DOCUMENT RESUME

ED 094 022 UD 014 326

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TITLE Increasing the Academic Performance of Culturally Disadvantaged Students: A Diamond Among the Glass or the Possibility of a Type I Error.
PUB DATE Apr 74
NOTE 25p.; Paper presented at the Annual Meeting of the American Educational Research Association (59th, Chicago, Illinois, April 1974)

EDRS PRICE MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS Academic Achievement; Achievement Gains; Caucasian Students; *Culturally Disadvantaged; Curriculum; *Elementary School Students; Individualized Instruction; *Inner City; Inservice Teacher Education; *Program Evaluation; Remedial Instruction; Research Methodology; *Special Education; Statistical Analysis

ABSTRACT

The general purposes of the present project were: (1) to develop a multifaceted special education system for providing maximum educational support to children regardless of their classification, (2) to demonstrate this alternative through a noncategorical educational model involving regular and special education in management plans for children regardless of variance in their abilities. The target population consisted of approximately 400 Caucasian, inner-city elementary school students in a large midwestern city, whose general academic performance was severely depressed. The model was to augment the specific instructional skills of the classroom teachers in working with given children or groups of children. Classroom teachers received instruction in building, implementing, and recording the specific instructional activities, concepts, and/or reinforcement techniques for their classroom; the teachers received university credit for implementing these procedures and recording the target behaviors in the classroom. The project was designed to provide a resource center where teachers could seek guidance, suggestions, assistance, and additional materials. Also, a child could be taken there for a brief period each day to be worked with by the project staff. (Author/JM)

INCREASING THE ACADEMIC PERFORMANCE OF CULTURALLY DISADVANTAGED STUDENTS: A DIAMOND AMONG THE GLASS OR THE POSSIBILITY OF A TYPE I ERROR

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ABSTRACT

This study was devised to provide students labeled "culturally disadvantaged" maximum stimulation in their greatest deficit area. The goal was to produce one year academic gain in one year. A pre-test/post-test design using criterion referenced test and standardized achievement tests as dependent variables indicated that the entire group consistently gained more than one academic year on standardized tests and made significant gains on criterion referenced tests. Amount of learning increased significantly over previous years. Of 100 concurrently conducted studies, only this study produced positive results. Implications critical to intervention programming will be discussed including teacher-related and pupil-related variables.

Introduction

Problems confronting teachers and students in an inner city environment are by no means new or novel. Solutions leading to the amelioration of these problems have been slow in developing and difficult to implement. One such effort, homogeneous grouping, has met with limited success and does not appear to be the panacea for culturally disadvantaged youth.

In considering the number and varieties of children in many inner city schools who demonstrate learning difficulties, e.g., LD, EMR, EMR-like, NH, etc., it appears to be unrealistic to segregate these children from the regular classroom for extensive special services. For in doing so, 25% or more of the inner school population will be segregated from the articulated curriculum. Thus, alternative strategies must be developed and employed if these children are going to receive maximum support in their educational placements.

The general purposes of the present project were:

a. To develop a multifaceted special education system for providing maximum educational support to children regardless of their classification.

b. To demonstrate this alternative through a non-categorical educational model involving regular and special education in management plans for children regardless of variance in their abilities.

Review of the Literature

Much emphasis has recently been place on a concept called "mainstreaming," the practice of including children within the regular classroom regardless of the child's classification or skill level. Proponents of mainstreaming argue that students, when isolated from the articulated curriculum of a school and placed exclusively in a special classroom, do not perform academically as well as they might if they were placed in the regular classroom (Davis and Reynolds, 1971; and Dunn, 1968). Coleman (1966) has demonstrated that this mainstreaming does not appear to adversely affect the academic performance of the other children in the classroom.

Stein and Susser (1970), and Haywood (1970), Coleman (1966) and Lei, et al., (1970) have documented the relationship between the cultural background of individuals and their performance on standardized measures of achievement. The results are clear--if one does not matriculate from a white middle class background, one's chances of doing well on these measures are substantially reduced. In addition, Stein and Susser (1970) have reviewed a series of studies which document the possibility of increasing performances of culturally disadvantaged persons on standardized measures. The work of Harring (1970) and Patterson (1971) indicate that specific behavioral programming can facilitate the academic performance of children in a classroom setting.

