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ABSTRACT

This study dealt with the identification of potential learning problems and the modification of the readiness program at the kindergarten level. Only the pre- and post-tests were administered to the control group. Experimental group A was tested, learning profiles were developed for each child and a team of specialists evaluated the profiles with the teacher. Experimental group B was tested, a learning profile on each child was written and a team of specialists worked with the children twice a week. All groups were taught using the traditional kindergarten program. A (t) test of the difference between means of pre- and post-tests was found significant for all three groups. A degree of difference was noted favoring the experimental groups. An analysis of variance between the three groups indicated a significant difference between both experimental groups and the control group. However, no significant difference was noted between the two experimental groups. The information gathered from the test results provided the teachers with data which enabled them to make meaningful and judicious decisions concerning the children's educational future. Early screening and identification can allow the kindergarten teacher to design a meaningful program and remediate the child's learning problems within the classroom setting. (Author/CS)

IDENTIFICATION OF LEARNING PROBLEMS-- ADJUSTMENT IN KINDERGARTEN CURRICULA

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INTRODUCTION

A significant number of children have problems in their school careers because of the lack of general learning readiness. Although they have developmental lags or perceptual handicaps, they have average or above average intelligence (Ilg and Ames, 1964; Kirk, 1970; Bateman, 1964). These problems affect a significant portion of the school population with professional estimates ranging from a minimum of 5% to a maximum of 40% of the total elementary school population (Mills & Mills, 1972; Kirk, 1970; Keogh, 1970; Bateman, 1964; Thomas, 1972).

Early identification of these children is critical. Many teachers diagnose this lack of readiness as immaturity and very little is done in making adjustments in the curriculum to enable the child to compensate for his developmental lag (Schubert and Torgerson, 1968; Dechant, 1968). Determining the child's needs is more than a casual diagnosis. It requires a total program that includes testing to identify the developmental lags and modification of the curriculum to provide directly or indirectly the kinds of experiences the child needs to insure the sequential development of readiness skills (McCarthy, 1964; Hirsch, 1966; Cohn, 1964; Simpson, 1970; Lerner, 1971).

The purpose of the present study was to determine whether there was a need for early identification of potential learning problems in the kindergarten child and whether an adjustment in the kindergarten curriculum helped the child compensate for his developmental deficiency.

DESIGN OF MODEL

This experimental study was conducted in Des Plaines, Illinois, a small, stable suburban community located approximately twenty miles northwest of Chicago, Illinois. The population of the town was approximately 57,000. It consisted of a cross section of multi-ethnic families whose income ranged from lower to middle upper. The school district contained ten elementary schools and three junior high schools.

A serious attempt was made to control all variables. During this two year study the kindergarten teachers remained constant in the school district. The teaching experience of the teachers ranged from one year to twenty-one years. There was no change in the kindergarten curriculum. The population used for this study consisted of one thousand six hundred and forty-five kindergarten children enrolled in the school district during the years of 1970-71 and 1971-72. The pre-test, Des Plaines Kindergarten Screening Test, was given in November. The post-test, the Metropolitan Readiness Test was administered in May.

The control group consisted of eight hundred and four kindergarten children enrolled in all ten elementary schools during the 1970-71 school year. No test results were given to the kindergarten teachers.

Experimental group A, four hundred and thirty-five kindergarteners, and experimental group B, four hundred and six kindergarteners, were all the children enrolled during the 1971-72 school year. Each group represented five elementary schools from both sides of town. All groups contained experienced and inexperienced teachers from the ten elementary schools. All the kindergarten teachers attended orientation meetings explaining the Des Plaines Kindergarten Screening Test and the rationale behind the study. This was: 1) to identify and diagnose overall behavior, 2) to define the important conditions under which the behavior occurs, and 3) to eliminate the problem through prescriptive remediation if necessary.

After the pre-test was administered the kindergarten teachers were given the results of the screening test. A learning profile on each child was compiled in the areas of visual perception, gross-motor and auditory perception. The results were evaluated and interpreted by a team of specialists which included the kindergarten teacher, the speech therapist and the learning disability teacher. The child's specific deficits were discussed and learning styles studied. A coordinated resume of the pertinent information of each child's strengths, weaknesses and maturation level was compared with the district's developmental norms (statistics gathered over a five year period of administering of the Des Plaines Kindergarten Screening Test).

The design of experimental group A was similar to that of the control group. The difference was that the teachers were given the pre-test results, a profile on each child and an evaluation and interpretation of the results. The rationale behind experimental group A was that the classroom teachers, in the final analysis, determined the type of program which best suited that particular class. Once they recognized the developmental stage of each pupil, they might automatically broaden or innovate the curriculum enabling the child to accomplish the behavioral objectives of the readiness program. The kindergarten teachers taught their class without any direct assistance from the specialists.

