THE RELATIONSHIP OF LANE GROUPING TO THE SOCIOECONOMIC STATUS OF THE PARENTS OF SEVENTH GRADE PUPILS IN THREE JUNIOR HIGH SCHOOLS

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This is to certify that the

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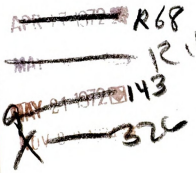

ABSTRACT

THE RELATIONSHIP OF LANE GROUPING TO THE SOCIOECONOMIC STATUS OF THE PARENTS OF SEVENTH GRADE PUPILS IN THREE JUNIOR HIGH SCHOOLS

by Roger Hugh Kariger

The Problem

This study was designed to determine if an X, Y, Z system of lane or track grouping, supposedly based on achievement and ability, operated independently of the socioeconomic status of the parents of the seventh graders in three junior high schools.

This laning system had been installed in the junior high schools of a city of over 160,000 when the schools were changed from an 8-4 to a 6-3-3 plan of organization in 1959. The schools in this study are identified as School 1, School 2, and School 3. The seventh grade enrollments in May, 1962, were 220, 234, and 295, respectively. This grade was selected because of the availability of the data plus the fact that the lane placements, through sixth grade teacher recommendations, reflect the laning role of teachers and principals of both the elementary and junior high school.

This study is concerned with placement in laned subjects, lane transfers, and placement in non-laned classes in relation to the socioeconomic status of the parents.

Procedure

The seventh grade pupils were classified in each school into

upper, middle, and lower groups by socioeconomic scores based on Duncan's Modification of the North-Hatt Scale, by Stanford reading grade equivalents, and by Stanford arithmetic grade equivalents. In accord with city-wide recommendations, Y lane pupils were expected to be working from a year below to a year above grade level. At the end of the seventh grade, the Y pupil could be expected to score within the range from 7.0 to 8.9 on a Stanford test with the X lane pupil scoring above and the Z lane pupil scoring below this range. Pupils were judged by the researcher to be correctly or incorrectly placed according to these standards.

It was determined by the chi square technique if X, Y, Z laning, lane transfers, and placement in non-laned classes were significantly related at the .05 level to the socioeconomic status of the parents.

Conclusions

The designers of the junior high school program had hoped to:

1. Increase achievement by grouping homogeneously in basic subjects with an individual program for each pupil

2. Provide flexibility and a method for adjusting incorrect placements through lane transfers

3. Hedge against a possible degree of socioeconomic segregation by grouping heterogeneously in non-laned subjects.

In practice, there was a question about the accomplishment of these objectives in the three schools studied. Although perhaps one

concedes a number of pupils could reasonably be expected to be outside their correct lanes according to a post-Stanford achievement test, incorrect placements were related at the .05 level of significance to the socioeconomic status of the parents in at least one lane in each of the schools.

Although no socioeconomic bias was indicated at the .05 level in lane transfers, there were only three and four-tenths lane transfers per one hundred placements.

In one of the three schools, a significant relationship existed at the .05 level in the non-laned social studies classes.

The evidence found in the statistical analysis led to the conclusion that a significant relationship at the .05 level existed in the three junior high schools between the seventh grade laning practices and the socioeconomic status of the parents.

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CHAPTER I

STATEMENT OF THE PROBLEM

Most American citizens accept the concept that everyone should have equality of opportunity for the kind and quality of education that best suits his needs and those of society. Socioeconomic mobility is a cornerstone of a democratic society. Today extensive education is a prerequisite of socioeconomic mobility. The public schools are expected to be agents in helping all individuals achieve their maximum potential. Therefore, schools are expected to play a significant role in furthering the opportunity for socioeconomic mobility for all their pupils.

The Problem

The Board of Education of a Midwestern city of over 160,000 is attempting to improve its educational program and at the same time meet the problems of increased enrollment by changing from an 8-4 to a 6-3-3 plan of organization. Since 1959 six new junior high school buildings and two remodeled buildings have been completed or are in progress.

As part of the attempt to improve the instructional program, grouping in X, Y, Z lanes or tracks has been instigated in the junior high schools in science, language arts, and arithmetic. Each pupil is given an individual program with the expectation that he will be placed in each laned area according to his ability and achievement in the particular subject. The principal of the junior high school is

responsible for programming incoming seventh graders on the basis of information supplied by the feeder schools. The evaluation form lists the Stanford Achievement Test[1] grade equivalents in reading and arithmetic, the sixth grade average reading and arithmetic grades, a rating of the pupil's personal characteristics, the homeroom teacher's recommendation as to lane placements, and the Otis[2] intelligence quotient. The permanent record of grades and test results covering the period of the pupil's enrollment in the feeder school is also provided for his folder.

The pupil who ranks very high, strictly average, or very low on the achievement continuum presents an easy task. Placement of the borderline pupil poses the difficult decision. The fact that each junior high school receives students from two or more feeder schools with probable different mean levels of achievement and socioeconomic statuses seems to add to the difficulties. At any rate, in addition to the normal problems encountered in ranking pupils, inconsistencies in teacher evaluations and recommendations within and among feeder schools appear to exist. While the principal keeps these several points of information in mind, he is faced with the practical problem of keeping the numbers in the three lanes at figures which permit the division of the lanes into classes reasonably even in size.

To provide for flexibility in grouping, teachers are encouraged

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[1]Truman L. Kelley, et al, "Stanford Advanced Arithmetic Test, Form K," and "Stanford Advanced Reading Test, Form K," World Book Company Standard Tests, January, 1961 (Chicago: Harcourt, Brace, & World, Inc.).

[2]Arthur S. Otis, "Otis Group Intelligence Test, Beta A," World Book Company Standard Tests, 1961 (Chicago: Harcourt, Brace, & World, Inc.).

to recommend a lane change immediately if they detect an error in placement, unusual pupil growth, or lack of growth. It is possible that a teacher may be reluctant to part with the good pupil and not overly anxious to receive the bothersome or uninterested one. At any rate, principals observe that the number of recommendations for lane changes submitted for their approval are not numerous. Changes in lanes are made at any time although they occur most often at the end of grading periods.

While the pupils are to be grouped homogeneously in science, English, developmental reading, and arithmetic, the intent is to group them heterogeneously in the non-laned subjects of social studies and music.

Much thought and study was devoted to the merits of homogeneous versus heterogeneous grouping before adopting this laned, non-laned program. It would seem the hope is to achieve the claimed academic benefits of homogeneous grouping cited by writers such as Woodring[3] and, at the same time, provide the opportunity for extensive association of pupils of the various socioeconomic statuses and levels of achievement deemed desirable by such writers as Bettelheim.[4]

Need for the Study

Since an announced objective of this junior high school program is to lane the pupils in X, Y, Z groups in certain subjects so that a

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[3]Paul Woodring, A Fourth of a Nation (New York: McGraw-Hill Book Co., Inc., 1957), 131.

[4]Bruno Bettelheim, "Segregation: New Style," The School Review, LXVI, No. 3 (Autumn, 1958), 251-72.

fast, average, or slow moving pupil will be working in a group of pupils of similar speed, a study of the grouping in actual operation is in order.

If pupils are grouped as homogeneously as possible on the basis of academic achievement, pupils with the prescribed academic achievement from all statuses of society can reasonably be expected to be laned correctly in comparable percentages from all levels of society, unless a factor or factors other than achievement are operating. A similar situation could be expected to prevail in lane transfers. To assure equal educational opportunities for every pupil in the school, the school and its social system are expected to operate in such a manner that no arbitrary limitation through its laning system exists for any one pupil or segment of pupils. In short, the laning system can reasonably be expected to be operating independently of the socio-economic status of the parents.

Another understood objective of the program is to provide each pupil with the opportunity for association with pupils of various social statuses and levels of ability and achievement through the method of heterogeneous grouping in the non-laned classes. The researcher proposes to determine if there are differences in the distribution and concentration of seventh grade pupils by the socioeconomic statuses of parents in the non-laned classes in social studies and music.

It is hoped some light will be shed on these questions by this research as a step in the evaluation and improvement in the operation of the junior high school program in the city.

Theoretical Assumptions

1. The school is a functioning social system.

2. The school social system is characterized by a pattern of stratification which may or may not correspond to the stratification patterns of the community in which it functions.

3. When practiced, lanes or tracks are one aspect of the stratification system.

4. The principal and teachers make decisions which determine the lane or track placement for students and thus influence stratification patterns of the student population of the school social system.

5. Lanes or tracks may correspond to and reinforce the community stratification patterns, or may operate independently of community stratification patterns.

6. The stratification patterns--particularly lanes or tracks--of the school social system affect the nature of the education obtained by the students.

7. Since the curriculum material and pupil interest in learning for the various lanes are not identical, student opportunity to achieve and prepare for various positions and statuses in society may be affected by laning.

8. Maximization of school achievement increases the range of opportunities for the individual students.

9. The grouping as done in these junior high schools is based on the assumption that improved learning will occur for all students when laned in the basic subjects.

10. The grouping as done in these junior high schools is based on the assumption that grouping in non-basic subjects should be on a heterogeneous basis in order to provide the opportunity for students to learn to know and get along with pupils of various levels of achievement and statuses in society.

Operational Assumptions

1. Duncan's Modification of the North-Hatt Scale[5] is an acceptable instrument for determining the socioeconomic status of parents and indirectly that of their children. The scale is based on the occupation of the father or male head of the household.

2. Based on the classification according to Duncan's Modification of the North-Hatt Scale, it is appropriate to combine the socio-economic statuses into upper (70 and up), middle (30-69), and lower (1-29) for this study.

3. The seventh graders in three all-white junior high schools provide a suitable population for this research.

4. In regard to the non-laned areas, a study of the grouping in social studies and music will answer the significant questions concerning the non-laned subjects in the seventh grade program.

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[5]Albert J. Reiss, Jr., Occupations and Social Status (New York: The Free Press of Gencoe, Inc., 1961), Chapters 6, 7, and Table B-1 of Appendix B prepared by Otis Dudley Duncan.

5. Since few lane changes are made after March 30, pupils enrolled in lanes and classes from March 30 to June 8, 1962, comprise the logical groups for the study. The record of lane changes includes those made at any time during the seventh grade year.

6. The achievement test grade equivalents from the Stanford reading and arithmetic tests given in May, 1962, during the seventh grade are the most objective criteria available to the researcher for determining possible discrepancies in pupil lane placement. The limitations of the validity of any test or tests as a measure of the correctness or incorrectness of pupil lane placements are recognized. However, Stanford tests are assumed to be of somewhat comparable validity for the upper, middle, and lower socioeconomic groups and therefore suitable for use in this research.

7. A pupil should be a Y lane pupil when he is working at a level from approximately a year below to a year above grade level. At the end of the seventh grade this is established as a range from 7.0 to 8.9, as measured by a Stanford reading or arithmetic test. An X lane pupil is one who scores above the Y range. A Z lane pupil is one who falls below the Y range.

Hypotheses

H: No significant relationship exists in three junior high schools between the seventh grade X, Y, Z laning practices and the socio-economic status of the parents.

S-H 1: Discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

S-H 2: Lane transfers in science, English, developmental

reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

S-H 3: Grouping in the non-laned classes of social studies and music is not significantly related to the socioeconomic status of the parents.

Delimitation

The study is limited to seventh grade pupils who enrolled at the beginning or at any time during the 1961-1962 school year, provided they continued to be enrolled during the period from March 30, 1962, to June 8, 1962, inclusive, in one of the three selected junior high schools.

Definition of Terms

Lane and track are used as synonyms.

Language arts is understood to include the two subjects of English and developmental reading.

The abbreviation used for socioeconomic index or status, or socioeconomic group, is S E I.

Basic subjects refer to science, English, developmental reading, and arithmetic.

Plan of the Thesis

Chapter I explains the nature of the problem as well as a statement as to the need for the study. Chapter II reviews the related literature. Chapter III indicates the procedure and methodology used. Chapter IV presents an analysis of the data. Chapter V includes the summary, conclusions, and implications and recommendations.

CHAPTER II

RELATED LITERATURE

A review of the related literature is essential for better understanding and insight into this study. It seems advisable to present commonly accepted views of the role of the school in society as well as to note the school's attempt to fulfill these expectations through its curriculum and organization.

