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ABSTRACT

Nongraded programs attempt to individualize instruction through the systematic assignment and reassignment of the pupil to classes consistent with his performance level. This evaluation of the nongraded program at Powel Elementary School (Grades 1-6) indicated that individualization of instruction did occur at Powel and that the pupils' performance in reading and arithmetic, on the Iowa Test of Basic Skills, was significantly improved over the previous year. In addition, nongraded pupils attained higher levels of independent study skills than most of their peers in graded schools. Instructional modifications suggested for implementation at Powel include upgrading program offerings and materials for the upper-level pupils, reassigning pupils on a more frequent basis, and increasing intra-teacher conferences. To provide greater program effectiveness, additional in-service training and preparatory periods, supplies and secretarial services are recommended. An administrative-roster chairman and a full-time Instructional Materials Center Assistant are additional enabling recommendations. (CK)

THE NONGRADED PROGRAM AT THE POWEL ELEMENTARY SCHOOL: EVALUATIVE PHASE II

Report Prepared by:

Edward K. Brown
Assistant Director
Department of Program Assessment

Report No. 7017

THE SCHOOL DISTRICT OF PHILADELPHIA

Office of Research and Evaluation
William C. Theimer, Jr.
Executive Director

Division of Instructional Research and Development
John B. Peper
Director

April, 1970

The evaluator wishes to thank the children, parents, teachers, principal, and community at Powel Elementary School for their guidance and devotion to the implementation and production of this report on pupil achievement.

REPORT SUMMARY

Evaluative Phase II of the nongraded program at Powel Elementary School showed the following results.

Academic Achievement

Significant gains in reading and arithmetic occurred (ITBS, Years 4, 5, and 6).

A wide range of pupil achievement was observed--Continuous Progress Primary (CPP) = -3 to +10 levels; Grade Equivalent (G.E.) = -0.7 to +2.0 years.

Years 3, 5, and 6 pupils performed above their district's and at the City's averages in Reading Comprehension and Total Arithmetic; Year 4 pupils were below these averages by 0.3 G.E.'s at the district and 0.5 G.E.'s at the City.

Gains in CPP Levels

Language Arts:	63% gained 1 or more levels
Arithmetic:	81% gained 1 or more levels

Gains in ITBS Scores

Reading Comprehension:	58% gained 0.6 or more G.E. 45% gained 1.0* or more G.E.
Total Arithmetic:	69% gained 0.6 or more G.E. 60% gained 1.0* or more G.E.

Nongraded Philosophy

- Nongrading appears to be an effective method for individualizing instructions in reading and arithmetic.
- Pupils attained higher levels of independent study skills than most of their peers in graded schools.
- Placing pupils in classes according to their achievement levels in Language Arts and arithmetic produces meaningful pupil progress.
- Most pupils, regardless of their initial achievement placement levels, gained on the average an equivalent number of levels in Language Arts and arithmetic over the 1968-69 school year.

*National criteria (G.E. = 1.0 ± 0.12) for Years 4, 5, & 6.

Suggested Instructional Modifications

- Upgrade program offerings and materials for the upper-level pupils (viz., levels 17-20).
- Reassign pupils on a more frequent basis
- Increase intra-teacher conference time

Enabling Alternatives

For a fuller implementation of the nongraded program at Powel, five major enabling alternatives are suggested:

- Additional in-service training and preparatory periods
- An administrative-roster chairman
- A full-time Instructional Materials Center Assistant or Aide
- Increased supply of materials
- Increased secretarial service

TABLE OF CONTENTS

	Page
REPORT SUMMARY	ii
LIST OF FIGURES	v
LIST OF TABLES	vi
Section	
I. INTRODUCTION	1
Program Description	1
Assessment of Achievement	1
II. EVALUATIVE PHASE I	2
III. EVALUATIVE PHASE II	2
Procedures	4
Results	5
Academic Progress Profiles	5
Individualization of Instruction	13
Effect of Nongrading Principles on Pupil Progress	20
Study Skill Development	23
IV. SUMMARY	27
V. DISCUSSION	28
Program Impact	28
Suggested Program Modifications	28
VI. BIBLIOGRAPHY	32

LIST OF FIGURES

Figure		Page
1	Distribution of Level Characteristics in Language Arts and Arithmetic at Three Points During School Year 1968-69	3
2	Distribution of Levels Gained in Language Arts and Arithmetic: Year I	6
3	Distribution of Levels Gained in Language Arts and Arithmetic: Year II	7
4	Distribution of Levels Gained in Language Arts and Arithmetic: Year III	8
5	Distribution of Levels Gained in Language Arts and Arithmetic: Year IV	9
6	Distribution of Levels Gained in Language Arts and Arithmetic: Year V	10
7	Distribution of Levels Gained in Language Arts and Arithmetic of Year I Through V Students	12
8	Distribution of Grade Equivalent Gains in Reading Comprehension of Year IV, V, and VI Pupils	17
9	Distribution of Grade Equivalent Gains in Total Arithmetic of Year IV, V, and VI Pupils	19
10	Comparisons of Study Skill Performance Between Year V Pupils at Powel and Seven Randomly Selected Graded Schools	25
11	Comparisons of Study Skill Performance Between Year VI Pupils at Powel and Seven Randomly Selected Graded Schools	26
12	Average ITBS Reading Comprehension and Total Arithmetic Scores of Year III, IV, V, and VI Pupils at Powel and of Similar Year-in-School Pupils at Graded Schools in District I and in the City, 1969	29

LIST OF TABLES

Table		Page
1	Average Scores in Reading Comprehension and Total Arithmetic of Year IV, V, and VI Pupils	13
2	Summary of the Analysis of Variance for School Years IV, V, and VI	14
3	Achievement Gains in Reading Comprehension of Pupils in Years IV, V, and VI Classified According to Their Initial Level Placement in Language Arts	16
4	Achievement Gains in Total Arithmetic of Pupils in Years IV, V, and VI Classified According to Their Initial Level Placement in Arithmetic	18
5	Correlations Between Relevant Factors Associated with the Nongraded Program	24
6	Summary of the Analysis of Variance Comparisons of Skill Performance	23

THE NONGRADED PROGRAM AT THE POWEL ELEMENTARY SCHOOL: EVALUATIVE PHASE II

Nongraded programs have as their operational objective and educational goal to individualize instruction. The nongraded policy achieves individualization in practice through the systematic assignment and reassignment of a pupil to classes of instruction which are consistent with the pupil's performance levels. Philosophically, nongradedness accepts the assumption that all pupils, however grouped, are not homogeneous with respect to any given ability. As a result, some pupils will be more advanced than others within a subject specialty and across educational programs. It is hypothesized that if pupils are continually reassigned to classes which are commensurate with their abilities, they will be able continually to develop their abilities. A pupil who requires additional instructional support should, therefore, remain at a particular level of instruction until he is ready to move to the next. When the pupil has proven to his individual satisfaction that he can master the materials presented to him, he will proceed to demonstrate that he is then ready to move to the next level. This practice, moreover, is intended to strengthen those prerequisite skills and abilities which would hinder the pupil from making his normal progress through school.

Program Description

The nongraded portion of the instructional program at the Powel Elementary School consists of two 45 minute periods each morning. At the sounding of the class bell, the pupils leave their homerooms and go to the classrooms which have been organized at their respective achievement levels. The instructional format in each classroom is a function of the teacher's style and the theme of the lesson. However, much attention is given to the development, reinforcement, and integrative use of the basic skills. Another focus is on the development of independent work and study habits through the use of reference materials and resources, library work, and programmed instruction packets.

Assessment of Achievement

In June of each year, all pupils except those in Year VI are tested to determine at which level in language arts and arithmetic they will be assigned in the following school year.

Language Arts

Achievement levels in language arts are obtained from an assessment

of reading ability and language usage. Informal Reading Inventories (IRI) are given to each pupil by his reading teacher. These results provide the reading teacher with the instructional level at which a pupil would be successful. Later in the month, the Language Arts Specialist, without the knowledge of the teacher's rating, evaluates the reading performance and language proficiency of each pupil again. If there is a difference between the two ratings, the level ascertained by the Language Arts Specialist is used.

Arithmetic Skills

Each pupil is given the Continuous Progress Primary (CPP) mastery test in arithmetic. CPP mastery tests are content oriented examinations prepared by the Continuous Progress Primary Committee, Mathematics Curriculum Department.

Another evaluation of pupil progress was made in February of 1969. The purpose of this evaluation was to identify those pupils who had progressed beyond the level of their initial placement and should be transferred to another classroom. This procedure constituted a reorganization of the school's instructional pattern in that a new distribution of "pupils-in-levels" resulted. Changes in level characteristics across the 1968-69 school year is shown in Figure 1. (See page 3)

EVALUATIVE PHASE I

The results of the first year's evaluation demonstrated that total school achievement in reading and arithmetic at Powel was superior to that of a matched control graded school, (Brown, 1968).

Comparisons, using ability groupings, of nongraded and graded pupils in Years V and VI showed that all of the nongraded pupils did better than their counterparts in the graded school. At Year IV, the pupils at Powel did not perform so well as the pupils in the graded school.

