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To determine the advantages of interage grouping, 18 first graders (mean IQ 118.65) were assigned to two interage classes containing first, second, and third graders; 19 first graders (mean IQ 119.60) were assigned to two straight first grade classes. All children selected had been recommended by their kindergarten teachers as their brightest students. Both groups were given the Metropolitan Achievement Test, Primary I Battery in the fall and Primary II Battery in the spring. Students in the interage condition performed at a higher level on all achievement scales; group means were significant on word discrimination and arithmetic (p .01). Students selected as evidencing initial adjustment problems showed greater gains than their controls on all four scales. However, they achieved significantly lower scores on the California Test of Personality. The parents of children in both conditions responded favorably to questions concerning their children's reactions to school, their adjustments in and out of school, and their interest in reading. The parents of children in the interage program provided significantly higher ratings on the richness and variety of classroom experiences and the motivations provided to challenge the child to make use of his talents. The California Test of Personality revealed no significant differences in social adjustment of interage as opposed to straight grade classes. (Author/BB)

END OF YEAR REPORT
JUNE 1962

EXPERIMENTAL PROGRAM NUMBER A-47-61

EARLY IDENTIFICATION OF THE GIFTED THROUGH INTERAGE GROUPING

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Plainedge Public Schools
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FOREWORD

The research program concerned with Early Identification of the Gifted Through Interage classroom instruction is both a cross-sectional and longitudinal study. Within any year, students in interage and traditional classes are compared "cross-sectional" on a number of behavioral measures. However, it is our plan to follow these same students over a number of years, including their progress when they "graduate" into classes in which traditional teaching procedures are employed. Since only one year of the research program has been completed, the following report is necessarily incomplete. In addition, the techniques for evaluating the behavioral changes as a result of exposure to interage instruction are still in the process of development.

The present report is concerned primarily with evaluating differences in scholastic achievement among bright students assigned to interage and regular classes, determining whether or not students evidencing "adjustment problems" upon entrance into the first grade show greater gains in the interage class, and evaluating parental reactions to their children's school experiences.

A problem which will not be answered definitely on the present report is: "to what extent are we measuring the effects of an approach to instruction and to what extent are we, perhaps measuring the effectiveness of skilled and dedicated teachers?" This problem is not specific to this study but is a general problem encountered whenever different "methods" are investigated, e.g. lectures vs discussion techniques, psychoanalysis vs general psychiatric therapy, TV vs live instruction, etc. What we have done to minimize the influence of the "teacher"variable has been to select, as control teachers, two instructors acknowledged by supervisory personnel to be "outstanding first grade teachers."

SECTION I

CHARACTERISTICS OF THE INTERAGE CLASS:

In recent years, there have been numerous critics of "traditional" classroom teaching methods. Most of the criticisms have focused about the presumed inflexibility of the class as conventionally organized. More specifically, the conventional class - with its emphasis upon completing prescribed curriculum and achieving age level norms- fails to take full cognizance of individual differences among students. Thus, the "dull" student is exposed to experiences which are beyond his "level" and the "bright" student is placed in blinders and halters which prevents him from achieving his potential. A number of efforts have been initiated within recent years to "remove the halters", so to speak. Thus, intra-class and interclass homogeneous grouping has achieved widespread adoption in schools throughout the country. However, it is questionable that homogeneous grouping provides a final answer to the problem it was designed to answer, for the following reasons: (The criteria for grouping are crude and often unreliable, (2) the groupings are poorly understood by parents and compromises are sometimes made to satisfy irate parents, (3) the child tends to be "pigeon-holed" perhaps to a greater extent than in the conventional classroom, (4) teachers often vie for the "bright" groups and take a depreciatory attitude toward lower tracks, and (5) the net effect of homogeneous grouping is to substitute "group norms" for the age level norms of the conventional classroom. Consequently, the "blinders and halters" mentioned in relation to the traditional class are often found in modified form in the homogeneous class.

In recent years, there has been a renewal of interest in the "one-room-schoolhouse" concept of teaching. Terms applied to this concept have included "multi-level" and "interage"classroom. In the interage class, several age groups are simultaneously represented. Thus, erstwhile first, second, and third graders may comprise a single class. To achieve greater flexibility, some schools may employ "overlapping" interage

classes. Thus, there may be 1-2-3, 2-3-4. and 3-4-5 classes. Proponents of interage classes cite the following advantages which they believe accrue to the student participating in the classes: (1) each child is permitted to develop at "his own rate" in each of the subject-matter areas included in the curriculum; (2) emphasis upon achieving "age-level" norms mitigated. If the child is capable of advancing beyond these norms, he is actively encouraged. If on the other hand, he is not yet "ready" for specific learning material, he is not made to feel inadequate because of his "failure"; (3) the students are actively incorporated into the learning process by serving, at times, as the instructor. Thus, if a given student does not understand something, he is free to consult another student for advice; (4) since several "grade levels" are represented in a single class, there is no "promotion" at the end of the year. A student is merely assigned to the same or a different interage class. Where overlapping interage classes are employed, a slow third grade student may be assigned to the following year to a 2-3-4 class. Thus, the stigma of being "left back" with all its negative emotional overtones--is avoided.

In order to observe the dynamics of the interage class, the research director visited several interage classes over a period of time. In each instance, the visit was unannounced so that typical "slices" of the interage class could be observed. Based upon these observations, the research director compiled the following list of the characteristics of interage instructions. However, in citing the following as characteristic of interage classes, it must be made clear that the research director is not denying that many traditional classes share these characteristics in varying degrees. Nevertheless, whereas one or more of these features may be found in any given traditional class, they appear as a common core in the interage classes.

