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Descriptors-*Beginning Reading, *Developmental Reading, Educational Attitudes, Elective Reading, *Initial Teaching Alphabet, *Phonics, Reading Achievement, *Reading Instruction

The following approaches to beginning reading were compared: (1) a basal reader program utilizing a whole word, carefully controlled vocabulary, and ability grouping procedures; (2) a phonics approach, with many different words, using essentially whole class procedures; (3) a combination whole word basal program supplemented with a phonics program; and (4) the i/t/a program employing a total language approach, a heavier than usual vocabulary, and grouping procedures. Each year the study was evaluated by the Stanford Achievement Test, the San Diego County Inventory of Reading Attitude, and a record of the number of books read independently. Additional random sample testing was done with individually administered tests. The original population, composed of 415 first graders in five classrooms per treatment, decreased to 262 pupils at the end of grade 3. In grade 1, while basal reader pupils read the most books, the other three programs generally appeared to help children to higher silent achievement. By the end of grade 3 the phonics approach scored significantly higher on Paragraph Meaning and Spelling than did the basal or combination classes. The phonics program was also favored significantly over the combination program at the end of third grade. At the same time the basal group scored significantly lower than the other three groups on Word Study Skills. Other significant differences are also reported. Tables are included. (CM)

A THREE YEAR LOOK AT i/t/a, LIPPINCOTT, PHONICS AND WORD POWER, AND SCOTT, FORESMAN

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This was a three year study of four different approaches to beginning reading in New Castle, Pennsylvania. It indicates that when teachers are properly prepared by frequent and effective in-service education that intensive phonic methods and materials which introduce many different words can make a significant difference in increased pupil achievement in reading and spelling according to certain standardized test results. Retention ratios for the low I.Q. third suggested that a slower instructional pace (than was employed in this study) is advisable for the intensive phonics, heavy vocabulary programs. Also basal readers probably should increase their vocabulary and phonics components. (1)

The following methods and materials were compared: (1) a basal reader program utilizing a "whole word", carefully controlled, comparatively small vocabulary approach to beginning reading instruction and ability grouping procedures, represented by Scott, Foresman and Company, 1960-62 edition; (2) a phonics approach, with many different words, using essentially whole class teaching procedures and filmstrips correlated with the reading texts, published by the J. B. Lippincott Company, 1963 edition; (3) a combination whole word plus phonics approach using the materials and methods (including grouping techniques) of Scott, Foresman and Company, 1960-62 edition, but supplemented with Phonics and Word Power, a series of booklets published by American Education Publications, Inc., 1964 edition; and (4) the Early-to-Read i/t/a Program published by i/t/a Publications, Inc., 1964 edition, which employs a total language approach with grouping procedures, a heavier than usual

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vocabulary and is expecially distinguished by an initial teaching alphabet which is designed to overcome phonic and spelling inconsistencies of the English language. Each treatment variable was continued throughout the study except for i/t/a. Since it was designed as a program of beginning reading instruction, the Treasury of Literature Series of Charles E. Merrill Books, Inc., 1960 edition, was used when i/t/a pupils made the transition to traditional spelling. Teachers used only those methods and materials recommended by the book company consultants for instructional purposes, but all children were encouraged to do wide independent reading.

Each year the study was evaluated by: (1) a group, standardized test of silent reading achievement (Stanford); (2) an inventory of attitudes toward reading (San Diego County Inventory of Reading Attitude); and (3) a record of the number of books read independently. In addition, randomly selected samples of the population were given certain individual tests of oral reading achievement (Gates Word Pronunciation Test, Fry Phonetically Regular Words Oral Reading Test, and Gilmore Oral Reading Test).

The population of the study was randomly selected by attendance areas and assigned to the required number of classrooms and treatment groups prior to their entrance into Grade I. Only those students for whom complete data was available were included in the statistical analysis. There were many reasons for student attrition including moving, retention, and absence from school during testing periods.

The original study, which was begun in September 1964, was composed of five classrooms per treatment method and 415 students. One Scott, Foresman teacher became ill during first grade resulting in the loss of her entire class from the study. Nineteen classes and 365 pupils were included in the comparisons drawn at the end of Grade I; 302 children remained at the end of Grade II; and the population decreased to 262 at the end of Grade III.