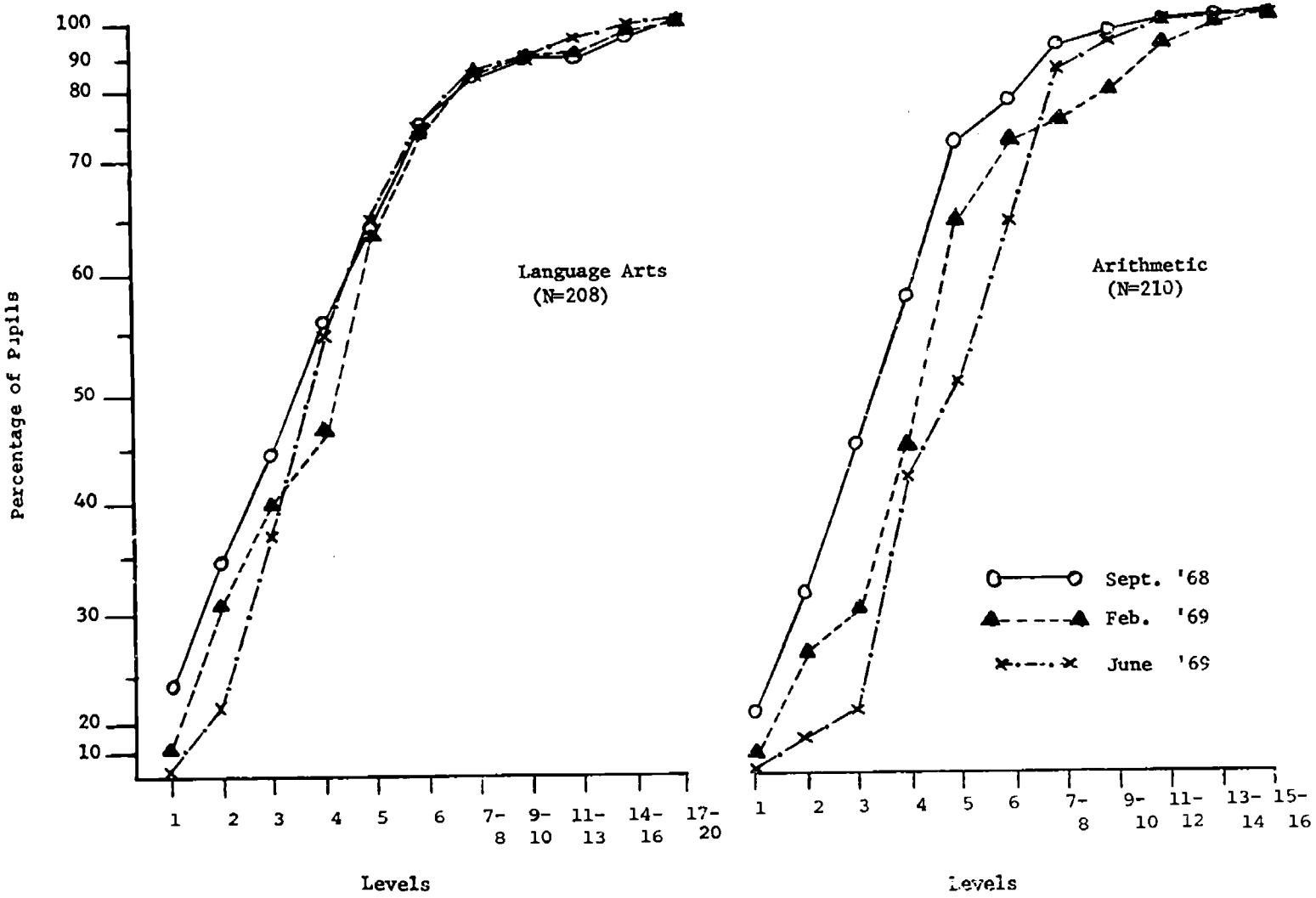
These differences in performances were initially attributed to the indirect instructional methods used in the nongraded school. This conclusion appeared to have been plausible under Piaget and Bruner's cognitive theory which defines this stage of development as being concrete and would, therefore, appear to favor a direct teaching style. However, in retrospect, this depression of performance was probably caused by (1) the instructing of the pupils at their level of needs rather than following strictly the fourth grade guides, and (2) a learning incubation period in which the pupils were assimilating knowledge.

EVALUATIVE PHASE II

Because of the need for additional information to determine whether

FIGURE 1

Distribution of Level Characteristics in Language Arts and Arithmetic at Three Points During School Year 1968-69



nongrading was providing an improved learning environment for all pupils at Powel, the thrust of Evaluative Phase II was to gather data that could be used to answer four major questions:

1. Does a need for individualization of instruction through nongrading exist at Powel?

2. Does the nongraded program at Powel provide individualized instruction for the variety of pupils attending the school?

3. Does the nongraded program at Powel provide for each pupil an opportunity to develop in accordance with his abilities?

4. Could the information gained from the study of individualization lead to improvements in the instructional program?

Procedures

Data Collection

In order to obtain the base line information needed to determine whether individualization of instruction was occurring at Powel, a systematic procedure for data collection was undertaken. Relevant data from the cumulative and history records of each pupil were organized into a Pupil Data Matrix of Pertinent Information. At the end of the year, the performance record of each pupil was entered along with his scores on the Iowa Tests of Basic Skills.

Objectives

The test scores and performance records from the Pupil Data Matrix were used as source information to achieve the following objectives:

1. To develop academic progress profiles

2. To determine whether individualization of instruction had occurred over the past school year

3. To determine the effect of relevant nongrading principles on pupil progress

4. To determine whether pupils at Powel had developed a greater capacity for using study skills than their pupil peers in graded schools

Design

Progress profiles were developed for each year-in-school to show the distribution of pupil progress over the school year. The differences in levels were found by noting the gains each pupil made. Progress pro-

files in reading and arithmetic were made for each year-in-school category (viz., Years I through VI). The purpose of these profiles was to show the variability of individual pupil growth over the year.

Individualization of instruction was assessed by determining whether a wide range of performance gains in reading and arithmetic resulted from placing pupils of the same year-in-school at different levels initially. Statistical analyses (ANOVA) were made using the 1968 and 1969 Iowa Tests of Basic Skills scores to determine whether the Years IV, V, and VI pupils had made significant gains in reading and arithmetic skills.

In order to determine the effect of the nongrading principle on pupil progress, correlations were made between relevant factors (e.g., gain in level, gain in Grade Equivalent). It was hypothesized that these correlations would help to identify those factors which were most directly related to pupil progress.

To determine whether the Years V and VI pupils at Powel had developed their independent study skills to a higher level than other fifth and sixth grade pupils, a random selection of fifth and sixth grade pupils was made from one school within each of the eight districts. An analysis was performed to determine whether significant differences existed among the classes and to identify those schools which were superior to the others.

RESULTS

The results of the analyses indicate that individualization of instruction did occur at Powel and that the performance of the pupils in reading and arithmetic, according to the Iowa Tests of Basic Skills, was significantly improved over the previous year.

Academic Progress Profiles

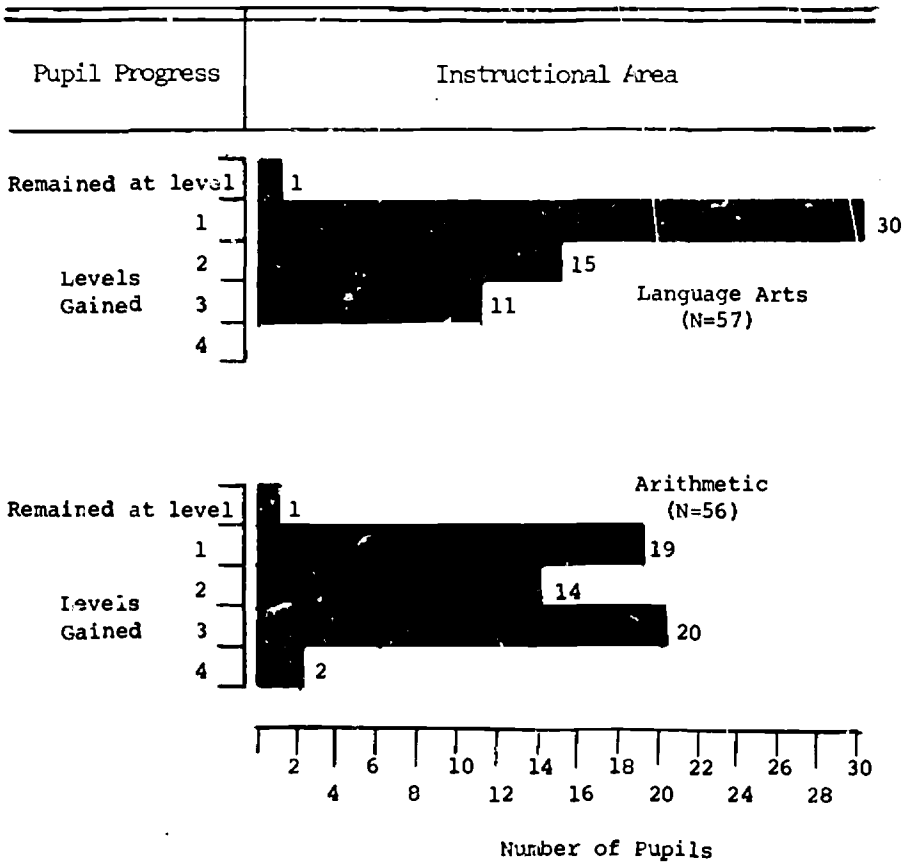
A summary of the academic progress profiles shows that the pupils at Powel, on an average, gained one or more levels in language arts and CPP levels in arithmetic skills.

