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AN INVESTIGATION OF CERTAIN FACTORS RELATED TO ADVANCEMENT IN PASCO, WASHINGTON SCHOOLS

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A Thesis

Presented to

the Graduate Faculty

Central Washington College of Education

In Partial Fulfillment of the Requirements for the Degree Master of Education

by

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Margaret Anne Moore

August 1960

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ACKNOWLEDGEMENTS

I wish to express deep appreciation to my committee chairman, Mr. Howard B. Robinson, and to my committee members, Dr. Eldon E. Jacobsen and Dr. T. Dean Stinson, members of the graduate faculty who have served so graciously and patiently on my committee. I would also like to thank my school district and especially my superintendent, Herman Jaeger, for allowing me access to district records.

DEDICATION

To the grandparents of my children, who have also worked hard every summer so that I might write this paper.

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CHAPTER I

THE PROBLEM AND THE IMPORTANCE OF THE STUDY

There is no magical age at which a child becomes ready for school. No arbitrarily defined entrance age can recognize the individual needs of every child or take into consideration all individual differences. A truly ideal situation might include the administration of a battery of individual entrance tests to every child and counseling for every parent. Currently, however, that is not practicable. Entrance age is and will continue to be determined by an arbitrarily defined chronological age requirement, with few if any exceptions allowed. The goal must be to establish this entrance age with care so that it will benefit the largest number individual children and the school district as a whole.

I. THE PROBLEM

This study concerned itself with a consideration of current entrance age practices in Pasco, Washington schools and the advantages, if any, of changing them. Under present school district policy children are admitted to kindergarten if they are five on or before October 31 (see Appendix A). As school usually starts late in August, this entrance age permits many four-year-olds to enter kindergarten. Some of them are not five until more than two months after school has started. The question arises as to whether or not this age difference has any significant effect on the progress of these children in school.

The specific purpose of this study was to test the hypothesis that children who are not six until after starting school are not able to compete successfully with their older classmates in terms of promotions and grades.

II. IMPORTANCE OF THE STUDY

The problem is one of current concern to many educators, particularly in the Tri-City area where Pasco is located. The other two major Tri-City school districts, Kennewick and Richland, have changed their entrance age requirement for entering kindergarten to five on or before September 10. The change was effective for the 1959-1960 school year. The Pasco school board considered such action, but the motion to make the change was tabled for further consideration at a later date. The effect of a single study on their eventual decision may not be crucial, but all data submitted will be considered.

CHAPTER II

REVIEW OF THE LITERATURE

This survey of the literature does not purport to be a comprehensive compilation of all that has been written on entrance age. It is, rather, a selective sampling of current trends and ideas.

The literature divides itself into several fairly distinct but related areas of controversy. First, and very pertinent to an understanding of the problem, is the question of actual age requirements being used today, together with contemplated changes.

This leads to a second question: How rigidly should these established entrance ages be enforced, and what is the possibility of alternative procedures?

Perhaps the most essential part of this sampling of the literature is the third question, concerned with the continued attempts to determine what chronological entrance age is best for the largest number of children.

Finally, there is the question raised by evidence that sex differences have an important bearing on both academic achievement and social adjustment.

This organization is not a hierarchical listing of questions thought to be important. All the questions are

interrelated and cannot be considered as separate queries. This will be obvious in the following comments pertaining to existing entrance age policies.

I. CURRENT TRENDS REGARDING ENTRANCE AGE

A brief summary of current practice in regard to entrance age is provided in the December, 1958, <u>Elementary</u> <u>School Journal</u> (6:129):

A comparison study reports that in the typical school system the minimum age for admission to first grade is 5 years, eight or nine months. There are signs that the minimum will soon go up to six years. All schools where a change is in prospect reported the new regulations will require beginning first graders to be older than under previous rulings. Few systems make exceptions to these rules. About 35 per cent said they make no exceptions at all.

The reasons for this trend to a more rigid chronological age requirement are explained as follows by an association of superintendents in New Jersey (2:29):

It was, and is, the considered opinion of the Bergen County Department of Superintendents that an older child is usually readier to accept and benefit by school experiences than a younger one. The recommendation of October 1 as the uniform entrance date was made not because it is a magical one, but because it is the earliest calendar date that can be used and still remain within the law as it is written. That there are exceptions to this or any other rule cannot be argued; yet there has been a barrage of criticism about the recommended date, not really because the rule is bad for most children, but because the exception to the rule, the "gifted child," is thought to be harmed. It should be rather clear, and it probably will become clearer through use of the testing programs many school districts have adopted, that gifted children are not as numerous as critics seem to believe, and that exceptional treatment may be used for these exceptional children without jeopardizing the value of the uniform date of October 1 for the many.

Even more pertinent to the determination of entrance age for Pasco schools is the report of a recent survey concerned with actual practices in Washington State, compiled by the School Information and Research Service (10:1-7). (The report is considered to be of such significance that much of the introductory statement is included here, along with a tabulation of results which appears as Table I):

Rigidly enforcing regulations concerning entrance age is a real headache to many, if not most, superintendents. But an exception for one day leads to an exception for two days and so on. Soon there is no control at all and children become increasingly immature. From the standpoint of parents, however, rigid rules don't make sense, particularly if it is a matter of only a few days or weeks. They point out that the child who just misses qualifying for entrance one year will be practically seven before he can begin school. Further they point out that the child is big for his age, his playmates will be attending school, etc. While it is desirable from the standpoint of administration, elimination of midyear classes only makes the matter worse from the point of view of parents.