Role of the School in Society

Development of Talents. Throughout the literature the reviewer discerns the feeling of an imperative need for maximum development of the collective talents and abilities of American youth. Brookover expresses this emphatically by saying, "Our economic progress, our defense strength, and our position in the world depend on an increasing supply of highly educated people, both in quantity and in quality."[1] He adds that our professional, technical, and managerial people have become our most numerous group with every prospect for the percentage to increase with the increasing productivity and complexity of our industrial system. Extensive education is a prerequisite to secure and and perform the highly skilled tasks associated with these white-collar positions. Even the blue-collar jobs are requiring more and more

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[1]W. B. Brookover, Presidential Address to the Ohio Valley Sociological Society, May, 1962.

education while most of our unemployed are those with little formal education.

Allocation of Human Resources. Kahl states:

> The school system has become the major institution not only for training people but also for selecting and placing them. A man starts in the occupational world according to the level he has achieved in the educational world.[2]

Parsons[3] and Brookover[4] both emphasize that the school has become society's principal medium for the selection and allocation of our youth for various professional and occupational roles. In turn, Barber[5] notes a person's socioeconomic status is largely determined by his occupation. This allocation process begins as pupils are assigned to slow, average, or fast reading circles and continues on through repeated evaluations of pupil performances, report cards, and later through counseling as to choice of courses and curricula.

Woodring[6] is representative of the school of thought which assumes that early identification of gifted children is possible and proposes differential curricula beginning at an early age. Critics such as Bettelheim[7] doubt that such programs will result in increasing

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[2]Joseph A. Kahl, The American Class Structure (New York: Rinehart & Co., Inc., 1957), 293.

[3]Talcott Parsons, "The School as a Social System: Some of Its Functions in American Society," Harvard Educational Review, XXIX, No. 4 (Fall, 1959), 297-318.

[4]Brookover, Presidential Address to the Ohio Valley Sociological Society.

[5]Bernard Barber, Social Stratification (New York: Harcourt, Brace, & Co., 1957).

[6]Woodring, A Fourth of a Nation.

[7]Bettelheim, The School Review, LXVI, No. 3.

achievement and may well lead to a new elite created through an educational caste system. Obviously, marked differences of opinion exist concerning the most desirable programs to develop the talents of our youth.

Maintenance of Equality of Opportunity. John W. Gardner in a report of the President's Commission on National Goals writes:

> Ultimately education serves all our purposes--liberty, justice, and all other aims--but the one it serves most directly is equality of opportunity. We promise such equality, and education is the instrument of which we hope to make good the promise. It is the high road of individual opportunity, the great avenue that all may travel.[8]

How ever much the majority of Americans may applaud these objectives, a review of the literature reveals that doubt exists in the minds of a number of investigators as to the reality of their attainment. In his analysis of Middletown in 1925, Lynd[9] observes the people are very much concerned that their children be educated. Yet many of the lower class children drop out. Lynd believes the school system with its middle class expectations and values tends to discourage attendance by lower class pupils. In his return to Middletown in 1935, Lynd[10] finds much the same conditions except for greater obstacles, associated with the depression, in the paths of the working-class people.

In 1944 Warner, Havinghurst, and Loeb in their study of Yankee City contend the schools serve to restrict upward mobility. They

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[8]Goals for Americans (New York: The American Assembly, Columbia University, Prentice-Hall, Inc., 1960), 81.

[9]Robert S. and Helen Merrell Lynd, Middletown: A Study in American Culture (New York: Harcourt, Brace & Co., 1929), 181-222.

[10]Robert S. and Helen Merrell Lynd, Middletown in Transition (New York: Harcourt, Brace & Co., 1937), 204-241.

observe:

> Whatever figure of speech we use, the school system appears to be a sorting device with various selective principles operating. In addition to the principle of intellectual ability, there are such principles of selection as economic status, social class, and social personality.[11]

They add that the lower socioeconomic groups are apt to be uncomfortable in school since their way of life does not conform to the school's middle class social standards.

The study of Elmtown finds differential treatment of the upper and lower social classes in the school. Hollingshead reports that the youth of the lowest class finds his "background and prestige positions are such that he is made to feel unwanted in the classroom, on the playground, or in the clubs and extracurricular activities that are an essential part of the school situation."[12]

It is possible these descriptions and observations paint the picture too dark. A study conducted by Gottlieb[13] of a sample of universities in the United States reveals that over half of the graduate students in social sciences, natural sciences, and the humanities came from lower or lower middle class backgrounds. Fisher[14] points out there is some danger of developing a stereotype of the lower class pupil. He says many of these lower socioeconomic class pupils do show an interest

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[11]W. Lloyd Warner, Robert J. Havinghurst, and Martin B. Loeb, Who Shall Be Educated? (New York: Harper & Brother, 1944).

[12]August Hollingshead, Elmtown's Youth (New York: John Wiley and Sons, 1949), 358.

[13]David Gottlieb, "Processes of Socialization in the American Graduate School (unpublished Ph.D. dissertation, University of Chicago, 1960).

[14]Robert J. Fisher, "Who is This Lower-Class Child?", Journal of Educational Sociology, XXXIV (March, 1961), 309-11.

in school, do strive to achieve, and do behave in accord with middle class values.

Literature Concerning Grouping and Curriculum

Historical Perspective. In reviewing the writings of numerous writers it becomes apparent that the degree of homogeneity in grouping which the school should attempt to achieve is a basic question. Cook[15] details steps in the history of attempts at homogeneity by citing the McGuffey Readers introduced in 1837 as the first graded textbooks, the first eight-grade school in 1848, grouping of pupils in the eight grades in one room rural schools by 1870, and emphasis on retensions even into the 1920's. He says the 1920's and 1930's witnessed an attempt to achieve even greater homogeneity within the classroom by increased use of ability grouping. Detroit Public Schools, a pioneer in this movement, used X, Y, Z Laning based on intelligence scores as early as 1920. Baker[16] refers to the 1920's and 1930's as a period of excessive ability grouping.

Otto[17] in 1954 writes that the period beginning with the 1940's found a shift away from ability grouping toward a growing concern for the development of well-rounded, emotionally and socially adjusted boys

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[15]Walter W. Cook, "Classroom Methods: The Gifted and Retarded in Historical Perspective," Phi Delta Kappan, XXXIX (March, 1958), 249-55.

[16]G. Derwood Baker, "What Crucial Problems Confront the Junior High School Principal?" A report to the Forty-Fifth Annual Principals' Convention. National Association of Secondary-School Principals, XLV, Part I (April, 1961), 181-82.

[17]Henry J. Otto, The Elementary School Organization and Administration, 3rd ed. (New York: Appleton-Century-Crofts, Inc., 1954), 199-203.

and girls with lessening concern for academic superiority. This is reflected in the view identified by Gruhn and Douglass as the modern view in which "the curriculum is thought to consist of the total controlled environment created under the direction of the school for the purpose of stimulating, influencing, and contributing to the wholesome growth and development of boys and girls."[18] However, the arrival of the space age and the present-day cold war has been accompanied by a deepening interest in academic excellence and attempts to achieve it through the mechanics of grouping. The literature indicates the renewed interest in ability grouping under a variety of names such as "cluster grouping,"[19] "cross grouping,"[20] "tracks,"[21] and--as used in this study--"lanes" or "laning."

Some Commonly-Held Views of Ability Grouping. The editor's note in Clearing House observes, "Leading research specialists say there is much feeling but practically no valid research to support one or another method of grouping over all other methods."[22] This does not prevent some educators and writers from having pronounced opinions on

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[18]William T. Gruhn and Harl R. Douglass, The Modern Junior High School (New York: The Ronald Press, 1947), 89-191.

[19]D. J. Kincaid and T. M. Epley, "Cluster Grouping," Education, LXXXI (November, 1960), 136-39.

[20]Jeff West and Callie Sievers, "Experiment in Cross Grouping," Journal of Educational Research, LIV, No. 2 (October, 1960), 70-72.

[21]Dan J. Hull, "Curriculum Design--Strength and Weaknesses of the Track System." A report to the Forty-Fifth Annual Principal's Convention. National Association of Secondary-School Principals, XLV, Part I (April, 1961), 286-87.

[22]Clearing House, Editor's note concerning "The Dexter Plan for Ability Grouping" by Jack W. Humphrey, XXXV (March, 1961), 423.

the subject. Typical statements are given herein.

Buell[23] says a below average teacher can do a better job teaching homogeneous groups. He believes it results in an easier teaching situation leading to more effective learning, that teaching methods and materials can be better adapted, that it is more challenging for the able pupils, and that slow pupils have a greater opportunity to react and interact. He points out that practice supports the wisdom of his position as evidenced by results of a questionnaire indicating that three-fourths of the schools in the Philadelphia area are grouped by general ability in academic subjects in grades 7, 8, and 9. He questions the research supporting heterogeneous grouping.

Mott[24] espouses ability grouping as he points to his years of experience and observation as evidence for his support of the system. He says democracy does not mean equal in every respect. It is a favor neither to the high nor low ability pupils to require them all to go through the "common mold." He illustrates his view by stating that heterogeneous grouping is comparable to asking a swimming teacher to teach a class of individuals of widely varying ability and achievement. He asks how such a teacher could help all without neglecting some if a few were experts, some beginners, and some were paralytics and paraplegics. He believes homogeneous grouping is the sensible way to organize either group.

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[23]Clayton E. Buell, "How Much Homogeneous Grouping in the Junior High School?", National Association of Secondary-School Principals, XLIV, Part II (April, 1960), 257-69.

[24]Kenneth Mott, "The Case for Ability Grouping," National Association of Secondary-School Principals, XLV, Part II (November, 1961), 53-62.

Ellis[25] points out that homogeneous grouping makes possible both vertical enrichment--such as algebra in the eighth grade, and horizontal enrichment--such as going into the subject in greater depth. He observes that for the first time some pupils average or below have the opportunity for leadership when in a classroom grouped homogeneously.

Loomis objects to homogeneous grouping on the grounds that children may feel stigmatized when placed in slow groups, that teachers often are reluctant to teach slow classes, and that it is undemocratic since it tends to accentuate social stratification. However, she qualifies the criticism somewhat by adding that research in the Colfax School in Pittsburgh "indicated acceptance and rejection patterns were more marked within an ability group than between ability groups."[26]

Baker objects strongly to extreme homogeneous grouping as follows:

> We profess to value the dignity and worth of each personality, but we do violence to this principle when by administrative arrangements, we say to eleven and twelve year olds, "We have tested you and found you lacking in intelligence," or "You are only average," or "You are bright and potentially talented." We can grade eggs without affecting their quality, but children are dynamic, perceptive, and responsive. They respond to our estimate of them. It is necessary to make adjustments for individual differences, but experience and research have amply demonstrated that ability grouping and sectioning by intelligence is not the way.[27]

He adds that he thinks grouping by interests a wiser course in seventh

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[25]George J. Ellis, "How Much Homogeneous Grouping in the Junior High School?", National Association of Secondary-School Principals, XLIV, Part II (April, 1960), 259-62.

[26]Mary Jane Loomis, "The Right Child in the Right Classroom," National Educational Association Journal, XLVIII (September, 1959), 17-18.

[27]Baker, National Association of Secondary-School Principals, XLV, Part I (April, 1961), 181-82.

and eighth grades, while subject choices begin to do grouping less painfully in the ninth grade.

Findings of Selected Research on Homogeneous Grouping. West and Sievers[28] report on a plan of grouping in Dade County, Florida, schools in which 218 fifth and sixth grade pupils were removed from their regular classrooms each forenoon to be sent to special teachers for instruction in academic subjects. They returned to their regular rooms for the afternoons. The study of twenty-eight of the pupils was continued in the seventh and eighth grades. Sociograms and Iowa Tests indicated no loss in social relationships and significant gains in academic achievement.

Lovell[29] reports "The Bay City High School Experiment" in which five hundred pupils were divided into equal groups. The 250 in the experimental homogeneous groups were divided into groups of approximately 30, with the best 30 in the subject in one class, the next 30 in the second class, and so on. In English the homogeneous groups achieved better as measured by standardized test. In algebra and biology there was no significant difference between the homogeneous and heterogeneous groups. He said there was no effect on social acceptance although the experimental group developed a more positive attitude toward school. He admitted there was no way to measure the effects of the teachers' strong bias for the homogeneous grouping which existed at the beginning and continued to exist to the end.

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[28]West and Sievers, Journal of Educational Research, LIV, No. 2 (October, 1960), 70-72.

[29]John Lovell, "The Bay City High School Experiment," Educational Leadership, XVII (March, 1960), 383-387.