1. Emphasis upon initiative and independence of action. Mary T.* was reading a

*Where names and initials are employed in the report, they do not coincide with the [illegible] and initials of the children actually observed.

selection in front of the class. When she hesitated over a word, Tony S. quietly walked up to a dictionary, looked up the word, and read its definition to the class.

2. Encouraging cooperative attitudes toward learning. The research director was interviewing John S. concerning his attitudes toward the interage class. During the interview, he stated, "beside, if there is something I don't understand, I can ask Brian T. or Frances F. for help". Noting that Brian T. was a year younger than John S., the research director asked, "doesn't it embarrass you to seek help from a younger student?" John replied, "Oh no. We're here to help each other learn. Besides, when I ask him to explain something to me, I am helping him too because, if he can't explain it to me, he never really understood it to begin with."

3. Development of mature attitudes toward study and learning. Most students do not appear to regard the learning situation as a highly competitive affair in which they are vying for the teacher's approval. Indeed, when competition is observed, it appears to be related to seeing who can help other students the most."

4. Emphasis upon self-discipline rather than discipline from without. With the beehive of activity characteristic of the interage class, it would be easy for discipline to become a serious problem were it not for reliance upon internal rather than external controls. It was only on infrequent occasion that the resource director observed the teacher take an active role in class discipline. In each of these instances, a few words were sufficient to reestablish order.

5. Stimulation of intellectual interests- class discussion of a wide variety of topics are frequently held. These topics may range from current events (e.g. the Algerian crises) to discussing the meaning of a line of poetry. When a word is employed by one of the discussant which is not understood by another, there is no hesitancy about asking for a definition and/or consulting a reference book, if necessary. The general atmosphere in the classes appears to be characteristically one of keen

anticipation relating to intellectual pursuits.

6. Providing opportunities for creative expression. Projects frequently involve writing poetry and prose about familiar subjects. For example, in one class visited by the consultant (a 3-4-5- group) the class was involved in a group discussion of the characteristics of a short story. Upon completing the discussion, during which the students took copious notes, the students were then assigned the project of writing a short story.

7. Encouraging participation in activities beyond one's "age level". A student in 1-2-3 class, for example, is exposed to the curriculum of the first three grades. hen classroom assignments are placed upon the blackboard, the materials are graded difficulty. As soon as the student completes the work appropriate to his "grade el", he is permitted to advance into more advanced work. Thus, in one of the classes ted by the research director, "first grade" students were observed to be working on a lem involving complex numbers. On the other hand, while advancing to higher ls is encouraged, no onus is placed upon the student who is unable to undertake at a higher level. The emphasis is, "First master the work for which you are nsible. Then and only then may you advance to work at a higher level".

. Informal organization of classes. One of the most striking features of the ge class is the extreme fluidity of the classroom organization. Students are not ed to a given space in the classroom within which they are expected to remain given specific contrary instructions by the teacher. In the interage class, the ation of the class at any given moment is a function of the activity being pur- t the time. Thus, when the teacher is leading a group discussion in front of the the students move their chairs forward to form a relatively compact cluster. hen the class is divided into reading groups, the students will arrange them- n circular fashion in widely separated groups. A leader will then be selected

by the students in each group to whose responsibility it is to assign passages to be read aloud by other members of the group. The groups themselves are flexible in structure and will vary in composition from day to day according to the needs of the individual students.

9. Development of class "esprit". As a result of the above factors, the students in the interage class develop an unusual "esprit". In individual interviews, they commonly express such sentiments as "I love school," "my class is fun and very exciting", "I like the opportunity to be the teacher as well as the student."

Assuming the above characteristics to be typical of the interage setting but atypical in the traditional class, it is possible to formulate "predictions" concerning behavioral dimensions which will differentiate students in the interage class from students in the traditional class. Following is a partial listing of predictions which have been investigated in the present year and/or will be studied in future years.*

a. Bright students will demonstrate greater academic gains in the interage class because of the opportunity to extend instruction well beyond their grade level. In addition, by serving as "instructors" to other students, they will be better able to consolidate their learning experiences.

b. Students exhibiting initial adjustment difficulties - shyness, aggressiveness, etc. -- will make more satisfactory social adjustment to the interage class for the following reasons: (1) interage instruction is more individualistic than conventional instruction; (2) positive reinforcement for accomplishment is frequently administered whereas negative reinforcement - with its frequently undesirable consequences - is only witnessed on rare occasions, and (3) active cooperation in the learning process is encouraged among students.

All hypotheses will be formulated in terms of the "bright" student since the project is specifically concerned with the identification of the gifted child. However,

hypotheses could easily be formulated to include the "slow" child.

c. Academic gains of students exhibiting initial adjustment difficulties will be greater in the interage class. This hypotheses is based upon the view that better emotional and personal adjustment leads to generally more efficient and productive behavior. This increased efficiency and productivity should include scholastic achievement.

d. The attitudes of student toward school and toward instruction should be more favorable among interage students when compared to students in traditional classes.

e. Students in the interage class will demonstrate greater: (1) initiative; (2) self-discipline; (3) flexibility of thinking; and (4) creatively - these hypotheses stem from the view that the interage class provides a setting in which the above behaviors can occur and be rewarded by the instructor. These hypotheses are not investigated in the present report but will be examined in future years.

f. Students in the interage classes will develop better "social" attitudes as result of their exposure to a situation where cooperative attitudes toward learning re actively encouraged.

SECTION II

THE RESEARCH STUDY

The general purpose of the 1st year of the research program was to determine the effect of interage instruction on the scholastic achievement, attitudes, and personality characteristics of entering "first grade" students.

