. However, the processes by which these objectives were to be pursued would vary significantly; each class would have either a Montessori, a traditional, or a cultural instructional model.

Developed originally for disadvantaged children in Italy in the 1880's and widely accepted as educationally sound, the Montessori model was a logical choice for one of the three classrooms. This approach emphasizes the child's development through interaction with didactic materials related to a preplanned sequence of objectives. The goals of the Montessori classroom include development of independence, self-control, inner discipline, and a loving image of oneself. The materials cover the areas of "practical life," "sensorial experience," mathematics, language, science, geography, and music.

The traditional model emphasizes interactions among children and their social, emotional, and cognitive development. Each day begins with group instruction by the teacher, after which the children work individually or in small groups under the direction of the teacher or aides. Materials are arranged in learning areas for mathematics, art, block play, reading, science, and socio-dramatic play. Curriculum planning stresses development of logical thought through tasks of classification, seriation, temporal relations, and spatial relations in Piagetian terms.

The major emphasis in the cultural model is on the environmental and cultural materials consistent with Indian cultures. The curriculum is planned around six major units, each based on an "Indian culture area": the southwest, the northwest coast, the eastern woodlands, the plains, the great basin and California, and the "ancients" of Mexico and the southwest. Logical tasks, science, social studies, cooking, music, and art activities are provided for each of the areas. Activities require cooperative effort: children work together to complete class projects in a noncompetitive environment modeled on many Indian cultures. This model explores the possibility of achieving the objectives of early education in a manner that is consistent with and enhances the child's pride in American Indian culture and traditions.

The three instructional models have been evolving slowly since the school was established in 1972. The traditional model, least spectacular of the three, has also been steadiest. The two members of the teaching staff who remain from the first year are assigned to this model. The class is quiet and relaxed and has proven particularly appropriate for the younger children in the school.

The availability of teachers specifically trained in the Montessori model should have ensured that this approach would have been the easiest of the three to implement. However, the model requires a great amount of specialized and relatively expensive equipment that is only gradually acquired in the real world of limited budgets. More interesting, particularly in light of Maria Montessori's intention to develop a model appropriate to the disadvantaged, has been the difficulty of finding Montessori-trained teachers who could overcome a middle-class backgroud to function effectively

in the Indian community. Since 1972, the Montessori model has been used for the instructional phases of daycare center activities. Children enrolled in this model remain in school all day, and represent a much wider range than do those in the other two models.

The cultural model proved the most difficult to establish. It was not adequately conceptualized until the end of the first year and teachers capable of developing the curriculum and working together were not found till the middle of the second year. The remainder of the second year was one of *ad hoc* development but a grant from the Lily Foundation funded summer work and the third year began with a completed syllabus for the cultural model (Hall, et al., 1974). This class, which proved too active and unsettling for the younger children, has the highest mean age of children enrolled in the school. Thus, the needs of the children and the community led to abandonment of random assignment to the three models. In addition state laws changed the original conception of the school. The grant to develop programs for Indian children faced the problem of a state law that prohibited selecting children on the basis of race, with the result approximately equal numbers of White and Mexican-American children have formed a significant minority of the school's enrollment since its inception.

Characteristics of Children in Three Instructional Models, 1972-1973[3]

Class	N	Mean Age in January (in months)	SD Age	Percent Indians	Percent Males
Montessori	45	47.75	8.09	55	48
Traditional	32	42.03	6.28	62	34
Cultural	34	53.90	3.11	68	38
All Classes	111	48.00	7.84	61	41

TABLE 1

Purpose of the Evaluation

Evaluation has been a part of the program since inception of the school; since the second year the evaluation has been designed to achieve four purposes:

1. To provide information to school administrators and staff useful in improving the educational program.
2. To provide an independent judgment of the extent to which the program is achieving intended outcomes.
3. To train American Indians in the basic techniques of educational evaluation.
4. To provide a laboratory setting for trying out ideas related to formative evaluation.

Instruments

Four tests were used to collect the basic evaluation information. Tests were chosen first on the relative importance of having information on an objective, second on the basis of the quality of the instrument as indicated in the *Seventh Mental Measurements Yearbook* (Buros, 1972) and the *CSE-ECRS Preschool-Kindergarten Test Evaluations* (Hoepfner, et al., 1971).