Van Wagenen[30] found that a homogeneous group of pupils with I Q's 120 or higher did not result in higher achievement compared with similar pupils taught with average children. He concluded that the failure to show any benefits may have resulted from the failure to enrich or change the program for the selected group.

Barthelmess and Barthelmess,[31] in the evaluation of ability grouping in five elementary schools in Philadelphia, state the evidence is significantly in favor of homogeneous over heterogeneous grouping in the skill subjects of reading, English, and arithmetic for the slow, medium, and fast groups.

Justman[32] reports the selection of a group of children with I Q's 130 or above for an acceleration program in which the selected group was given the three years of junior high school in two years. The acceleration by one year was accompanied by some gain in academic achievement and a significant superiority to matched pairs in normal progress groups.

Herr[33] relates another acceleration study in which pupils with I Q's of 120 or more completed grades 7 and 8 in one year and were then promoted to the ninth grade. There were no adverse effects in their

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[30]M. J. Van Wagenen, "The Effect of Homogeneous Grouping upon the Quality of Work of Superior Children," Educational Method, VI (February, 1927), 240-47.

[31]Boyer P. and Harriet Barthelmess, "An Evaluation of Ability Grouping," Journal of Educational Research, XXVI (1932), 284-94.

[32]Joseph Justman, "Academic Achievement of Intellectually Gifted Accelerants and Non-Accelerants in Junior High School," School Review, LXII (1954), 142-50.

[33]William A. Harr, "Junior High School Accelerants and Their Peers in Senior High School," School Review, XLV (1937), 1186-95 and 289-99.

scholastic achievement when they were studied in high school. While there were no outstanding differences, the differences that did exist slightly favored the accelerants. There was no observable difference socially, in health, in attendance, and a slight increase in extracurricular participation. The accelerants did in some cases exhibit more neurotic tendencies, but Herr questions this result because of the failure to measure this tendency at the beginning of the study. He felt the neurotic pupils probably had the characteristic at the beginning of the program.

Summaries of Certain Reviewers of the Research Literature on Homogeneous Grouping. Wilhelms and Gibson[34] state their review of the research literature on homogeneous grouping causes them to conclude that there is no significant improvement in the student mastery of subject matter. Any improvement, if any, is so minute as to be insignificant. Any gains are limited to the dull with definite advantages for the mentally retarded.

Wrightstone[35] states that experts disagree about ability grouping whether based on I Q, achievement, or teacher grades. Organizing into three tracks reduces the range only 15 to 17 per cent.

Cook says, "The idea that the process of schooling must consist of homogeneous groups of pupils receiving uniform instruction by mass education techniques from uniform textbooks is the axiom which prevents

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[34]Fred T. Wilhelms and Dorthy Westly Gibson, "Grouping: Research Offers Leads," Educational Leadership, XVIII (April, 1961), 410-13 and 476.

[35]J. Wayne Wrightstone, "What Research Says about Class Organization for Instruction," National Education Association Journal, XLVI (April, 1957), 254-55.

constructive approaches to the problem of variability in the classroom."[36] He adds not only is there variability of traits within any one individual but also marked heterogeneity within any group. Cook concludes even when grouping is done under the most favorable conditions on the basis of achievement in reading and arithmetic, variability will be reduced only twenty per cent. When X, Y, Z grouping is used, the extreme X and Z groups will overlap approximately 80 per cent. Thus, the range in achievement would be 6.4 years in reading ability instead of 8.0 in a sixth grade. In other areas such as writing, music, art, and spelling the reduction in variability is practically nil. If grouping is to be done, he recommends that it be on an individual subject basis.

Otto reports, "Experimental studies of ability grouping have been fraught with such difficulties relating to the many variables to be controlled and the diffused concepts about grouping that it can hardly be said that ability grouping has been experimentally evaluated."[37]

Otto arrives at these conclusions:

1. Evidence slightly favors ability grouping when adaptions are made in methods and materials

2. Most teachers prefer it

3. Confusion exists as to how materials and methods should be adapted

4. It is best for the dull, next best for the average, and least helpful for the bright--in fact frequently harmful for the last group

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[36]Cook, Phi Delta Kappan, XXXIX (March, 1958), 249-55.

[37]Otto, 199-203.

5. It is not clear in which subjects and grades ability grouping is most helpful

6. There is no conclusive evidence in areas other than knowledge and skills

7. Parents normally favor it

8. The variability in achievement with three groups is about 83 per cent as great as in unselected groups, with two groups the variability about 93 per cent as great.

Ekstrom, in an extensive review of the research, summarized as follows:

> It can be concluded that controlled experimental studies comparing the effectiveness of homogeneous and heterogeneous grouping, as evaluated by student achievement, showed a great variety of experimental design and no consistent pattern of results. Many experiments failed to control the type of teaching and to provide differentiation of teaching according to ability levels. Poor experimental design, such as the use of available data only and the use of matched pairs of subjects on unwarranted assumptions of similarity, made many studies less effective.
>
> In experiments that specifically provided for differentiation of teaching methods and materials for groups at each ability level, and made an effort to push bright homogeneous classes, results tended to favor homogeneous groups.[38]

Curricular and Grouping Recommendations. Gruhn and Douglass[39] point out that no serious problem of correlation of subjects existed in the traditional seventh and eighth grades when one teacher taught all subjects. However, Baker[40] states excessive departmentalization in the

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[38]Ruth B. Ekstrom, "Experimental Studies of Homogeneous Grouping: A Critical Review," School Review, LXIX (Summer, 1961), 223.

[39]Gruhn and Douglass, 89-191.

[40]Baker, National Association of Secondary-School Principals, XLV, Part I (April, 1961), 181-82.

1920's and 1930's increased the problems of curriculum and school organization--a condition which he says is with us again today. He recommends that the seventh grade be a transition period from the sixth grade homeroom. He suggests block scheduling for the major portion of the school day plus having one teacher teach a group for a block of time.

Noall and Bell's[41] description of the experiment in core curriculum at Weber County, Utah, is illustrative of the attempt to correlate subjects under departmentalization. Language arts and social studies are scheduled consecutive periods under the same teacher in an attempt to merge the areas. Mott[42] refers to this approach as the fusion of two subjects in the block period.

Conant[43] visited 237 junior high schools in 23 states as the basis for a number of observations and recommendations. He recommends that English, mathematics, science, and social studies be taught one period daily to seventh and eighth graders. Pupils should be grouped in three levels in these academic subjects with the majority in the middle lane. He thinks all seventh and eighth grade pupils should be grouped heterogeneously for instruction in music, art, physical education, home economics for the girls, shop for the boys.

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[41]Matthew F. Noall and Tarrol H. Bell, "Core Curriculum at Weber County, Utah," National Association of Secondary-School Principals, XLIV, Part I (January, 1960), 141-47.

[42]Mott, "Language Arts--Social Studies Fusion in the Junior High School Block Period," National Association of Secondary-School Principals, XLIV, Part I (March, 1960), 124-31.

[43]James B. Conant, Education in the Junior High School Years (Princeton, New Jersey: Educational Testing Service, 1960), 1-46.

Selected Junior High School Plans. Cochran[44] reports a lane grouping plan in use in Kalamazoo, Michigan, for grades 7, 8, and 9. Students in each grade are laned in slow-moving, average, and fast-moving groups in language arts and arithmetic with 20, 60, and 20 per cent of the pupils in the respective lanes. Eighth and ninth graders are each divided into two lanes in science. Rigid selection criteria are not used as an attempt is made to consider the total needs of the pupil in this placement. A pupil may be in a fast group in one subject and in a slow group in another. In the evaluation a great deal of overlap is found in achievement, as measured by standardized achievement tests, with from 5 to 33 1/3 per cent of the pupils in the average lane exceeding the mean of the fast-moving groups.

While this is not a carefully controlled study, the test results slightly favor the homogeneous grouping plan. He summarizes his evaluation by saying parents feel the flexible grouping plan helps their children, teachers believe the plan makes very little difference in results but approve its use, but that "flexible grouping does not make much difference" in achievement.

Humphrey[45] identifies the plan in use at the Dexter Junior High School in Evansville, Indiana, as "The Dexter Plan." The pupils in each of grades 7 and 8 are divided into three levels in English and arithmetic largely on the basis of standardized tests. Transfers from lane to lane are flexible to the extent that a pupil may move up or down at any time

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[44]John R. Cochran, "Grouping Students in the Junior High School," Educational Leadership, XVIII (April, 1961), 414-19.

[45]Jack W. Humphrey, "The Dexter Plan for Ability Grouping," Clearing House, XXXV (March, 1961), 423-26.

as decided by the teachers involved. However, most changes occur at the end of grading periods. Grades in the fast-moving groups are usually A's and B's, the average groups B's and C's, with the slowest groups usually getting C's, D's, and some F's.

The teachers consider the advantages to be as follows: unnecessary to neglect the advanced students, grouping range narrowed, student competition keener, little difficulty with discipline, student interest high, slow students feel free to speak up without ridicule, subject matter can be geared to the child, more creative work in all classes because of less fear of ridicule, remedial activities not interfered with by disciplinary problems, and pupils happier because they can more easily cope with teacher demands.

He notes the disadvantages as: some parents upset, pupils changing from class to class do not have the same instruction all year, teachers have to make three preparations instead of one for three classes, and the plan requires extra administrative time for testing, conferences, and lane changes.

It should be noted that the Kalamazoo and Dexter junior high school plans are quite similar to the plan used as a basis of this study.

Summary

In conclusion, although there is wide difference of opinion as to how best to assure the opportunity for an excellent education for every child, today there is an increased interest in achieving the objective. Many are turning to ability grouping in the expectation that this administrative device will increase achievement for pupils thus

grouped. Research on ability or achievement grouping is inconclusive. However, a review of the literature in this field seems to indicate a slight improvement in pupil achievement, especially if pupils are grouped by ability in the specific subject and if materials and teaching methods are adapted to the group.

CHAPTER III

PROCEDURE AND METHODOLOGY

A resume of the procedure in the collection, processing, and analysis of the data should help the reader as he follows the progress of this research. Preliminary plans were formulated early in 1960 with the 1961-1962 school year selected as the period for collection of the data.

This chapter will be organized into five main headings: the cooperation of school people and the collection of the data, classification of pupils, I B M processing, analysis of data, and statistical methods to be employed to test the major and sub-hypotheses.

Cooperation of School Officials, Teachers, and Pupils and the Collection of Data

The researcher began by securing permission of the superintendent, assistant superintendent, and the junior high school principals in the city. They not only willingly consented but expressed the hope that such a study would be valuable in the evaluation of the laning practices.

Three of the eleven junior high schools were selected. While all three are inside the city limits, schools identified in this study as 1 and 3 appear to be suburban in respect to population. Pupils from school 2 appear to be from lower income homes in comparison.

Although much of the information needed was available from the regular school records, the principals and assistant principals of the selected schools exerted special care in the attempt to have all information complete. In addition to making all regular records available, they noted lane transfers on the pupil program cards to assist the researcher.

Although in most cases the occupation of the father was on the student permanent record, the information was not in sufficient detail to be used as the primary source for assigning the S E I scores. Therefore, the researcher patterned an occupational questionnaire[1] after a section of a sheet entitled "Your Educational Plans"[2] which accompanies the "Pupil Record of Educational Progress" test published by Science Research Associates, Inc. Pupils completed the questionnaire under the direction of homeroom teachers and assistant principals. Several of the teachers voluntarily edited pupil answers and wrote clarifying comments. Thus, the researcher had carefully completed questionnaires as well as the official records for comparison. As a result, he believes he was able to assign S E I scores with an acceptable degree of accuracy.

The researcher recorded the following information:

1. School number

2. Pupil number

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[1]See Appendix A.

[2]"Your Educational Plans," Sheet No. 7-2563, (Chicago: Science Research Associates, Inc., 1961).

3. Otis mental ability score

4. Stanford Advanced Reading and Arithmetic Tests, Forms K and J grade equivalents

5. Lane placements in the basic subjects

6. Lane transfers with the direction of the changes

7. Assignments to non-laned classes in social studies and music.

This data was recorded in code to facilitate transfer to I B M cards.

Classification of Pupils

Classification by Socioeconomic Index. The researcher used Duncan's Modification of the North-Hatt Scale[3] as the basis for the assignment of a socioeconomic score or index to each pupil. The pupils were then arbitrarily grouped into upper, middle, and lower socio-economic classes as shown on Table 1 for the purposes of this research.