Some years back the swing was toward liberality. Many districts extended their entrance age to six by January 1 and even later. Readiness became a factor to be taken into consideration. Indeed, a few systems all but eliminated chronological age and admitted largely on the basis of mental and social age as determined by tests and trial. During recent years, however, the tendency is to admit on the basis of chronological age, cutting the date back to about the beginning of the school year and to make few exceptions. Periodically bills have been introduced in the legislature to standardize entrance age, but always these have come to naught. Of course entrance age is related to program and same is true the other way around. Whatever the beginning age, programs must be continuously adapted to abilities, interests and needs. But since first grade generally represents a reading program it helps if the children are sufficiently mature. Ideally they should have a mental age of about 6½ years. With only one entering group per year it then becomes necessary to establish an age-date which takes all factors into consideration and yet is not unduly restrictive in terms of tradition and mores.

It will be noted that a little over half of the responding districts--81 out of 154--now say six by October 1. While presently only 16 districts now require the age of six by September 1 or by the date school starts, we suspect that the trend is in this direction and the number will grow.

Of the schools represented in Table I, 77 stated they allow no exceptions while 40 indicated that exceptions are made in the case of transfers from other districts and occasionally for children whose tests indicate superior ability.

A comparison of Washington State practices as shown in Table I with national trends as discussed by Letton would seem to imply that Washington entrance ages conform fairly closely to the national norm. The tendency in both seems to be toward an earlier age requirement because this would seem to be best for the average child.

It is not easy to make any radical changes, however, because of parental objections. These range from such educationally invalid reasons as wanting the children away from home as soon as possible to legitimate complaints such as concern for the gifted child. From an administrative point of view an inflexible policy of admitting children on the basis of chronological age rather than because of parental preference presents the least problems. This subject will be discussed in the following section, along with possible alternatives and compromise solutions.

II. ARGUMENTS FOR AND AGAINST AN ARBITRARILY DEFINED CHRONOLOGICAL ENTRANCE AGE

Opposing those who would admit children solely on the basis of age, many educators would prefer that rigid entrance age requirements be abandoned on the theory that our increasing knowledge of individual differences is largely wasted as long as we persist in admitting children to school after judging them only by this criterion.

Kittitas County has reached a compromise (see Appendixes B, C, and D) by adopting a policy with a suggested entrance age of six on or before September 10. An exception can be made if a child will be six on or before December 31 and the parents can offer evidence of objectively determined readiness for school. A psychological examination must be administered by a psychologist approved by but not employed by the school district. The factors to be evaluated in the psychological examination are listed in a letter to the psychologist (see Appendix C). Among

other things, individual intelligence test results must show that the child has achieved a mental age of six or show an intelligence quotient of at least 130, and in the judgment of the psychologist must show evidence of a high quality of social maturity and a high level of emotional maturity. The parents must also submit evidence of physical fitness and stamina, attested by a physician. The cost of such tests, assumed by the parents, ranges from \$20.00 to \$30.00.

Commenting on the effectiveness of a flexible entrance program, Rowland and Nelson refer to a recent N.E.A. study (9:18-23). They state that a majority of administrators of schools employing a flexible entrance age feel that it is successful in their districts but some are not really sure how it is being received by the general public. Still others admit that some parents like it and some do not-according to the decision on entrance accorded their own child.

When questioned about the most reliable criteria for determining admittance, 66 per cent of the same administrators said the individual psychological examination was the most effective. Other methods, in order of frequency mentioned were group tests and developmental histories, observation in kindergarten, teacher observations, parent interviews, and physical examinations.

In the same study the administrators estimated the time involved in evaluating the individual child to be from fifteen minutes to four hours, with one hour being average. The cost to the school district was estimated at from twenty-five cents to \$35.00 per child, with most ranging from \$5.00 to \$15.00. One might question the validity of the twenty-five cent, fifteen minute interview, and wonder about the feasibility of the four-hour, \$35.00 evaluation.

It is possible to offer many criticisms of such flexible programs. They are expensive, time-consuming, and can lead to poor public relations when children are not accepted for entrance unless adequate counseling for the parents involved is available. Many of the programs used were not thorough enough in gathering data on each child or did not provide enough evidence on each child, which led to as many errors in admitting individual children as does adherence to an inflexible chronological age requirement.

Presenting the case for rigid enforcement of a chronologically determined entrance age, Hampleman (3:331-4) says:

It is the opinion of the author, however, that school people can get changes made in the chronological age requirement far more easily than they can get the public to accept readiness test scores. Therefore, to be practical, more study should be concentrated on that chronological age at which beginning reading can be taught most successfully.

Even some reputable psychometrists share the view that entrance age based on a testing program is not workable. The following comments are from an article in the August, 1959, School Executive (2:31):

Anna Starr, formerly of Rutgers University and well known for her work in testing the pre-school children has said, "There is no single measure by which to determine the right answer in reference to a particular child. It is not age alone nor physical size, nor health, nor nursery school experience; nor is it social or emotional maturity alone, but rather a balance of all these working together. It is far easier to agree upon admission rules for a group rather than for an individual."

Logical arguments can be offered both for admittance to school strictly on the basis of chronological age and for a flexible entrance program based on testing. Ideally, to recognize all individual needs and differences. a comprehensive testing program might be the solution. However, a testing program must be carefully planned and properly administered to be of any value. An incomplete or inaccurate evaluation of the children can lead to as many problems as can uncompromising enforcement of age rulings. There are very few valid and reliable group tests for pre-school children, and these few are limited in scope. The alternative--administration of many individual psychological examinations--can be costly in time and money. Viewing the problem from a strictly practical standpoint, a chronological age requirement is the most administratively sound

plan, with the possibility of a compromise feature such as mentioned in the Kittitas County plan.

If it is to be assumed that a chronological age requirement is desirable, the next step is a consideration of what that age requirement should be.