The first of the four tests is the 150-item Peabody Picture Vocabulary Test (PPV). The examiner shows the child four pictures printed on a single page

[3]The figures are characteristic but only approximate, as dropouts and new enrollees ensure constant fluctuation. Children in the Montessori model attend school all day, while only one-half those in the Traditional or Cultural models are in school at one time.

and asks the child to indicate the one named by the examiner. For example, a child may be shown a line drawing of a crib, a woman, a kitten, and a spoon, and asked to indicate the picture of the crib.

The second test is the 64-item Cooperative Preschool Inventory (CPI). Three of the four scales are used. The Social Responsiveness score, interpreted as a measure of self-concept, is based on the ability of the child to respond to questions such as "What is your first name?" The Associative Vocabulary score is based on questions such as "If you want gas for your car, where would you go?" The Concept Activation-Sensory score, interpreted as a measure of motor development, is based on judgments of quality of the child's response to directions such as "Copy this (triangle) for me."

The third test (Tribal American Prematheматics or TAP) is a locally developed 134-item prematheматics instruments that measures counting ability, knowledge of the mathematical properties of objects such as size, weight and length, and knowledge of money and time.

The fourth test used during 1973-1974 was the Primary Academic Sentiment Scale (PASS). In this test, the child marks one of three pictures to indicate which of three activities he would most like to do. For example, he may be asked whether he would most like to play ball, sit on his mother's lap, or go to a museum. Choice of the museum would count toward "motivation to learn" and choice of his mother toward "dependency"; choice of the ball would not be scored.

Collection of Data

The plan for data collection using these tests has three distinctive features. First, testing is done individually. That is, the examiner takes

a single child from his class to a special testing area (actually a quiet corner of the daycare center) and administers the test on a one-to-one basis. There are two reasons for this approach. First, group testing of preschool and early elementary school-age children does not work well (Jones, 1970; Kennedy, 1970; Klein, 1971). Second, it provides more thorough training in evaluation for the American Indians who are doing this work.

The second important feature is monthly, rather than pre-and posttesting. Each child is tested eight times a year during the first week of the month between October and May.

The third important feature is a counterbalanced matrix sampling plan. Children from each of the three classrooms were assigned randomly to one of four groups. All the children in a group receive the same test each month and all tests in rotation during the school year. No two groups receive the same test in the same month. Combined with the monthly testing feature, this ensures data on student progress on a continuous basis without subjecting any one child to more than about 15 minutes of testing each month.

Results are portrayed graphically in Figures 1-7.[4] Analysis of variance, with three levels of instruction and eight levels of time as factors, was originally conceived as appropriate to the situation. However, departure from random assignment of students to models and the scope of the dropout problem suggests age and total months enrollment as covariates. Small sample

[4]PASS results have been omitted, and this instrument is no longer being used in the evaluation. Basically, results from all three models fall along the publishers fourth stanine for the dependency scale and within the "normal range" for the motivation scale. The slope is slightly positive for the dependency scale and slightly negative for the sentiment scale. The converging results suggest that criticism of the interdependence of the two scales is warranted. This leaves the results essentially uninterpretable.

size, the confounding of treatment and teacher effects, and the constantly changing nature of the curriculum while these data were being collected suggest that the effort and expense of such an analysis is not yet worthwhile.

Key to Figures 1 - 7

Mean score, Montessori Classroom

Mean score, Traditional Classroom

Mean score, Cultural Classroom

Mean score, all classrooms

Publisher's norm. Where one norm is shown, it is for a 48 month old child. Where two are shown, the higher score is the norm for a 48. and the lower score is the norm for a 36 month old child.