In the replicative study, beginning in September 1965, only three classes per treatment method were selected. End of the year comparisons were made on 248 first grade students and 213 pupils remained by the end of second grade. The replicative results are not reported here, but they generally support the major study.

Those publishing companies whose materials were used in this study provided consultant services to the teachers of the original study to aid them in following appropriate procedures through classroom observations followed by in-service workshop meetings. Teachers who participated in the replication were almost always those who were in the original study, and in-service work was largely eliminated in an attempt to control Hawthorne effects.

Each of the consultants conducted a three day workshop in August 1964 before the original study was begun. They also visited and observed each classroom seven times during that year and conducted after school workshops following each day of observation. During the second and third years of study the preschool workshop meetings were reduced to one day, and only four classroom visitations and subsequent workshops were held.

Administrative personnel made twenty visits to each classroom during the first year and twelve visits to each classroom during the second and third years to check on adherence to procedural and material limitations. During these observation periods, each supervisor also independently rated the teachers for effectiveness on the Hayes Teacher Rating Scale.

Teacher logs were also used as a method safeguard. Teachers in the original study submitted logs to the field director during alternate weeks on which they recorded the materials used, the skills taught, the grouping procedures followed and the time spent in teaching reading. Teachers of the replicative study submitted monthly summaries.

Statistical Analysis

Statistical analysis consisted of correlation coefficients, a 4 X 3 factorial analysis of variance and covariance (where appropriate). In this analysis, factor A consisted of four methods of teaching reading, while factor B represented three levels of intelligence (high, average and low). In the third year of the study the preceding analysis involved random casting out of cases to produce an equal number of cases per cell. This resulted in 15 cases per I.Q. level, 45 per treatment and a total N of 180 in Grade II and also in Grade III. The Stanford paragraph meaning scores were also analyzed for all students by an unweighted means analysis with very similar results to the analysis for just 180 pupils.

For the analysis of variance involving 180 cases per grade, a Tukey (a) multiple range test was employed to determine which differences between means were contributing to significant F ratios. When analysis of covariance produced significant F ratios, Winer's multiple F test was used to compare difference between each appropriate pair of means. Also, Bond and Tinker reading expectancy scores were compared to grade scores for Word Reading, Word Study Skills and Paragraph Meaning.

Results

While only the major three year study results are reported here, the replicative study results largely confirmed the major study. The following treatment I.Q. Means in Grade III were very comparable: 98.58 for Lippincott, 98.49 for Scott, Foresman, 97.96 for i/t/a-Merrill and 96.98 for Phonics and Word Power. Average teacher effectiveness ratings per treatment were also very similar. Four of the five Lippincott classes,

three of the five i/t/a-Merrill classes, two of the five Phonics and Word Power classes, and two of the four Scott, Foresman classes had 50 percent or more pupils achieving at least one-half grade above the predicted levels in Word Meaning, Word Study Skills and Paragraph Meaning by June of third grade.

The grade equivalent means on the Stanford Achievement Test, after adjusting statistically for factors such as intelligence and teacher effectiveness ratings, were as follows:

TABLE 1

PARAGRAPH MEANING BY TREATMENTS

	SF	PWP	Lipp	i/t/a-M
Grade I - January 27, 1965	1.4	1.6	1.6	1.6
Grade I - April 29, 1965	1.7	1.8	1.8	1.8
Grade II - January 12, 1966	2.6	2.5	2.9	2.8
Grade II - May 20, 1966	2.9	3.2	3.1	3.1
Grade III - January 12, 1967	3.4	3.7	3.8	3.8
Grade III - June 1, 1967	4.3	4.4	4.9	4.6

For the above, significant differences occurred as follows: (1) in January of Grade II when Lippincott was compared to Phonics and Word Power, and (2) in June of Grade III when Lippincott was compared with Phonics and Word Power and also with Scott, Foresman.