However, all efforts to facilitate the performance of children are not aimed directly at the children. A concentrated effort is made to upgrade the skills of the classroom teachers in specific areas. With the advent of new technologies and priorities, e.g., behavior modification, individualized programming, teacher inservice, etc., into the educational arena, additional alternatives are becoming available to teachers. Increasing the tools of the classroom teacher is a slow and difficult process.

Many studies document the high relationship between academic performance of pupils and the socioeconomic school related factors of the immediate environment (Bowles and Levin, 1968; Guthrie, et al., 1969: Wilbur, 1970; Dyer, 1968; Mayeske, 1969; Coleman, 1966). These studies indicate that as the pupil, teacher and building characteristics become depressed there is an accompanying depression in academic performance.

To these ends this study sought data to support these findings and assertions in a setting where: the children are labeled culturally disadvantaged; the children do not score well on measures of academic performance; the special education children are included in the regular classroom; and specific classroom intervention is initiated over a one-year period.

The goal of this study was to raise the academic performance of children in grades four, five, and six from an inner city school one academic year in one year.

Methodology

Population

The target population consisted of approximately 400 elementary school children located in one school building in a large midwestern city. These children were predominantly Caucasian (97%), first generation descendents of Appalachian parents. The school is classified as "inner city" and the general academic performance of the pupils in the building on measures of academic success was severely depressed. By the end of grade six, the average performance of the pupils on a standardized measure of achievement was two grade levels behind the local and national norms. The school was classified as a Title I priority 3 school.

Program

Of the 400 pupils in the building, 60 were identified as specific targets needing supplemental instruction, behavior modification programming and/or special assistance. However, all pupils in the school were eligible for service and included in the study.

Conceptually, the model was to augment the specific instructional skills of the classroom teachers in working with given children or groups of children. Classroom teachers received instruction in building, implementing and recording the specific instructional activities, concepts and/or reinforcement techniques for their classroom; the teachers received University credit for implementing these procedures and recording the target behaviors in the classroom. The project was designed to provide a resource center where teachers could seek guidance, suggestions, assistance and additional materials. In addition the resource center was a setting in which a child with a specific learning problem could be taken for a brief period each day to be worked with by the project staff.

Data Sources

Eighteen pupil-related and teacher-related characteristics were obtained from the school district. These student socio-economic and teacher qualification characteristics were available for the school building as well as the school district profile for the past four years.

The California Test of Basic Skills (CTBS) Form A was administered to the 400 pupils at the beginning of the 1972-73 academic year. A criterion referenced instrument (CRI), developed by school

personnel and indexing mathematics and reading was individually administered to the 60 target children in the early Fall. The program was implemented and the alternate form of the CTBS was given to children in grades 4, 5 and 6 in April, 1973; the CRI was also administered to the group of 60 children in the Spring.

Data Analysis

The pupil-related and teacher-related characteristics were analyzed both across years and between the school building and school district via a series of Chi Square Goodness of Fit Tests and Chi Square Tests of Independence applied in the appropriate instances. The data from the standardized test, CTBS, were analyzed via a series of t-tests comparing the baseline score to the post-test for each grade level (four, five and six) and each subtest of the CTBS. In addition, the CRI data were analyzed with respect to the percent correct for each pupol on each subtest at each grade level, (one through six). A profile of the baseline and final progress of each student was constructed. For reporting purposes, the individual scores for each grade level on each subtest were averaged resulting in an estimate of typical performance at each grade level on each subtest for the baseline and end-of-year scores.

Results

Teacher-Pupil Characteristics

A profile analysis of the pupil-related characteristics and the teacher-related characteristics was conducted documenting the discrepancies and similarities between the school-related characteristics and the school district-related characteristics (see Table 1). For brevity of presentation only the final year is included in the table. The following factors emerge with consistency each year. (Significant Chi Square values were obtained by the relatively large contributions of the following data points).

1. The incidence of Aid to Dependent Children (ADC) cases surrounding the target school is more than twice that of the school district.
2. The absence rate at the target school is higher than that of the district.
3. The pupil mobility rate at the target school is more than twice that of the district.
4. The percent of new pupils at the target school is about three times as great as the district.
5. The population at the target school is about 97% Caucasian while the school district figure remains about 70% Caucasian.
6. The target school has more inexperienced teachers than the district average; almost 70% of the target school teachers have less than five years experience.