THE SAMPLE

Fifty kindergarten children were selected by their teachers as representing the "brightest" students in their classes. Permission was requested from the parents of each of these children for participation in the interage program. However, there were no guarantees that any specific child would be ultimately selected for the program. The forty children who received parental approval were then administered the Stanford-Binet Intelligence Scale during June 1961. The children were then rank ordered from highest to lowest I.Q. and then one member of each successive pair was randomly assigned to experimental and control conditions. The twenty children randomly selected for the interage program were placed in two first grade interage classes involving the 1st, 2nd, and 3rd grade students (10 per class). The twenty control students were placed in two straight grade classes (also, 10 per class).

Unfortunately, the unanticipated opening of a parochial school in the Plainedge district caused several of the students to drop out of the study. Where possible, these students were replaced by others highly recommended by their kindergarten teachers. The final number of students in the study were 18 and 19 in the straight and interage groups, respectively.

The mean Stanford-Binet I.Q.'s of the interage and straight grade groups were 118.65 and 119.60 respectively. The standard deviations, which were based upon unbiased estimates of population variances, were 11.34 and 9.20. Thus, it can

be seen that the two groups were highly comparable with respect to I.Q.

RESEARCH INSTRUMENTS EMPLOYED

Achievement Tests-The Primary I Battery of the Metropolitan Achievement Tests were administered to all students in the study in September 1961. These tests were administered to obtain initial measures of achievement on all students. In May 1962, Primary II Battery of the Metropolitan Achievement Tests was administered to all students. Primary II Battery was selected because, at the end of the year, most of the students would hit the ceiling of the Battery I scale.

PARENTAL ATTITUDE INVENTORY

In December 1961, the parents of all children participating in the study were asked to complete a questionnaire concerned with their reactions to the education of their children. The characteristics of this questionnaire will be more fully presented in Section 3 of this report.

THE CALIFORNIA TEST OF PERSONALITY

In order to obtain some evidence of Personality change, the California Test of Personality was administered in September 1961 and again in May 1962. The California Test yields a score for Total Adjustment as well as two part scores from Personal Adjustment and Social Adjustment.

It is recognized that with the age level of the children involved in the study, a personality test is at best a crude measure. In future years, additional techniques will be employed, viz. Piaget-type interviews, projective devices, and specially designed questionnaires.

TEACHER EVALUATIONS

Each teacher participating in the study was asked to prepare a brief biographical

sketch of each student. More specifically, the teachers were asked to comment upon Home Background, Academic Preparation, Academic Achievement, and Social Achievement. They were also asked to note any special adjustment problems (e.g. extreme shyness or anti-social behavior) which might affect classroom performance. The teacher evaluations were employed for purposes of selecting students with "adjustment" difficulties for further analysis.

STATISTICAL ANLAYSIS

The student t-ratio was employed to determine the significance of the difference between groups on all of the objective test results. Since the Parent Questionnaires do not meet the assumption for "normal curve" statistics, the Mann-Whitney U was employed to determine the significance of the difference between groups.

SECTION III

RESULTS

METROPOLITAN ACHIEVEMENT TEST

The Metropolitan Achievement Test is subdivided into four scales: (1) Word Knowledge, which measures word recognition abilities; (2) Word Discrimination, which measures a child's ability to select an orally administered word from among a group of similar words; (3) Reading, which measures a child's ability to comprehend sentences and paragraphs; and (4) Arithmetic Concepts and Skills, which provides a measure of the child's mastery of basic numerical and quantitative concepts.

Table (I) summarizes the results of the end-of-year administration of the Metropolitan Achievement Test, Form A, Primary II Battery.

	GROUP MEANS			
	Interage	Regular	t-Ratio	r-Value
Word Knowledge	22.789	18.057	1.99	$p > .05$
Word Discrimination	29.263	24.278	3.19*	$p < .01$
Reading	26.340	24.834	.43	$p > .05$
Arithmetic	59.422	48.722	6.16*	$p < .01$

Table I. Group Means of Interage and Regular subjects on four scales of the Metropolitan Achievement Battery.

Examination of Table I reveals that the Interage Group scored higher on all four of the scale of the Metropolitan Achievement Test. On two of these scales, (Word Discrimination and Arithmetic) the differences are significant beyond the .01 level. Thus, it appears that the interage setting produced superior performance of its subjects when compared to the straight classroom setting.

What is perhaps more impressive is the comparison of "grade equivalents" of the two

experimental groups. In Table 2 is summarized the "grade equivalent" of the group means for the interage and regular conditions.

	GRADE EQUIVALENT	
	Interage	Regular
Word Knowledge	2.8	2.4
Word Discrimination	3.2	2.6
Reading	2.6	2.5
Arithmetic	3.2	2.7

Table 2 Grade Equivalent of Group Means among subjects in interage and regular conditions.

Inspection of Table 2 reveals that the interage groups, taken as a whole, was performing well beyond its age level on all four scales of the Metropolitan Tests (grade 1.9 at time of testing). Of course, since the students were "preselected" for superior intelligence, it would be expected that they would perform beyond grade level. However, the grade level equivalent of the interage group was higher than the control subjects on all four scales. Indeed, in two of the scales, the first grade interage students were performing well into the third grade level. It appears, therefore, that the interage setting provides a basis for the better utilization of the superior intellectual talents of the gifted child.