TABLE 2

SPELLING BY TREATMENTS

	SF	PWP	Lipp	i/t/a-M
Grade I - January 27, 1965	1.3	1.6	1.7	2.0
Grade I - April 29, 1965	1.7	2.0	1.9	2.1
Grade II - January 12, 1966	2.5	2.9	3.1	3.0
Grade II - May 20, 1966	3.1	3.4	3.6	3.6
Grade III - January 12, 1967	3.6	3.8	4.0	4.4
Grade III - June 1, 1967	4.4	4.4	4.3	4.5

For the above, the significant differences were: (1) in January of Grade I when i/t/a was compared to each of the other three groups and also when Lippincott and Phonics and Word Power were compared to Scott, Foresman, (2) in April of Grade I the results favored i/t/a, Lippincott, and Phonics and Word Power compared to Scott, Foresman, (3) in January and May of Grade II the results favored i/t/a-Merrill and Lippincott over Scott, Foresman, (4) in January of Grade III i/t/a-Merrill and Lippincott compared favorably to Scott, Foresman, while i/t/a-Merrill was also greater than Phonics and Word Power, and (5) in June of Grade III the results favored Lippincott versus Scott, Foresman and Phonics and Word Power.

TABLE 3

WORD MEANING (READING) BY TREATMENTS

	SF	PWP	Lipp	1/t/a-M
Grade I - January 27, 1965	1.3	1.5	1.7	1.9
Grade I - April 29, 1965	1.7	1.8	2.0	1.9
Grade II - January 12, 1966	2.5	2.7	3.0	3.0
Grade II - May 20, 1966	2.9	3.1	3.3	3.3
Grade III - January 12, 1967	3.8	3.7	4.2	4.0
Grade III - June 1, 1967	4.7	4.6	5.1	4.9

For the above, the significant differences were: (1) in January of Grade I, i/t/a compared to each of the other three groups, while Lippincott was also ahead of SF and PWP, and PWP was ahead of SF, (2) in April of Grade I, Lipp compared to SF and PWP and i/t/a compared to SF, (3) in January of Grade II, i/t/a-M and Lipp were ahead of SF, (4) in January of Grade III, Lipp was ahead of PWP, and (5) in June of Grade III, the results favored Lipp compared to both SF and PWP.

TABLE 4

WORD STUDY SKILLS BY TREATMENTS

	SF	PWP	Lipp	1/t/a-M
Grade I - January 27, 1965	1.4	1.6	1.8	2.1
Grade I - April 29, 1965	1.8	2.0	2.0	2.0
Grade II - January 12, 1966	2.5	2.4	3.6	3.0
Grade II - May 20, 1966	2.8	3.2	4.0	3.4
Grade III - January 12, 1967	3.6	4.0	5.2	4.8
Grade III - June 1, 1967	4.4	5.3	5.8	5.8

For the above, the significant differences were: (1) in January of Grade I, i/t/a compared to each of the other three, and Lipp and PWP compared to SF, (2) in April of Grade I, i/t/a, Lipp and PWP compared to SF, (3) in January of Grade II, Lipp compared to each of the other three groups, and i/t/a-M versus both SF and PWP, and (4) in May of Grade II, Lipp was ahead of the other three, and i/t/a-M over SF, (5) the January Grade III results favored Lipp over SF and PWP, while i/t/a-M was ahead of SF, and (6) in June of Grade III, SF was behind each of the other three.

For the high I.Q. level significant differences occurred as follows on Stanford Paragraph Meaning: (1) in April of Grade I and in January of Grade II, i/t/a-M and Lipp compared to SF and PWP, (2) in May of Grade II, i/t/a-M and Lipp compared to SF, and (3) in June of Grade III, Lipp versus PWP. The grade equivalent means at the end of third grade were 6.0 for Lipp, 4.9 for i/t/a-M, 4.8 for SF, and 4.7 for PWP.

For the average I.Q. the significant differences on the Stanford Paragraph Meaning Test were: (1) in April of Grade I, Lipp and i/t/a-M compared to PWP, and (2) in January of Grade II, Lipp versus PWP. While not statistically significant the grade equivalent means in June of Grade III on paragraph meaning were 4.9 for Lipp, 4.8 for i/t/a-M, 4.7 for SF, and 4.6 for PWP.

For the low I.Q. level the differences were not significant on the Stanford Paragraph Meaning Test. The mean grade equivalent scores were as follows: 4.2 for Lipp, 3.9 for i/t/a-M and PWP, and 3.7 for SF.