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[3]Reiss, 263-75.

TABLE 1

SOCIOECONOMIC CLASSIFICATION
USED IN THIS RESEARCH

Coded	Duncan's Scale	Researcher's Rating of S E I
1	90-99	
2	80-89	Upper
3	70-79	
4	60-69	
5	50-59	Middle
6	40-49	
7	30-39	
8	20-29	
9	10-19	Lower
10	0- 9	

Classification by Achievement. While Form K of the Stanford reading and arithmetic tests had been given to these pupils as sixth graders in May, 1961, principals appear not to have let the results play the major role in making lane placements.

The Stanford Tests in reading and arithmetic, Form J, given in May, 1962, are the tests referred to throughout this study for determining if the pupils were in the correct lanes as seventh graders during their last eight weeks of school. The researcher uses the reading test, Form J, to evaluate the placements in science, English, and developmental reading, the arithmetic test, Form J, to evaluate placement in arithmetic as reported in Table 2. Since these tests were given at the close of the school year, the results had no effect on laning decisions during the 1961-1962 year.

TABLE 2

RECOMMENDED LANE PLACEMENT OF SEVENTH GRADERS BASED ON MAY, 1962, STANFORD ACHIEVEMENT TESTS, FORM J, GRADE EQUIVALENTS

Coded	Stanford Grade Equivalents	Recommended Lane Placements	School Rating
1	9.5 & up	X	High
2	9.0-9.4		
3	8.5-8.9		
4	8.0-8.4	Y	Average
5	7.5-7.9		
6	7.0-7.4		
7	6.5-6.9		
8	6.0-6.9		
9	5.5-5.9	Z	Low
10	5.0-5.4		
11	4.9 & down		

Obviously, pupils testing X lane who are incorrectly placed are assigned too low; Z lane testing pupils can be incorrectly laned in an upward direction only; Y lane testing pupils can be placed incorrectly either upward or downward.

I B M Processing

Tabulation of Data. Following key punching of the data on I B M cards, the researcher determined the S E I distribution of the pupils in each school. He further determined the correctness and incorrectness of lane placements in relation to S E I in each subject in each school using the appropriate Stanford test as the criterion. He then tabulated the lane changes and recorded the S E I distribution of pupils in social studies and music in each of the classes in the schools.

Statistical Method and Procedure to be Used in the Analyses of the Data

The Major Hypothesis. The major hypothesis is:

H: No significant relationship exists in three junior high schools between the seventh grade X, Y, Z laning practices and the socio-economic status of the parents.

The major hypothesis is tested through the testing of three sub-hypotheses.

Sub-hypothesis 1. The first sub-hypothesis is concerned with the placement of pupils in the laned subjects and if such grouping is significantly related to the socioeconomic status of the parents. The sub-hypothesis is as follows:

S-H 1: Discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

It should also be noted that each child was involved in four separate, independent decisions regarding his lane placements since each pupil was to be laned according to ability in each of four separate and distinct subjects. This fact makes it possible to combine the lane placements or transfers in all subjects within the school and test for S E I relationship with chi square. Whether or not a significant relationship is found, the researcher will proceed to use chi square to test for a significant relationship in each school in the separate lanes and in the combined lanes in each laned subject.

It should be noted that S E I categories are combined when there are insufficient numbers for a meaningful chi square test. In discussing the use of chi square with six or more cells, Siegel states, "Only after he (the researcher) has combined the categories so that

fewer than 20 per cent of the cells have expected frequencies of less than 5 and no cell has an expected frequency of less than 1 can the researcher meaningfully apply the chi square test."[4]

If a significant relationship is found between laning and the socioeconomic status of the pupils, additional chi square tests are used to determine where in the lane or lanes the S E I bias exists.

Sub-hypothesis 2. The second sub-hypothesis is concerned with the lane transfers which were intended to keep the laning process flexible so that a pupil could be moved upward or downward when his achievement or lack of achievement merited such transfer. The sub-hypothesis is as follows:

S-H 2: Lane transfers in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

Chi square will be used to determine if a significant relationship exists between lane transfers and socioeconomic status of the parents. A preliminary count indicates that transfers are too few to be tested by individual subjects within a school. Consequently, it will be necessary to test the total transfers within each school to determine if S E I bias exists.

Sub-hypothesis 3. This sub-hypothesis is concerned with the socioeconomic distribution of pupils in the non-laned subjects of social studies and music. This sub-hypothesis is:

S-H 3: Grouping in the non-laned classes of social studies and music is not significantly related to the socioeconomic status of the parents.

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[4]Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw-Hill Book Co., Inc., 1956), 178.

As previously mentioned in Chapter I, an understood objective of this junior high school program is to provide the opportunity for the various socioeconomic levels of society to be associated in the non-laned areas. Testing this sub-hypothesis by chi square tests should determine whether or not this objective was achieved for seventh graders in the three schools.

CHAPTER IV

ANALYSIS OF THE DATA

The analysis of the data is presented in four sections. First, the populations of the three schools are compared with the socioeconomic distribution of the male workers in the nation to provide some understanding of S E I characteristics of the schools. Second, sub-hypothesis 1 is tested by chi square to determine if incorrect placement in laned subjects is significantly related to the socioeconomic status of the parents. Third, sub-hypothesis 2 is tested by chi square to determine if there is a significant relationship between lane transfers and the socioeconomic status of the parents. Fourth, sub-hypothesis 3 is tested by chi square to determine if placement in the non-laned subjects of social studies and music is significantly related to the socioeconomic status of the parents.

Comparison of the Populations of the Three Schools by S E I with the Population of the Nation

As a preliminary step in the analysis of the data, perhaps some insight as to the nature of each of the three schools would be provided by comparing the socioeconomic distribution of their pupils with that of the nation on Duncan's scale. Table 3 indicates the percentages in each S E I grouping used by the researcher.

TABLE 3

COMPARISON OF THE SOCIOECONOMIC DISTRIBUTION OF THE THREE SCHOOLS WITH THE DISTRIBUTION IN THE NATION[1]

SEI	Duncan's Scale	National Percentage	School 1 Percentage	School 2 Percentage	School 3 Percentage
Upper	70-99	7.3	13.7	5.1	22.3
Middle	30-69	33.0	53.1	43.8	50.1
Lower	0-29	59.7	33.2	51.1	27.6
		100.0	100.0	100.0	100.0

It is noted that the socioeconomic scores of the parents of the pupils in all three schools are above the national average with the exception of the percentage of upper S E I in School 2. It is evident that School 3 has the highest mean S E I with School 1 second and School 2 third.

Analyses by Chi Square of the Laning in the Basic Subjects in the Three Schools to Test Sub-hypothesis 1

As stated in Chapters I and III Sub-hypothesis 1 is as follows:

S-H 1: Discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

Each school is analyzed separately. As the first step in the analysis, the chi square test is applied to the combined X lanes of the four basic subjects to determine if discrepancies between pupil lane placements and achievement are significantly related at the five per cent level to the socioeconomic status of the parents. The combined

[1]Reiss, 147. (The national percentages are the male experienced labor force according to the 1950 census.)

Y lanes of the four subjects are then tested, followed by a similar test of the combined Z lanes. Next the X, Y, Z lane placements in the school are added together and tested. Hereafter this step will be referred to as the testing of the corresponding and the combined lanes in a school. The results of these tests are reported for School 1 in Table 4, for School 2 in Table 11, and for School 3 in Table 16.

Whether or not a significant relationship at the .05 level is found when testing the corresponding and then the combined lanes, each school is further analyzed by applying the chi square test to each lane in each basic subject and to the combined lanes in each basic subject. The results of these tests for School 1 are given in Tables 5, 6, 7, 8, 9, and 10. Additional results for School 2 are reported in Tables 12, 13, 14, and 15. The additional results for School 3 are presented in Tables 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28.

Throughout these tables and in other tables reporting chi square test results, the observed frequencies are indicated by an "O," the expected or theoretical frequencies by an "E" for the upper, middle, and lower socioeconomic groups. Throughout the test of sub-hypothesis 1, upper and middle S E I categories are combined when the upper group numbers are too small to meet Siegel's criteria for test.[2]

The reader needs to continue to keep in mind that a pupil testing X (high), Y (average), or Z (low) on the Stanford test is considered in this research to be correctly laned if he is placed in the corresponding X, Y, or Z lane.

Analyses of Combined Basic Subject Lanes of School 1. It will

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[2]Siegel, 178.

be recalled that School 1 ranked second of the three schools in regard to socioeconomic status of parents.

The results of the total number of placements in the four basic subjects in the corresponding lanes and then in the combined X, Y, Z lanes are reported in Table 4 for School 1.

TABLE 4

SUMMARY OF CHI SQUARE ANALYSES OF LANE PLACEMENTS IN ALL LANES IN ALL BASIC SUBJECTS IN SCHOOL 1 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	76	(59.2)	185	(188.5)	63	(76.3)	df = 2
X	Incorrect	18	(34.8)	114	(110.5)	58	(44.7)	X^2 = 19.33
Y	Correct	13	(12.4)	76	(80.4)	78	(74.2)	df = 2
Y	Incorrect	5	(5.6)	41	(36.6)	30	(33.8)	X^2 = 1.49
Z	Correct			33[a]	(37.5)	44	(39.5)	df = 1
Z	Incorrect			26[a]	(21.5	18	(22.5)	X^2 = 2.89
X,Y,Z	Correct	97	(77.6)	286	(302.1)	185	(188.3)	df = 2
X,Y,Z	Incorrect	23	(42.4)	181	(164.9)	106	(102.7)	X^2 = 16.32

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Z lane.

The analyses of the total lane placements in all basic subjects in School 1 indicate that there is a significant relationship between the socioeconomic status of the parents and the laning of pupils. The chi square values suggest that the major portion of the bias may be arising with placement of pupils testing X lane in some subject or subjects. However, the tests at this point do not eliminate the

possibility that bias may be found in Y or Z lanes in a certain subject or subjects.

Analyses of Lanes of Basic Subjects in School 1. The results are shown in Tables 5, 6, 7, 8, 9, and 10.

TABLE 5

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN SCIENCE IN SCHOOL 1 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	16	(12.8)	42	(41.6)	13	(16.6)	df = 2
X	Incorrect	7	(10.2)	33	(33.4)	17	(13.4)	X^2 = 3.56
Y	Correct			18[a]	(17.7)	14	(14.3)	df = 1
Y	Incorrect			14[a]	(14.3)	12	(11.7)	X^2 = 0.03
Z	Correct			7[a]	(8.5)	10	(8.5)	df = 1
Z	Incorrect			9[a]	(7.5)	6	(7.5)	X^2 = 1.13
X,Y,Z	Correct	21	(16.5)	62	(63.9)	37	(39.6)	df = 2
X,Y,Z	Incorrect	9	(13.5)	54	(52.1)	35	(32.4)	X^2 = 3.23

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Accepted

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

TABLE 6

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN ENGLISH IN SCHOOL 1 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	21	(15.3)	48	(49.8)	16	(19.9)	df = 2
X	Incorrect	2	(7.7)	27	(25.2)	14	(10.1)	X^2 = 8.81
Y	Correct			20[a]	(22.1)	20	(17.9)	df = 1
Y	Incorrect			12[a]	(9.9)	6	(8.1)	X^2 = 1.44
Z	Correct			10[a]	(11.5)	13	(11.5)	df = 1
Z	Incorrect			7[a]	(5.5)	4	(5.5)	X^2 = 1.21
X,Y,Z	Correct	27	(20.2)	72	(78.7)	49	(49.1)	df = 2
X,Y,Z	Incorrect	3	(9.8)	45	(38.3)	24	(23.9)	X^2 = 8.75

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Accepted

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

Since there is evidence of bias when X, Y, Z lanes in School 1 are combined, as well as when pupils testing X lane are considered alone, further chi tests are essential to locate the bias. Results of the tests are presented in Tables 7 and 8.