Year I

All of the Year I pupils were placed in level one in language arts and arithmetic. Over the school year, 56 (98%) of the pupils gained one or more levels in language arts and arithmetic skills. Eleven (19%) gained three levels in language arts. In arithmetic skills, 20 (36%) gained three CPP levels and 2 (4%) gained four CPP levels. The distribution of the number of levels gained in language arts and arithmetic skills for the entire class of Year I is presented in Figure 2. (See page 6)

FIGURE 2

Distribution of Levels Gained in
Language Arts and Arithmetic: Year I

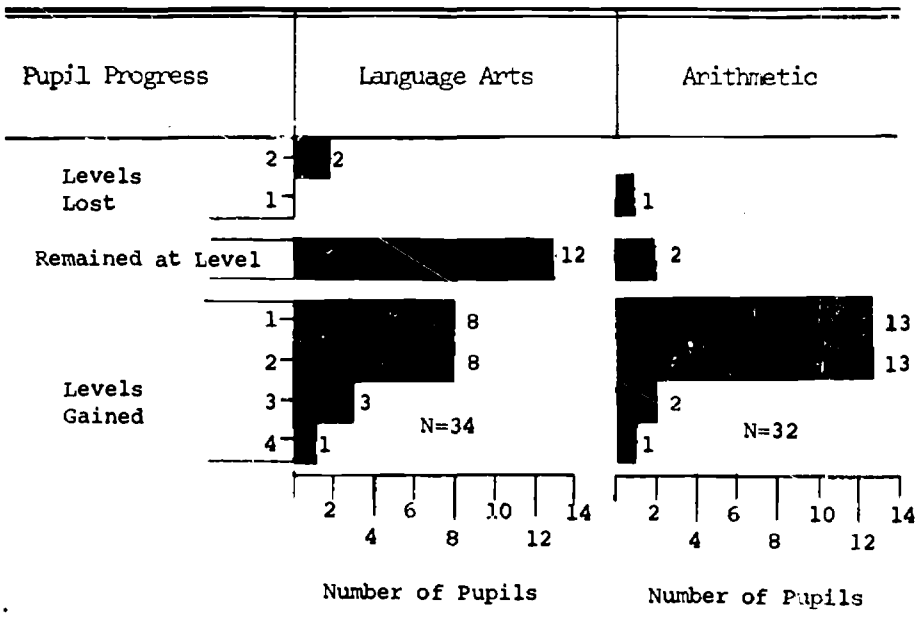


Year II

Various level placements were made for Year II pupils. The average pupil placement was level 3 in language arts and arithmetic. The distribution of levels gained by these pupils over the year is presented in Figure 3. (See page 7) In language arts, 2 pupils (6%) lost two levels; 12 pupils (35%) remained at level; 20 pupils (59%) gained one or more levels. In arithmetic skills, one pupil (3%) lost one CPP level; two pupils (6%) remained at level; 29 pupils (91%) gained one or more CPP levels.

FIGURE 3

Distribution of Levels Gained In
Language Arts and Arithmetic: Year II

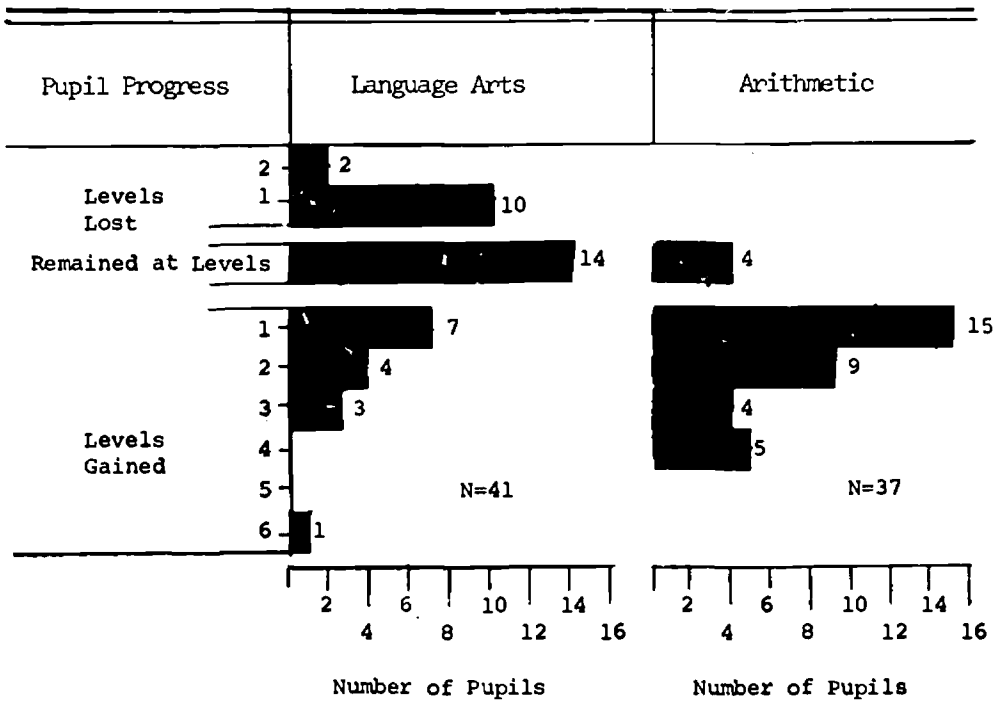


Year III

A wider dispersion of pupil placements was evidenced in year III. Most language arts placements were in level 6; arithmetic level 5. Posttesting showed that 2 pupils (5%) lost two levels in language arts; 10 (24%) lost one level, 14 (34%) remained at their initial level, and 15 pupils (37%) gained one or more levels. In arithmetic, 4 pupils (11%) remained at level and 33 (89%) gained one or more CPP levels. A summary of the actual distribution of the pupils is shown in Figure 4. (See page 8)

FIGURE 4

Distribution of Levels Gained in
Language Arts and Arithmetic: Year III

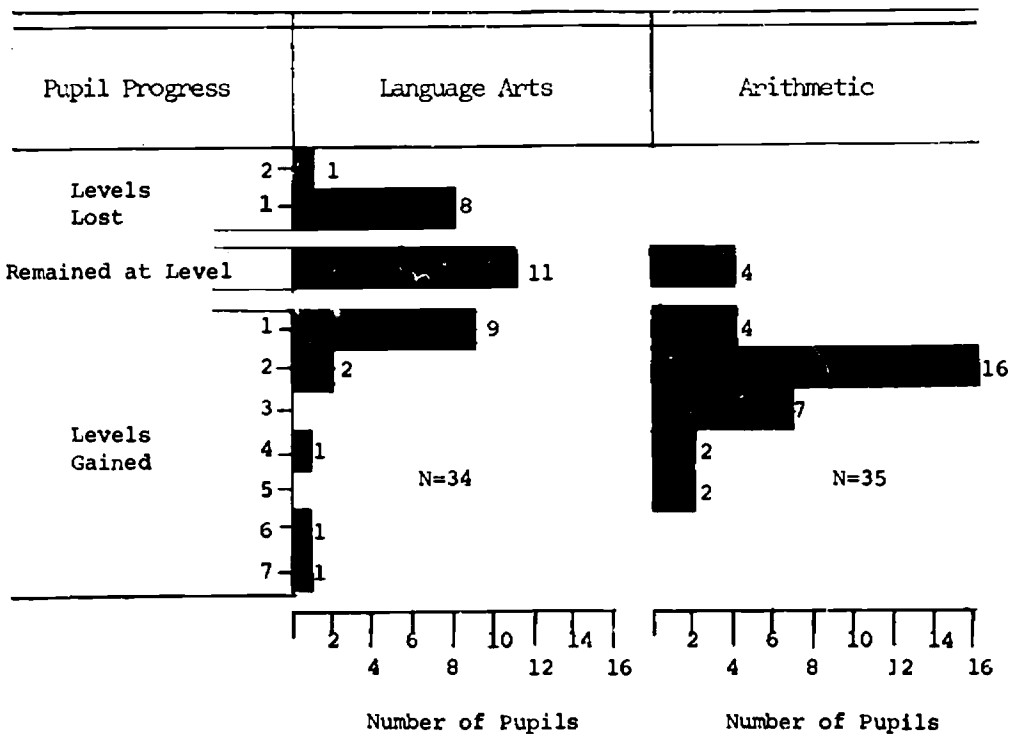


Year IV

The average placements in language arts and arithmetic for these pupils were levels 6 and 5, respectfully. The range for language arts was from 3 to 16. In arithmetic, it was from 2 to 8. Figure 5, Page 9, shows the distribution of the levels gained in language arts and arithmetic over the year. Fourteen pupils (41%) gained one or more levels in language arts; 11 (32%) remained at level; 9 (27%) lost one or more levels. In arithmetic skills, 29 pupils (88%) gained one or more CPP levels; 4 (12%) remained at level. However, these distributions demonstrate that the gains made by the pupils over the year varied, showing that individuals were performing at different rates.