Experimental group B had the same design as experimental group A except that one extra dimension was added. The children in this group were divided into four groups according to the common deficiencies that needed remediation. These were visual perception, auditory perception, gross and fine motor skills and enrichment for those children who scored above the 85th percentile in all areas. The groups were flexible providing for many variations in teaching strategies and for teaching skills and concepts. After every two week period, each pupil's progress was evaluated. If the behavioral objective was reached in the given skill, he was moved to another area in which he needed improvement. This team approach started in November and ended in May.

RESULTS

The evaluation and significance of the results of the three groups (control, experimental group A and experimental group B) were computed by a Biomedical Computer Program, BMD X 70 (Dixon, 1970). The subtests of both the Des Plaines Kindergarten Screening Test and the Metropolitan Readiness Test were divided into four categories to evaluate parts of the multi-sensory approach to readiness. Subtest I measured the child's verbal concepts; the ability to understand spoken words and make correct responses. The second subtest measured the child's auditory attention; the ability to comprehend phrases, numbers and sentences. The third subtest measured the child's visual perceptual skills that involved auditory discrimination skills. The fourth subtest measured the combination of visual perception and motor control and was an inventory of the child's knowledge of number concepts. The Pearson Product Moment Correlation Coefficient was used to assess the degree of relationship between the two subgroups (pre and post). The results were as follows: subtest I .856, subtest II .802, subtest III .881, and subtest IV .772. In order to correct the difference between the maximum possible scores for the pre and post-tests, an arcsine transformation was performed.

TABLE I

MEAN OF PRE-TEST

GROUPS	SUBTESTS I	II	III	IV
Control	9.938	9.852	21.138	20.674
Experimental A	9.200	7.788	20.360	14.888
Experimental B	10.240	9.206	22.210	16.592

TABLE II

MEAN OF POST-TEST

GROUPS	SUBTESTS I	II	III	IV
Control	11.672	10.948	22.740	23.340
Experimental A	10.302	10.740	23.600	22.882
Experimental B	12.100	11.780	26.060	27.980

Tables I an II showed the central tendencies of the scores. The mid points of both the mean and median scores were approximately the same.

TABLE III

DIFFERENCE IN MEANS OF PRE AND POST TESTS

GROUPS	SUBTESTS I	II	III	IV
Control	1.634	1.096	1.602	2.666
Experimental A	1.102	2.952	3.240	7.994
Experimental B	1.860	2.574	3.850	11.388

The difference in the means of the pre and post-test (Table III) indicated that all three groups gained. A mean percent gain was calculated by summing the percent difference between the pre and post-test of all the subtests and dividing by four. The mean gains were as follows: 1) control group 6.5%, 2) experimental group A 14.6% and 3) experimental group B 18%. The teachers were not given the results of the pre-test for the control group. However, they were given the results of the kindergarten screening test and a learning profile on each child for the experimental group.

In subtest I, verbal concepts, the children showed the least gain; while in subtest IV, the combination of eye-hand coordination and cognitive manipulation of quantitative relationships, the children's test results showed the greatest gain in all three groups (Table III).

TABLE IV

(t) TEST ANALYSIS

GROUPS	SUBTESTS I	II	III	IV
Control	3.85	2.60	3.00	2.88
Experimental A	3.31	7.69	6.21	8.21
Experimental B	5.01	7.89	9.94	11.50

TABLE V

LEVEL OF SIGNIFICANCE OF
DIFFERENCE IN THE t SCORES

GROUPS	SUBTESTS I	II	III	IV
Control	.000	.012	.004	.006
perimental A	.002	.000	.000	.000
Experimental B	.000	.000	.000	.000

The (t) test analysis (Table IV) which was used to judge the significance of the results, showed that the scores in all three groups were significant. The level of significance of the difference in the (t) scores for all three groups was significant at the 1.5% level (Table V).

TABLE VI

F RATIO OF VARIANCE

GROUPS	SUBTESTS I	II	III	IV
Control and Experimental A	1.80	9.49*	11.56*	18.84*
Control and Experimental B	.12	6.66*	14.75*	25.16*
Experimental A and Experimental B	2.37	.01	.01	2.69

*Significant Level

TABLE VII

LEVEL OF SIGNIFICANCE OF DIFFERENCE IN F RATIO

GROUPS	SUBTESTS I	II	III	IV
Control and Experimental A	.188/NS	.003/S	.001/S	.000/S
Control and Experimental B	.735/NS	.013/S	.000/S	.000/S
Experimental A and Experimental B	.129/NS	.908/NS	.934/NS	.109/NS

S - Significant NS - Non-significant

When the analysis of variance was performed, the null hypothesis was rejected in three of the four subtests. They were subtest II, subtest III and subtest IV (Tables VI and VII). In subtest I the difference was not significant, thus the null hypothesis was not rejected.