TABLE 7

CHI SQUARE ANALYSIS OF PLACEMENT IN X, Y, Z LANES IN ENGLISH IN SCHOOL 1

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	27	(20.2)	3	(9.8)	8.80
Middle	72	(78.8)	45	(38.2)	
Upper	27	(22.1)	3	(7.9)	5.83
Lower	49	(53.9)	24	(19.1)	
Middle	72	(74.5)	45	(42.5)	0.60
Lower	49	(46.5)	24	(26.5)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

TABLE 8

CHI SQUARE ANALYSIS OF PLACEMENT IN LANES IN ENGLISH OF PUPILS TESTING X LANE IN SCHOOL 1

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	21	(16.2)	2	(6.8)	6.28
Middle	48	(52.8)	27	(22.2)	
Upper	21	(16.1)	2	(6.9)	8.76
Lower	16	(20.9)	14	(9.1)	
Middle	48	(45.7)	27	(29.3)	1.04
Lower	16	(18.3)	14	(11.7)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

The chi square tests indicate there is a significant relationship between the placement in English of upper S E I pupils testing X lane and the S E I of the parents. The lower S E I pupils have the least chance of being correctly laned of the three S E I groups.

TABLE 9

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN DEVELOPMENTAL READING IN SCHOOL 1 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	19	(15.6)	50	(51.0)	18	(20.4)	df = 2
X	Incorrect	4	(7.4)	25	(24.0)	12	(9.6)	X^2 = 3.25
Y	Correct			20[a]	(21.5)	19	(17.5)	df = 1
Y	Incorrect			12[a]	(10.5)	7	(8.5)	X^2 = 0.71
Z	Correct			10[a]	(11.0)	12	(11.0)	df = 1
Z	Incorrect			7[a]	(6.0)	5	(6.0)	X^2 = 0.52
X,Y,Z	Correct	25	(20.2)	74	(78.7)	49	(49.1)	df = 2
X,Y,Z	Incorrect	5	(9.8)	43	(38.3)	24	(23.9)	X^2 = 4.35

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Accepted

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

TABLE 10

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN ARITHMETIC IN SCHOOL 1 AS DETERMINED BY BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	20	(15.6)	45	(46.1)	16	(19.3)	df = 2
X	Incorrect	5	(9.4)	29	(27.9)	15	(11.7)	X^2 = 4.87
Y	Correct			31[a]	(31.7)	25	(24.3)	df = 1
Y	Incorrect			8[a]	(7.3)	5	(5.7)	X^2 = 0.19
Z	Correct			6[a]	(5.9)	9	(9.1)	df = 1
Z	Incorrect			3[a]	(3.1)	3	(2.9)	X^2 = 0.01[b]
X,Y,Z	Correct	24	(20.7)	78	(80.8)	50	(50.5)	df = 2
X,Y,Z	Incorrect	6	(9.3)	39	(36.2)	23	(22.5)	X^2 = 2.03

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Accepted

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

[b]In eight cases in Tables 10 through 22 a 2 X 2 chi square table does not have the recommended 5.0 or more expected frequency in each of the cells. In each case, Yates's Correction for Continuity is used. The correction has the effect of reducing by 0.5 the discrepancies in each cell between the observed and expected frequencies, thereby reducing the size of the chi square.

Summary of the Analyses of School 1. The placement of pupils testing Y and Z lanes in School 1 does not indicate a significant relationship between the placements and the socioeconomic status of the parents at the 5 per cent level.

The chi square values indicate there is a significant relationship between the placement of upper S E I pupils testing X lane English and the socioeconomic status of the parents. The combined totals of pupils testing X lane in the basic subjects indicate a bias exists

although, when tested separately, science, developmental reading, and arithmetic chi square values do not reach the .05 level of significance.

Reference to Table 4 indicates upper S E I pupils testing X lane in a basic subject in School 1 are correctly placed in X lane 80.9 per cent, middle S E I pupils 61.9 per cent, and lower S E I pupils 52.1 per cent of the time.

In conclusion, sub-hypothesis 1 stating--discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents--is rejected.

Analyses of Combined Basic Subject Lanes of School 2. It will be noted that only 12 pupils are classified in the upper S E I in School 2 with the result that upper and middle S E I categories are often combined for testing with chi square.

The results of the chi square tests applied to the corresponding and to the combined lanes of the four basic subjects are reported in Table 11.

TABLE 11

SUMMARY OF CHI SQUARE ANALYSES OF LANE PLACEMENTS IN ALL LANES IN ALL BASIC SUBJECTS IN SCHOOL 2 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	16	(16.1)	136	(128.0)	86	(93.9)	df = 2
X	Incorrect	11	(10.9)	78	(86.0)	71	(63.1)	X^2 = 2.90
Y	Correct	13	(12.1)	76	(74.2)	87	(89.7)	df = 2
Y	Incorrect	8	(8.9)	53	(54.8)	69	(66.3)	X^2 = 0.45
Z	Correct			33[a]	(47.6)	131	(116.4)	df = 1
Z	Incorrect			28[a]	(13.4)	18	(32.6)	X^2 = 28.76
X,Y,Z	Correct	29	(30.3)	245	(255.5)	304	(292.2)	df = 2
X,Y,Z	Incorrect	19	(17.7)	159	(148.5)	158	(169.8)	X^2 = 2.62

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Z lane.

While no significant relationship is shown in Table 11 except with pupils testing Z lane, it is desirable to test each lane and subject to determine if pupil placement is significantly related to the S E I of the parents.

Analyses of Lanes of Basic Subjects in School 2. The results are presented in Tables 12, 13, 14, and 15.

TABLE 12

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN SCIENCE IN SCHOOL 2 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct			30[a]	(29.3)	19	(19.7)	df = 1
X	Incorrect			31[a]	(31.7)	22	(21.3)	X^2 = 0.08
Y	Correct			21[a]	(19.0)	16	(18.0)	df = 1
Y	Incorrect			15[a]	(17.0)	18	(16.0)	X^2 = 0.92
Z	Correct			7	(11.0)	34	(30.0)	df = 1
Z	Incorrect			9	(5.0)	7	(11.0)	X^2 = 6.64[b]
X,Y,Z	Correct	7	(6.7)	51	(56.0)	69	(64.3)	df = 2
X,Y,Z	Incorrect	5	(5.3)	50	(45.0)	47	(51.7)	X^2 = 1.80

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils.

[b]Yates's Correction is used.

In school 2 lower S E I pupils who test Z lane science are correctly placed in the Z lane significantly more often than the middle S E I pupils who test Z. None of the upper S E I pupils tested Z lane science.

TABLE 13

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN ENGLISH IN SCHOOL 2 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct			37[a]	(34.7)	21	(23.3)	df = 1
X	Incorrect			24[a]	(26.3)	20	(17.7)	X^2 = 0.88
Y	Correct			18[a]	(18.5)	18	(17.5)	df = 1
Y	Incorrect			18[a]	(17.5)	16	(16.5)	X^2 = 0.06
Z	Correct			9	(11.9)	35	(32.1)	df = 1
Z	Incorrect			7	(4.1)	6	(8.9)	X^2 = 3.96[b]
X,Y,Z	Correct	7	(7.2)	57	(60.9)	74	(69.9)	df = 2
X,Y,Z	Incorrect	5	(4.8)	44	(40.1)	42	(46.1)	X^2 = 1.25

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils.

[b]Yates's Correction is used.

In School 2 lower S E I pupils who test Z lane English are correctly placed in the Z lane significantly more often than the middle S E I pupils who test Z. None of the upper S E I pupils tested Z lane English.

TABLE 14

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN DEVELOPMENTAL READING IN SCHOOL 2 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct			40[a]	(35.9)	20	(24.1)	df = 1
X	Incorrect			21[a]	(25.1)	21	(16.9)	X^2 = 2.83
Y	Correct			18[a]	(18.0)	17	(17.0)	df = 1
Y	Incorrect			18[a]	(18.0)	17	(17.0)	X^2 = 0.00
Z	Correct			8	(12.1)	37	(32.9)	df = 1
Z	Incorrect			8	(3.9)	4	(8.1)	X^2 = 8.29[b]
X,Y,Z	Correct	6	(7.3)	60	(61.7)	74	(70.9)	df = 2
X,Y,Z	Incorrect	6	(4.7)	41	(39.3)	42	(45.1)	X^2 = 1.06

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils.

[b]Yates's Correction is used.

In School 2 lower S E I pupils who test Z lane developmental reading are correctly placed in the Z lane significantly more often than the middle S E I pupils who test Z. None of the upper S E I pupils tested Z lane developmental reading.

TABLE 15

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN ARITHMETIC IN SCHOOL 2 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct			45[a]	(44.8)	26	(26.2)	df = 1
X	Incorrect			13[a]	(13.2)	8	(7.8)	X^2 = 0.01
Y	Correct			32[a]	(29.7)	36	(38.3)	df = 1
Y	Incorrect			10[a]	(12.3)	18	(15.7)	X^2 = 1.08
Z	Correct			9	(10.8)	25	(23.2)	df = 1
Z	Incorrect			4	(2.2)	1	(2.8)	X^2 = 3.07[b]
X,Y,Z	Correct	9	(9.1)	77	(77.0)	87	(86.9)	df = 2
X,Y,Z	Incorrect	3	(2.9)	24	(24.0)	27	(27.1)	X^2 = 0.01

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Accepted

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils.

[b]Yates's Correction is used.

In School 2 there is no significant difference at the .05 level in the placement of pupils in arithmetic. None of the upper S E I pupils tested Z lane arithmetic.

Summary of the Analyses of School 2. No significant relationship is evident in School 2 between pupil placement and the socio-economic status of the parents except with the Z testing pupils in each of the basic subjects except arithmetic. Since all 12 upper S E I pupils tested X or Y lane for every subject, the bias is between middle and lower S E I groups. Expressed in percentages, reference to Table 11 indicates middle S E I pupils testing Z lane are correctly placed Z lane

54.1 per cent of the time, while lower S E I pupils testing Z lane are correctly placed Z lane 88.3 per cent of the time.

In conclusion, sub-hypothesis 1--stating discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents--is rejected--except for arithmetic.

Analyses of Combined Basic Subject Lanes of School 3. As mentioned previously, School 3 ranks highest of the three schools in socioeconomic status of the parents. The procedure for testing the S E I relationship to laning, if any, will be repeated as for the two previous schools.

The results of the chi square tests applied to the corresponding and to the combined lanes of the four basic subjects are reported in Table 16.

TABLE 16

SUMMARY OF CHI SQUARE ANALYSES OF LANE PLACEMENTS IN ALL LANES IN ALL BASIC SUBJECTS IN SCHOOL 3 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df / X^2
X	Correct	172	(144.2)	259	(259.3)	61	(88.5)	df = 2
X	Incorrect	40	(67.8)	122	(121.7)	69	(41.5)	X^2 = 43.53
Y	Correct	27	(18.7)	69	(67.1)	49	(59.2)	df = 2
Y	Incorrect	11	(19.3)	67	(68.9)	71	(60.8)	X^2 = 10.83
Z	Correct	14	(11.8)	51	(56.5)	64	(60.7)	df = 2
Z	Incorrect	0	(2.2)	16	(10.5)	8	(11.3)	X^2 = 7.17
X,Y,Z	Correct	213	(172.9)	379	(382.3)	174	(210.8)	df = 2
X,Y,Z	Incorrect	51	(91.1)	205	(201.7)	148	(111.2)	X^2 = 45.64

df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

The analysis of the total lane placements in all basic subjects in School 3 indicates there is a significant relationship between the laning of the pupils and the socioeconomic status of the parents. The chi square values suggest the most significant relationship is in the laning of pupils testing X lane. An analysis by lanes in each of the basic subjects is in order.

TABLE 17

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN SCIENCE IN SCHOOL 3 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	42	(37.0)	67	(67.7)	18	(22.3)	df = 2
X	Incorrect	11	(16.0)	30	(29.3)	14	(9.7)	X^2 = 5.00
Y	Correct			22[a]	(19.5)	12	(14.5)	df = 1
Y	Incorrect			17[a]	(19.5)	17	(14.5)	X^2 = 1.50
Z	Correct			18[a]	(18.2)	15	(14.8)	df = 1
Z	Incorrect			5[a]	(4.8)	5	(5.2)	X^2 = 0.02[b]
X,Y,Z	Correct	53	(43.7)	96	(96.7)	45	(53.6)	df = 2
X,Y,Z	Incorrect	13	(22.3)	50	(49.3)	36	(27.4)	X^2 = 9.95

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

[b]Yates's Correction is used.

Since there is evidence of S E I bias when X, Y, Z lanes in science in School 3 are combined as shown in Table 17, further chi square tests are essential. Results of the tests are given in Table 18.