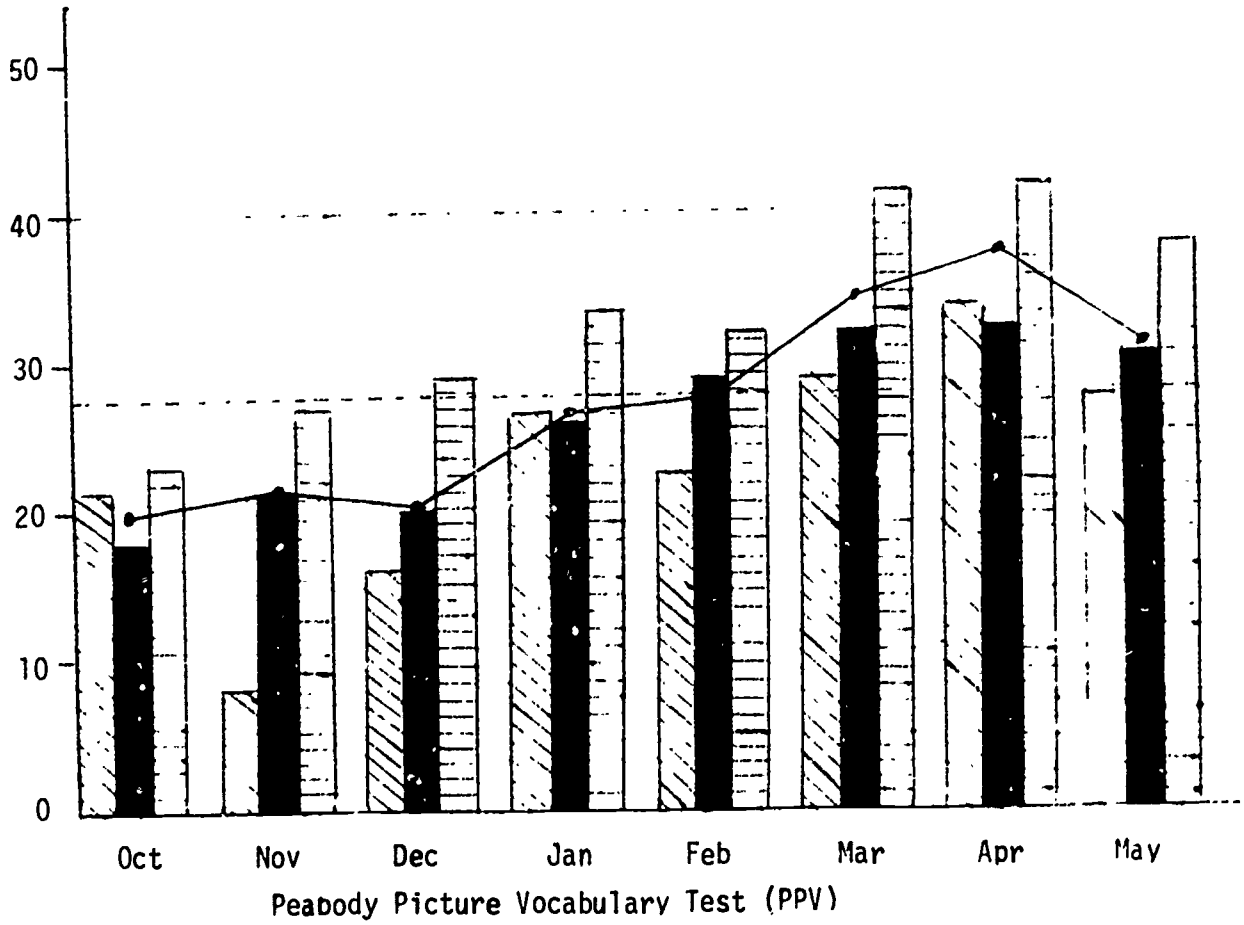
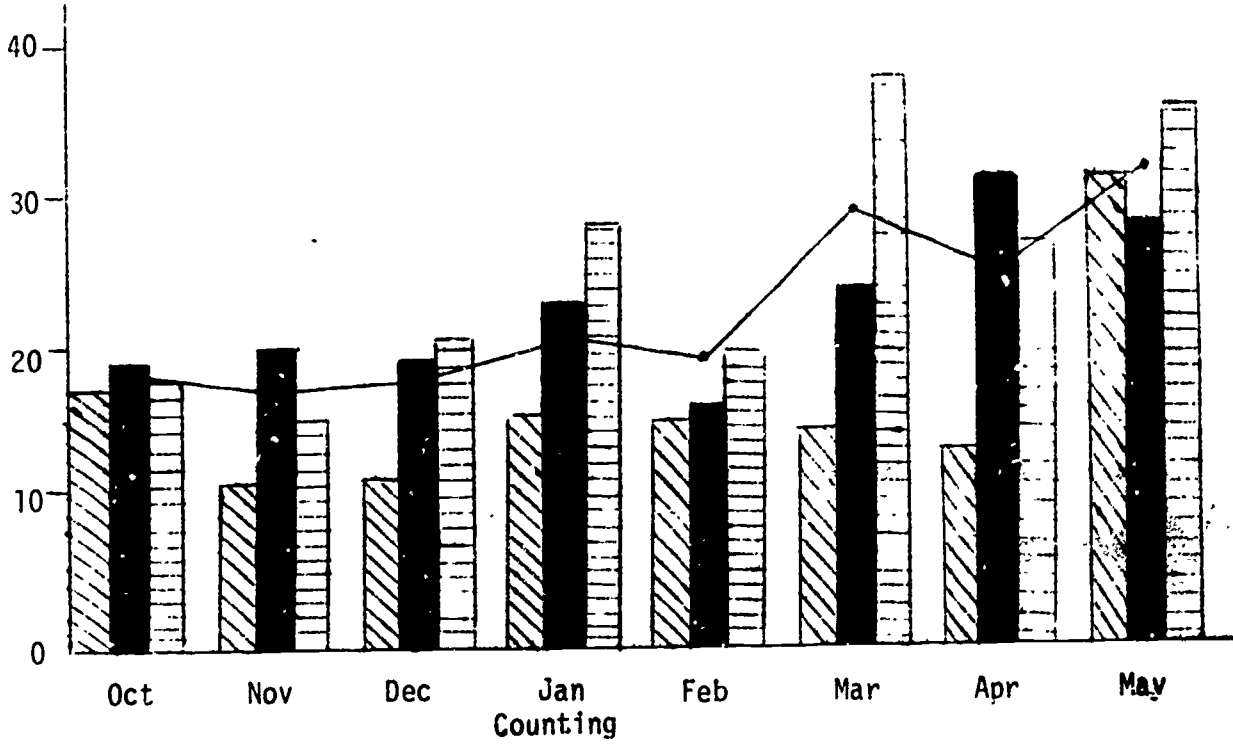
