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ABSTRACT

The purpose of this study was to determine whether there were significant differences in the academic achievement of children attending three different types of school: a model "open" school, a comparable "traditional" school, and a traditional school with a student population from a higher socioeconomic area. Data based on standardized achievement tests (Comprehensive Test of Basic Skills, CTBS) were gathered from approximately 95 third graders over a two-year period for each of the three schools. In addition, a control for intelligence was obtained by analyzing a discrepancy score based on predicted achievement, rather than actual grade equivalent. One way analysis of variance on discrepancy scores revealed significant differences for the subtests of Reference, favoring the model "open" school, and Social Studies, favoring the higher socioeconomic "traditional" school. Analysis of discrepancy scores, collected at the beginning and end of a two-year period, showed five out of the seven CTBS subtests favored the model school. The study stressed the importance of examining not only the method of instruction, but also the socioeconomic factor and the teacher variable. (Author/MP)

INFORMAL EDUCATION - WHERE DOES IT MAKE A DIFFERENCE

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ABSTRACT

The present study examines achievement differences on the Comprehensive Test of Basic Skills (CTBS) for three types of schools: a model "open", a parallel "traditional", and a high socioeconomic "traditional". A one way analysis of variance on discrepancy scores revealed significant differences ($p. < .05$) for the subtests of Reference favoring the model "open" school, and Social Studies favoring the higher socioeconomic "traditional" school. A two-year analysis of discrepancy scores showed five out of the seven CTBS subtests favored the model school. The study stressed the importance of examining not only the method of instruction, but also the socioeconomic factor and the teacher variable.

INTRODUCTION

The Coleman report (1966), indicated that the public schools were failing to meet their major goal, the teaching of basic academic skills. While widely criticized for its methodology, the report initiated the movement to alternative approaches to the instruction of young children. In the late 60's and early 70's, open education was advocated by a variety of educators, (Holtz, 1964; Kohl, 1972; Kozol, 1967; Silberman, 1970). According to Silberman, the less structured humanistic approach to education would not only benefit the students' personal lives, but would also aid them in learning the basic skills. Advocates of open education felt that if the school experience were more enjoyable, relevant, and inner-motivated, the students' chances of attaining academic achievement and growth were higher and more realistic.

Research in the early to mid 70's on open education was summarized by Katz (1972), Featherstone (1971) and Stetz (1974). Featherstone (1971, p. 40) stated: "On measureable achievement in conventional tests, children in formal classrooms do slightly better than children in informal classrooms. Uniformly, the differences are slight." Stetz (1974), in his assessment of academic achievement of young children in nontraditional settings concluded that: "Studies which have been done have not shown increased (achievement) gains over more traditional programs" (p. 5). However, Killough (1971 p. 7) in his

longitudinal studies of academic achievement reports very positive results favoring open education. Silberman (1970) reported that Gardner, in her twelve-year comparison, found that children attending informal schools performed better in the areas of reading and language arts than a matched group of children attending traditional schools. Killough (1971), in his three-year longitudinal study, indicated that students from open schools scored significantly higher on cognitive achievement measures of arithmetic and reading.

With the current concern for educational accountability and the return to the basics, there is a need to gather more data in the cognitive realm of elementary school children. Such data should be examined in light of the methods employed in instruction, since the results of open education appear to be inconclusive.

The purpose of the present study was to determine whether there were significant differences in the academic achievement of children attending open and traditional schools within the same school district. Specifically, three schools were selected: a model open school, a comparable traditional school, and third, a traditional school with a student population from a higher socio-economic area. Data based on standardized achievement tests were gathered over a two-year period for each of the three schools. In addition, a control for intelligence was obtained by analyzing a discrepancy score based on predicted achievement, rather than actual grade equivalent.

METHOD

Subjects

Approximately 95 third grade children comprised the sample used to compare achievement growth of students attending open and traditional educational programs within the same school district.