TABLE 18

CHI SQUARE ANALYSIS OF PLACEMENT IN X, Y, Z LANES IN SCIENCE IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	53	(46.4)	13	(19.6)	4.59
Middle	96	(102.6)	50	(43.4)	
Upper	53	(44.0)	13	(22.0)	10.02
Lower	45	(54.0)	36	(27.0)	
Middle	96	(90.7)	50	(55.3)	2.29
Lower	45	(50.3)	36	(30.7)	

df = 1 $X^2_{.05} = 3.841$ S-H 1% Rejected

The chi square values indicate there is a significant relationship between the placement of upper S E I pupils in science and the S E I of the parents. The lower S E I pupils have the least chance of being correctly laned of the three S E I groups.

TABLE 19

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN ENGLISH IN SCHOOL 3 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df / X^2
X	Correct	43	(35.8)	67	(65.6)	13	(21.6)	df = 2
X	Incorrect	10	(17.2)	30	(31.4)	19	(10.4)	X^2 = 15.09
Y	Correct			19[a]	(18.4)	13	(13.6)	df = 1
Y	Incorrect			20[a]	(20.6)	16	(15.4)	X^2 = 0.09
Z	Correct			18[a]	(19.8)	20	(18.2)	df = 1
Z	Incorrect			5[a]	(3.2)	0	(1.8)	X^2 = 3.15[b]
X,Y,Z	Correct	54	(43.2)	93	(95.7)	45	(53.1)	df = 2
X,Y,Z	Incorrect	12	(22.8)	53	(50.3)	36	(27.9)	X^2 = 11.62

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

[b]Yates's Correction is used.

There is evidence of S E I bias in English placement when pupils in the three lanes in School 3 are considered together. Chi square test results locating the bias are reported in Table 20.

TABLE 20

CHI SQUARE ANALYSIS OF PLACEMENT OF PUPILS IN X, Y, Z LANES IN ENGLISH IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	54	(45.8)	12	(20.2)	6.96
Middle	93	(101.2)	53	(44.8)	
Upper	54	(44.4)	12	(21.6)	11.52
Lower	45	(54.6)	36	(26.4)	
Middle	93	(88.8)	53	(57.2)	1.42
Lower	45	(49.2)	36	(31.8)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

The chi square values indicate there is a significant relationship between the placement of upper S E I pupils in English and the S E I of the parents.

The chi square values indicate S E I bias in the placement of pupils in English testing X lane in School 3. Chi square analysis of the placement of the three S E I groups is desirable. The results are presented in Table 21.

TABLE 21

CHI SQUARE ANALYSIS OF PLACEMENT IN LANES IN ENGLISH OF PUPILS TESTING X LANE IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	43	(38.9)	10	(14.1)	2.51
Middle	67	(71.1)	30	(25.9)	
Upper	43	(34.9)	10	(18.1)	14.63
Lower	13	(21.1)	19	(10.9)	
Middle	67	(60.2)	30	(36.8)	8.15
Lower	13	(19.8)	19	(12.2)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

The chi square values indicate there is a significant relationship between the placement of upper S E I pupils who test X lane English and the socioeconomic status of the parents. The middle S E I pupils testing X lane English also have a significantly better chance than the lower S E I of being correctly laned.

TABLE 22

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN DEVELOPMENTAL READING IN SCHOOL 3 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df / X^2
X	Correct	42	(35.2)	66	(64.5)	13	(21.3)	df = 2
X	Incorrect	11	(17.8)	31	(32.5)	19	(10.7)	X^2 = 13.69
Y	Correct			20[a]	(18.9)	13	(14.1)	df = 1
Y	Incorrect			19[a]	(20.1)	16	(14.9)	X^2 = 0.29
Z	Correct			18[a]	(18.8)	18	(17.2)	df = 1
Z	Incorrect			5[a]	(4.2)	2	(2.8)	X^2 = 0.45[b]
X,Y,Z	Correct	53	(42.8)	93	(94.7)	44	(52.5)	df = 2
X,Y,Z	Incorrect	13	(23.2)	53	(51.3)	37	(28.5)	X^2 = 10.91

df = 1 $X^2_{.05}$ = 3.841 df = 2 $X^2_{.05}$ = 5.991 S-H 1: Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Y and Z lanes.

[b]Yates's Correction is used.

The chi square values indicate S E I bias in developmental reading lane placement in School 3 when the three lanes are considered together. Results of tests to determine the location of the bias are shown on Table 23.

TABLE 23

CHI SQUARE ANALYSIS OF PLACEMENT IN X, Y, Z LANES OF PUPILS IN DEVELOPMENTAL READING IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	53	(45.5)	13	(20.5)	5.78
Middle	93	(100.5)	53	(45.5)	
Upper	53	(43.6)	13	(22.4)	10.83
Lower	44	(53.4)	37	(27.6)	
Middle	93	(88.1)	53	(57.9)	1.92
Lower	44	(48.9)	37	(32.1)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

The chi square values indicate there is a significant relationship between the placement of upper S E I pupils in developmental reading and the S E I of the parents.

The chi square test indicates S E I bias in the placement of pupils testing X lane developmental reading in School 3. The results of further tests to determine the location of the bias are given in Table 24.

TABLE 24

CHI SQUARE ANALYSIS OF PLACEMENT IN LANES IN DEVELOPMENTAL READING OF PUPILS TESTING X LANE IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	42	(38.2)	11	(14.8)	2.09
Middle	66	(69.8)	31	(27.2)	
Upper	42	(34.3)	11	(18.7)	13.01
Lower	13	(20.7)	19	(11.3)	
Middle	66	(59.4)	31	(37.6)	7.63
Lower	13	(19.6	19	(12.4)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

The results indicate an upper S E I bias in laning of pupils testing X lane in developmental reading.

TABLE 25

SUMMARY OF CHI SQUARE ANALYSES OF X, Y, Z LANE PLACEMENTS IN ARITHMETIC IN SCHOOL 3 AS DETERMINED BY STANFORD GRADE EQUIVALENTS

Tested	Placement	Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E	df X^2
X	Correct	45	(36.2)	59	(61.5)	17	(23.3)	df = 2
X	Incorrect	8	(16.8)	31	(28.5)	17	(10.7)	X^2 = 12.48
Y	Correct	6	(5.6)	29	(23.5)	11	(16.9)	df = 2
Y	Incorrect	5	(5.4)	17	(22.5)	22	(16.1)	X^2 = 6.91
Z	Correct			11[a]	(11.0)	11	(11.0)	df = 1
Z	Incorrect			1[a]	(1.0)	1	(1.0)	X^2 = 0.00
X,Y,Z	Correct	53	(42.9)	97	(94.8)	39	(51.3)	df = 2
X,Y,Z	Incorrect	13	(23.1)	49	(51.2)	40	(27.7)	X^2 = 15.35
df = 2			$X^2_{.05}$ = 5.991				S-H 1:	Rejected

[a]Upper and middle S E I categories are combined because of the small number of upper S E I pupils testing Z lane.

The chi square values indicate bias in arithmetic lane placement in School 3 when pupils in the three lanes are considered together. Results are presented in Table 26.

TABLE 26

CHI SQUARE ANALYSIS OF PLACEMENT IN X, Y, Z LANES
OF PUPILS IN ARITHMETIC IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	53	(46.7)	13	(19.3)	4.22
Middle	97	(103.3)	49	(42.7)	
Upper	53	(41.9)	13	(24.1)	14.78
Lower	39	(50.1)	40	(28.9)	
Middle	97	(88.2)	49	(57.8)	6.32
Lower	39	(47.8)	40	(31.2)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

The chi square analysis of the arithmetic placement in School 3 indicates the upper S E I pupils are correctly laned significantly more often than the middle or lower S E I pupils. The middle S E I are also correctly laned significantly more often than the lower S E I pupils.

The chi square value indicates S E I bias in arithmetic lane placement of pupils testing X lane in School 3. The results of further tests of this group are given in Table 27.

TABLE 27

CHI SQUARE ANALYSIS OF PLACEMENT IN LANES IN ARITHMETIC OF PUPILS TESTING X LANE IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper	45	(38.5)	8	(14.5)	6.38
Middle	59	(65.5)	31	(24.5)	
Upper	45	(37.8)	8	(15.2)	12.21
Lower	17	(24.2)	17	(9.8)	
Middle	59	(55.2)	31	(34.8)	2.46
Lower	17	(20.8)	17	(13.2)	

df = 1 $X^2_{.05} = 3.841$ S-H 1: Rejected

Again upper S E I pupils testing X lane are correctly laned significantly more often than the other two groups with the lower S E I having the least chance of correct placement.

For the first time in this study pupils testing Y lane by Stanford test show a significant chi square value in considering the Y lane alone. The results of further tests are reported in Table 28.

TABLE 28

CHI SQUARE ANALYSIS OF PLACEMENT IN LANES IN ARITHMETIC OF PUPILS TESTING Y LANE IN SCHOOL 3

S E I	Correct Placement O	E	Incorrect Placement O	E	Chi Square
Upper and Middle	35	(29.1)	22	(27.9)	6.67
Lower	11	(16.9)	22	(16.1)	
Middle	29	(23.3)	17	(22.7)	6.76
Lower	11	(16.7)	22	(16.3)	
df = 1	$X^2_{.05} = 3.841$				S-H 1: Rejected

Since the upper S E I category is too small to be appropriate for the chi square test, it is combined with the middle S E I. Again the lower S E I pupils are incorrectly laned significantly more often than the other two groups.

Summary of the Analyses of School 3. School 3 with the highest proportion of upper S E I pupils has the highest incidence of significant relationship between laning pupils and the socioeconomic status of the parents. The relationship is most significant with the placement of the upper S E I. However, it also extends to the correct placement of middle S E I pupils significantly more often in English, developmental reading, and arithmetic.

Reference to Table 16 indicates upper S E I seventh grade pupils testing X lane in a basic subject in School 3 are correctly placed in X lane 81.1 per cent, middle S E I pupils 68.0 per cent, and lower S E I pupils 47.0 per cent of the time. Pupils testing Y

lane, reported in the same order, had percentages of correct placement of 71.1, 50.7, and 50.8. Rather surprisingly, judged from the X and Y testing placements, all 14 of the upper S E I testing Z lane were correctly laned Z. The percentages of the three groups are 100.0, 76.1, and 89.0.

In conclusion, sub-hypothesis 1 stating--discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents--is rejected.

Summary of the Analyses of Sub-hypothesis 1 in the Three Schools. The rejection of sub-hypothesis 1 is indicated by the chi square analyses in all three schools. The S E I bias in Schools 1 and 3 related primarily to the upper socioeconomic pupils. In School 3 the bias included middle S E I in comparison with lower S E I pupils testing X lane in English, developmental reading, and arithmetic. In contrast, it should be noted that the relationship between pupil placement in the laned subjects and the S E I of the parents, involved the lower S E I pupils in School 2.

Analysis of Pupil Transfers in Laned Subjects

S-H 2: Lane transfers in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

Analysis of Sub-hypothesis 2. A summary of lane transfers in the basic subjects in the three schools is presented in Table 29.

TABLE 29

SUMMARY OF LANE TRANSFERS IN ALL BASIC SUBJECTS IN THE THREE SCHOOLS

School	Direction of Lane Change	Upper SEI N	Middle SEI N	Lower SEI N
1	Non-transfers	113	457	280
	Upward	7	8	5
	Downward	0	2	6
	Totals	120	467	291
2	Non-transfers	46	387	453
	Upward	2	12	9
	Downward	0	5	0
	Totals	48	404	462
3	Non-transfers	258	561	306
	Upward	5	14	8
	Downward	1	9	8
	Totals	264	584	322

The 2,962 lane placements shown in Table 29 involved 741 pupils in the basic subjects. Seventy-four pupils, or 10 per cent of the enrollment in the seventh grade, were involved in lane transfers. Seventy-one of the transfers were upward, thirty downward. The 101 lane transfers are 3.4 per cent of the total lane placements.

A summary of the chi test analyses of lane transfers is presented in Table 30.

TABLE 30

SUMMARY OF CHI SQUARE ANALYSES OF ALL LANE TRANSFERS IN COMBINED BASIC SUBJECTS

School		Upper SEI O	Upper SEI E	Middle SEI O	Middle SEI E	Lower SEI O	Lower SEI E
1	Non-transfers	113	(116.2)	457	(452.1)	280	(281.7)
	Transfers	7	(3.8)	10	(14.9)	11	(9.3)
2	Non-transfers	46	(46.5)	387	(391.6)	453	(447.9)
	Transfers	2	(1.5)	17	(12.4)	9	(14.1)
3	Non-transfers	258	(253.9)	561	(561.5)	306	(309.6)
	Transfers	6	(10.1)	23	(22.5)	16	(12.4)

df = 2 School 1--X^2 = 4.77; School 2--X^2 = 3.84; School 3--X^2 = 2.83; $X^2_{.05}$ = 5.991; S-H 2: Accepted

While no school shows a significant relationship at the .05 level between lane transfers and the S E I of the parents, the chi square values suggest there is some degree of significance. Consequently, the researcher further tested by combining categories in various combinations to attempt to discover S E I bias. These tests consistently resulted in chi square values insignificant at the .05 level.