Standardized Tests

The CTBS data analyses for grades four, five and six are presented in Tables 2, 3, and 4 respectively. A t-test was used to compare the baseline score with the post-test score. In each of the three tables the results for the entire grade and the results of just the target pupils are presented. No statistical analysis was performed on the data of the target pupils because of the small number of subjects at each grade level. Of the 23 tests conducted, 18 were statistically significant with $P<.05$. This indicates that the progress demonstrated by the respective students during the six month period can be accounted for by more than a chance phenomenon (Student absence caused discrepancy between the number tested in the Fall and Spring of the year).

The greatest gain occurred in the sixth grade pupils (these pupils also began with the greatest deficit). There was approximately one year of academic improvement in the scores of these pupils in a six month period in both math and language. In previous years their rate of gain had averaged slightly more than 1/2 of an academic year in one year of schooling. Thus the rate of learning was increased.

The 13 target pupils from the sixth grade also demonstrated significant gains from pre- to post-testing, $P<.05$. As would be expected, their performance began and ended below that of the entire group and their rate of gain was less than that of the entire grade, but their rate of growth was increased over previous year's rates.

The fifth grade students gained a significant amount on the mathematics subtests ($P<.05$), but the progress on the language subtests was more typical of their previous test performances and did not demonstrate marked increases or accelerated learning. The math performances did demonstrate an increased rate of learning for these pupils.

Grade four students made significant gains in math and some of the language subtests ($P<.05$). However, this group began with the smallest deficit of the three grade level groups and made slightly less progress than the other two groups. In math the total gain was slightly less than one academic year and in language the total gain was slightly more than one-half academic year. Although the language gain was statistically significant, it does not represent an accelerated rate of learning for these pupils. However, the math gains do represent an increased rate of learning.

Criterion Referenced Instrument

Table 5 presents the data from 35 target students on the math portion of the CRI. Table 6 presents the similar data for the reading section of the instrument, and Table 7 presents the difference

between the scores for Fall and Spring testing on each subtest for each grade level. The scores represent the average performance of all target pupils at a given grade level. Figures 1 and 2 are examples of a typical target student profile showing baseline and end-of-year performance (six month actual duration) on each subtest. The scores document the consistent progress and attainment of the target pupils in basic mathematics and reading skills. For the most part, students who were target students in math were not target students in reading.

Discussion

The data from the target school profile document many of the stereotypic problems confronting educators working in a socio-economically deprived inner city area. As a school, it has characteristics much like other inner city schools and also much different from the school district norms. The socio-economic data and the teacher-related factors suggest a relationship between these factors and academic performance, i.e., as the school-related factors become depressed academic performances are also depressed. These data support this interpretation, i.e., academic performance in the target school is much below the district and national norms and the pupil-related factors indicate a relatively low socio-economic pattern. The teacher-related characteristics correlation with academic performance is also less favorable than that of the school district.

Given these parameters as a beginning, is there anything that can be done to aid the students in this school or similar schools? The data from this study suggest that there are ways of helping these students.

First, segregated classes, e.g., special education, EMR rooms, etc., do not appear to yield maximum student performance. The non-categorical assignment of children exhibiting the greatest academic difficulties into the regular classroom significantly increased the performance of these target children on math activities and at a minimum maintained their performance in language and reading. At the same time the individual student programming also improved the general performance of the other children in grades four, five and six, most notably in math but also in language activities. The inclusion of children demonstrating previous academic difficulty into the regular classroom seemed to have a positive motivating effect on these children and did not appear to adversely affect the other children in the room.

However, it should be noted that, from these data, there is no way of determining the effects of the individual programming on the "regular" children with the "special" children removed, i.e., would the regular children have done even better if they had received the

programming without the special children in the room? Although there is no data from this study to document this, these authors believe that the performance of the regular children would not be greatly enhanced over what it was if the hypothesized procedure had been implemented.

Secondly, working directly with the classroom teachers on a cooperative basis in providing specific learning and teaching suggestions to facilitate instruction resulted in increased academic performances from the students. University credit was accrued by classroom teachers for learning, implementing and recording specific instructional activities within her classroom. This is not to say that the new teaching techniques attempted in the classroom caused the increased student performance, but these activities were certainly part of the project intervention.

Third, a resource center was established where a teacher could seek additional materials and/or ideas from professional educators. In addition, the resource center was a place where children demonstrating particular classroom difficulties could be worked with for brief periods of time each day on their particular weaknesses until their weaknesses were remediated or the student could move on to the next level of activity.