III. WHICH AGE IS THE BEST AGE?

The importance of even minor changes in entrance age is emphasized in the following statement from Gertrude Hildreth (4:22):

Every month makes a difference in the mental maturity and learning capacity of these young children. One month makes more difference in these early growth years than it does later. At age five, for example, one month represents one-sixtieth of the child's total maturity to date; at age eight, one ninety-sixth, at age ten, one one-hundred-twentieth, and so on.

One of the most important tasks of the child starting to school is learning to read. Tinker discusses the theories of many reading authorities in <u>Teaching Elementary</u> <u>Reading</u> (10:22-27). He summarizes conservatively the following consensus:

The accumulated evidence seems to indicate that children with mental ages appreciably below six years should not begin to learn to read in the ordinary classroom situation. If his mental age is at least six years and other factors . . . are favorable, the child can be taught to read, provided the first grade teacher is going to be alert in recognizing and making adequate adjustments to the individual differences in ability she will encounter. Most of these children, however, can profit by further preparation for reading while they are attaining somewhat greater intellectual development. It is evident that even under optimum conditions a mental age of six is considered minimum for starting to read, and actually, most authorities recommend a readiness program at this time with the reading program itself beginning when the child attains a mental age of six years four months to six years six months.

Gertrude Hildreth (5:28) poses the question, "Should the minimum entering age be set high so as to keep out immature children and maintain high standards of achievement in the first grade?"

To some extent she answers her own question in another publication (4:22).

The only research finding that have much bearing on the problem are those that tend to show that in the conventional first grade, children tend to fail unless they have a mental age of about six years and four months at the time of entrance. Only the brighter children and those who are nearing six and a half by the opening of school in September make good progress with the traditional first grade program. Slower learners and those who are much younger and no more than normally bright have a difficult time.

Hampleman (3-331-4) summarizes a study concerning the effect of entrance age on reading achievement. In the quotation, Group I refers to children who were six years, three months of age or younger at entrance and Group II to children who were six years, four months of age or over at entrance:

A comparison of the two groups, Group I and Group II, indicates that there is an interesting difference between them in reading achievement. Although it has been well established by earlier research that many factors may influence reading readiness, it seems fairly certain, as a result of this study, that school administrators can advise parents that their children have a considerably better chance for success in reading by starting to school a few months later, rather than a few months earlier. This would be especially important in those cases where birthdate causes doubt as to the best time to send a child to school. The administrator can be more confident then of a good prognosis if an intelligence test is given.

Some worthwhile arguments are presented by Gelles and Coulson (2:29-31). First they discuss the negative values of premature school entrance, then stress that more is involved than simply lack of progress:

Numerous studies, made all over the country, have shown what school people long knew from experience. Many younger children entering kindergarten were not ready to profit from school experience. If this were simply a matter of not gaining something it would <u>not</u> be too bad. But rarely does the situation confine itself solely to the academic area of no gain--it almost always edges its way into the negative area of social and emotional maladjustment, academic failure, difficulty with reading and the like. These problems arise when the child enters kindergarten at an age younger than most of his fellow entrants.

Then they refer to another study in discussing estimated success of younger children in the first grade:

A table predicting degree of success in first grade, prepared by Elizabeth B. Bigelow, indicates that children of average intelligence and equivalent levels of social and emotional development who are younger than six years of age, have a small chance of success in the first grade. The younger the average child, the less chance he has of adjusting to first grade work.

Gelles and Coulson also discuss the very important physical and emotional problems involved:

Younger children are normally far-sighted. They see distant objects much better than those close at hand. Authorities whose opinions educators respect agree some children 6 years of age and younger are still normally far-sighted. One study by Dr. Betts states, "Confusion of symbols is somewhat typical of normal 6-year old children. Eighty percent of 6-year-olds are still normally far-sighted, which means that too much reading is a strain at this age." Thus, children who are urged to learn to read before they are truly ready, physically, may well experience great difficulty. It is a fact that early school experiences take on great importance in influencing a child's attitude in the area of reading as well as toward his whole school career. Premature experiences at this stage may well tinge a child's whole outlook with defeatism.

Premature entrance to kindergarten and consequent premature exposure to the curriculum of the first grade which emphasizes reading and close eye and hand work and result in eyestrain and other physical as well as mental discomfort. Children brought into school early are called upon to use what they do not yet posses. This could be called cruelty without too great an exaggeration.

Many younger children are able, however, to keep up with older children. But at what cost? What are the social, emotional, and physical tolls exacted from them? They are often forms of maladjustment--social, physical or academic--which appear years later.

The answer to the question "What age is best?" appears to be six before starting first grade or five before starting kindergarten. It has been suggested that serious maladjustments may occur if the child is forced to try to do things he is not ready for mentally or physically.

To many the two groups involved in the entrance age problem are older children as opposed to younger ones. To others, the group working at a disadvantage is boys. In the last year this subject has received considerable public-

ity.

IV. IMPORTANCE OF SEX DIFFERENCES

One of the difficulties in comparing boys and girls in school achievement is that so many of the differences are difficult to measure, particularly such variables as attitude and social adjustment. It is difficult to discriminate between real differences, directly attributable to sex, and differences due to cultural patterns. Does a boy achieve in a given pattern because he is a boy or because he is expected to be a boy? It could be argued that this consideration may be incidental if differences in achievement among the sexes do exist, because if they exist, they must be dealt with. Conversely, if they must be dealt with, it would be helpful to know what causes them.