The subjects were drawn from three elementary schools in western Pennsylvania. Each of the three schools serve communities whose attendance areas are generally considered suburban-rural. The schools were referred to in the study as Model, Parallel, and Atypical.

The Model (Open) School

The educational program of the model school was organized to incorporate continuous progress learning, cooperative teaching, and multi-aged grouping. This program was characterized as providing flexible alternatives in the use of space, staff, time, materials, and instructional techniques. The philosophy of the model school provided an opportunity for the learner to actively participate in classroom decision-making.

The physical facility had not been altered to accommodate the organizational pattern found in the curriculum. Based on their age and achievement level, students in the model school were assigned to either a primary or intermediate cluster. The children move about the school for instructional activities appropriate to their individual needs.

The Parallel (Conventional) School

The parallel school was organized on grade levels, with individual teachers in charge of self-contained classrooms. There was some cross-grouping of students, with teachers functioning in a departmentalized organization. The curriculum of the school was typical to most self-contained elementary schools. The teachers were responsible for their own classroom and the progress of the twenty-five to thirty children assigned to them.

The Atypical School

The term "atypical" is used in the study when referring to the third school. The students attending this school are generally from a higher socioeconomic community than the students attending the other two schools. The parents of the children attending the third school generally attained higher educational levels than the parents of students attending the model and parallel schools. This information prompted the study to consider the school atypical in relation to the model and parallel schools.

The physical facility and curriculum of the atypical school shared the same general characteristics of the parallel school. The classrooms were self-contained and the teacher-pupil ratio was generally twenty-five to thirty children assigned to a room, with one teacher responsible for the instructional program.

Procedure

In the spring of 1974 the Comprehensive Test of Basic Skills (CTBS) was administered to the third grade children attending the three schools under analysis. This standardized instrument yielded achievement scores on the factors of "Reading", "Language", "Arithmetic", and a "Total" of these three areas; as well as "Reference", "Science", and "Social Studies". In the spring of 1976 a similar achievement test (CTBS) was again given to the third grade children attending the three schools.

The CTBS provided grade equivalent scores and also a predicted grade equivalent achievement score based on an intelligence measure for each of the subtests. By taking the difference between actual and anticipated achievement, a discrepancy score was obtained, with a positive score indicating achievement above, and a negative score indicating achievement below prediction.

Statistical Analysis

To determine whether there were significant differences between the three "different" schools in the present study, a one-way analysis of variance model was employed. The dependent variables for the analysis were the discrepancy scores outlined in the previous section. Because the atypical school was from a higher socioeconomic environment than the other two schools, the discrepancy score was utilized since it provided a "control" for the factor of intelligence.

Each achievement subtest data was analyzed separately,

using the Bio-Medical Package developed at U.C.L.A. The one-way analysis of variance program was processed on a Univac computer, Model 70/3 at Millersville State College.

As outlined in the section on procedures, similar third grade data was available for students who had been tested with the CTBS in the spring of 1974. By taking the difference between the 1976 and 1974 discrepancy mean scores, a cross-sectional comparison between the three schools was made. This comparison led to the development of a "difference score" figure which will be presented in the next section.

Results

Table I presents a summary of the discrepancy score analysis of variance for the 1976 third grade achievement data. As can be seen from the table, significant differences were obtained for the subtests of Reference ($p. < .05$) and Social Studies ($p. < .05$). Table II presents the means and standard deviations for the CTBS subtests for each of the three comparative schools. As can be seen from the table, for the statistically significant Reference subtests, the model open school had the largest mean discrepancy score (1.17). The atypical school had the next largest mean discrepancy (.95), followed by the parallel school (.07).