THE TEACHER VARIABLE

As indicated earlier, a possible criticism of many studies aimed at comparing various "instructional methods" is that the "methods" are confounded with the teacher variable- i.e. a given method may be more successful because more gifted and dedicated teachers are employed in one condition. In the present study, we attempted to reduce any special advantage in this respect by employing, in the control condition

two teachers acknowledged to be "among the best in the district." Now, it might be argued, if the interage teaching procedures produce a special advantage above and beyond "teacher effect", one would expect no "interaction" between the teacher variable and the experimental effects. In other words, one would expect that the students in both classes of the interage groups would perform better than the students in both straight classes. On the other hand, if evidence of "interaction" were found, one might question the generality of the interage effects.

Table 3 summarizes the class means of all groups on the four scales of the Metropolitan Achievement Test.

SCALE	INTERAGE		STRAIGHT GRADE	
	Teacher A	Teacher B	Teacher A	Teacher B
Word Knowledge	24.33	21.40	19.33	16.78
Word Discrimination	31.22	27.5	24.77	23.77
Reading	33.44	27.40	27.22	22.44
Arithmetic	60.00	58.90	51.78	45.67

Table 3- Class means on 4 scales of Metropolitan Achievement Battery.

Examination of Table 3 reveals that the class means of both interage groups are higher than the class means of the straight grade classes on all four scales of the Metropolitan Achievement Test. Although these results are consonant with the view that the interage setting itself produced the gains, it is far from conclusive since only two teachers were involved in each condition. Future research, employing a greater number of teachers in each condition, should go a long way toward clarifying the role of the teacher in the interage condition.

COMPARISON OF STUDENTS EVIDENCING ADJUSTMENT PROBLEMS

It will be recalled that one of the hypotheses in the present investigation is that

students with adjustment problems would evidence greater gains in the interage than in the straight grade condition. This, hypothesis was based upon the assumption (as yet untested) that the interage setting is more conducive to effective personal and social adjustment than the straight grade class. To test this hypothesis, the teacher evaluations alluded to earlier in the report, were employed. Each report was carefully studied by the research director. When a given report clearly indicated that the child was experiencing personal and/or social adjustment problem, the full record of that child was selected for further analysis. For obvious reasons, no attempt could be made to quantify the "degree of seriousness" of the disturbance on such subjective and relatively incomplete evidence. The teacher evaluations were employed, then, only as the basis for locating students who, in the opinion of the teachers, posed initial adjustment problems of sufficient severity to warrant the inclusion of said information in the report. When such words and expressions as the following appeared, the child was identified as posing an initial adjustment problem: "The child was quite withdrawn and appeared to be afraid of the teacher," "Child was friendless at the beginning of the year," "He always seemed frightened and ready to cry-- and did cry-- quite often.

Based upon these teacher evaluations, the research director identified 11 students in the interage program who evidenced initial adjustment difficulties and 8 in the straight grade classes. The before-after change in the Metropolitan Achievement Tests was then determined for three of the scales. Changes in the Reading scale were not determined since most students obtained a score of zero at the beginning of the year. Since different batteries of the test were employed at the beginning and at the end of the year, the raw scores were all converted to standard scores. Consequently, the before-after changes shown on Table 4 represent changes in standard scores (or relative position on each testing.) The t-ratios reported on Table 4 are based upon a second order t-analysis of the difference scores.

MEANS OF
BEFORE-AFTER CHANGE
ON STANDARD SCORES

	Interage	Regular	t-ratio	p value
Word Knowledge	+ 6.454	+5.625	.37	$p > .05$
Word Discrimination	+14.455	+7.625	2.13	$p < .05$
Reading[1]	45.640	41.00	1.99	$p < .10$
Arithmetic	+10.364	+2.125	2.28	$p < .05$

Table 4- Before-after changes in mean standard scores among students evidencing initial adjustment difficulties.

From Table 4, it can be seen that both groups evidenced before-after gains in standard scores in the Metropolitan Achievement Tests. However, the gains were larger for the interage group on all scales. In two instances--Word Discrimination and Arithmetic-- the changes are significant at beyond the .05 level. On one scale-Reading-- the difference is significant at the .05 level. All probability values are based upon two-tailed rather than one-tailed tests.

Based upon these data, it appears reasonable to conclude that students evidencing initial adjustment difficulties show greater gains in scholastic achievement in the interage setting as compared to the straight grade class. This very important finding will have to be investigated in future years by employing more sensitive and quantificable measures of adjustment.

PARENTAL ATTITUDES

A most common report by visitors observing the interage class in action is that the children appear to be more enthusiastic about learning, enjoy the classroom activities, are more cooperative toward one another, and show greater initiative in the classroom situation. For example, when the research director was visiting one classroom, (consisting mainly of 6 and 7 year olds) the children were having a group discussion of several lines of a poem by Keats. "A thing of beauty is a joy forever. Its loveliness increases. It will never pass into nothingness." The children evidenced great spontaneity and considerable thought as they probed the meaning of these words. When one child questioned the definition of "nothingness", another child, without prompting, consulted the dictionary and proceeded to read the definition to the class.

Because observations of this sort appear to be the rule rather than the exception, it was felt that efforts should be made to develop some quantitative basis for determining differences among interage and regular classroom children on these important behavioral dimensions. Unfortunately, the age of the children in the program rules out any real possibility of obtaining reliable questionnaire information from them directly. However, it was felt that, as a first approach, the reaction of their parents might provide some useful information. Along these general lines, consequently, a nine point rating scale was developed to be administered to all parents of children involved in the program. The parents were asked to rate their children on the following items:

A. 1. How would you describe your child's feelings about school?

2. How often does your child volunteer information about his school experiences?

3. When he does volunteer information, do his comments reflect favorable or unfavorable attitudes toward school?

4. What effects do you believe your child's school experiences have had on each of the following?

a. Initiative

b. Social relations

c. Cooperation in home

d. Interest in reading

B. 1. How well is the school succeeding in educating your child?

2. Do you feel the school is providing sufficiently rich and varied experiences to motivate your child to learn?

3. Are you satisfied with the extent to which the school challenges your child to use his talents?

It was recognized that rating scales are fraught with difficulties which rule out their definitive use as a precise quantitative measure of differences among children in the two groups. For example, each parent undoubtedly approaches the questionnaire with a different set of values. Consequently, a rating of, say, 7 by one parent cannot be claimed to be equivalent to a rating of 7 by another parent. In addition, there is a strong tendency, already described by many researchers, for the respondent to develop a response set, e.g., selecting all intermediate ratings or selecting the same rating on all questions, without much regard for the questions themselves. As we shall see, the internal evidence indicates that the parents fell into neither of these patterns of responding. On the contrary, they demonstrated considerable selectivity and discriminability. In spite of these interpretive difficulties, the null hypothesis with respect to each scale is the same, viz., there is no difference in the median ratings of the two groups. Since the subjects were assigned to each condition in a non-biased fashion, any significant differences may be attributed to differences in the experimental conditions. Incidentally, the median is employed as a measure of central tendency since the ratings represent ordinal rather than cardinal measurement. The test of significance employed is the Mann-Whitney U. When ratings are employed as

criterion measures, a large number of ties are inescapable. Unless corrections are made in calculating U. the P value will tend to be underestimated. In other words, the test of significance will be more conservative than if corrections were made. In the statistical analyses reported below, the significance levels are based upon non-corrected data. Consequently, where significant differences are found, we may feel confident that the "true" probability value is lower than reported.

The median ratings and significance levels are shown in Table 5 for each comparison between the "interage" and "regular" respondents. In interpreting the results, it is important to recall that the "regular" teachers were selected because it was felt that they represented the finest primary teachers involved in regular instruction in t chool district.

	Median Ratings		
Item	Regular	Interage	Significance level of difference
1	8.7	8.8	n.s.
2	8.0	7.1	n.s
3	8.5	8.5	n.s.
4a	7.6	7.8	n.s.
4b	6.0	6.5	n.s.
4c	6.75	6.70	n.s.
4d	8.9	8.8	n.s.
1	7.5	8.5	n.s.
2	6.0	8.6	$p < .02$
3	6.75	8.5	$p < .02$

ble 5- Median ratings of Interage and Regular parents on 10 scales of Attitude uestionnaire and significance of difference in median ratings. (16 of 20 respondents regular class and 20 of 20 respondents in interage class).

Two characteristics of the parental ratings are immediately apparent on examination Table 5. First, the parent did not respond simply by selecting intermediate values each rating scale. Indeed, the extremely high ratings characterizing most of the re- nses suggest a high degree of satisfaction with teacher effectiveness in both

experimental conditions. Secondly, the parents demonstrated considerable discriminability in responding to each item. Thus, the median ratings per item show considerable dispersion. Inspection of Table 5 reveals that significant differences exist with respect to two items, viz., B-2 and B-3. Significantly enough, both of these items involve the parents' judgments concerning the extent to which the classroom situation motivates and challenges their children. In response to item B-1--Do you feel the school is providing sufficiently rich and varied experiences to motivate your child to learn?--the median rating of "regular" parents was 6.0, whereas the "interage" parents responded with an extremely high median rating of 8.6. Similarly, in item B-2--Are you satisfied with the extent to which the school challenges your child to use his talents?--the difference in median ratings was large and statistically significant.

It would appear, then, that the following conclusions are warranted. (1) In general, the parents of children in both conditions responded favorably to questions concerning their children's reactions to school, their adjustments in and out of school, and their interest in reading. The unexpectedly high ratings in both conditions probably reflect the general excellence of the teachers participating in the study. (2) The parents of children in the interage program provided significantly higher ratings on the two items dealing with (1) the richness and variety of classroom experiences and (2) the motivations provided to challenge the child to make use of his talents. It is tentatively suggested that these discrepancies reflect important differences in interage and regular instruction.

CALIFORNIA TEST OF PERSONALITY

As pointed out earlier, the two bases for estimating personal and social adjustment--Teacher Evaluation and scores on the California Test of Personality--represent rather crude devices for assessing personality, particularly at the age level of the student involved in the study. Nevertheless, teacher evaluations were used as the basis for determining which student entered the first grade with "adjustment problems". To

determine whether or not these two "measures" agreed with one another, the mean "total" adjustment scores of students classified by their teachers as presenting initial adjustment problems were compared to the mean adjustment scores of students not so designated. These results are summarized in Table 6.

	TEACHER CLASSIFICATION			
	Presenting Adjustment Problem	Not Presenting Adjustment Problem	t-ratio	p-value
Mean	68.47	79.81	3.20	p .01
n	19	16		

Table 6- Group means on California Test of Personality students classified as representing "initial adjustment problems" and students not so classified.

Based upon the results appearing in Table 6, it may be included that there was agreement between the classification based upon teacher evaluations. The difference between the means of the two groups--11.34,-- is significantly at well beyond the .01 level. Thus, insofar as the California Test of Personality represents a valid basis for estimating the adjustment of 1st graders, it may be concluded that the teacher evaluations were also valid bases for estimating adjustment problems.

One of the hypotheses formulated - Section I of the present report was that students in the interage conditions would make greater gains in Social Adjustment than students in the straight grade classes.

Table 7 present the means obtained by the interage and straight groups in the Social Adjustment Scale of the Personality Test in September 1961 and May 1962.

	GROUP MEANS			
	BEFORE	AFTER	DIFFERENCE	p-VALUE
Interage	38.17	38.56	+.39	$p > .05$
Straight Grade	39.35	39.76	+.41	$p > .05$

Table 7- Before-after means obtained by the interage and straight grade groups on the Social Adjustment Scale of the California Test of Personality.