Current discussion of the problem has been expressed with both emotion and logic. Maxwell (7:26) calls attention to the disadvantages endured by boys. He attributes the difficulties many boys experience in spelling, writing, verbal expression, written expression, and reading to the fact that they are put in competition with an obviously superior foe--girls. He suggests these problems in the language arts area are created early in primary school and later influence the boys' achievement in and attitude toward the entire curriculum. He emphasizes the differences in physiological, psychological, and social adjustment in

secondary schools and the attendant problems thus created, especially in boy-girl relationships. He proposes that a simple solution would be starting boys a year or more later than girls.

Pauly (8:281-3) would admit boys later than girls or else retain many more boys in their first year of school. He summarizes his years of research as follows:

1. If boys are admitted six months or so later than girls there will be less frustration for boys, their parents, and their teachers; and there will be fewer drop-outs of boys in high school because of failing or unsatisfactory work.

2. State legislatures or boards of education should raise the legal entering age for boys (or lower it for girls). If custodial care for immature children is needed, it can be provided much less expensively than by placing such children in the schoolroom with more advanced children.

3. All mental age norms published should be revised to provide norms for each sex.

Pauly's arguments are challenged by Clark (1:73-77), who seems particularly critical of the former's statements concerning separate norms. First, Clark offers a table with the median chronological ages (in months) of boys and girls in grades one through twelve. The figures are reproduced here as Table II.

Clark points out that the difference between the median ages increases steadily so that in the first grade the median for boys is only .7 years greater than for girls but in the twelfth grade has increased to 2.6 years. He attributes this to more retentions among the boys, but even so he feels that the difference is not enough to justify any change in entrance age.

Clark bases further conclusions on statistics pertaining to a group of California Mental Maturity Tests and California Achievement Tests administered to a sample of third, fifth, and eighth graders. His rather lengthy summary of findings follows:

1. Sex differences in the area of general intelligence do not exist. Hence there is no need to provide mental age norms for each sex. It should be stated that many previous studies have identified sex differences in certain specific groups. The hypothesis is offered that if mental ability differences do exist, they arise from environmental factors. Conditions in our environment, in our mores, in our schools, and in our customs probably operate in selective ways so as to further the development of specific abilities in one sex to a greater extent than in the other sex.

2. Differences in achievement in basic skills areas of reading and arithmetic were not found. It follows that we must look toward the instructional materials area, toward interests, and toward other educational factors when we find differences in performance.

3. The superior achievement of girls on both mechanics of English and spelling tests implies that significant sex differences do exist in the language area. It may be necessary to afford additional instructional time and materials exclusively to boys in the language area in order to bring their achievement to the level of girls in the same grade.

4. Finally, on an over-all basis, this study stresses the wide range in variability in both mental ability and achievement at each grade and reminds the educator of the continuing need for dealing educationally with the individual differences of students irrespective of the sex of the pupil. It might be mentioned that the tests discussed by Clark measure maximum performance, not always highly correlated with the daily work of the individual child. They also fail to consider the rather complex problems of social and emotional factors which comprise an important part of this problem.

V. CONCLUSIONS

It is impossible to find either-or answers for all of the questions that arise when considering entrance age. However, several trends in thought and action do emerge. These are based on many years of practical experience in the field of education and upon empirical research. The tendency is toward requiring kindergarten children to be five and first graders to be six before school starts. This age requirement is in accord with much of the research done on reading readiness and success in first grade.

Very flexible entrance age requirements are difficult to administer although no one can deny that there is a wide range of individual differences among children and that no one age requirement can take care of all needs.

The difference between the older and younger children is not the only difference observed. A pronounced variance between the achievement of boys and girls is evident. Whether or not an adjustment of entrance age would help solve this problem is subject of violent disagreement.

All of these factors must be considered in any recommendations concerning entrance age.

TABLE I

TABULATION OF ENTRANCE AGES REPORTED IN WASHINGTON STATE

1960

1959 Siz	9 WEA Salary Study e Groups	I	II	III	IV	v	VI	ALL
Num	ber of Districts	4	65	41	117	83	107	417
Num	ber of Usable Replies	2	45	26	63	17	1	154
1. 2.	6 by September 1 6 by September 1 or	0	0	3	6	2	0	11
3.	whichever is earlier 6 by September 1 or	0	0	l	0	0	0	l
4.	whichever is later	0	0	0	2	0	0	2
4.	school	0	1	0	0	1	0	2
5. 6.	6 by September 10 6 by September 15	1 0	8 4	5	8 3	3 0	0	25 7
7.	6 by September 30	0	6	2	4	03	0	12
9.	6 by October 15	ŏ	2	1	6	2	, U l	12
10.	6 by October 14, work- ing back to Sept. 1	0	0	0	1	0	0	1
11. 12.	6 by October 31 6 by November 1	0 1	3 15	2 8	10 13	0 5	0	15 42
13. 14. 15.	6 by November 15 6 by November 30 No specific age	0 0 0	1 1 0	0 0 0	0 0 0	0 0 1	0 0 0	1 1 1

¹In preparing this table showing entrance age requirements in Washington State, the School Information and Research Service utilized the W.E.A. Salary Study size to identify school districts as to size. Group I includes schools with an enrollment of 20,000 or over, Group II, schools with enrollments of 2,000 to 19,999, Group III, schools with enrollments of 1,000 to 1,999, Group IV, schools with enrollments of 250 to 999, Group V, schools with an enrollment of less than 250 but with 5 or more teachers, and Group VI, schools with from one to four teachers.