For the significant Social Studies subtests, the largest mean discrepancy score (.86) occurred in the atypical school with the second largest mean discrepancy (.60) occurring in the model. Again, the parallel school had the lowest mean discrepancy

Table I

Grade 3 Analysis of Variance for 1976 Achievement Discrepancy

Source	df	Reading MS	Reading F	Language MS	Language F	Arithmetic MS	Arithmetic F	Total MS	Total F	Reference MS	Reference F	Science MS	Science F	Social Studies MS	Social Studies F
Between	2	52.60	.44	451.88	2.37	68.05	.92	75.11	.91	913.22	3.70*	424.74	2.36	646.36	3.50*
Within	92	120.16		190.37		74.16		82.64		247.02		180.35		184.75	

*p <.05

Table II

Grade 3 Discrepancy Score Means and Standard Deviations for the 1976 Comprehensive Test of Basic Skills for the Three Comparative Schools

Subtest	Model School (N=20)		Parallel School (N=28)		Atypical School (N=47)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Reading	.25	.99	.18	.88	.41	1.24
Language	.75	1.66	.11	1.05	-.05	1.42
Arithmetic	-.09	.86	-.35	.81	-.09	.89
Total	.23	.76	-.13	.86	.06	.99
Reference	1.17	1.91	.07	1.12	.95	1.64
Science	.29	1.00	.31	1.36	.90	1.45
Social Studies	.60	1.13	.01	1.15	.86	1.55

Table III

Grade 3 Discrepancy Score Means and Standard Deviations for the 1974 Comprehensive Test of Basic Skills for the Three Comparative Schools

Subtest	Model School (N=24)		Parallel School (N=21)		Atypical School (N=29)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Reading	.08	1.00	.06	.59	.37	1.06
Language	.18	1.15	.19	.96	.13	1.43
Arithmetic	.23	.85	-.10	.62	.04	.87
Total	.20	.80	.01	.51	.19	.87
Reference	.65	1.43	.24	1.20	.68	1.51
Science	.16	1.11	.26	1.05	.72	1.73
Social Studies	.08	1.33	-.25	.67	.39	1.44

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(.01). As shown in Table I, the remaining mean discrepancy differences were not significant.

As outlined in the section on statistical analysis, 1974 discrepancy data was also available for each of the three comparative schools. Table III presents the means and standard deviations for the 1974 CTBS achievement results. In order to compare the 1976 and 1974 discrepancy means, as described in the statistical analysis section, a figure was prepared (see Figure I) showing the difference for the two-year period. As Figure I shows, for 5 out of 7 subtests (Reading, Language, Total, Reference, and Social Studies), the greatest difference among the three comparative schools occurred in the model school. It is further interesting to note that the largest differences favoring the model school were obtained for the subtests of Language and Reference. For the subtest of Math, negative differences were found in all three schools, with the least decline occurring in the atypical school. For the subtest of Science, positive discrepancies occurred in all three schools, with the atypical school displaying the greatest gain over the two-year period.

CONCLUSION

The results of the present study support the findings of Trachtman (1971), suggesting that open school students do as well as children in traditional schools. In addition, the study supports the work of Gardner, which showed that children in informal schools were superior in the verbal and language