It can be readily seen that the group means remained remarkably stable over both testing periods. The slight gains made by each group do not approach statistical significance. In addition, the second order student t-ratio comparing the gains of the no groups is a fractional value which, of course, does not approach statistical significance. There is new basis, therefore, for inferring differential improvement on social adjustment in the two experimental groups. Consequently, the hypothesis that the interage group would show greater gains on social adjustment than the straight grade groups is not confirmed.

It is not felt that this finding represents the final word on the hypothesis under investigation. As already pointed out, the California Test of Personality, at best, a crude basis for assessing personality changes among the age group in question. In future years, additional techniques will be developed for assessing personality changes among students in the early grades. Several of these techniques are discussed in Section 4 of the present report.

SECTION IV

SUMMARY, CONCLUSIONS, AND FUTURE RESEARCH PLANS

The preceding report represents the results of the 1st year's investigation concerned with "Early Investigation of the Gifted Through Interage Grouping". The study was concerned with investigating the following specific hypotheses:

1. Students in interage classes will evidence greater scholastic gains than students of similar ability enrolled in straight grade classes. Scholastic gains were measured in terms of the four scales of the Metropolitan Achievement Battery-Word Knowledge, Word Discrimination, Reading, and Arithmetic.

2. Students evidencing initial adjustment problems will show greater scholastic gains in the interage than in the straight grade class.

3. Students in the interage classes will show greater interest in and motivation for learning, as judged by parent reactions.

4. Students in interage classes will show greater gains in Social Adjustment as measured by the California Test of Personality.

Forty students, who had been selected by their kindergarten teachers as "bright", were assigned to four classes on the basis of Stanford Binet I.Q. scores. Two of the classes were Interage and two were straight grade. Class assignments were such as to produce approximately equal distributions of I.Q.'s in each condition. Attrition, due primarily to the opening of a parochial school in the Plainedge School District, reduced the n's to 19 in the interage condition and 18 in straight grade.

The Metropolitan Achievement Battery and the California Test of Personality were administered in September and May of the school year. In addition, parents were requested to rate their children's attitudes on a number of items relating to first grade experiences. Finally each teacher prepared individual evaluations on each student, with special emphasis upon initial adjustment to school.

Teachers in the control groups were specifically selected as representing "the

The results of the 1st year's investigations were as follows:

1. Students in the interage condition performed at a higher level on all scales of the Metropolitan Achievement Battery. On two of these scales--Word Discrimination and Arithmetic- the group means were significant at beyond the .01 level. In addition, both interage classes performed better than both control classes on all four scales.

2. Students selected as evidencing "initial adjustment problems" showed greater gains than their controls on all four scales. The differences were statistically significant on two scales- Word Discrimination and Arithmetic. In addition, the differences approached statistical significance on the Reading Scale.

3. The California Test of Personality confirmed the validity of the above selections based upon teacher evaluation. Students selected as evidencing "initial adjustment problems" achieved significant lower scores on the Total Scale of the Personality Test.

4. The parents of children in both conditions responded favorably to questions concerning their children's reactions to school, their adjustments in and out of school, and their interest in reading. The high ratings in both conditions probably reflect the general excellence of the teachers participating in the study.

The parents of children in the interage program provided significantly higher ratings on the two items dealing with (a) the richness and variety of classroom experiences and (b) the motivations provided to challenge the child to make use of his talents. These discrepancies may well reflect important differences in interage and regular instruction.

5. The California Test of Personality revealed no significant differences in Social Adjustment of interage as opposed to straight grade classes.

In general, the results of the 1st year of the interage project provides strong evidence of the possible superiority of interage instruction in achieving superior performance of gifted children and providing maximum intellectual challenges. It does not seem reasonable that these differences can be ascribed to the "teacher variable.". ever, this possibility cannot be ruled out. Future research should further

SECTION V

FUTURE RESEARCH PLANS

I. Hypotheses to be Tested or Questions to be Answered-These hypotheses stem directly from the observations reported in Section I of this report.

1. Children in interage classes have more opportunity to develop leadership qualities than children in regular classes.
2. Children in interage classes show greater initiative than children in regular classes.
3. Children in interage classes have more opportunities to develop a sense of responsibility than children in regular classes.
4. Children in interage classes show greater ability to carry on sustained independent work than children in regular classes.
5. Children in interage classes do as well academically as children in straight grade classes.
6. Children in interage classes develop as well socially and emotionally as children in straight grade classes.
7. Parents of interage children tend to be more satisfied with the challenge the school is giving their children than the parents of the children in the straight grade classes.
8. Children of different age levels provide a greater challenge and stimulus to each other than do children in the regular class.

The program: An interage class is one consisting of children of different ages. The spread is from two to three years - e.g., 6,7,8 year olds are in one class, and 9,10 year olds are in another class. This year we have six interage classes as follows: 1) two classes for the 1, 2,3 grade group, 2) two classes for the 2,3 grade group, 3) one class for the 4,5 grade group, and 4) one class for the 5,6 grade group. For the school year 1962-63 we shall have the following Interage classes:

2 classes	-	1st, 2nd & 3rd grades
2	"	1st & 2nd grades
3	"	2nd & 3rd grades
3	"	4th & 5th grades
1 class		5th & 6th grades
1	"	Seminar

The purpose of the interage classes is to meet the intellectual needs of each individual child so that he may learn at his own pace regardless of age or grade level. This kind of grouping deals with individuals without trying to fit them into chronological or grade level categories. Children are constantly being moved into group situations that will best suit their academic and social needs. If a first grade child is able to read on a higher level, he is permitted to do so. If a second grade child is capable of doing fourth or fifth grade arithmetic, he is given work commensurate with his ability.