Each year of the study a representative subsample of pupils were chosen randomly for individual testing. In Grades I and II the results on the Gates Word List significantly favored Lipp and i/t/a-M over SF and PWP. In Grade III the results for the Gates Word List were not significantly different (The group means were i/t/a-M, 34.89; Lipp, 33.94; PWP, 32.78; and SF, 31.72).

The Gilmore Accuracy results provided significant differences as follows: (1) in April of Grade I for the high I.Q. level, Lipp and i/t/a-M compared to SF and PWP, (2) in May of Grade II for the average I.Q. level, i/t/a-M over SF, (3) in April of Grade III, i/t/a-M over SF for the entire subsample, and (4) in April of Grade III for the high I.Q. level, Lipp and i/t/a-M over SF. In April of Grade III, the Gilmore Accuracy means for the entire subsample were: i/t/a-M, 37.83; Lipp, 35.78; PWP, 33.78; and SF, 30.94.

The Gilmore comprehension results were significantly different as follows: (1) in April of Grade I for the average I.Q. level, SF over Lipp, (2) in April of Grade III for the low I.Q. level, i/t/a-M over Lipp, (3) for the high I.Q. level in Grade III, Lipp and i/t/a-M were ahead of SF and PWP, and (4) for the total subsample in Grade III, i/t/a-M over both Lipp and SF (see Table 5).

TABLE 5

GILMORE COMPREHENSION

(NUMBER OF PUPILS TESTED TOTALS 72)

	Means	Differences		
		PWP	Lipp	SF
i/t/a-M	26.67	3.06	3.56*	3.73*
PWP	23.61		.50	1.67
Lipp	23.11			.17
SF	22.94			

*Significant at the .05 level

Significant differences for Gilmore Rate were: (1) for the entire subsample in Grade I, i/t/a was higher than Lipp and PWP, (2) for the high I.Q. level in Grade I, i/t/a over PWP, and (3) for the average I.Q. level in Grade I, i/t/a over SF over Lipp. Subsequent to Grade I there were no significant differences in Gilmore Rate. In April of Grade III, the treatment means for Gilmore Rate were: SF, 124.44; Lipp, 121.78; i/t/a-M, 119.83; and PWP, 118.28.

As measured by the San Diego County Inventory of Reading Attitude in April of Grade I, PWP was rated significantly higher than each of the other three treatment groups. The results for the same attitudinal inventory in April of Grade II indicated that SF was rated significantly lower than each of the other three groups. In April of Grade III there were no significant differences for the San Diego inventory, and the treatment means were as follows: i/t/a-M, 19.18; Lipp, 19.09; PWP, 18.89; and SF, 17.09.

Based on the number of books read other than the regular textbooks, SF was significantly ahead of the other three groups in Grade I, while in the same grade Lipp was significantly ahead of PWP and i/t/a. For the same variable in Grade II, i/t/a-M was significantly behind the other three groups. In Grade III Lipp and SF were significantly ahead of i/t/a-M and PWP with the following average number of books read in a typical month: Lipp, 10.77; SF, 10.31; PWP, 6.21; and i/t/a-M, 5.59.

Discussion and Conclusions

In Grade I while Scott, Foresman pupils read the most books, the other three programs generally appeared to help children to higher silent achievement as measured by a standardized test. The Phonics and Word Power group scored highest on the reading attitude inventory in Grade I, but read comparatively few books. The Fry and the Gates Word List results indicated significantly greater first grade word recognition

achievement for i/t/a and Lippincott than did either Scott, Foresman or Phonics and Word Power. Since the overall comprehension results on the Gilmore Oral were not significant in first grade, reading programs with a heavy phonic emphasis apparently gave children greater power in recognizing word lists, but this advantage may not be readily transferred to a significant degree until Grade III to understanding meaning of words in context in oral reading. The extremely high correlation of .93 between the Fry and Gates Word Lists suggested that children who do well with phonetically regular words also do well with phonetically irregular words, and that those who do poorly with the one, do poorly with the other.