FIGURE 5

Distribution of Levels Gained in
Language Arts and Arithmetic: Year IV

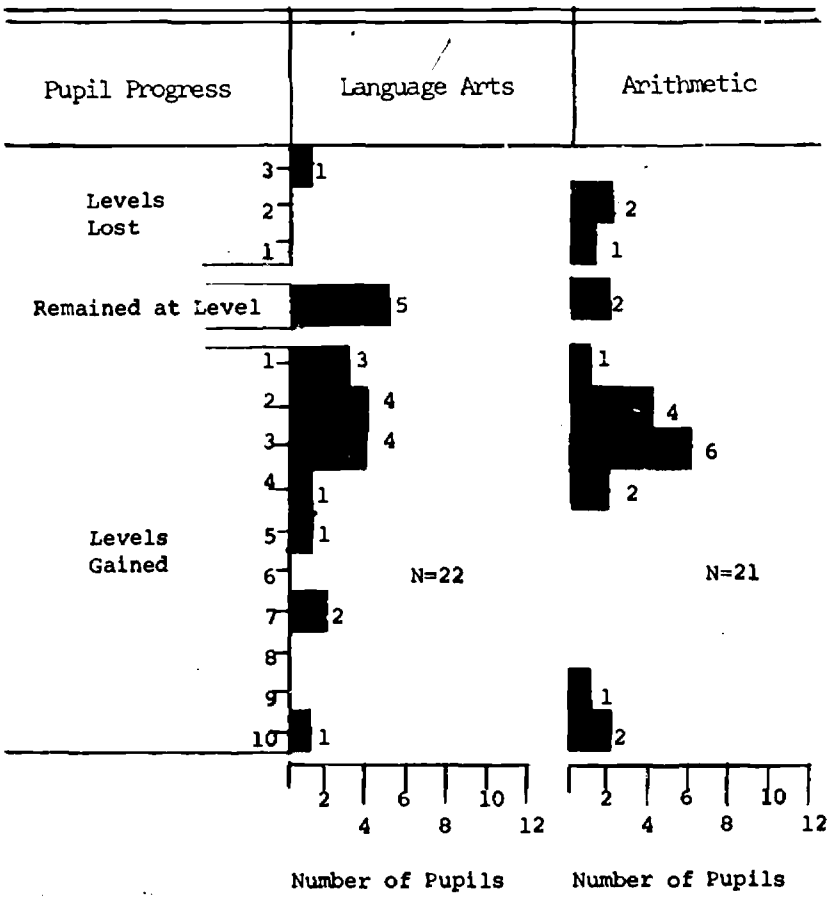


Year V

The average placements in language arts and arithmetic were levels 11 and 9, respectively. The wide diversity of gains made by these pupils over the year is shown in Figure 6. (See page 10) One pupil (4%) lost three levels in language arts while four pupils (18%) gained more than four levels. In arithmetic, three pupils (14%) lost one or more levels, while three pupils (14%) gained nine or more levels. Twelve pupils (54%) gained one or more levels in language arts; 19 pupils (81%) gained one or more CPP levels in arithmetic skills.

FIGURE 6

Distribution of Levels Gained in
Language Arts And Arithmetic: Year V

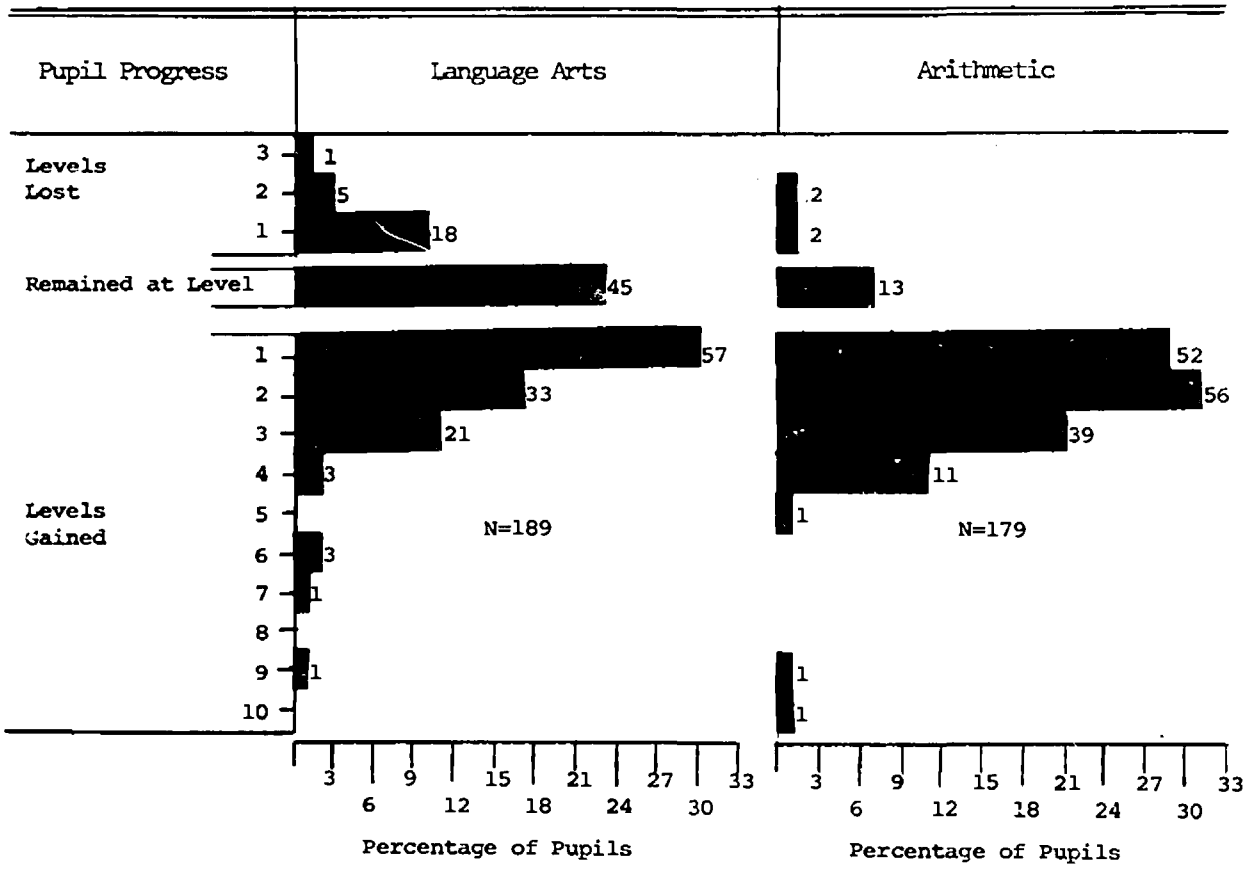


Summary

These data show that the pupils in Years I through V made meaningful gains in language arts and arithmetic over the year. A concise summary showing these gains is presented in Figure 7. (See page 12) This figure shows that most pupils gained one level in language arts and two levels in arithmetic. Twenty-four (13%) of the 189 pupils lost one or more levels in language arts performance. Forty-five (24%) remained at the same performance level in language arts. The remaining pupils (120 or 63%) gained one or more levels. In arithmetic performance, 4 pupils (2%) lost one or more CPP levels; 13 (7%) remained at level; 162 (91%) gained one or more levels. Overall most pupils demonstrated educational achievement over the year.

FIGURE 7

Distribution of Levels Gained in Language Arts and Arithmetic by Pupils in Years I Through V



Individualization of Instruction

Assessment of the effectiveness of the individualization of instruction over the school year was conducted on Years IV, V, and VI because there were pupils on whom standardized measures were available for two or more years. Differences in the Grade Equivalent scores of each pupil were used (1) to demonstrate whether the pupil, according to a standardized measure, had made progress that was consistent with his abilities, and (2) to ascertain whether the initial placements of the pupil improved his achievement possibilities.

Placements were predicated upon the diagnostic needs of each pupil. The placement of a pupil performing below level expectation was aimed at assisting the pupil to overcome those difficulties that were preventing his normal progress. The placement of a pupil performing above level expectation was directed toward the continuance of his growth and the removal of frustrations or boredom he would develop from being forced to do things which were uninteresting to him.

A major assumption for these placements was that if all pupils within a given year were placed at their performing level, the overall achievement of the total group would be significantly better than that of the previous year. Average scores in Reading Comprehension and Total Arithmetic of all pupils enrolled in Years III, IV, and V in 1968 and their corresponding averages in 1969 are shown in Table 1.