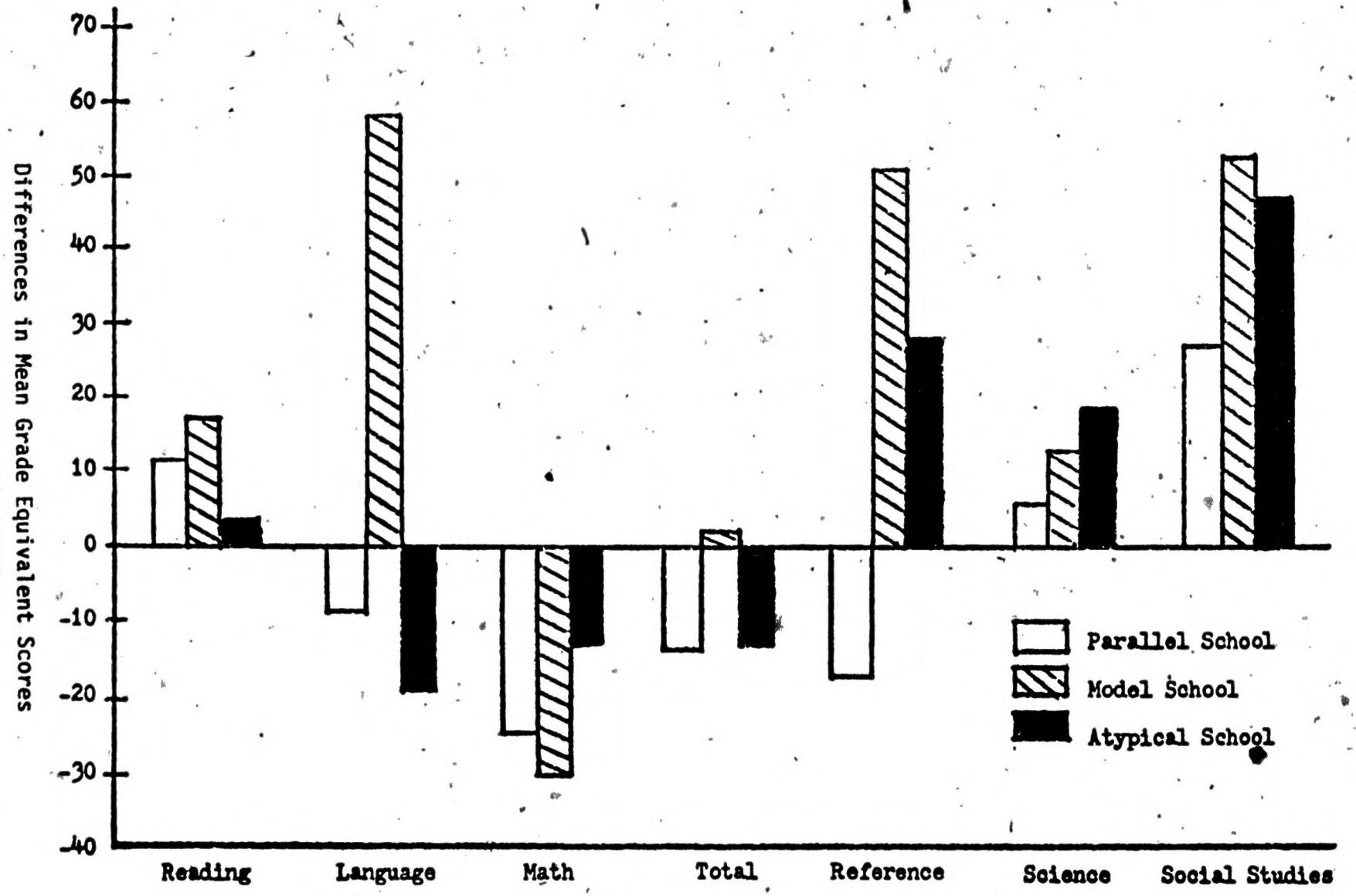

Figure I

Differences in Discrepancy Scores for 1974 and 1976 Achievement Subtests for Three Comparative Schools

areas to children in traditional schools. This finding is highlighted by the higher performance of the model school when compared to the parallel school youngsters in the areas of Language, Reference and Social Studies. In particular, the consistently favorable findings in Referencing underscores a major objective of the open school, i.e., the ability of children to work independently, in their search for knowledge.

The study also highlights the basic importance of the environmental and intelligence factors. The significant differences in the Social Studies area, and the gains in the atypical school for the subtests of Reference, Science, and Social Studies give credence to the Coleman report which stresses the effect of the socioeconomic environment upon a child's achievement level.

Overall, the present research supports the general findings of educational methods studies; namely, that no one method of instruction leads to consistently favorable results in all achievement areas. Perhaps future studies could examine why one method achieves positive results in one achievement area, and not another. Also, the work of Fleming and Anttonen (1971) and Good and Brophy (1973) underscore the need to consider the teacher variable.

Obviously, in all approaches to instruction of children, be they open or conventional, their implementation depends on the human factor, the attitude and commitment of the classroom teacher.

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