Group work is also stressed. The areas that lend themselves to large groups- phonics, social studies and science- are dealt with in that manner. Here again, mixed age-levels frequently work on projects together. For example, mixed age-groups may hear book reports together, or work together on a common arithmetic experience. New concepts are introduced to the whole group, and developed with the children who are ready. Other children are exposed and store some of this knowledge for future use.

In selecting children for interage classes, no attempt was made to group children according to any single criterion. Children were selected with the following factors being considered: 1) children who work well together 2) kindergarten children who were apparently ready for reading 3) children who were above average in ability for he grade level (present classes have a preponderance of bright children - average Q. is 119) 4) an equal number of children at each age level to avoid gearing the ogram to any age level.

The age and ability spread in an interage class forces the teacher to plan work varied levels in all academic areas to a greater extent than she would plan a aight grade class. Young children are inspired by the advanced work they see ng done in class and work more enthusiastically. On the other hand older children ume leadership roles, and strengthen their knowledge by helping the younger children. use individualized progress is encouraged, children need not wait for everybody re learning more. The children who are in the third year of a 1,2,3 grade situation ermitted to do work at their own level whether it be 2nd, 3rd, 4th or 5th grade . No academic restrictions are placed on the children. In this way, an enthusiasm arning is maintained.

he philosophy of the interage class is not one of "pouring" information into en's heads and having them give back the "right" answers all the while block- t the right questions.. Rather, it is a philosophy of instilling a desire to , to ask, to investigate. The aim is not to push children "ahead" but to give broader base for learning in a cooperative rather than a competitive atmos-

Children will remain in interage classes throughout the elementary school. will be placed in a 3,4 grade group or a 4,5 grade group depending on his needs. e will be permitted to work at his level-this is the philosophy of all inter- ses- it will not matter how advanced he is at the end of "grade 3".

next teacher will also give him work commensurate with his ability, whether it be , 4th, 5th or 6th grade level. Therefore this should not be a boring situation for child. Each child who goes through an interage program should enter junior high hool with the best possible quality education an elementary school can offer. Each ld's horizons should be wider from having been exposed to many age levels within ch interage classroom where he has been placed.

The research which will be undertaken will be a comparison of academic, social, d emotional growth of bright children in interage classes and in straight grade asses. Also, a questionnaire will be prepared to determine whether or not bright hildren who are placed in interage classes are more enthusiastic about learning han are bright children in a straight grade class.

Twenty children will be placed in two interage classes (1st, 2nd and 3rd grades combined) where each child will be allowed to learn at his own pace, and may work in any subject at any level at which he is capable of working. Twenty other children of similar ability will be placed in straight first grade classes where children learn reading, arithmetic, spelling, and other academic subjects outlined for the 1st grade level.

In order to permit valid comparisons between interage classes and straight grade classes, no special advantages will be given to the interage students. Thus, if special consultants are available to interage teachers, the same consultants will be available to the straight grade teachers. The same considerations also apply to equipment and materials.

b. <u>The sample:</u> Twenty bright children (ten in each of two groups) will continue in the interage classes, consisting of grades one, two and three. This will constitute the experimental group. The twenty remaining bright children (ten in each of two groups) will remain in their present groups, but will be placed in two straight second grade sses with high calibre experienced teachers. This will constitute the control group.

An additional thirty-two first grade children will be placed as follows in September 1962:

16 (8 in each class) in two interage classes (1st, 2nd & 3rd graders)

16 (8 in each class) in two straight first grade classes

The kindergarten, interage, and straight first grade teachers will select the children. Kindergarten children selected will be listed from the brightest to the lowest and placed in four comparable groups. The same interage and high calibre first grade teachers will be used again. There will be a total of seventy children in the entire project.

c. <u>The data:</u> (1) Use of standardized tests-achievement tests will be administered to subjects in the experimental and control groups to determine if there are any significant differences in academic growth among bright children placed in interage classes and bright children placed in regular classes. Questionnaires will be given to children and parents to determine attitudes toward and enthusiasm for learning. Sociometric tests will be administered to determine social growth and adjustment. All scores will be charted on Allometric Charts throughout the elementary school years.

In order to collect such data the following will be used: 1) California Achievement Tests, 2) Instruments (to be prepared by Dr. Runyon) to determine both student's attitudes toward and enthusiasm for learning and parental attitudes concerning the educational programs offered their children, 3) California Test of Personality, 4) Mental Maturity Tests will be administered to the original control and interage groups, 5) Tape recordings will be analyzed for information concerning discipline, responsibility and leadership.

(2) Use of non-standardized techniques- it is felt by the investigators that the standardized tests available for measuring scholastic achievement and emotional stability are, at best, only rather crude ways of assessing the types of behavorial

ges which take place under exposure to interage instruction. Achievement tests h are available, for example, measure the accomplishments of children relative to in norms or expectancies appropriate to a given age group. It is our view that nterage class exposes the child to educational experiences which are generally idered "beyond" the ability of children at certain age levels. Consequently, dardized tests fail to tap the very abilities and achievements which we feel re- ent the basis for the superiority of the interage setting. In addition, personality ntories have only questionable validity for children in the age groups involved e study. For these reasons, a number of additional techniques for assessing ffectiveness of interage instruction will be incorporated into the study.