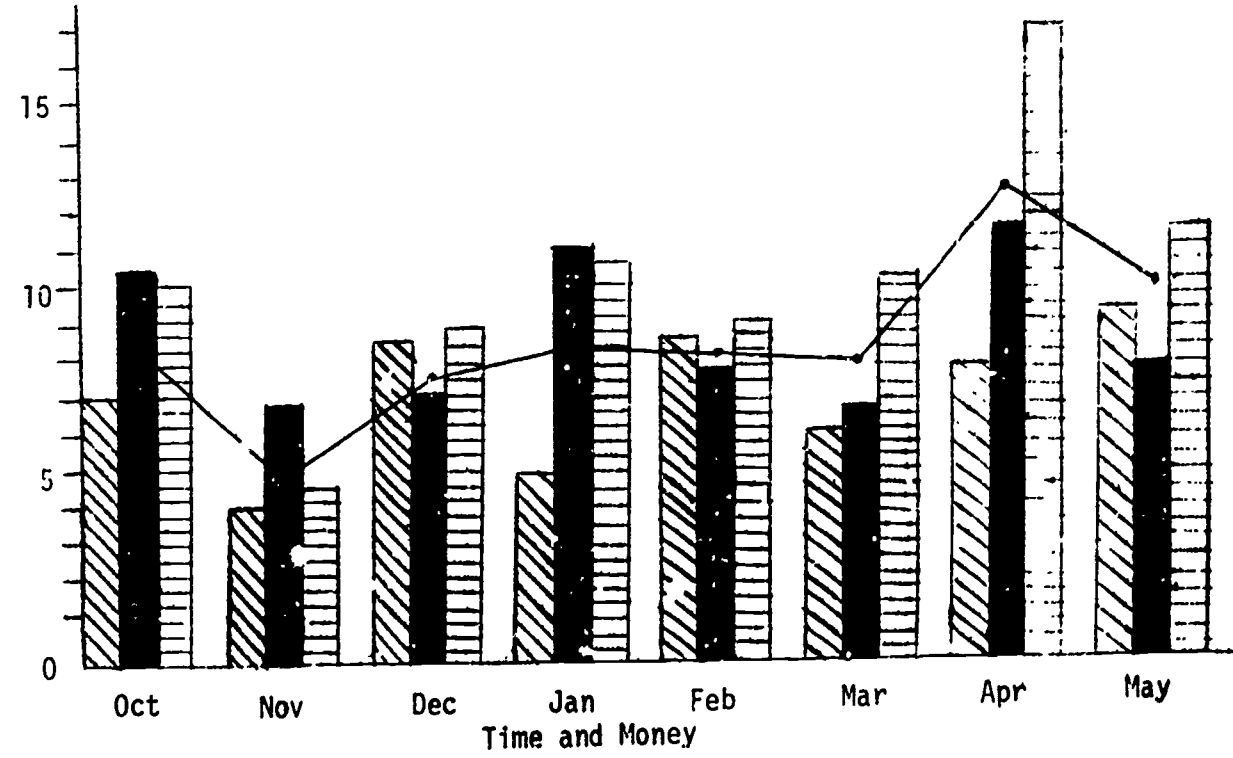