Summary of the Analyses of Sub-hypothesis 2 in the Three Schools. If the reader shared the researcher's expectation of greater incidence of transfers, the 3.4 percentage of transfers of the 2,962 lane placements is of special interest.

The chi square values indicate there is no significant relationship at the .05 level between lane transfers and the socioeconomic status of the parents.

In conclusion, sub-hypothesis 2 stating--lane transfers in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents--is accepted.

Analyses of Pupil Placements in Non-laned Classes of Social Studies and Music

S-H 3: Grouping in non-laned classes of social studies and music is not significantly related to the socioeconomic status of the parents.

Analysis of School 1. In order to meet the requirements cited by Siegel[3] of no expected frequency less than one and no more than 20 per cent of the cells with expected frequencies less than five in tables with six or more cells, it is necessary to combine the upper and middle S E I categories in School 1 to use chi square to test the data. Therefore, the actual distribution of pupils by socioeconomic status in each of the social studies and music classes in School 1 is presented in Tables 31 and 32.

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[3]Siegel, 178.

TABLE 31

DISTRIBUTION OF SEVENTH GRADE PUPILS IN NON-LANED SOCIAL STUDIES CLASSES BY S E I OF PARENTS IN SCHOOL 1

Subject	Class Identification	Upper SEI N	Middle SEI N	Lower SEI N	Totals N
Social Studies	008	2	14	13	29
	009	7	16	10	33
	024	4	13	15	32
	025	5	20	5	30
	026	3	17	10	30
	027	4	21	10	35
	028	5	16	10	31
	Totals	30	117	73	220

TABLE 32

DISTRIBUTION OF SEVENTH GRADE PUPILS IN NON-LANED MUSIC CLASSES BY S E I OF PARENTS IN SCHOOL 1

Subject	Class Identification	Upper SEI N	Middle SEI N	Lower SEI N	Totals N
Music	001	2	16	15	33
	002	2	22	10	34
	003	1	14	17	32
(Band)	004	9	36	4	49
	005	10	16	12	38
	007	6	13	15	34
	Totals	30	117	73	220

Analyses of the social studies and music classes are presented in Tables 33, 34, and 35. As in previous tables the observed and expected frequencies are indicated by "O" and "E."

TABLE 33

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 1 IN NON-LANED SOCIAL STUDIES CLASSES IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper and Middle SEI O	E	Lower SEI O	E	Totals N
Social Studies	008	16	(19.4)	13	(9.6)	29
	009	23	(22.1)	10	(10.9)	33
	024	17	(21.4)	15	(10.6)	32
	025	25	(20.0)	5	(10.0)	30
	026	20	(20.0)	10	(10.0)	30
	027	25	(23.4)	10	(11.6)	35
	028	21	(20.7)	10	(10.3)	31
	Totals	147		73		220

df = 6 $X^2 = 8.74$ $X^2_{.05} = 12.592$ S-H 3: Accepted

TABLE 34

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 1 IN NON-LANED MUSIC CLASSES IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper and Middle SEI O	E	Lower SEI O	E	Totals N
Music	001	18	(22.0)	15	(11.0)	33
	002	24	(22.7)	10	(11.3)	34
	003	15	(21.4)	17	(10.6)	32
(Band)	004	45	(32.8)	4	(16.2)	49
	005	26	(25.4)	12	(12.6)	38
	007	19	(22.7)	15	(11.3)	34
	Totals	147		73		220

df = 5 $X^2 = 23.77$ $X^2_{.05} = 11.070$ S-H 3: Rejected

There is no significant relationship at the .05 level between the placement of pupils in School 1 in the non-laned classes of social studies and the S E I of the parents. There is a significant relationship in music. However, since band is an elective, composed chiefly of upper and middle S E I pupils in this school, the general music classes are tested by chi square with the band class omitted. The results are presented in Table 35.

TABLE 35

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 1 OF NON-LANED CLASSES OF MUSIC IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper and Middle SEI O	E	Lower SEI O	E	Totals N
Music	001	18	(19.7)	15	(13.3)	33
	002	24	(20.3)	10	(13.7)	34
	003	15	(19.1)	17	(12.9)	32
	005	26	(22.6)	12	(15.4)	38
	007	19	(20.3)	15	(13.7)	34
	Totals	102		69		171

df = 4 $X^2 = 5.69$ $X^2_{.05} = 9.488$ S-H 3: Accepted

When the music classes without the band class are tested by chi square, there is no significant relationship between the placement of pupils and the S E I of the parents in School 1.

Analysis of School 2. As in School 1 where the upper and middle S E I groups needed to be combined, the distribution of pupils in social studies and music by socioeconomic status of parents is shown in Tables 36 and 37.

TABLE 36

DISTRIBUTION OF SEVENTH GRADE PUPILS IN NON-LANED SOCIAL STUDIES CLASSES BY S E I OF PARENTS IN SCHOOL 2

Subject	Class Identification	Upper SEI N	Middle SEI N	Lower SEI N	Totals N
Social Studies	045	4	15	16	35
	046	0	15	20	35
	047	0	15	15	30
	048	2	17	15	34
	049	2	14	17	33
	060	1	7	12	20
	061	3	10	13	26
	077	0	9	11	20
	Totals	12	102	119	233

TABLE 37

DISTRIBUTION OF SEVENTH GRADE PUPILS IN NON-LANED MUSIC CLASSES BY S E I OF PARENTS IN SCHOOL 2

Subject	Class Identification	Upper SEI N	Middle SEI N	Lower SEI N	Totals N
Music	057	3	9	16	28
	058	0	13	13	26
	093	1	13	18	32
	094	2	14	19	35
	066	0	11	12	23
(Band)	067	1	10	13	24
	068	3	18	16	37
(Band)	069	2	14	12	28
	Totals	12	102	119	233

The results of the chi square analyses of the non-laned classes of social studies and music are presented in Tables 38 and 39.

TABLE 38

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 2 IN NON-LANED CLASSES OF SOCIAL STUDIES IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper and Middle SEI O	E	Lower SEI O	E	Totals N
Social Studies	045	19	(17.1)	16	(17.9)	35
	046	15	(17.1)	20	(17.9)	35
	047	15	(14.7)	15	(15.3)	30
	048	19	(16.7)	15	(17.3)	34
	049	16	(16.1)	17	(16.9)	33
	060	8	(9.8)	12	(10.2)	20
	061	13	(12.7)	13	(13.3)	26
	077	9	(9.8)	11	(10.2)	20
	Totals	114		119		233

df = 7 X^2 = 2.34 $X^2_{.05}$ = 14.067 S-H 3: Accepted

TABLE 39

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 2 IN NON-LANED CLASSES OF MUSIC IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper and Middle SEI O	E	Lower SEI O	E	Totals N
Music	057	12	(13.7)	16	(14.3)	28
	058	13	(12.7)	13	(13.3)	26
	093	14	(15.7)	18	(16.3)	32
	094	16	(17.1)	19	(17.9)	35
	066	11	(11.3)	12	(11.7)	23
(Band)	067	11	(11.7)	13	(12.3)	24
	068	21	(18.1)	16	(18.9)	37
(Band)	069	16	(13.7)	12	(14.3)	28
	Totals	114		119		233

df = 7 X^2 = 2.69 $X^2_{.05}$ = 14.067 S-H 3: Accepted

In School 2 the placement of pupils in social studies and music is not significantly related at the .05 level to the S E I of the parents according to the chi square values.

Analysis of School 3. The results of the chi square analyses of the placement of pupils in social studies and music classes are presented in Tables 40 and 41.

TABLE 40

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 3 IN NON-LANED CLASSES OF SOCIAL STUDIES IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper S E I O E	Middle S E I O E	Lower S E I O E	Totals N
Social Studies	159	9 (5.2)	9 (11.5)	5 (6.3)	23
	160	1 (5.6)	12 (12.5)	12 (6.9)	25
	147	4 (6.3)	13 (14.0)	11 (7.7)	28
	148	11 (7.2)	17 (16.0)	4 (8.8)	32
	149	4 (4.7)	10 (10.5)	7 (5.8)	21
	150	5 (7.4)	14 (16.5)	14 (9.1)	33
	151	10 (7.8)	20 (17.5)	5 (9.7)	35
	130	6 (7.0)	15 (15.5)	10 (8.5)	31
	131	13 (7.4)	14 (16.5)	6 (9.1)	33
	132	3 (7.4)	23 (16.5)	7 (9.1)	33
	Totals	66	147	81	294

df = 18 $X^2 = 37.36$ $X^2_{.05} = 28.869$ S-H 3: Rejected

TABLE 41

CHI SQUARE ANALYSIS OF PUPIL PLACEMENT IN SCHOOL 3 IN NON-LANED CLASSES OF MUSIC IN RELATION TO THE S E I OF THE PARENTS

Subject	Class Identification	Upper S E I O E	Middle S E I O E	Lower S E I O E	Totals N
Music	133	16 (11.5)	21 (25.5)	14 (14.0)	51
	134	9 (12.1)	32 (27.0)	13 (14.9)	54
	135	11 (12.6)	25 (28.0)	20 (15.4)	56
	136	7 (10.3)	22 (23.0)	17 (12.7)	46
(Band)	137	4 (3.8)	9 (8.5)	4 (4.7)	17
(Band)	138	8 (6.3)	14 (14.0)	6 (7.7)	28
(Band)	140	4 (4.5)	13 (10.0)	3 (5.5)	20
(Band)	141	7 (4.9)	11 (11.0)	4 (6.1)	22
	Totals	66	147	81	294

df = 14 $X^2 = 13.66$ $X^2_{.05} = 28.869$ S-H 3: Accepted

Chi square values indicate there is a significant relationship at the .05 level between the placement of pupils in social studies and the S E I of the parents. There is no significant relationship in the placement in music classes and the S E I of the parents.

Summary of the Analyses of Sub-hypothesis 3 in the Three Schools. Chi square values indicate there is a significant relationship at the .05 level between pupil placement in the non-laned subject of social studies and the S E I of the parents in School 3. When band is included in the analysis of the music classes in School 1, a similar significant relationship is indicated. However, when School 1 music classes are tested, with band omitted from the group, there is no significant relationship. Other classes in the three schools show no significant relationship at the .05 level.

In conclusion, sub-hypothesis 3 stating--grouping in non-laned classes of social studies and music is not significantly related to the socioeconomic status of the parents--is rejected.

Chapter Summary

Sub-hypothesis 1 stating--discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents--is rejected. In at least one lane in each of the three schools, incorrect placements are related at the .05 level to the socioeconomic status of the parents.

The S E I bias in Schools 1 and 3 is related primarily to the upper socioeconomic pupils. Both schools show significant chi square values at the .05 level when the placements in all lanes in each of the schools are combined. Further analysis in School 1 indicates the problem rests chiefly with the upper socioeconomic pupils testing X lane. However, only in English is the chi square value sufficiently high to be significant at the .05 level when each subject is tested separately. In School 3, discrepancies in placements in all four basic subjects are significantly related at the .05 level to the socioeconomic status of the parents. The bias is primarily with the placement of upper S E I pupils although there is significant bias in the placement of the middle S E I pupils in relation to the lower S E I in English, developmental reading, and arithmetic.

In contrast, in School 2 no significant relationship is indicated by chi square tests when all the placements are added together. However, when the placement of pupils testing Z lane is

tested, the lower S E I pupils in each subject except arithmetic are correctly placed significantly more often at the .05 level than the middle S E I pupils. None of the twelve upper S E I pupils tested Z lane.

Placements in the three schools can be summed up by stating that upper S E I pupils testing X lane are correctly placed approximately four fifths of the time, middle S E I pupils two thirds of the time, and lower S E I pupils one half the time.