TABLE VIII

STANDARD DEVIATION OF DIFFERENCES
BETWEEN THE GROUPS

GROUPS	SUBTESTS I	II	III	IV
Control and Experimental A	3.811	4.223	4.763	9.211
Control and Experimental B	3.525	3.938	4.327	8.972
Experimental A and Experimental B	4.076	3.758	4.915	9.190

The standard deviation of the differences between the groups indicated that the group scores were fairly homogeneous in all four subtests (Tables VIII).

At the readiness level the specialists acting as controllers or manipulators of the environment did not prove to be as effective as some authorities have claimed (Bateman, 1964; Thomas, 1972; De Hirsch and others, 1966). These teachers performed the function of careful and

precise teaching of specific concepts or skills in the areas of the child's deficits. During the two remediation periods the specialists concentrated on teaching deficient skills rather than depending on the child to learn the skills incidentally from the regular kindergarten program. The extra planning time used in developing specific objectives as well as selecting and preparing teaching activities did not seem to show the benefits in furthering or broadening each child's potentials. The data revealed that there was no significant difference between experimental group A and B (Table VII). The prescriptive remediation and the extra time allotted for working with groups of children did not indicate any appreciable gain over the regular kindergarten program.

There was no significant gain in any of the three groups in subtest I. This subtest dealt with verbal concepts and provided for measuring general maturity. The test assessed the reorganization of ideas through actions or implicit manipulation of verbal signs and symbols. Since word definitions have always been a standard measurement of general intelligence, perhaps, this was the reason there was no significant gain in any of the groups. The successive stages of verbal development were the same for all children. The manipulations that were done in this study did not seem to have any effect in the area of verbal concepts. Early intervention does not seem to make any appreciable difference.

The data indicated that in subtests II, III and IV the differences between the control and the experimental groups were great. These results seem to indicate that a screening device and learning profile on each child helps the teacher diagnose and reinforce the areas of deficiency thus enabling him to compensate for his lag. This was confirmed by periodic visitations by the coordinator. It was also noted that another factor of pupil success in readiness was maturation and intelligence -- the greater the maturity, the higher the intelligence. Each new experience of learning depended upon previous learnings and each sequential level of skill seemed to increase the child's maturity.

INTERPRETATION

The data from this study clearly indicated that specifically designed strategies were not more effective in improving the perceptual and cognitive abilities of children than were the more general approaches used in the regular kindergarten program. However, the key seemed to be the classroom teachers, a diagnostic evaluation and a learning profile on each child. Visitations confirmed that the kindergarten teachers seemed to be able to remediate the identified lag with a variety of resource materials.

The findings did seem to indicate that there was a need for screening the kindergarten children early in the school year. This gave the teachers a thorough understanding of strengths, weaknesses,

learning style and developmental stages of each child in their classroom. Once they had an insight into the child's learning profile, they seemed to be able to make adjustments in the curriculum. Visitations indicated that they seemed to be aware that every child in the class must be exposed to a more individualized variety of real and vicarious experiences within a classroom setting. The information that the teachers received from the pre-test seemed to give the program the needed direction. As they interacted with their pupils, they seemed to be sensitive to significant clues, timing, and could continuously diagnose the child's difficulty.

Although the specialists stressed a progressive, upward, sequential skill development program during the thirty minute periods, this did not significantly improve pupil performance. This remediation was isolated and did not flow naturally and meaningfully as did the work done in the regular classroom based on projects eminating from the kindergarten curriculum. This spontaneous teaching of readiness skills in each of the academic areas, developing and reinforcing the skills through classroom projects and activities seemed to be as effective as the team approach through which pupils were observed, carefully evaluated, identified, grouped and regrouped according to their specific deficits. Thus, on the basis of the results from this study it may be concluded that early screening of kindergarten children, development of learning profiles and diagnosing the profiles are desirable ingredients for a kindergarten program.

SUMMARY

This study dealt with the identification of potential learning problems and the modification of the readiness program at the kindergarten level. Only the pre and post tests were administered to the control group. Experimental group A was tested, learning profiles were developed for each child and a team of specialists evaluated the profiles with the teacher. Experimental group B was tested, a learning profile on each child was written and a team of specialists worked with the children twice a week. All groups were taught using the traditional kindergarten program. A (t) test of the difference between means of pre and post tests was found significant for all three groups. A degree of difference was noted favoring the experimental groups. An analysis of variance between the three groups indicated a significant difference between both experimental groups and the control group. However, no significant difference was noted between the two experimental groups.

The information gathered from the test results provided the teachers with data which enabled them to make meaningful and judicious decisions concerning the children's educational future. Early screening and identification can allow the kindergarten teacher to design a meaningful program and remediate the child's learning problem within the classroom setting. The key to any successful educational program has been and always will be the classroom teacher.

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