TABLE II

MEDIAN CHRONOLOGICAL AGES (MONTHS) OF BOYS AND GIRLS IN VARIOUS GRADES

		كالاستكار كالمستكرانيا ومراقب ويستروه ويرجعن ويتربين الانتيان والتي ميزا معتقا ومناومات متراف والاستراك والمتروي و
GRADE	BOYS	GIRLS
1	76.7	76.0
2	89.8	89.2
3	103.1	101.0
4	116.7	113.8
5	129.3	126.1
6	141.6	138.5
7	153.7	150.2
8	165.5	162.0
9	176.3	173.2
10	187.0	184.2
11	198.2	195.7
12	210.5	207.9

Adapted from <u>1950 United States Census of Population</u>, Vol.II, Characteristics of Population, Part I, U. S. Summary, Chapter C, Washington, D. C.: U. S. Government Printing Offices, 1953.

CHAPTER III

DESCRIPTION OF THE SAMPLE AND METHODS USED

In studying the implications of entrance age for progress in the Pasco schools, it seemed impractical to gather data on the entire population. It was necessary to limit the study to a sample; ultimately, the sixth grade for the 1959-1960 school year was chosen, giving a selected, representative sampling rather than a random sampling.

I. DESCRIPTION OF THE SAMPLE

A description of the population from which the sample was taken together with a description of the ecology of the Pasco school district may suffice as a description of the sample itself.

<u>Population</u>. Before World War II Pasco was primarily a railroad town with a population of about 3,000. School district figures predict that the population of the town will approximate 15,000 during the 1960-61 school year, with the population of the entire school district estimated at 21,000.

<u>Past economy</u>. Prior to the war the railroad economy was supplemented by dry land farming, principally wheat, with some grapes and diversified farms. During and immediately following World War II, the area was populated largely by a transient "boom" population. It is now comparatively stable. The Atomic Energy Commission activities at nearby Hanford accounted for much of the initial population surge. Most of the current population is permanent and employed in other fields, although many A. E. C. employees do still reside in the Pasco School District.

Present and future economy. New industries which contribute much to the income of the area are a pulp mill and paper box company and several new chemical plants. Storage and wholesaling have become important to area economy in conjunction with trucking and the railroad. Railroad facilities have been greatly expanded with the construction of a one million dollar hump yard. Farming has always been relatively important, but irrigation from the Columbia Basin Project has made it even more so. Government sponsored project farms allocated to veterans on a nation wide lottery basis have brought many families from other states. Sugar beets and seed beans and peas are grown, and commercially produced fertilizer is manufactured locally. The expansion of the population is making the area increasingly important as a shopping center. Construction of housing, bridges, and dams has created a large

and surprisingly stable group of construction workers. The stability of this faction can be explained largely by the fact that government regulations prohibit contractors importing more than 5 per cent of their personnel.

As the economy would indicate, Pasco has a largely middle class population. There are few, if any, really wealthy families. Professional people, managerial personnel, and business people constitute the upper level. The area has been criticized in the public print for the "ghetto-like conditions" endured by the colored population, but actually, the lower class is not excessively large if the way the school children are cared for can be used as a criterion.

Housing. Most housing in the area is fairly new, as the growth in population would indicate. Once common, over-crowding is no longer an important factor in the health and emotional growth of the children. Some 259 school children do still live in trailers and some live in low cost city housing. Sub-standard city housing is being torn down. Much of the housing, in keeping with the people, is middle-class.

Ethnology. The population is predominately Caucasian. Ten years ago it was 10 per cent Negroid, but the colored population has not kept up with the increase in white population and now constitutes only 5 per cent. orientals account for less than one per cent of the total, with only four Japanese families and two Chinese families. There are a few Mexican families, most of them new to the district.

Religion. As religious activities are kept distinctly separate from those of the school district, the influence of the churches on the school district is indi-The Catholic Church has its own elementary school rect. with first through ninth grade. The Seventh Day Adventist Church also has its own small grade school with grades one through six. Lutheran children can go to a Lutheran school in Kennewick, and a few do. There may be a few more Pentecostal churches than is typical of northwest towns because of the number of people in Pasco who have come from The Latter Day Saints Church has a large and the South. growing congregation and is particularly strong in the The standard white Protestant churches have rural area. expanding congregations but without excessive denominational identification or rivalry. Every effort is made by the school district to keep church and state separate.

<u>School district and students</u>. In the 1959-60 school year, enrollment in the school district was

approximately 5700 from kindergarten through junior college. Columbia Basin College, the district junior college, accounted for some 1100 of these. Many of the college students commute from other school districts. Nine years ago the school district enrollment was 2000. Predicted enrollment figures for the 1960-61 school year indicate that it will have tripled in ten years. The average increase is 7 per cent.

<u>School district physical plant</u>. At present the district has a kindergarten building, five elementary schools, a junior high school, a senior high school, and an additional junior high under construction. Only two and a half of these buildings are over ten years old. School building construction has kept pace with district growth so that split shifts and emergency classrooms have been kept to a minimum.

<u>Effects of growth</u>. As the rapid growth of the community would indicate, many of the students are not native to Pasco but rather are from all over the United States. Only 47 per cent of the students in the sample have been in Pasco schools from the first through the sixth grade.

<u>Staff.</u> Of the 220 teachers, many are from other states, particularly the midwest. Almost all of the junior

college instructors have Master's degrees, and all teachers are encouraged to obtain them. A few teachers remain with emergency certification. For the most part, they are competent and experienced but have been certified in states with lower requirements. They are urged to bring their certification up to Washington State standards. Salaries are based on a definite schedule and raised regularly to keep the school district in a favorable position for competing for competent teachers. Several new teachers are hired every year because of district growth, not because of excessive turnover.

Pasco is an average, middle class community. There would seem to be nothing in its living standards, ethnology, or religious activities to mark it as significantly different from other middle class communities. Rapid growth has been an important factor in school planning, as it has been everywhere. The schools are competently administered and the staff is conscientious. There are no conspicuous factors that would make it very different from most average school districts. Thus, inferences drawn from other average school districts may be applied to Pasco and vice versa.