Figure 1



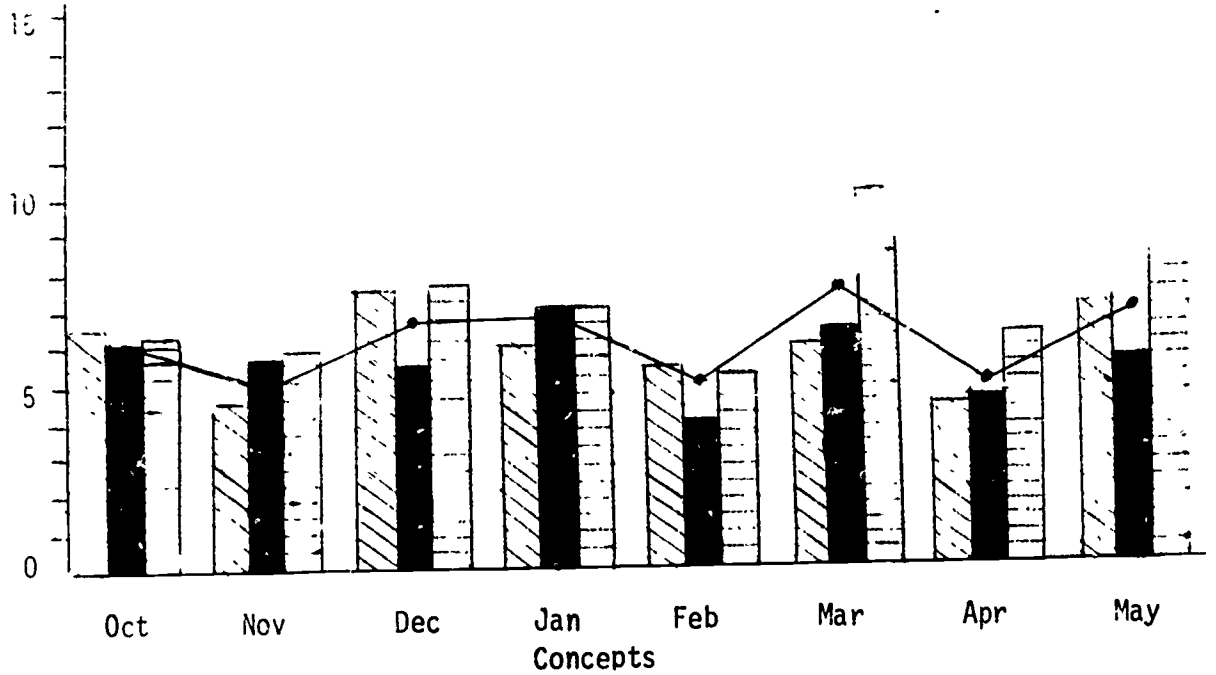
Tribal American Prematheматics (TAP)