TABLE 1

Average Scores in Reading Comprehension and Total Arithmetic of Year IV, V, and VI Pupils

ITBS Subtest	Year in School (1968)	Grade Equivalent Average Score 1968	1969
Reading Comprehension	III	2.62 (n=29)	3.27 (n=29)
	IV	3.43 (n=24)	4.09 (n=29)
	V	4.38 (n=33)	5.22 (n=30)
Totals		N=86	N=88

TABLE 1 (continued)

ITBS Subtest	Year in School (1968)	Grade Equivalent Average Score 1968	1969
Total Arithmetic	III	2.73 (n=26)	3.26 (n=25)
	IV	3.50 (n=22)	4.46 (n=25)
	V	4.45 (n=35)	5.52 (n=26)
Totals		N=83	N=76

In some cases the number of pupils in these Years differs because of incomplete data. However, an analysis was made using an unequal sample size technique. The results appear in Table 2. These analyses indicate that all gains except those for Year IV in Total Arithmetic were significant. However, this gain, in a practical sense, is meaningful.

TABLE 2

Summary of the Analysis of Variance [a] for School Years IV, V, and VI

ITBS Subtests	Year IV			Year V			Year VI		
	D.F.	M.S.	F	D.F.	M.S.	F	D.F.	M.S.	F
Reading Comprehension									
Between Years	1	615.8	4.40**	1	1104	4.86**	1	565.6	4.05**
Within Years	56	140.0		61	227		51	139.8	
Total Arithmetic									
Between Years	1	357.0	3.96	1	1704	18.54*	1	1086.2	14.02*
Within Years	49	90.2		59	92		45	77.4	

[a] Unequal - n computational techniques
*p<.01
**p<.05

Reading Comprehension

An investigation of pupil gains in reading comprehension, relative to initial placements in September, revealed that some pupils gained as much as 2.0 years, while others lost as much as 0.7 year (seven months). Table 3 summarizes these findings. (See page 16) The most frequent (modal) placement category for each year is enclosed in a rectangle. For Year IV, the modal level was 5; for Year V, 8; for Year VI, 14. (Note: The six pupils in level 6 (Year 1) resulted from transfers into the school after September.)

Year IV placements ranged in level from 3 through 16. The modal placement (level 5) pupils showed an average gain of 0.8 year (eight months). Pupils placed in levels 4, 6, and 7 gained, on an average, 0.5 year (five months). The pupils who were placed in levels 14 and 16 increased their performance by at least one year. Six pupils, four at level 3 and two at level 8, progressed an average of about 0.2 year (two months).

Year V placements ranged in level from 1 through 16. Pupils placed in the modal category gained one year in reading comprehension. Pupils placed in the lowest and highest levels performed better than the pupils in the modal category. Those in level 1 gained 1.9 years. Pupils placed in levels 14 and 16 showed 1.8 years of growth. Two pupils in level 5 remained at their initial grade-equivalent level of performance.

Year VI placements ranged from level 5 through level 20. Pupils in the modal category improved their reading average comprehension score by 2.0 years. Level placements of 9, 10 and 19 produced gains of about 1.3 years. Placements in level 16 resulted in an average loss of 0.7 year (seven months). An average of 0.1 year (one month) was lost by pupils placed in levels 5 and 6.

These data indicate that individualization of instruction through level performance produced meaningful growth in reading for 58% of the pupils if we use 0.6 years (projected district's norm) as a relevant growth expectation. If we use the national criterion (1.0 ± 0.2), 45% of the pupils in Years IV, V, and VI were successful. Performance gains of all the pupils are illustrated in Figure 8. (See page 17)

TABLE 3

Achievement Gains in Reading Comprehension of Pupils in Years IV, V, and VI Classified According to Their Initial Level Placement in Language Arts

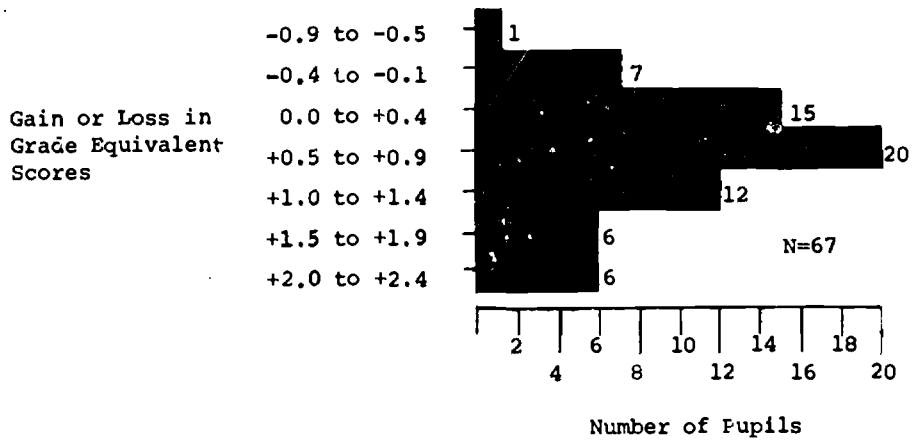
Level Placement September 1968	WITHIN-SCHOOL CLASSIFICATION											
	Year IV				Year V				Year VI			
	Number of Pupils	Average ITBS Score[a] 1968	1969	Average Gain[b]	Number of Pupils	Average ITBS Score 1968	1969	Average Gain	Number of Pupils	Average ITBS Score 1968	1969	Average Gain
1	-	-	-	-	2	3.0	4.9	1.9	-	-	-	-
3	4	1.9	2.1	0.2	-	-	-	-	-	-	-	-
4	4	2.1	2.6	0.5	1	2.6	3.4	0.8	-	-	-	-
5	7	2.4	3.2	0.8	2	2.5	2.5	0.0	2	3.6	3.5	-0.1
6	4	2.6	3.3	0.7	2	3.7	4.3	0.6	6	3.9	3.7	-0.2
7	2	3.9	4.3	0.4	3	2.7	3.9	1.2	3	3.8	4.3	0.5
8	2	3.8	3.9	0.1	4	3.7	4.7	1.0	-	-	-	-
9	-	-	-	-	-				1	3.4	4.7	1.3
10	-	-	-	-	3	4.2	4.8	0.6	1	3.4	5.6	1.2
14	1	3.6	4.9	1.3	1	3.0	4.9	1.9	5	4.9	6.9	2.0
16	1	5.3	6.3	1.0	2	5.6	7.2	1.6	2	6.0	5.3	-0.7
19	-	-	-	-	-	-	-	-	1	6.8	8.1	1.3
20	-	-	-	-	-	-	-	-	1	7.9	8.2	0.3
Total	25				20				22			

[a] Iowa Tests of Basic Skills, Subtest R, Reading Comprehension (Grade Equivalent Score)

[b] Difference in Grade Equivalent Scores

FIGURE 8

Distribution of Grade Equivalent Gains in Reading Comprehension of Year IV, V, and VI Pupils



Total Arithmetic

On an average, pupils in Years IV, V, and VI showed 0.8 year (eight months) growth in arithmetic skills. A summary of the growth made by these pupils in terms of their initial placement in arithmetic is presented in Table 4. The most frequent (modal) level placement for each year is enclosed in a rectangle. For Year IV, the modal level was 5; for Year V, 8; for Year VI, 14. (See page 18)

Year IV placements ranged in level from 2 through 8. At the most frequent placement level, and at level 6, the pupils gained on an average 0.4 year (four months). Pupils placed in the lower and higher levels gained an average of 1.1 years.

Year V placements varied from level 1 through level 16, with the mode at level 8. Pupils at the modal level progressed an average of 1.1 years in arithmetic achievement. Pupils placed in the lowest (level 1) and highest categories (levels 10, 14, and 16) gained an average of 1.5 years. One pupil at level 4 lost 0.3 year.

Year VI placements extended from level 5 through level 20; the modal level was 14. A year's average growth was achieved by pupils at the modal level. Placements in levels 5, 6, 7, and 19 produced from 1.0 to 1.9 years of progress. Placements in levels 16 and 20 resulted in a growth of about 0.1 year.