Most i/t/a pupils (74 percent) made the transfer to traditional orthography by the end of first grade (66 percent of the low I.Q. third, 89 percent of the average I.Q. third, and 83 percent of the high I.Q. third). Of the remainder, 17 percent of the low I.Q. third made the transfer in September, 3 percent in October, and 14 percent in November of Grade II. For the average I.Q. third, the transfer was made by 3.7 percent in September, 3.7 percent in October, and 3.7 percent in November. For the high I.Q. third, 14 percent transferred in October and 3 percent completed transition in November of Grade II.

In Grade II Scott, Foresman pupils averaged significantly lower than each of the other three groups on the San Diego County Inventory of Reading Attitude, but by April of Grade III there were no significant differences for this variable. In all three grades i/t/a-Merrill pupils lagged significantly behind each of the other three groups on number of books read other than regular textbooks.

For the first two years i/t/a-Merrill and Lippincott were significantly ahead on the Gates Word List, but by April of Grade III the differences on this variable were no longer significant. By April of Grade III i/t/a-Merrill was significantly ahead of Scott, Foresman on the Gilmore Accuracy Test, and for the Gilmore Comprehension, i/t/a-Merrill scored significantly higher than both Scott, Foresman and Lippincott.

By the end of Grade III Lippincott scored significantly higher on Paragraph Meaning and Spelling than did Scott, Foresman and Phonics and Word Power. Lippincott was also favored significantly over Phonics and Word Power on Word Meaning at the end of third grade. At the same time (June, Grade III) Scott, Foresman scored significantly lower than the other three groups on Word Study Skills.

During 1964-1965, 12 percent of the Lippincott pupils were retained in Grade I compared to 3 percent of the i/t/a pupils, 6 percent of the Scott, Foresman pupils, and 6 percent of the Phonics and Word Power pupils. In the second year of the study, 1965-1966, there were almost 8 percent of the Lippincott children who were retained in second grade compared to almost 5 percent i/t/a-Merrill pupils, almost 2 percent Scott, Foresman pupils, and almost 5 percent Phonics and Word Power pupils. These retentions were mostly among pupils in the low I.Q.

third and it suggests a slower instructional pace for the heavy phonics and vocabulary approaches than was employed in this study. The differential retention among treatments would not invalidate the results of this study since retention was primarily in the low I.Q. third where generally there were no significant differences although such differences were definitely in favor of the intensive phonic and vocabulary approaches by the end of third grade.

It appears that method and materials as well as teachers can make a difference in the teaching of reading since four of five Lippincott classes, three of five i/t/a-Merrill classes, only two of five Phonics and Word Power classes, and only two of the four Scott, Foresman classes had 50 percent or more pupils achieving at least one-half grade above their predicted levels in Word Meaning, Word Study Skills and Paragraph Meaning in June of third grade. Intensive phonic approaches seem to produce significantly better results in Word Study Skills than does an eclectic basal reader. Pupils introduced to reading through the i/t/a-Merrill program are not confused in the area of Spelling. Since by the end of Grade III the i/t/a-Merrill group generally achieved the best results in oral comprehension and the Lippincott group generally achieved the best results in silent reading achievement, it is indicated that an i/t/a-Lippincott program would be worthy of attention and future study. Also, the basal reader programs should give serious consideration to increasing both vocabulary and phonics in their beginning reading materials.

There is an important postscript to this study. Although the official study ended in Grade III and all project pupils were taught by Scott, Foresman methods and materials in Grade IV, significant differences occurred when the Stanford Achievement Test was given in February of 1968. Significant differences in Word Meaning favored the Lippincott program over the other three programs at the .01 level of confidence. These results are described further in Tables 6 through 10. Also at the request of the school superintendent, the teachers met frequently during the past year to decide which program they wished to use in the future. Twenty-eight of the thirty-six primary teachers in Grades I, II, and III, after considerable deliberation and frequent meetings indicated by written ballot that they preferred the Lippincott program and this program is presently being implemented in all primary classrooms in the New Castle public schools.