Figure 2



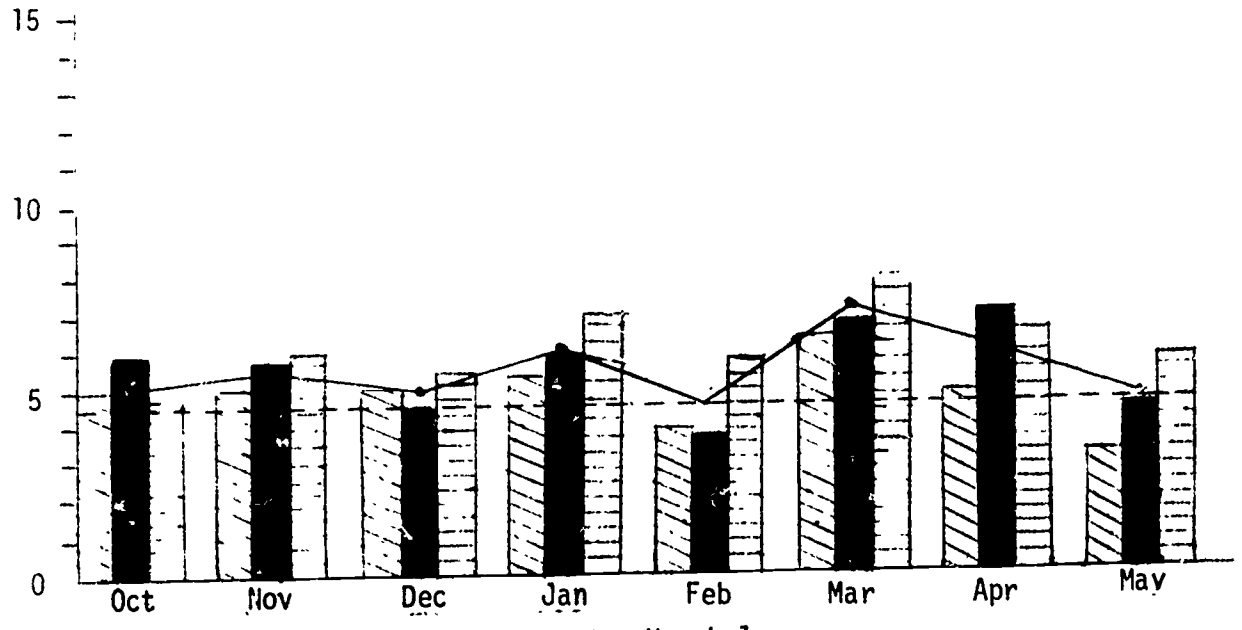
Tribal American Prematheматics (TAP)

Figure 3



Tribal American Prematheматics (TAP)