TABLE 4

Achievement Gains in Total Arithmetic of Pupils in Years IV, V, and VI Classified According to Their Initial Level Placement in Arithmetic

Level Placement in September 1968	WITHIN-SCHOOL CLASSIFICATION											
	Year IV				Year V				Year VI			
	Number of Pupils	Average ITBS Score[a] 1968	1969	Average Gain[b]	Number Pupils	Average ITBS Score[a] 1968	1969	Average Gain	Number of Pupils	Average ITBS Score[a] 1968	1969	Average Gain
1	-	-	-	-	1	3.5	5.0	1.5	-	-	-	-
2	1	1.6	2.6	1.0	-	-	-	-	-	-	-	-
4	-	-	-	-	1	3.4	3.1	-0.3	-	-	-	-
5	6	2.4	2.8	0.4	2	3.3	3.5	0.2	1	2.9	4.5	1.6
6	4	3.3	3.7	0.4	3	3.4	4.3	0.9	3	3.9	5.0	1.1
7	-	-	-	-	2	3.2	4.1	0.9	3	4.2	5.2	1.0
8	3	3.9	5.1	1.2	4	3.9	5.0	1.1	-	-	-	-
9	-	-	-	-	-	-	-	-	1	3.7	4.4	0.7
10	-	-	-	-	2	3.8	5.5	1.7	-	-	-	-
14	-	-	-	-	1	4.1	5.6	1.5	9	4.8	5.8	1.0
16	-	-	-	-	1	4.6	6.2	1.6	2	5.6	5.6	0.0
19	-	-	-	-	-	-	-	-	1	4.5	6.4	1.9
20	-	-	-	-	-	-	-	-	1	6.9	7.1	0.2
Total	14				17				21			

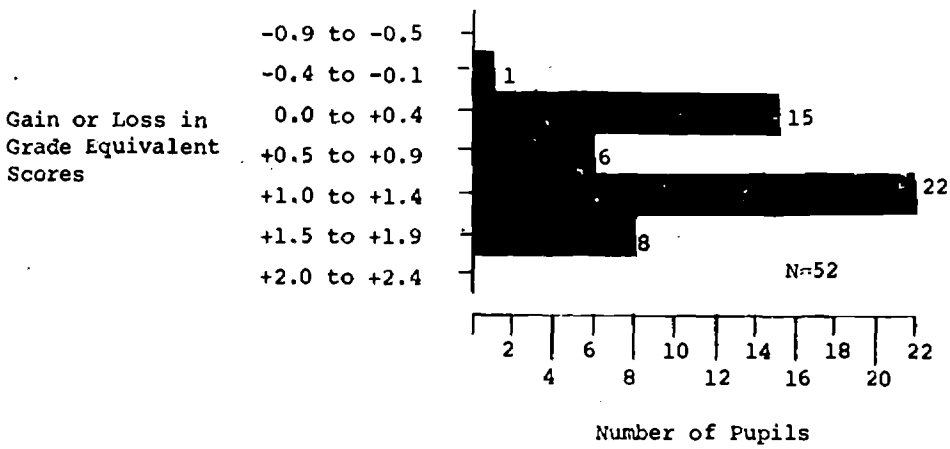
[a] Iowa Tests of Basic Skills, Subtest IA, Total Arithmetic (Grade Equivalent Score)

[b] Difference in Grade Equivalent Scores

These findings indicate that those levels in which the majority of the pupils were placed served as an appropriate base line from which to measure pupils' growth in arithmetic skills. The data also demonstrate that pupils placed in levels above and below the mode showed gains equivalent to or better than the projected district average expectation of 0.6 year. If we use the projected district-average criterion, 69% of the students achieved success through this form of instructional individualization. If we use the national criterion (1.0±0.2), 60% of the pupils having complete data (N=52) performed successfully. Performance gains of the pupils are shown in Figure 9.

FIGURE 9

Distribution of Grade Equivalent Gains in Total Arithmetic of Year IV, V, and VI Pupils



Effects of Nongrading Principles on Pupil Progress

In an effort to understand better the effects of nongrading principles on pupil progress, correlations were made between factors which appeared to be most directly related to pupil achievement. Five pairs of factors were considered: (1) level placements in language arts and in arithmetic; (2) level placement and number of levels gained; (3) level placement and ITBS score; (4) levels gained in language arts and in arithmetic; and (5) level and ITBS Grade Equivalent gains. A listing of these correlations, made at each Year-in-School classification, is presented in Table 5. (See Page 21)

Placement in Language Arts and Arithmetic

These analyses were made to find out how the pupil's development in language arts was related to his proficiency in arithmetic. The correlation values for Years II through VI show that a significant relationship exists between his two placements. The degree of association between these placements increases from Year II to a maximum at Year V and then decreases. In most cases, the level placement of a pupil in language arts was similar to his level placement in arithmetic.

Level Placement and Levels Gained

These correlations were made to see how the number of levels a pupil gained over the year was related to the level at which he was placed initially. One would normally expect pupils placed in the higher levels to gain more over the year than those pupils placed in the lower levels. However, it was hypothesized that if individualization of instruction occurred, there would be a very small, if any, relationship between level placement and levels gained.

Language Arts. These correlations show that a small, negative relationship exists between level placement in language arts and number of language arts level gained in Years II, III, and V. A statistically significant relationship exists between these variables at Year IV.

Arithmetic. Positive correlations exist between level placements in arithmetic and number of CPP levels gained. At Year II this relationship is statistically significant.

Level Placement and ITBS Score

Correlations using these two factors were considered to determine whether there were any meaningful relationships between these two performance indices. It was of particular concern to ascertain to what extent performance rankings expressed as levels (language arts and/or CPP) are similar to those obtained from the Iowa Tests expressed as Grade Equivalents. It was assumed that significant positive relationships exist between the two achievement scales. Such relationships would give evidence that the task performance ratings were measuring similar content specificity.

TABLE 5

Correlations Between Relevant Factors
Associated with the Nongraded Program

Year in School	Level Placement in Language Arts and Arithmetic	Level Placement and Levels Gained		Level Placement and ITBS Scores		Levels Gained in Language Arts and Arithmetic	Levels and ITBS Grade Equivalents Gained	
		Language Arts	Arithmetic	Reading	Total Arithmetic		Reading[a]	Total Arithmetic[b]
I	-	-	-	-	-	769*	-	-
II	380*	-173	317*	-	-	769*	-	-
III	690*	-232	308	833*	635*	083	-	-
IV	714*	359**	295	224	181	263	-013	308
V	978*	-143	211	-143	211	638*	-117	270
VI	618*	-	-	394**	023	-	-	-

[a]Language arts levels vs. Reading Comprehension
[b]CPP levels vs. Total Arithmetic
*Significant at the .01 level.
**Significant at the .05 level.

Reading. These data show that level placement in language arts and Reading Comprehension scores are positive and significantly related in Years III and VI. A small positive relationship was evidenced a: Year IV. A negative correlation value was obtained from Year V scores.

Arithmetic. A positive relatio..ship appears to exist between level placements in arithmetic and ITBS Total Arithmetic scores. The magnitude of these associations is greatest at Year III (significant) and least at Year VI.

Levels Gained in Language Arts and Arithmetic

Correlations between these two variables were undertaken to determine how the number of levels gained in language arts and in arithmetic were related. Another consideration was to learn whether the nongraded efforts in language arts and in arithmetic were producing similar results.

The results show that a significant positive relationship exists between levels gained in language arts and in arithmetic among the Year I, II, and V pupils. At Years III and IV positive associations are present but not statistically significant.

Levels and ITBS Grade Equivalents Gained

An investigation to determine whether the gains in achievement as measured by level (language arts and/or CPP) and by ITBS Grade Equivalents was conducted. The results indicate that there is a small negative relationship between these measuring criteria when applied to progress in reading. A larger and positive association appears to exist when progress in arithmetic is considered.

Summary

The results of the correlation studies show that there is a definite relationship between a pupil's level of development in language arts and in arithmetic. These data show that the highest degree of association occurred in Year V. In most instances level placements were somewhat negatively associated with gains in language arts and positively related to CPP gains in arithmetic.

In general, level placements agreed with rankings derived from ITBS Reading Comprehension and Total Arithmetic scores. The lowest of the correlations between language arts and Reading Comprehension scores occurred at Year V (-.143); the highest value was obtained in Year III (.833).

Three of the eight correlations considered were significant. Positive correlations were found between levels gained in language arts and arithmetic. Level gains and ITBS Grade Equivalent gains appear not to be positively related when measuring progress in reading. There is, nevertheless, a small, positive relationship between these measures when growth in arithmetic is considered.

Study Skill Development

Another emphasis of the nongraded program at Powel was to improve the pupil's capacity to do independent work. In pursuance of this objective, the teachers systematically included in their lesson presentations, homework, in-school assignments, and extracurricular acitvities the use of study skill materials (e.g., dictionary, encyclopedia, library). Along with this concern for the use of reference materials was an interest in increasing the pupil's use of graphic, tabular, and cartographical information. It was believed that increased use of these techniques for locating and assimulating information would improve the pupil's opportunities for success.

To determine whether pupils at Powel had developed their capabilities to use study skill techniques to a higher level than their counterparts in graded schools, two classes--one fifth-grade and one sixth-grade --were randomly chosen from schools, each of seven districts -- 1, 2, 3, 4, 5, 7, and 8. However, the fifth- and sixth-grade classes of the seven districts were not from the same schools. Comparisons were made between the average ITBS subtest scores of these pupils and those at Powel in Years V and VI. The results of the analyses, presented in Table 6, show that there were statistically significant differences among the eight schools.

TABLE 6

Summary of the Analysis of Variance
Comparisons of Study Skill Performance
(N=8 Schools)

ITBS SUBTEST	Source of Variation	Year in School V D.F.	V M.S.	V F	VI D.F.	VI M.S.	VI F
Map Reading	Between Schools	7	1948	13.68*	7	1635	8.45*
	Within Schools	228	142		211	1934	
Reference Usage	Between Schools	7	1940	13.68*	7	2557	14.79*
	Within Schools	228	142		211	1802	
Graphs and Tables	Between Schools	7	1554	9.75*	7	2126	12.16*
	Within Schools	228	159		211	1749	

*Significant at the .01 level

To determine whether the pupils at Powel performed better than the pupils in the graded schools, planned comparisons were made between the average ITBS subtest score of Powel's pupils and the average ITBS score of the pupils in the graded schools. Graphic presentations, which demonstrate these differences in the areas of Map Reading, Reference Usage, and Use of Graphs and Tables, follow (Figures 10 and 11). In each case the performance of the pupils at Powel is shown by a solid horizontal line. Average performance difference between each graded class and Powel's pupils at that level is indicated by a solid vertical line.