Fourth, health and social service screening were conducted on each child in the school. Obvious medical, dental and/or social problems were identified and treated, referred to the appropriate agency, worked with, etc.

It is impossible to discern which of the above four activities had the greatest effect on the students. In all likelihood, it was some combination of the above and possibly even the increased attention or the additional people that had a positive effect on the students. However, what is important is the fact that it was possible to significantly increase the academic performance of a group of culturally disadvantaged students.

There is a critical point which must be discussed in this presentation and that is the amount of gain that a student might have made had the intervention not taken place. Looking at the historical data from the target school, there was minimal change over the previous four years on the teacher- and pupil-related characteristics. There was also consistency in the below standard academic performance of the pupils in this school over the same time period. There was a consistently increasing deficit as the students matriculated through the elementary grades so that by grade six the average performance was two grade levels below the district norm and national norm. The students were gaining a great deal less than one academic year on the standardized measure in one year of schooling. After intervention of the project, the students gained an average of at least one year

according to the standardized measure in math and in certain grade levels also made great strides in language and reading. In every case the gain measured after intervention was at least equal to the measured gain of previous performances. In addition the target pupils were experiencing academic success while improving their skills. This experience for these target pupils was probably one of the few positive academic experiences in their young lives.

It should also be noted that even after intervention the performances of the children was still markedly below that of the district and national norms. For example, the grade six students after the six month intervention were still more than one full grade level behind norm groups.

Another critical point of discussion centers around the cost of such an endeavor. Initiating such a program for a given school is quite expensive particularly with respect to the resource center. However, it is logistically possible for a given resource center to service several schools thus diminishing the size of the investment for a single school building. There is also considerable cost in developing and initiating the project. Again, however, once the program has been implemented, maintaining the project is cost efficient. Personnel required to staff the project are: three Learning-Resource Center teachers, a teacher's aid, a project coordinator, and access to professional services, e.g., nurse, doctor, dentist, social worker, etc.

The results of this study should be critically examined both optimistically and pessimistically. The concepts presented are but one set of possible alternatives; there may be other more potent combinations. These results are also limited to one school building with very specific characteristics and to one school district. In addition, these results are from only one academic year of intervention and may wash out over time. More studies are necessary before definitive results are claimed. These authors are critically examining the outcomes of this study--of all studies conducted in the school district this past year (approximately 100) this is one of the very few studies which yielded positive results. Does this suggest the possibility of a Type I error or are these results for real? Have we identified a diamond or are these results temporarily glittering and nothing but a brute imitation of the real thing. Only additional research will provide the answer and that is the direction being pursued.

TABLE 1

ANALYSIS OF SCHOOL FACTORS
AT TARGET SCHOOL AND SCHOOL DISTRICT, 1971-72

Values are Percentages

School-related Factors	School Building	School District
Incidence of ADC cases to enrollment	34	15
Absence rate	10	07
Pupil mobility rate	38	15
Percent of pupils new to Columbus schools	19	06
Percent of pupils above age in grade level	14	07
Percent of white pupils	97	71
Percent of classroom teachers to total professional staff	79	85
Percent of professional staff in general fund special programs	04	03
Percent of professional staff in state-federal programs	11	07
Staff turnover rate	18	15
Percent of teachers with Bachelor's degrees	63	64
Percent of teachers with 150 hours of study, including B.A.	16	19
Percent of teachers with Master's degrees	21	16
Percent of teachers with M.A. + 30 or more hours of study	00	01
Percent of teachers with 1 year or less experience	11	05
Percent of teachers with $1\frac{1}{2}$ to $5\frac{1}{2}$ years experience	63	41
Percent of teachers with 6 to $10\frac{1}{2}$ years experience	16	22
Percent of teachers with 11 or more years experience	11	32

TABLE 2

*GRADE 4 STUDENT PERFORMANCE
ON THE CALIFORNIA TEST OF BASIC SKILLS, 1972-73

	MATH				LANGUAGE				
	Computation	Concept	Application	Total	Vocabulary	Comprehension	Total	Spelling	No. of Students
FALL	3.25	3.39	3.23	3.23	3.08	3.19	3.04	2.84	50
SPRING	4.45	3.75	3.79	4.10	3.64	3.64	3.58	3.62	46
GAIN	1.20**	0.36	0.56**	0.87**	0.56**	0.45	0.54**	0.78**	

* Scores are grade level equivalent.
** Gain significant at $P < .05$.