(a) Case History Methods: A complete reassessment of the Cumulative Records be undertaken with the purpose of determining which information will be most use- n understanding the personal background and educational experiences of the child. e the information has been decided upon, all kindergarten teachers who will be ributing students to both the interage and regular classes will receive special uctions on the preparation of the Cumulative Records. The records will then be as the basis for classifying individuals into various categories. Students within ain of these categories will then be randomly assigned to interage and regular ses. For example, if a total of 8 children evidence obvious emotional problems, will be assigned randomly to interage and four to the regular class. Follow-up ies, which will include documentation from the Cumulative Record, will ascertain extent to which changes in scholarship, emotional adjustment, social adjustments, , take place. Such methods, although admittedly subjective to a great extent, go far toward specifying the tapes of behavioral changes which take place in interage as opposed to the regular classroom situation.

(b) "Piaget" Type Interviews: The interview techniques described by the famous nch Psychologist, Jean Piaget, will be adapted to elicit information concerning tudes toward school, enthusiasm, initiative, and social and emotional adjustments. se interviews will be conducted by a trained but impartial observer.

(c) "Naturalistic" Observation and Naturalistic Experimentation: One of the im- tant objectives of the research program is to arrive at some specification of the ys in which the teaching techniques employed in the interage classroom differ from se employed in the regular classroom. It is also important to discover the types responses which are elicited in the student by the different techniques employed. accomplish this, both regular and interage classes will be visited by research rsonnel and observations will be made in terms of certain categories which will be ecified in advance. In addition, hidden microphones will be connected with tape corders which will be in operation during certain selected periods. Content analyses the "tapes" should provide additional information concerning differences between gular and interage instruction. In addition, certain "Piaget like" experiments may performed. To illustrate: It is our feeling that the interage situation is one hich develops both leadership and "followship" characteristics in the children part- ipating in the interage class. Consequently, the children are not overly dependent on the teacher for maintaining both order and organized activities. One technique r investigating this hypothesis would be for the teacher to be "called" suddenly ut of class. A leader might be appointed or the class might be instructed to con- nue whatever it was doing until the teacher returned. An analysis of the tape re- ordings, made during the absence of the teacher, might provide valuable information oncerning class discipline, responsibility, cooperation, etc. The number of experiments" of this type are virtually without limit and should go a long way toward pecifying the characteristics of interage as opposed to regular instruction.

(d) The Statistical Analysis: Because of the wide variety of different phenomena hich will be observed and the variety of techniques which will be employed, the tatistical analyses will be equally varied. Statistical analyses will include the tudent ratio, the Mann-Whitney U, and the rho correlation coefficient. In each case, he statistical analyses employed will be appropriate for the numerical scales nplicit in the data and will meet the assumptions required for the statistical analysis.

The study has two different aspects from the point of view of statistical analysis- the analysis change in the various standardized indeces of academic achievement s a function of exposure to the experimental conditions and 2) the analysis of change the "non-standardized" dimensions of behavior referred to in paragraph (2) on page 8.

The statistical analysis of change in the standardized indeces will involve uch techniques as covariance analysis and the student t-ratio where appropriate. o determine the significance of the difference between parental attitude in the two xperimental groups, the Mann-Whitney U will be employed. The choice of this tatistical test is dictated by the fact that our measure of parental attitudes involve rdinal scaling methods.

In the second facet of our statistical analysis - i.e., the analysis involving on-standardized techniques--the specific form of statistical test must depend upon e nature of the data collected. To illustrate, we previously mentioned the "Piaget" pe of interview which will be conducted by an impartial observer at the beginning nd at the end of each school year. Following each interview, the observer will rate ch child on such dimensions as emotional adjustment, attitudes toward school, ease establishing rapport with the interviewer, etc. The two experimental groups will en be compared in terms of the median ratings on each of these dimensions. The Mann hitney U will be employed to assess the significance of the differences.

We might further illustrate our statistical analysis of the "non-standardized" techniques by reference to the Cumulative Records which as we already indicated, will be kept on each child. Let us say that, following a careful appraisal of each Cumulative Record, it is found that 10 children pose serious problems of emotional adjustment. As indicated earlier, five of these children would be assigned randomly to the control group and five to the experimental group. Following studies conducted over the course of several years, would employ both the Cumulative Records and the personal interviews to reveal the extent to which these emotional problems were alleviated or aggravated within these children.

(e) The schedule: The forty bright children who are in the present research project will be placed in two interage and two straight second grade classes (10 in each class). In September 1962, the following tests will be administered to all pupils: 1) Sociometric Tests, 2) California Tests of Mental Maturity, 3) California Achievement Tests 4) Parent Questionnaires to determine attitudes. Tests 1,2 & 4 will be administered again in May 1963, 5) Tape recordings will be made frequently throughout the program, 6) Anecdotal records will be kept on each child throughout the year.

Thirty-two bright first graders will be placed in two interage and two straight grade classes. They will receive the following tests in September and May: 1) Metropolitan Reading Readiness, 2) California Achievement Tests 3) Sociometric tests.

A P P E N D I X

A. Regulations of the State Council of Education Concerning Early Entrance of Beginners in Accordance with Provisions of Act 184, Approved July 27, 1953.

B. Questionnaire to Parents of Early Entrants under Act 312 (1951).

C. Questionnaire to Parents of Early Entrants 1963.

D. Student Interview Questionnaire of Early Entrants.

E. Letter to School District from Supervisor of Special Education Recommending Early Entrance.

F. Letter to School District from Supervisor of Special Education Not Recommending Early Entrance.

G. Statewide Questionnaire on "Early Entrance Practices" by the Special Education Division of Department of Public Instruction.

H. Local School Board Resolution Form Concerning the "Admission of School Beginners Less Than Five Years and Seven Months of Age."

A copy of each of these is attached to the original study.