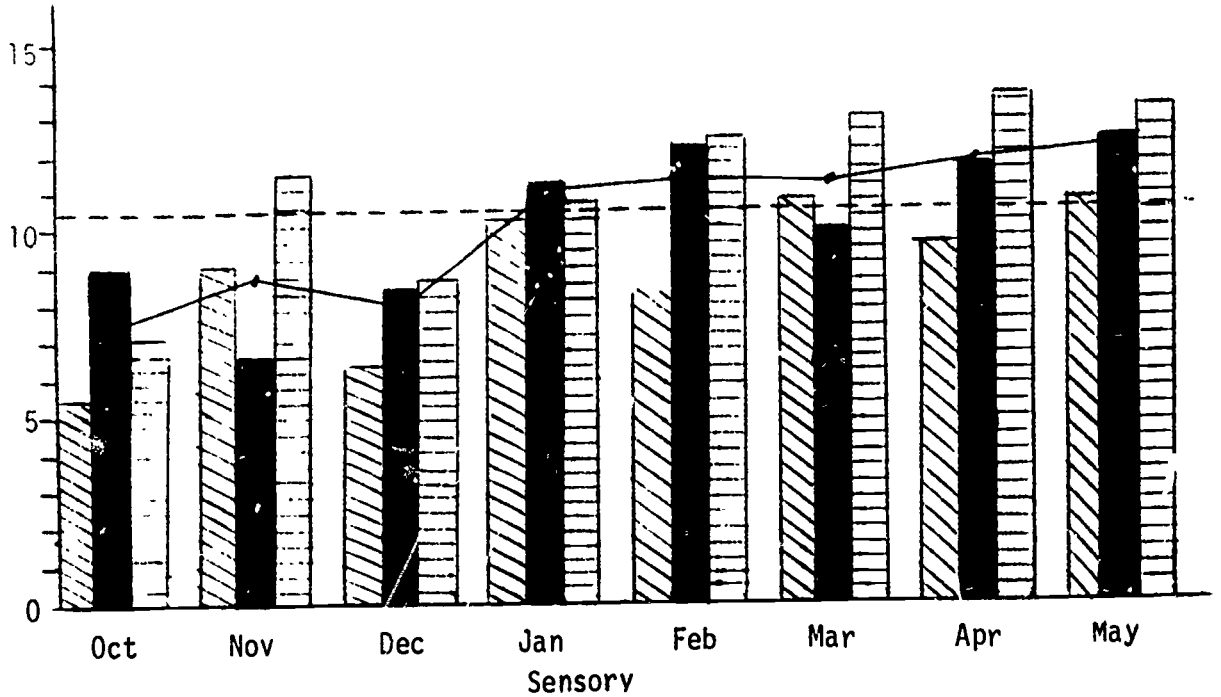
Figure 4



Associative Vocabulary

Cooperative Preschool Inventory (CPI)

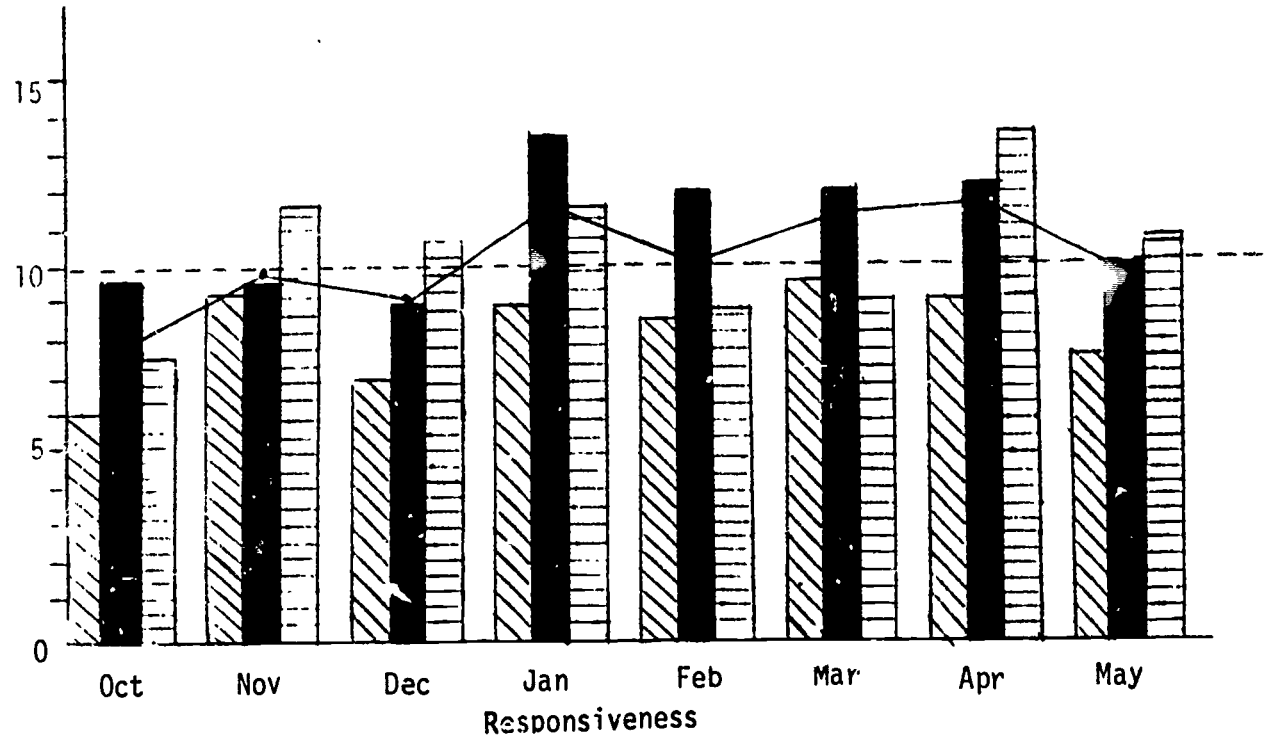
Figure 5



Sensory

Cooperative Preschool Inventory (CPI)

Figure 6



Responsiveness

Cooperative Preschool Inventory (CPI)

Figure 7

School-wide averages on five of the seven scales show a distinct drop in the last one or two months of the school year. This brings to mind the complaints of general exhaustion that one often hears from teachers and students toward the end of the school year and here these effects are found in a preschool! Of the two scales that do not show the effect, one (Figure 6) is a measure of motor development and the other (Figure 4) is the locally developed mathematics concepts test--the most dubious scale in the battery. If this pattern is universal, it may explain many evaluation results which have relied only on pre- and posttest measures. Whether statistically significant results are obtained could easily be a matter of timing. Knowing that such a pattern is likely to exist permits design of an evaluation that will praise or condemn a program independent of actual program achievement and dependent only on what the evaluator wants to prove!