PERFORMANCE OF 10 GRADE 4 TARGET STUDENTS
ON THE CALIFORNIA TEST OF BASIC SKILLS, 1972-73

	MATH				LANGUAGE			
	Computation	Concept	Application	Total	Vocabulary	Comprehension	Total	Spelling
FALL	2.20	2.78	3.08	2.26	2.82	2.36	2.45	2.20
SPRING	3.43	2.97	2.73	3.17	2.73	2.13	2.33	3.00
GAIN	1.23	0.19	-0.35	0.91	-0.09	-0.23	-0.13	0.80

TABLE 3

*GRADE 5 STUDENT PERFORMANCE
ON THE CALIFORNIA TEST OF BASIC SKILLS, 1972-73

	MATH				LANGUAGE			
	Computation	Concept	Application	Total	Vocabulary	Comprehension	Total	No. of Students
FALL	3.79	3.90	3.81	3.82	3.88	3.68	3.74	64
SPRING	5.14	4.81	4.38	4.80	4.31	3.98	4.03	56
GAIN	1.35**	0.91	0.57**	0.98**	0.43*	0.30	0.29	

*Scores are grade level equivalent.
**Gain significant at $P < .05$.

PERFORMANCE OF 14 GRADE 5 TARGET STUDENTS
ON THE CALIFORNIA TEST OF BASIC SKILLS, 1972-73

	MATH				LANGUAGE		
	Computation	Concept	Application	Total	Vocabulary	Comprehension	Total
FALL	3.20	2.51	2.98	2.89	2.49	2.25	2.24
SPRING	4.03	2.50	3.15	3.35	2.80	2.55	2.50
GAIN	0.83	-0.01	0.17	0.46	0.31	0.30	0.26

TABLE 4

*GRADE 6 STUDENT PERFORMANCE
ON THE CALIFORNIA TEST OF BASIC SKILLS, 1972-73

	MATH				LANGUAGE				
	Comprehension	Concept	Application	Total	Vocabulary	Comprehension	Total	Spelling	No. of Students
FALL	4.48	4.27	4.24	4.25	4.09	4.11	3.84	4.24	43
SPRING	5.68	5.41	5.19	5.40	5.27	5.07	5.10	4.77	43
GAIN	1.20**	1.14**	0.95**	1.15**	1.18**	0.96**	1.26**	0.53	

* Scores are grade level equivalents.
** Gain statistically significant at $P < .05$.

PERFORMANCE OF 13 GRADE SIX TARGET CHILDREN
ON THE CALIFRONIA TEST OF BASIC SKILLS, 1972-1973

	MATH				LANGUAGE			
	Computation	Concept	Application	Total	Vocabulary	Comprehension	Total	Spelling
FALL	3.72	3.35	3.02	3.52	3.45	2.50	2.87	3.15
SPRING	3.86	4.25	3.94	4.10	3.97	3.69	3.75	3.58
GAIN	0.14	0.90	0.92	0.58	0.52	1.17	0.88	0.43

TABLE 5

AVERAGE PERCENTAGE CORRECT BY 35 TARGET CHILDREN
ON THE CRITERION REFERENCED INSTRUMENT MATH SECTION, 1972-73

Grade	Readiness		Comprehension		Total		No. of Students
	Fall	Spring	Fall	Spring	Fall	Spring	
1	33	62	0	8	17	36	8
2	45	74	10	28	28	51	2
3	90	89	18	40	54	65	2
4	90	90	39	52	64	71	6
5	85	95	34	70	62	83	9
6	91	94	57	75	71	85	8

TABLE 6

AVERAGE PERCENTAGE CORRECT BY 25 TARGET CHILDREN
ON CRITERION REFERENCED INSTRUMENT READING SECTION, 1972-73

READING

Grade	Readiness		Alphabet		Phonetics		Comprehension		Dolch Words		Total		No. of Students
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	
1	70	78	33	63	8	28	0	0	1	11	25	41	7
2	64	80	32	67	1	27	0	0	0	1	23	39	2
3	32	88	87	94	44	65	0	20	33	80	60	78	2
4	84	93	92	96	57	83	13	70	74	98	77	92	4
5	35	96	76	87	50	74	24	41	41	60	61	75	5
6	91	95	84	94	60	75	38	50	61	77	73	83	5