The sample. The sample itself consisted of the sixth grade of the 1959-60 school year. It totaled 365

students from eleven sixth grade classrooms in the five elementary schools. Of the 365, 172 were girls and 190 boys. Because of differences in the available records and the fact that some of the students were too new to the district to have accumulated any data at all, a very few students could not be considered in the sample.

The sixth grade represented a selected rather than a random sample. However, they may be assumed to be a typical group.

Sixth grade students were selected for the sample for several reasons. First, they are at the mid-point in their education and near the mean as far as class size is concerned. Second, they have been in school long enough to have accumulated additional test records, scholarship records, and citizenship records to make statistical inferences feasible. Third, in the Junior High (grades seven through nine) there is some homogeneous grouping, and some of the pupils are already being directed to vocational training while others are taking courses suitable for the accelerated student, thus making their records not directly comparable with one another. The sixth grade was selected as typical. It was assumed that the degree entrance age had affected the progress of students of this age group would also apply to other students in the district.

Limitations of the study. The study was limited to Pasco, Washington School District #1. The sample was limited to the sixth grade.

II. METHODS USED

<u>Compilation of data</u>. To compile the information on each of the 365 subjects, their school records were carefully examined.

From their cumulative and permanent record cards and from their test records, master sheets were prepared listing the pertinent data. Information gathered included name, school, teacher, date of birth, years of enrollment in the Pasco School District, average scholarship letter grade, average citizenship letter grade, mental maturity scores for first, third, and fifth grades, and academic achievement scores for fourth and sixth grades. (The last were not utilized in any statistical computations). It was possible to ascertain how often and when the child had been retained, placed, or socially promoted by checking the permanent record card. Personal interviews were necessary for pupils from other schools when there was any question.

<u>Chi square as a test of an a priori hypothesis</u>. The hypothesis the study was designed to test is this: Children who were not six before school started would show measurable differences in progress when compared with the children who were six before school started. The older children were expected to progress with fewer retentions and to achieve higher letter grades.

The pertinent data were transformed into frequency tables which appear in Chapter IV. A test of significance was needed to determine if the differences departed from chance expectations. Since the hypothesis to be tested was an a priori one, chi square as a test of the null hypothesis was used. In testing the null hypothesis with chi square, it is assumed that the differences shown in the frequency tables are not significant but are due to chance. Only if the null hypothesis can be rejected can it be defended that differences are due to the variable being considered, in this case, that of age.

<u>Control of extraneous variables</u>. The selection of the sixth grade for the sample was an attempt to preserve the homogeneity of the sample in that the children all had somewhat the same educational experience and were in the same age group.

It was also necessary to ascertain that neither group was extremely different from the other in intelligence. This will be discussed at length in Chapter IV. In determining the mean mental maturities it was necessary to use group test scores in most cases. When more than one was available the highest was used on the assumption that group tests measure the "floor" and not the "ceiling," and that therefore the highest could be the most accurate. When an individual test score was available, it was used.

The review of the literature in Chapter II shows that a number of educators feel that sex is an important factor in achievement in elementary school. To test this hypothesis in relation to Pasco, all computations were done for boys and girls separately.

CHAPTER IV

DEFINITIONS OF TERMS AND RESULTS OF THE STUDY

Several words have special meaning in the context of this study. Their difinitions are offered here.

I. DEFINITIONS OF TERMS

<u>Older</u>. For the purposes of this study <u>older</u> refers to pupils who attained a chronological age of six years before starting the first grade. (With respect to the study's sample, the cut-off date is August 1, 1948, and children born before that date are classified as <u>older</u>).

<u>Younger</u>. Children not six before starting school are referred to as <u>younger</u>. This means children who were born on or after August 1, 1948. August was selected as the crucial month since Pasco schools always start in August.

<u>Promoted</u>. This refers to children who have satisfactorily completed the work at their assigned grade level and have been passed on to the next grade. When applied to the study's sample it will designate the children who have satisfactorily completed each grade in one year.

Not-promoted. This refers to children who have been retained, socially-promoted, or placed. In the Pasco schools retained is used to designate children who have not satisfactorily completed the work on their assigned grade level and must repeat that grade. It also applies to children who repeat a grade because of social or physical immaturity or by parental request. Parental request, however, is usually because of one of the previously mentioned rea-Socially-promoted labels children who have not persons. formed satisfactorily but who are moved on to the next grade because of age or because their level of intelligence does not suggest they would benefit by repeating the grade. Placed is used interchangeably with socially-promoted and also includes children whose parents refuse to allow them to be retained. Here, not-promoted will be used to suggest any one of the other three terms. For the purpose of this study the important fact is that children have not always progressed sequentially from one grade to the next without difficulty. The children grouped under the classification of not-promoted may have been retained, socially-promoted, or placed one or more times and in any combination or multiple combination of the three.

II. RESULTS OF THE STUDY

The process of trying to reduce active children to inferential statistics is a frustrating process at best. In trying to evaluate the sample as a group, the writer was constantly pausing to note that this child or that was really a special case for one reason or another and could not be accurately pictured by the simple measures used in this study. However, teacher judgments in the form of scholarship and citizenship grades are at best subjective, even when they are reduced to letter grades and the judgments of several teachers are averaged. For this reason, all children for whom information was available were included with no provisions being made for special cases. This would have been much simpler if the children had all been strangers to the writer.

In the future, perhaps a frankly subjective evaluation of each child in the <u>younger</u> group by their teachers might supplement this study.