Comparisons of Study Skill Performance: Year V

Figure 10 shows that three schools (Schools B, F, and G) achieved higher average Grade Equivalent scores than Powel (4.5 years) in Map Reading. Of the schools which scored lower than Powel, School E's performance was significantly lower. (See page 25)

Schools C, F, and G achieved higher average scores than Powel (4.4 years) in Reference Usage, School F's performance being significantly higher.

Schools F and G scored significantly higher than Powel (4.6 years) in the Use of Graphs and Tables. The other schools had average scores that were below Powel's, School E being significantly lower.

Comparisons of Study Skill Performance: Year VI

Figure 11 shows that two Schools (F and G) performed better than Powel on Map Reading (4.7 years), School F being significantly better. The other schools had Grade Equivalent averages which were below 4.7 years. School B's performance was significantly lower than Powel's. (See page 25)

In Reference Usage, Powel's average Grade Equivalent score (5.5) was generally higher than all other schools, but statistically greater than schools A, B, D, and E.

In Graphs and Tables, Powel's average Grade Equivalent scores (5.4) was generally higher than all schools, but statistically greater than schools A, B, E, and F.

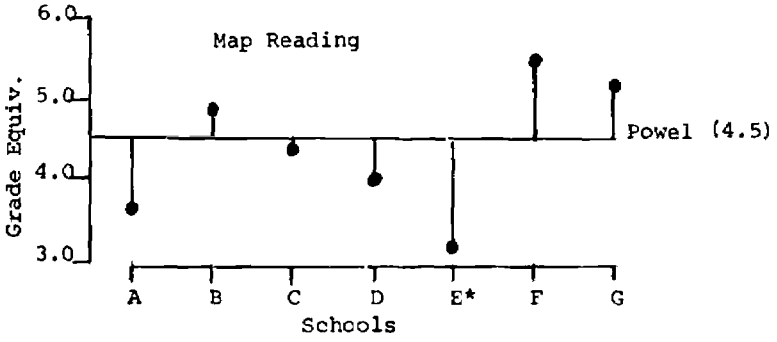
Summary

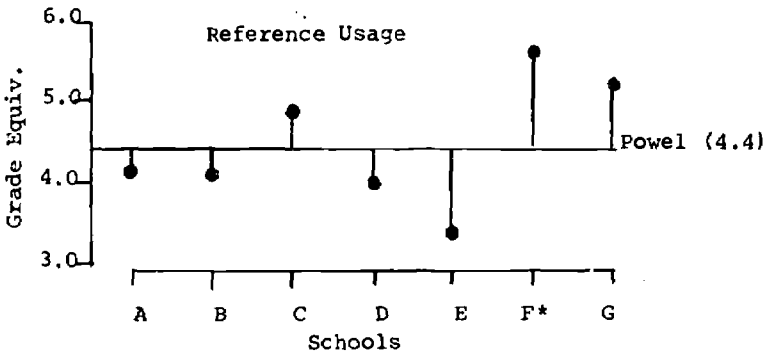
At Year V, two of the seven schools consistently showed higher performance in Study Skills than Powel. In general, Powel's performance was approximately 0.5 year above the average of the other five schools.

The performance of the Year VI pupils at Powel was consistently exceeded only by School F. Compared with the average of the other six schools, Powel's performance in Study Skills was approximately 1.0 years higher.

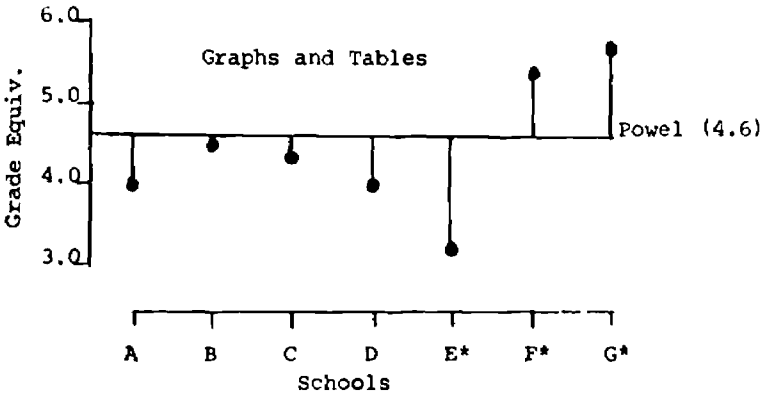
FIGURE 10

Comparisons of Study Skill Performance
Between Year V Students at Powel and Seven
Randomly Selected Graded Schools





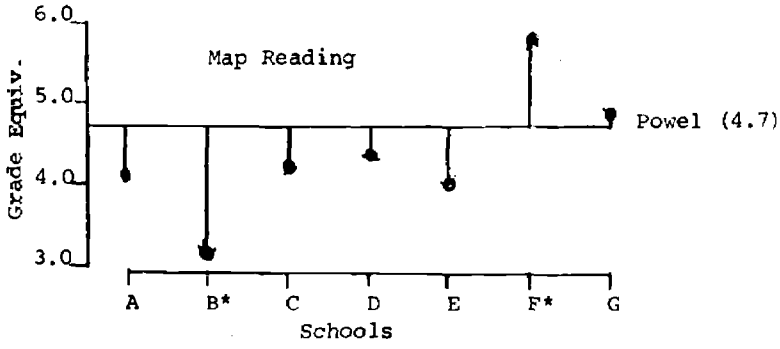
Legend	
School	District
A	1
B	2
C	3
D	4
E	5
F	8
G	7

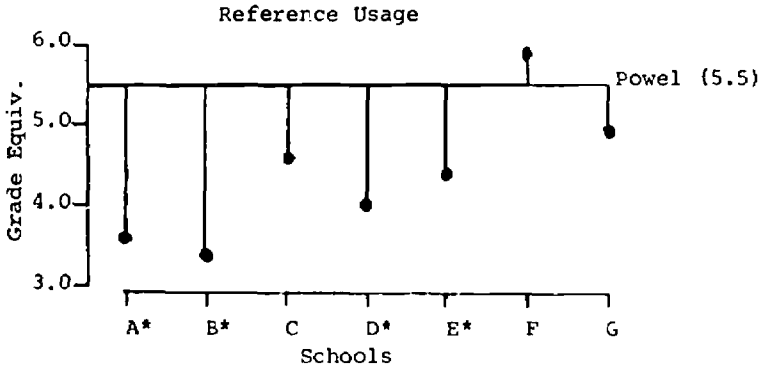


*Difference is statistically significant ($p<.01$)

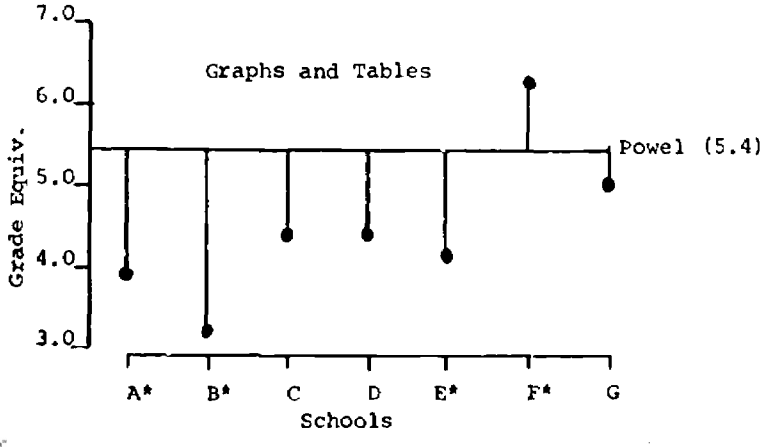
FIGURE 11

Comparisons of Study Skill Performance
Between Year VI Students at Powel and Seven
Randomly Selected Graded Schools





Legend	
School	District
A	1
B	2
C	3
D	4
E	5
F	8
G	7



*Difference is statistically significant ($p<.01$).

SUMMARY

Evaluative Phase II of the nongraded program at Powel Elementary School gives evidence that nongrading is an effective instructional method for achieving pupil progress in reading and arithmetic. The findings of this study indicate that most of the pupils at Powel realized a meaningful measure of educational success. Although some pupils did show losses, they were in the minority (almost 12% in language arts, 4% in arithmetic). About 24% of the pupils maintained their initial performance level in language arts; 7% in arithmetic. The majority of the pupils gained one or more levels in language arts (almost 64%) and arithmetic (91%).

Assessment of pupil growth according to ITBS scores showed that 58% of the pupils gained 0.6 or more years in Reading Comprehension and that 69% gained 0.6 or more years in Total Arithmetic. The average Grade Equivalent gain in Reading Comprehension was 0.5 year; in total Arithmetic, 0.7 year.

The results of this study suggest that the nongrading principle is an effective method for individualizing instruction. The policy of placing pupils in language arts and arithmetic classes according to their achievement levels in these areas produces meaningful results. The data demonstrate that such placements can produce gains up to 3 levels and increases of 2.0 years on a standardized test--such as the Iowa Tests of Basic Skills.