TABLE 7

AVERAGE PERCENT GAINED BY TARGET CHILDREN
ON CRITERION REFERENCED INSTRUMENT OVER SIX MONTH PERIOD, 1972-73

Grade	MATH			READING					
	Readiness	Comprehension	Total	Readiness	Alphabet	Phonetics	Comprehension	Dolch Words	Total
1	29	8	19	8	30	20	0	10	16
2	29	18	23	16	35	26	0	1	16
3	-1	22	11	6	7	21	20	47	18
4	0	13	7	9	4	26	57	24	15
5	10	36	21	11	11	24	17	19	14
6	3	18	14	4	10	15	12	16	10

Figure 1

John G
age (1-1-73) 7-1

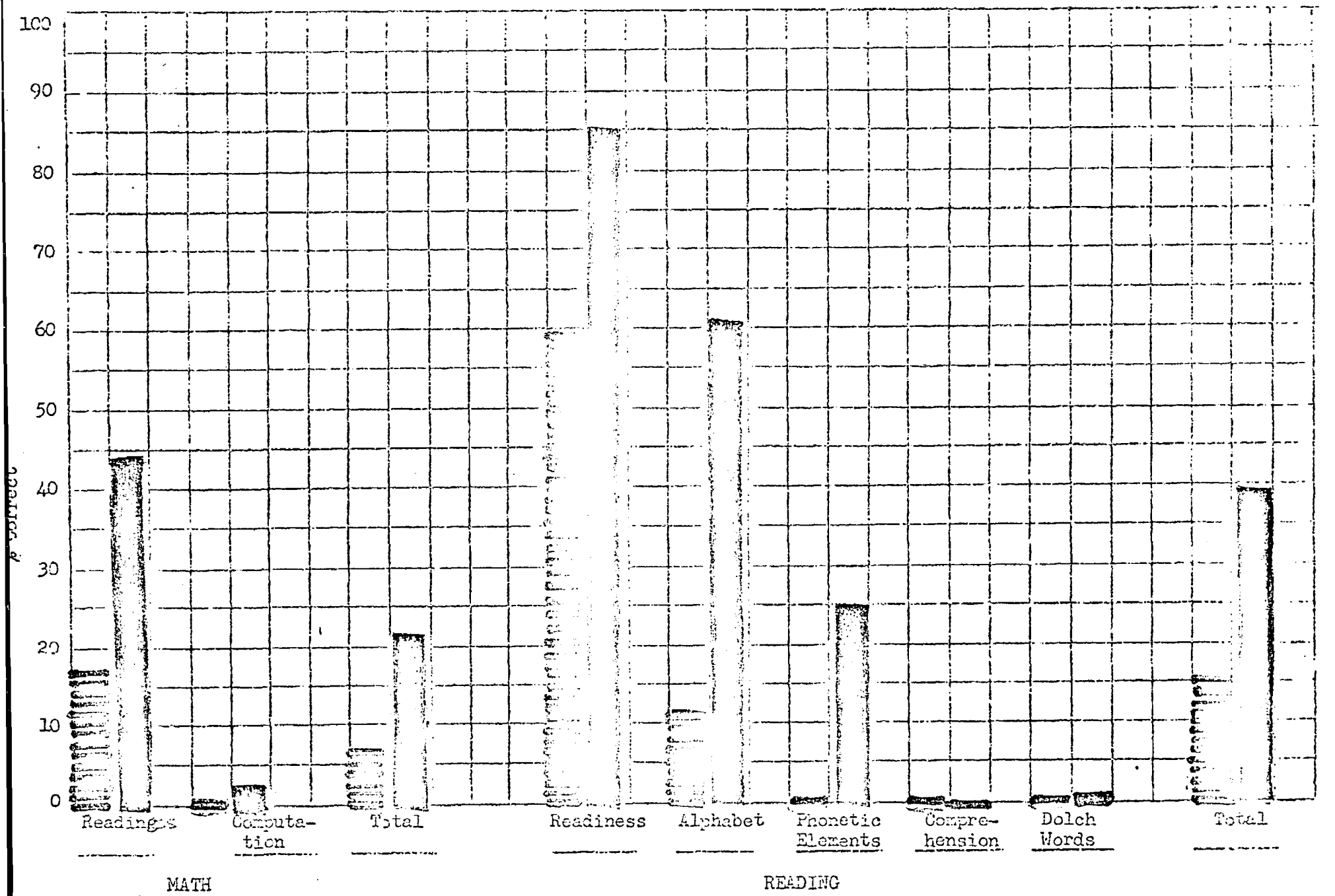
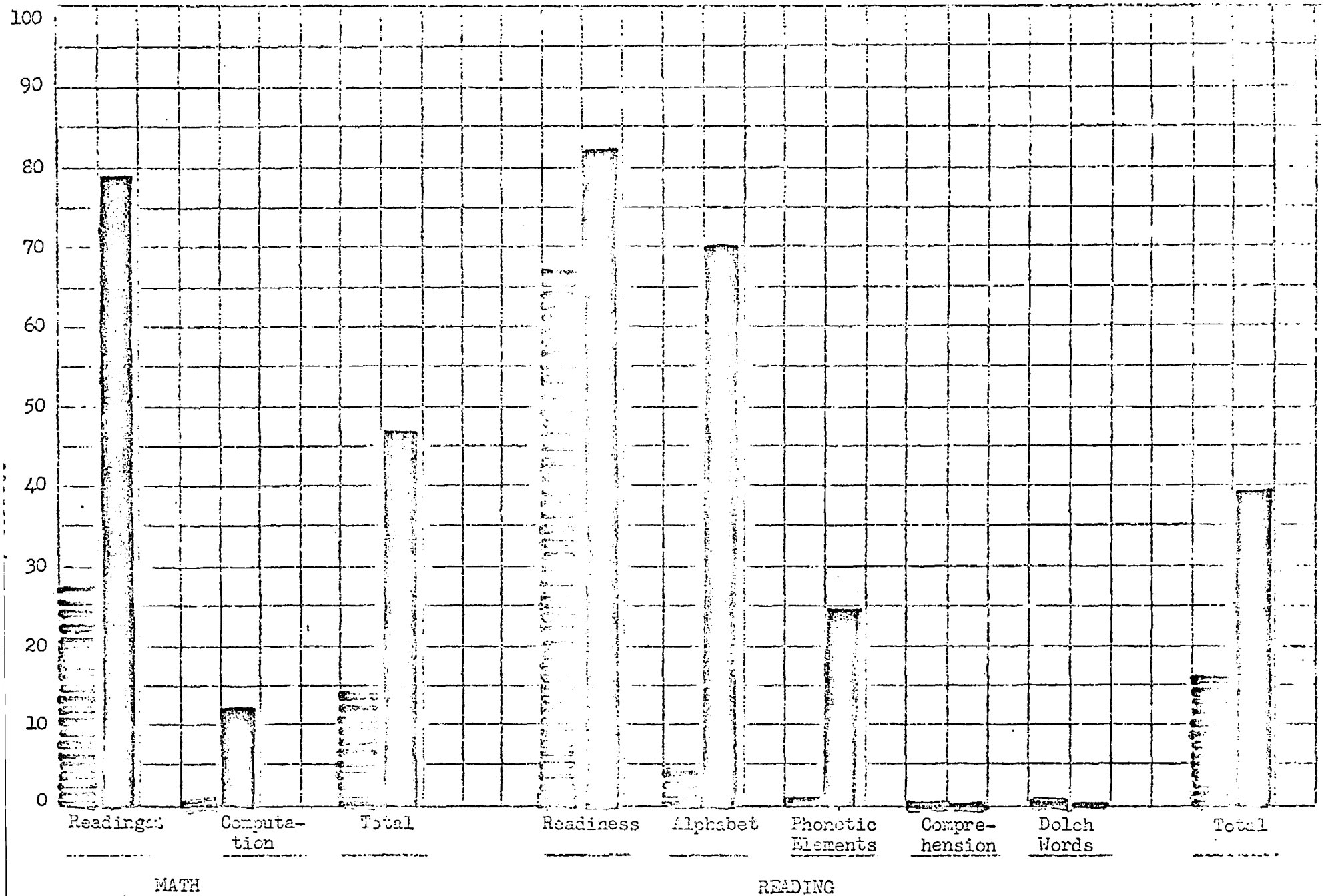


Figure 2

Brenda
age (1-1-73) 6-8



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