In the interest of simplicity and continuity, the same test of significance, chi square, has been applied to all of the variables considered in the study. It allows the acceptance or rejection of the previously stated hypothesis. In the interest of determining whether or not children who are not six until after school starts are

working at a disadvantage when competing with those children who are six before school starts, the age variable is compared here with sequential progress, with scholarship letter grades, and with citizenship grades.

Promoted or not-promoted. The frequencies in Table III indicating the number of boys promoted and not-promoted would appear to show that the younger boys are at a disadvantage. Only 24 per cent of the older boys fall into the not-promoted classification while 32 per cent of the younger boys do. However, the probability of .30 noted on the table does not bear out this initial impression. The frequencies for girls on this same set of variables in Table IV show even less significance: P = .50. Ten per cent of the older girls are classified as not-promoted and only 6 per cent of the younger girls. It is necessary to conclude that in the Pasco schools it is impossible to predict that the younger children, as defined in this study, will probably be retained, socially-promoted, or placed any more frequently than the older children.

The next consideration was whether or not the younger children received consistently lower grades than the older ones. Although the grading system in Pasco is based on A, B, C, D, and E, D's and E's are given so seldom in the elementary school as to make it statistically

impossible to consider them in a separate classification. The grades in the tables that follow are designated as A. B, and C. Actually the cell frequencies listed as C include grades of C and below. The grades are an average of the scholarship and citizenship grades for six years and kindergarten. If the child repeated a year, more than this number were averaged. If he was not in the Pasco system throughout elementary school, less grades are involved. If he was new to the district and had less than three-quarters of grades recorded, he was omitted from this particular computation as his grades for such a short time in a new school may not be indicative of his typical These grade averages were correlated with performance. the older and younger classifications.

Scholarship grades. Tables V and VI suggest what little boys have always known. Little girls get the best grades. Even so, the younger boys are at even more of a disadvantage than the older ones; the notation below Table V shows a significance level of .01. This shows that the younger boys receive conspicuously lower grades than the older boys, all other factors being assumed equal. Table VI, dealing with the same variables for girls, gives a significance level of .05, previously established as the crucial significance level for these computations. It may be concluded that although the entrance age as it now stands cannot be considered a crucial factor to being promoted or not-promoted, the children in the younger classification operate at a definite disadvantage regarding scholastic achievement. Those who are six years old before starting school operate at a consistently higher level.

<u>Citizenship grades</u>. The only measure of social adjustment considered in this study is the citizenship grade. These grades were considered in the same manner as were the scholarship grades.

A comparison of Tables VII and VIII suggests an even greater divergence between citizenship grades of boys and girls than was exhibited in scholarship grades. The value of chi square for Table VII, comparing citizenship grades of older and younger boys, is 12.21, the highest of any in this series, giving an .01 level of significance. As far as the citizenship grades indicate, the younger boys are not as well-adjusted as the older. This is even more important when the poor showing of boys on the whole is considered.

The frequencies in the table for the girls, Table VIII, do not suggest this same trend. Comparing citizenship grades of older and younger girls, Table VIII shows the significance level is only .30. However, it would be a mistake to interpret this as implying that girls are all well-adjusted. Many younger girls are excessively quiet and shy, and although this is just as indicative of lack of adjustment as obstreperous behavior in boys, it effects the citizenship grade favorably rather than unfavorably.

Intelligence of sample. In all of the test of chi square, it has been necessary to assume that the intelligence of the older and younger groups would in all probability be equal. Under most circumstances the hypothesis that the month of birth has no correlation with intelligence would be accepted without question. However, if the intelligence of the younger group were lower than that of the older group, it would challenge the tests of significance previously discussed. For this reason it has been necessary to compute an arithmetic mean of intelligence quotients for all of the groups considered.

Examination of these means, shown in Table IX, does show unexpected variance in the two groups, older and younger. However, it is one that would reinforce, rather than challenge the tests of significance. Actually, the average intelligence quotients of the children in the younger group, and particularly those classified as notpromoted, were significantly higher than those of the older group. From this may be suspected that the younger group might have been at even more of a disadvantage had the intelligence factor been equal.

TABLE III

FREQUENCIES OF OLDER AND YOUNGER BOYS IN RELATION TO BEING PROMOTED OR NOT-PROMOTED

	PROMOTED	NOT-PROMOTED	TOTAL
OLDER	111	36	147
YOUNGER	29	14	43
TOTAL	140	50	190

These frequencies yield a X^2 of 1.13 which is not significant.

TABLE IV

FREQUENCIES OF OLDER AND YOUNGER GIRLS IN RELATION TO BEING PROMOTED OR NOT-PROMOTED

	PROMOTED	NOT-PROMOTED	TOTAL
OLDER	110	13	123
YOUNGER	46	3	49
TOTAL	156	16	172

These frequencies yield a X^2 of .84 which is not significant.

TABLE V

FREQUENCIES OF SCHOLARSHIP GRADES FOR BOYS IN THE OLDER AND YOUNGER CLASSIFICATIONS

				a the same state the same state and a same state of a same state	
	A	В	C	TOTAL	
OLDER	18	47	73	138	
YOUNGER	6	11	22	39	
TOTAL	24	58	95	177	

These frequencies yield a X^2 of 9.32 which is significant.

TABLE VI

FREQUENCIES OF SCHOLARSHIP GRADES FOR GIRLS IN THE OLDER AND YOUNGER CLASSIFICATIONS

		-			
	A	В	C	TOTAL	
OLDER	26	51	40	117	
YOUNGER	3	21	20	44	
TOTAL	29	72	60	161	
		_			

These frequencies yield a X^2 of 5.40 which is significant.