TABLE 6

NEW CASTLE READING STUDY (N=180)

Adjusted Grade Equivalent Means - February 1968 - Grade IV

	Word Meaning	Paragraph Meaning	Spelling	Word Study Skills	Language
Lipp	6.20	6.13	5.85	6.41	6.48
i/t/a-M	5.56	5.32	5.53	6.18	5.81
SF	5.74	5.52	5.30	5.73	6.01
PWP	5.07	5.53	5.41	6.05	5.82

Differences in means for Word Meaning were significant favoring Lipp over each of the other three groups at the .01 level of confidence. This was also true for i/t/a-M and SF versus PWP

	Arithmetic Computation	Arithmetic Concepts	Arithmetic Applications	Social Studies	Science
Lipp	4.86	5.94	5.31	5.61	5.61
i/t/a-M	4.98	5.73	5.24	5.35	5.31
SF	4.75	6.07	5.08	5.36	5.33
PWP	5.16	5.97	5.12	5.23	4.97

Note: 45 pupils in each of four groups
Above means were adjusted statistically for differences in intelligence as measured early in first grade.
In fourth grade all children were taught with Scott, Foresman materials.

TABLE 7

NEW CASTLE READING STUDY (N=60)

Adjusted Grade Equivalent Means - High I.Q. Group - February 1968 - Grade IV

	Word Meaning	Paragraph Meaning	Spelling	Word Study Skills	Language
Lipp	6.93	7.13	6.16	6.56	6.94
i/t/a-M	6.30	5.99	5.79	6.65	6.57
SF	6.62	6.51	5.81	6.40	6.94
PWP	5.79	6.49	5.77	6.91	6.89

Adjusted Grade Equivalent Means - High I.Q. Group - February 1968 - Grade IV

	Arithmetic Computation	Arithmetic Concepts	Arithmetic Applications	Social Studies	Science
Lipp	4.96	5.77	5.56	6.24	6.24
i/t/a-M	5.06	6.06	5.44	5.50	5.95
SF	5.11	6.94	5.49	6.01	5.66
PWP	5.84	6.84	5.89	6.05	5.44

TABLE 8

NEW CASTLE READING STUDY (N=60)

Adjusted Grade Equivalent Means - Middle I.Q. Group - February 1968 - Grade IV

	Word Meaning	Paragraph Meaning	Spelling	Word Study Skills	Language
Lipp	6.29	6.16	6.10	6.75	7.41
i/t/a-M	5.70	5.72	6.13	6.87	6.36
SF	5.83	5.81	5.36	5.34	6.42
PWP	4.95	5.48	5.62	6.34	5.93

Note: For Word Meaning, Lipp mean was greater than PWP mean at .01 level
" " " , i/t/a-M and SF means were greater than PWP mean at .05 level
" Word Study Skills, SF mean was lower than the other three means at the .05 level.

Adjusted Grade Equivalent Means - Middle I.Q. Group - February 1968 - Grade IV

	Arithmetic Computation	Arithmetic Concepts	Arithmetic Applications	Social Studies	Science
Lipp	4.95	6.43	5.58	5.71	5.87
i/t/a-M	4.82	5.95	5.59	5.57	5.51
SF	4.61	6.07	5.25	5.43	5.88
PWP	5.16	6.13	5.12	5.31	5.12

TABLE 9

NEW CASTLE READING STUDY (N=60)

Adjusted Grade Equivalent Means - Low I.Q. Group - February 1968 - Grade IV

	Word Meaning	Paragraph Meaning	Spelling	Word Study Skills	Language
Lipp	5.30	4.99	5.14	5.69	5.01
i/t/a-M	4.65	4.21	4.74	5.16	4.54
SF	4.74	4.23	4.62	5.31	4.62
PWP	4.62	4.77	5.03	5.15	4.76

Adjusted Grade Equivalent Means - Low I.Q. Group - February 1968 - Grade IV

	Arithmetic Computation	Arithmetic Concepts	Arithmetic Applications	Social Studies	Science
Lipp	4.55	5.49	4.75	4.75	4.67
i/t/a-M	5.08	5.18	4.69	4.93	4.42
SF	4.44	5.14	4.48	4.62	4.45
PWP	4.65	5.10	4.41	4.51	4.42

TABLE 10

Mean IQ's in Grade IV Sample

New Castle Reading Study

	Total (N=180)	High Third (N=60)	Middle Third (N=60)	Low Third (N=60)
Lipp	98.56	114.07	98.87	82.73
i/t/a-M	97.96	111.87	97.47	84.53
SF	98.00	112.33	99.00	82.67
PWP	96.16	106.67	97.80	84.00
Total	97.67	111.23	98.28	83.48