Sub-hypothesis 2 stating--lane transfers in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents--is accepted. Since there are only three and four-tenths transfers per hundred placements in the schools, the transfers in all basic subjects in each school are added together and tested by chi square. In none of the three schools is there a significant relationship at the .05 level between lane transfers and the socioeconomic status of the parents. The small number of lane transfers is certainly of interest.

Sub-hypothesis 3 stating--grouping in non-laned classes of social studies and music is not significantly related to the socioeconomic status of the parents--is rejected, but not in all three schools. School 1 indicates a relationship at the .05 level only when band, an elective, is included in the music classes for the chi square tests. In School 2, there is no significant relationship. In School 3, there is a significant relationship at the .05 level between the grouping of pupils in social studies and the socioeconomic status of the parents.

In conclusion, the major hypothesis stating--no significant

relationship exists in three junior high schools between the seventh grade X, Y, Z laning practices and the socioeconomic status of the parents--is rejected.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Summary

The Basic Problem. This study is an outgrowth of the researcher's interest in X, Y, Z laning used in some junior high schools. The basic question investigated in this research is: Is the operation of the X, Y, Z laning system significantly related to or independent of the socioeconomic status of the parents? To assure equal educational opportunities for every pupil in the school, the school and its laning system are expected to operate in such a manner that no arbitrary limitations through its laning system exist for any one pupil or segment of pupils. Any such limitations would reduce the opportunities for upward socioeconomic mobility deemed essential in a democratic society.

The researcher constructed the major hypothesis to be tested by three sub-hypotheses as follows:

H: No significant relationship exists in three junior high schools between the seventh grade X, Y, Z laning practices and the socioeconomic status of the parents.

S-H 1: Discrepancies between pupil lane placement and pupil achievement in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

S-H 2: Lane transfers in science, English, developmental reading, and arithmetic are not significantly related to the socioeconomic status of the parents.

S-H 3: Grouping in the non-laned classes of social studies and

music is not significantly related to the socioeconomic status of the parents.

Review of the Literature. A review of the literature reveals ability or achievement grouping to be a controversial issue. Research findings are contradictory. Many writers question the quality and findings of much of the research. However, the evidence to date slightly favors the practice as a means of increasing achievement--especially if pupils are grouped by ability in the specific subject and when materials and methods are adapted to the group.

Selection of Populations. X, Y, Z laning had been adopted in 1959 for the junior high schools of a midwestern city of over 160,000 during its change from 8-4 to a 6-3-3 plan of organization. The seventh grade pupils of three of the eleven schools were selected. A number of considerations entered the choice of grade and schools such as:

1. Availability of data for the seventh grade

2. A range in size from one of the smallest to one of the largest seventh grades in the city

3. All-white enrollments eliminating the possible complicating racial factor

4. Probable differences in socioeconomic distribution of pupils among the three schools

5. Recognition of the influence of both the elementary and junior high school faculties on seventh grade laning.

Collection and Processing of the Data. The following information concerning the seventh graders was recorded:

1. Socioeconomic index scores, determined by the socioeconomic status of the parents--using Duncan's Modification of the North-Hatt Scale

2. May, 1961, sixth grade Stanford reading and arithmetic achievement grade equivalents

3. May, 1962, seventh grade Stanford reading and arithmetic achievement grade equivalents

4. Lane placements as of May, 1962, in science, English, developmental reading, and arithmetic

5. Lane transfers during the 1961-1962 school year

6. Specific class placements as of May, 1962, in non-laned social studies and music.

Pupils in each school were classified by upper, middle, and lower socioeconomic statuses. The pupils were also classified as rating high, average, or low by Stanford reading and Stanford arithmetic grade equivalents. The data was tabulated in preparation for analysis.

Statistical Method and Procedure in the Analysis of the Data. The chi square technique was used to analyze the data. Lane placements were tested by chi square in each school by combined lanes and subjects, by combined lanes in each subject, and by each lane in each subject for possible significant relationship to the socioeconomic status of the parents. Lane transfers and placement in non-laned classes were also

tested for socioeconomic bias. Upper and middle socioeconomic categories were combined when upper S E I pupils were insufficient for meaningful chi square tests. Pupils were judged by the researcher to be correctly or incorrectly laned according to the May, 1962, Stanford achievement grade equivalents.

Conclusions

In all three junior high schools there was evidence of socio-economic bias in placements in laned subjects. When pupils were tested by Stanford achievement tests at the end of the seventh grade, analysis of the results indicated many pupils were not in the recommended lanes according to city-wide standards. Significantly from the socioeconomic viewpoint, upper S E I pupils testing X (top) lane were incorrectly laned too low approximately one time in five; middle S E I pupils with similar X lane test scores were incorrectly laned too low approximately one time in three; while lower S E I pupils testing X lane were incorrectly laned too low approximately half the time.

In School 2, the evidence of bias was in the laning of lower S E I pupils testing Z (lowest) lane with these pupils being correctly laned 88.3 per cent of the time. In contrast, the middle S E I pupils testing Z lane were correctly laned 54.1 per cent of the time. There were only twelve upper S E I pupils in School 2, none of which tested Z lane.

In regard to laning, the evidence indicated that the socio-economic status of the parents affected the opportunity of some pupils for placement in lanes for which they were qualified according to the post-Stanford tests.

The socioeconomic class bias did not extend to lane transfers. Possibly the noteworthy factor is the three and four-tenths transfers per hundred placements. This raises the question whether this percentage of lane transfers kept up with unusual pupil growth or lack of growth as planned by the organizers of this junior high school program.

The originators of the program had also expected, in order to hedge against the possibility of a degree of socioeconomic segregation in the laned subjects, to lane pupils heterogeneously in the non-laned subjects of social studies and music. Chi square values at the 5 per cent level indicated this objective was not achieved in social studies in School 3, or in band, an elective, in School 1. Chi square tests of other music and social studies classes did not indicate a significant relationship at the .05 level between assignment to classes and the socioeconomic status of the parents.

In conclusion, sub-hypotheses 1 and 3 were rejected; sub-hypothesis 2 was accepted. Therefore, the major hypothesis that no significant relationship exists between laning practices and the socioeconomic status of the parents was rejected.

Implications and Recommendations

An X, Y, Z laning system is based on the premise that this administrative device will provide the opportunity for increased learning by permitting the adaptation of instructional materials and teaching methods to the particular group. The literature reveals that homogeneous grouping often is not accompanied by this adaptation. In fact, in the seventh grade in the schools used in this research, only in

language arts was there a definite effort to select instructional materials for the specific lanes. In the other laned subjects of science and arithmetic, all pupils were expected to cover essentially the same materials in the same period of time. Consequently, this left the teachers dependent on the courses of study and their own devices for dealing with the problem of enrichment needed for the X lanes and for some pupils in the Y lanes.

At the same time, the teachers had difficulty motivating the Z lane pupils. In addition to the problem of instructional materials, many teachers had had little or no special training for teaching slow-learning children. Administratively, the usual procedure was to schedule one or two Z lane classes for each teacher as his fair share. Teachers doing an excellent job motivating these pupils appeared to be in the minority, while the teacher expressing a desire to teach Z lane classes was indeed a rarity. This suggests that teachers as well as pupils were apt to be suffering from low motivation during the Z lane periods.

It is to be remembered that a disproportionate number of lower socioeconomic pupils capable of working in higher lanes were also in the Z lanes as well as in the Y lanes. It is assumed that the interests of pupils are best served in homogeneous grouping when they are correctly laned. Therefore, it is peculiar when discrepancies in pupil lane placement are significantly related to the socioeconomic status of the parents with the descent on the socioeconomic scale increasing the possibility that the pupil will be laned below his ability. It is of interest to consider probable reasons for this discrimination. Some possible explanations are:

1. Upper S E I families place greater emphasis on success in school with the result that these children generally spend more time on their studies, are more conscientious about their daily work, do more homework, attend school more regularly, and are more likely to do their make-up work. Usually these children adjust better to school life, are more polite, and are more cooperative in their dealings with teachers. In all probability their daily work is actually better than that of middle and lower S E I pupils who make similar scores on national tests.

2. Upper S E I parents are usually more anxious than parents of middle and lower S E I pupils to have their children placed in top lanes. In actual practice, the upper S E I parents in these schools seldom complain about lane placements. The reader may suspect this fact reflects the schools' ability to avoid difficulties with this influential group.

The writer predicted at the beginning of this research that no significant relationship would be found between laning practices and the socioeconomic status of the parents. It is doubtful if the question of possible bias in laning had been given much thought by principals and teachers working in this program. At any rate, when the writer discussed the outcome of this research with some of these people, the usual reaction was one of surprise with the response that if bias existed, it certainly was unintentional. They sometimes added that they thought more faith should be placed in the teachers' judgment than in the results of Stanford tests.

Although the writer recognizes the importance of teachers'

evaluations as well as the limitations on the validity of any test or tests as the basis for grouping children, he assumes Stanford tests are of somewhat comparable validity for upper, middle, and lower socio-economic groups.

While it is of interest to speculate as to possible reasons for the socioeconomic bias in laning practices, the serious implication is that many pupils are not making maximum use of their educational opportunities. If the bias merely reflects pupil inertia with increased incidence as one descends the socioeconomic scale, ways and means should be found to overcome this inertia. On the other hand, if there are arbitrary--although unintentional--restrictions for the lower socio-economic groups for correct placement under the laning system, then this is obviously contrary to the American democratic concept of equality of educational opportunity with the related possibility of upward socio-economic mobility. Of course inertia and arbitrary restrictions may both be factors.

In conclusion, this research and personal observation suggest three recommendations for improvement of the X, Y, Z laning program:

1. Instructional materials and curricula suitable for the specific lanes

2. Special training for teachers teaching slow-learning and low-motivated pupils

3. Greater care to be certain that all socioeconomic groups have equal opportunity to be correctly laned.

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APPENDIX A

OCCUPATIONAL QUESTIONNAIRE

Pupil's Name_____
Last First Middle

School_____ Encircle: Boy Girl

Please CAREFULLY read the entire page before you write any more.

May 1, 1962

Dear Seventh Grader:

The superintendent and the junior high school principals have given their consent for me to make a study of X, Y, Z lanes under the direction of the Education Department of Michigan State University. Information about your father's job is needed for part of the study. Your answers will be considered confidential.

Thank you for your help.

Sincerely,

Hugh Kariger

WHAT IS YOUR FATHER'S JOB? (The word FATHER means the male parent you live with, even if he is not your real father.) If you are not living with such a person at present, tell about the job of the MALE parent you last lived with. TRY TO BE AS EXACT AS POSSIBLE. FOR EXAMPLE:

1. If he is in business, tell what kind of business and whether he owns it himself or works for others.
2. If he runs a machine, tell what kind of machine he runs.
3. If he is a salesman, tell what kind of goods he sells.
4. If he is a foreman or manager, tell about how many people work under him and what sort of work they do.
5. If your father is not working, tell what kind of work he usually does when he works.
6. If he is retired or dead, tell what kind of work he last did.
7. You probably will tell where he works.

DESCRIBE YOUR FATHER'S JOB IN THE BOX BELOW. (Do not write outside of the box.)

Please read your answer carefully to be sure you really explained what your father's job is or was.

APPENDIX B

SIXTH GRADE EVALUATION FORM

[redacted] SCHOOLS

EVALUATION SHEET
For Sixth Grade Students

For Junior High School Placement

Home Room No. ..... Lang. Arts Sec. .....

Arith. Sec. ..... Science Sec. .....

From ....
School Date

NAME OF STUDENT ..... Sex .....
Last First Middle

Age ..... Date of Birth ..... Place of Birth .....
Mo. Day Year

Parent or Guardian ..... Telephone No. .....
Last First Middle

Address .....

Mental Rating, I.Q., or Binet .....

Reading Grade Score ..... Arithmetic Grade Score .....

Yearly Reading Grade ..... Yearly Arithmetic Grade .....

	Satisfactory	Unsatisfactory	COMMENTS
Attendance			
Health			
Citizenship			
Study Habits			
General Scholarship			

Is student working at his or her capacity or ability? .....

Junior High students are placed in lanes in some subject areas. The X lane is generally one year or more above grade level and the Z lane is generally one year or more below grade level. The Y lane is in between. There are other factors besides achievement. Where would you place this student in the following subject areas?

	X	Y	Z	WHY?
Reading or Language Arts				
Mathematics				

This student participates in ..... Band ..... Orchestra ..... Vocal Chorus

What instrument does the student play? .....

Please indicate any special abilities or handicaps .....

.....

Use back of this sheet for additional information.

Teacher's Signature .....