The correlation studies showed that:

1. Placements in language arts were positively (directly) and significantly related to placements in arithmetic at all school-year levels studied.

2. The number of levels gained in language arts was positively related to the number of CPP levels gained in arithmetic at all school levels studied.

3. A small, negative association existed between level placements and level gains. This finding would reflect the fact that a student placed in any level was learning approximately as much as those pupils placed above him. Any difference between initial placements of various pupils would tend to remain the same, or to decrease when those pupils placed the lower levels would move up to a more nearly average level of performance.

4. Pupil gains measured in levels (language arts and CPP) and in ITBS Grade Equivalents are somewhat directly related when we consider arithmetic performance, but not directly related when we consider in reading comprehension. However, placements in language arts, based on reading (IRI) and language usage ability, are directly related to Grade Equivalent scores in both Reading Comprehension and Total Arithmetic on the Iowa Tests of Basic Skills.

DISCUSSION

The nongraded program at Powel was successful in significantly improving ITBS scores in Reading Comprehension and Total Arithmetic over the 1968-69 school year. The program, in general, provided opportunities for the pupils to develop along a variety of dimensions (e.g., reading, arithmetic, study skills). It appears that the total program of the school affected pupils at all achievement levels such that almost every pupil experienced some kind of success.

Program Impact

The resultant impact of the nongraded program at Powel is recognized when average pupil ITBS scores in Reading Comprehension and Total Arithmetic are compared with those of Powel's district and the City. Figure 12 shows that Powel's performance in Reading Comprehension is at the City's level and above its district's level in Years III, IV, V, and VI. In Year IV, Powel is 0.5 year below the City and 0.3 year below its district. (See page 29)

In Total Arithmetic also, Powel is at the City's level and above its district's level in Years III, V, and VI. At Year IV, it is 0.6 year below the City and 0.3 year below its district.

Performancewise, the average pupil at Powel is doing as well as, or only slightly less well than, other elementary pupils within the City, and better than those within Powel's district. However, the distribution of individual performance gains evidenced in this study demonstrates that the total nongraded program is (a) providing an environment which meets the needs of 90% of its pupils and (b) encouraging pupils at all achievement levels to reach higher levels of educational performance.

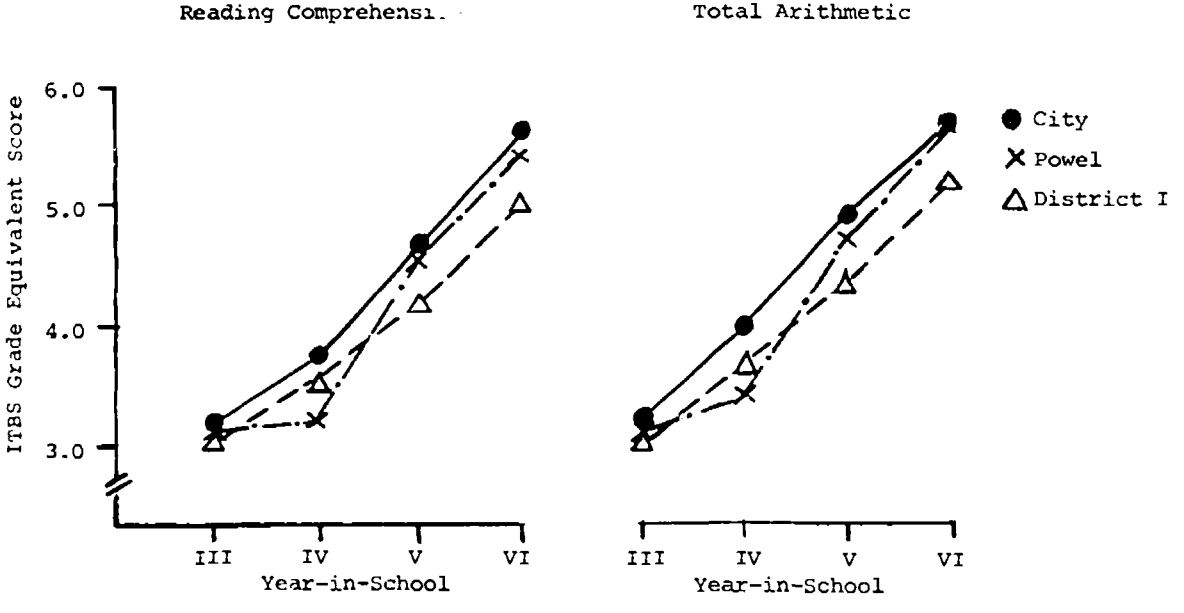
Suggested Program Modification

A need for modification in program implementation and curriculum development is indicated by the marginal progress of pupils placed in the upper levels (i.e., levels 17-20). These results suggest that the program materials available to the pupils are not providing the kinds of experiences that would most improve their productivity and capabilities. This disparity of performance is more evident in the arithmetic program than in language arts.

Because a large proportion of the pupils made meaningful gains by February, it appears that changes in level assignments could have occurred before this time. Although most pupil placements did not affect pupil performance, they did seem to affect the pupils in Years IV and V. The placement of these pupils with younger pupils might have contributed to their lower performance. However, had pupil assessment been made on a more frequent basis, these pupils could have been identified and been provided with either counseling or provisional placements.

FIGURE 12

Average ITBS Reading Comprehension and Total Arithmetic Scores of Year III, IV, V, and VI Pupils at Powel and of Similar Year-in-School Pupils at Graded Schools in District I and in the City, 1969



Enabling Alternatives

To improve the performance of the pupils at Powel, five major enabling alternatives are suggested for a fuller implementation of the nongraded program. These are: (1) Inservice training for the teachers which should include additional preparation periods within the school year; (2) an administrative roster chairman; (3) a full time Instructional Materials Center assistant; (4) an increased materials supply; and (5) increased secretarial service.

Inservice training for teachers. Most teachers in public schools have been oriented toward a graded school organization. Therefore, they cannot make an instant transition to viewing their responsibilities in terms of the philosophy of nongrading. Although the teachers at Powel have a good understanding as to what kinds of decisions, problems, and implementation occur under this organization, there is an expressed need for them to get together as a group with parents to discuss pupil progress under this system. Sessions of this kind are essential if a total program of individualized instructions is to be realized. This period could also be used to discuss the individual progress of pupils prior to the marking of their school report cards--especially the anecdotal reports for parents. Moreover, during these sessions, the teachers may get to know of the general problems facing some pupils and parents. These inputs could be used to develop amendments to the existing curriculum, reporting techniques, and dissemination programs.

Administrative roster chairman. According to the NEA Research Division's (1965) report on nongraded schools, some of the major administrative difficulties facing the nongraded schools are those of handling individual pupil rosters, communicating the concept of nongrading to parents, and adapting the curriculum to individual needs. With reference to rostering, it becomes necessary to look at each pupil not as a class but as a unit of one. This means that composite or aggregate classes cannot be determined in advance. Frequent roster changes must be made to meet the continued needs of the pupils.

It is recommended that an administrative roster chairman be assigned to nongraded schools. A tentative listing of the functions and duties of this position follows:

1. To make up and maintain individual rosters for pupils during the major reorganization periods.

2. To prepare the rosters of pupils transferring into the program. This would involve testing or retesting the incoming pupils for placement.

3. To make more refined roster changes for particular pupils whose needs are not met by the general reorganization plans.

4. To review, with the principal, teachers, and parents, the anecdotal and progress reports on each pupil.

5. To visit with parents and community leaders to explain, discuss, and clarify the objectives of the nongraded program.

6. To work jointly with the principal to discuss roster assignments or adjustments, organizational problems, and alternative methods for program implementation.

These kinds of activities would release the principal (a) to participate more vigorously in the instructional program, (b) to provide more precise directions for the instructional and inservice programs, and (c) to develop a systematic documentation of the kinds and breadth of administrative and organizational problems encountered in a nongraded environment. An accurate record of the alternative methods or techniques used to resolve any problems could also be maintained.

Full-time IMC assistant. Many of the individual and independent activities for the pupils at Powel involve the use of the Instructional Materials Center (IMC). IMC activities include the use of reference materials, the card catalogue, and individualized instruction packets. These materials are used by the pupils to find information in books other than their classroom texts and to gain additional practice in the development of particular skills. In order to meet the additional demands placed upon the facilities and to plan more independent activities for the pupils, a full-time library assistant is needed.

Increased supply, instructional materials and textbook allotment. Because individualized programs are prescribed under a nongraded program, there is an increased need for materials (i.e., slide projectors, individualized programmed projects, and other consumable items). Estimates of the increased needs indicate that the present allotment for materials could approximately be doubled.

Increased secretarial service. The activities of the Administrative Roster chairman and the need for more frequent pupil reclassification require supportive services, which could be fulfilled by the appointment of an additional secretary. This person would (a) maintain an accurate file of pupil progress and reclassification, (b) assist the principal and Administrative Roster Chairman in the preparation and dissemination of materials, and (c) update all communications or publications to parents and teachers.

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