School-wide averages show little change between September and May on two of the seven scales. In one case (Figure 5), the results are approximately at the national norm for 48 month-old children for the entire year, except for March and April, when they are well above the norm. It would appear from this that the school is having little effect on "associative vocabulary," in reality a measure of general knowledge about the community. The other scale showing little change during the year (Figure 4) is based on an instrument of low reliability that has since been revised.

School-wide averages on the remaining five instruments have approximately the same shape. That is, the slope tends to be zero or slightly positive for the first two or three months and is strongly positive from November to April. Gains are steadiest on the psychomotor scale (Figure 6) and greatest in vocabulary development (Figure 1) and counting skills (Figure 2).

Children in the cultural model consistently outperform those in the Montessori model, and those in the Montessori model consistently outperform those in the traditional model. The most likely explanation of the differences lies in the age of the children (Table 1). As the curves for all models are similar, all models seem equally efficient in achieving the objectives measured. However, student progress in the cultural model seems to accelerate significantly after the mid-year. This acceleration coincides with the actual introduction of the cultural model which had existed in name only until December.

Discussion

Data from 1974-1975, will be more useful in determining the relative efficiency of the three models. During this school year all programs are operating as originally conceptualized. These data will even overcome to some extent the problem of nesting treatments and teachers; included in the data are a second school, opened in October 1974 which is following the cultural model; and a third school, opened in December 1974, which is following the traditional model. A real answer of course requires a still larger number of schools, and it is hoped that this will be possible beginning in September 1975.

Should all models be equally efficient in achieving program objectives (as suggested), than a choice should be made among them on the basis of either cost or affect. Selecting the cheapest program that will achieve desired objectives will permit operation of a greater number of schools and the education of a greater number of children. Selecting the program most desired by children and parents will increase the likelihood that Indian children will be enrolled in preschools. As there is little to

choose from on the basis of relative costs (salaries, rent, and food which account for about 90% of the budget, are about the same in all models), and as children cannot be educated unless present, the latter criteria is probably the more appropriate, if a choice must be made.

Tribal American Consulting Corporation has consistently devoted about four percent of the program budget to evaluation and may be expected to continue to do so. A larger percentage would have detracted from the program per se and would not have been used efficiently, while the continuing expansion of the program has permitted continued improvement of the evaluation itself. The preschool evaluation provided an opportunity to experiment ith a number of techniques and ideas potentially useful in conducting evaluations. The ideas themselves are not new, but comparing all of them in one program provided a long-term look at the way they work in practice and the way they interact with one another. Among these techniques and ideas were (1) monthly testing, (2) adapting published tests to evaluation studies by using only needed subscales, (3) developing criterion-referenced tests locally, (4) focusing the evaluation by development of questions from a general checklist of program characteristics, (5) selecting instruments appropriate to a particular situation, (6) sampling to increase the information obtained, (7) using graphs and modified delphi techniques for decision making, (8) estimating time and financial requirements for various phases of the evaluation, (9) reporting results, (10) developing working relationships with teachers, parents, and students, and (11) testing with a paraprofessional staff.

Much of what was learned was incorporated in the CSE Formative Evaluation Kit (Churchman, Petrosko, Spooner-Smith, 1974, 1975). This Kit is

designed for the typical elementary-school situation, in which programs must be developed without external evaluators, random assignments, control groups, special evaluation instruments, statistical tests, and without the other methods of the social scientist, but with a great deal of community and staff interest, resistance, or pressure. The preschool evaluation has led to the development of evaluation techniques that are based on adapting social science methods to the school situation, rather than trying to force the school to adapt to the methods of the social scientist. If this Kit, now in national field test, proves in any way successful, the importance of the preschool evaluation lies not only in its contributions to development of the school program but also in its contributions to the development of evaluation methodologies.

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