TABLE VII

FREQUENCIES OF CITIZENSHIP GRADES FOR BOYS IN THE OLDER AND YOUNGER CLASSIFICATIONS

									and the state of the
		Å		В		C		TOTAL	
(DLDER	27		58		53		138	
3	YOUNGER	6		18		15		39	
ŋ	TOTAL	33		76		68		177	
These	frequencies	yield	a X ²	of	12.21	which	is	signigi	cant.

TABLE VIII

FREQUENCIES OF CITIZENSHIP GRADES FOR GIRLS IN THE OLDER AND YOUNGER CLASSIFICATIONS

	A	В	C	TOTAL	
OLDER	47	51	19	117	
YOUNGER	13	20	11	44	
TOTAL	60	71	30	161	

These frequencies yield a X^2 of 2.29 which is not significant.

TABLE IX

MEAN I.Q.'S FOR VARIOUS GROUPS IN SAMPLE TO BE COMPARED WITH MEAN OF 110.84 FOR ENTIRE SAMPLE

		NOT- PROMOTED	PROMOTED	TOTALS BY AGE	TOTALS BY SEX
TOTAL MEAN FOR BOYS			<u>, , , , , , , , , , , , , , , , , , , </u>	a a da an an de sa sa an an an dù dù na	110.59
MEAN	FOR OLDER BOYS			109.47	
	PROMOTED		113.35		
	NOT-PROMOTED	94.96			
MEAN	FOR YOUNGER BOYS		;	111.00	
	PROMOTED		121.4 7		
	NOT-PROMOTED	101.59			
TOTAL MEAN FOR GIRLS		•			111.12
MEAN	FOR OLDER GIRLS			110.50	
	PROMOTED		113.00		
	NOT-PROMOTED	91.00			
MEAN	FOR YOUNGER GIRLS			112.75	
	PROMOTED		113.14		
	NOT-PROMOTED	106.00			

CHAPTER V

SUMMARY AND CONCLUSIONS

It is difficult to write in terms of summary and conclusions when so much remains to be done. Perhaps the most obvious need brought out by this study is for extensive, empirical research on the problems of younger boys. The scope of this study seemed monumental when the data were being assembled but much less significant now. Like every problem, this one has many facets, all of them meriting investigation.

On the basis of the information currently available, the following summary and conclusions are offered.

I. SUMMARY

The first problem discussed in the review of literature pertained to current trends in entrance age. According to the statistics presented in Table I, the current practice in Pasco of requiring children to be six on or before October 31 is only one day away from the mode for Washington State. The trend, however, is toward requiring children to be six on or before the opening day of school.

The second problem concerned the advantages of a single, universally applied age requirement. Arguments

are presented both for and against this practice. A program making generous allowances for individual differences emerges as an ideal, but a rigidly defined chronological age requirement has more practical advantages. Experience in the district, itself, cannot be discounted in policy matters of this kind, and a definite ruling with few, if any, exceptions has proved most satisfactory in Pasco in the past. Increasing public awareness of the problems of the gifted child accentuates this problem. A compromise is presented in the Kittitas County plan.

The consensus of authorities cited is that the child should have attained a chronological age of six years before starting school. The results of the survey confirmed this consensus. This stands out as the strongest argument for changing the current age requirement to an earlier date.

The problem of sex differences in achievement presented a dilemma. In current publications it is argued with more emotion than logic. Much more research is needed on this phase of the problem and an extended public relations program would be necessary before it would be possible to consider this factor in determining entrance age. However, the results of the study do show that boys do not achieve on the same level as girls, either in scholarship or citizenship.

II. CONCLUSIONS

<u>Conclusions from the literature</u>. The literature offered many of the disadvantages of an entrance age that permits children to start the first grade before they have attained a chronological age of six years. Although no one claims there is any signle age at which every child is automatically ready for school, much of the data accumulated does show that children who are six before starting school have a much better chance of achieving to capacity then those who are not. Particularly affected is the language arts field, especially reading.

The attitude of the younger child is adversely affected when he is asked to do things he is not ready to do. His social and psychological adjustments are impaired in many cases.

<u>Conclusions from the study</u>. The results of this study confirmed some of these conclusions. Although limited in scope, the study indicated there are measurable differences in the scholastic progresss of the older and younger children, and in their social adjustment indicated by the citizenship grade. In these areas, the younger children are definitely working at a disadvantage. On the basis of the study there was not conclusive evidence that the younger child is more likely to be retained, sociallypromoted, or placed, although some of the statements in the review of literature indicated that many authorities believe this factor must be considered.

<u>Recommendations</u>. This study indicated the practicality of an earlier cut-off date for entrance age in Pasco, Washington schools. In order that all first-graders be chronologically six years of age before school starts, August 1 is recommended. This would alleviate many of the problems created by having children enter the first grade before they are six, and kindergarten before they are five. Likewise, this would bring Pasco's policy more in line with those of the other Tri-Cities which follow national trends.

The advantages of allowing no exceptions have been discussed. If the school board and administration feel that provision must be made for individual differences, a plan similar to that in Kittitas County is suggested. Parents of children who would be six on or before December 1 would be offered the privilege of proving their child's readiness for school. This would take the form of a psychological examination showing the child to have reached a mental age of six years before school starts and also showing evidence of social maturity. Also to be submitted would be a physician's statement that the child is physically

fit and physically mature enough to enter school. The same procedure would be followed for early entrance to kindergarten, changing six to five, of course. The letters sent to Kittitas County parents (reproduced in the Appendixes B, C, and D) might serve as models. The psychological tests referred to would be administered by psychometrists recommended by the school district, and the medical examinations by physicians belonging to the Benton, Franklin Medical Association. All costs would be the responsibilility of the parents.

The problem of lower achievement by boys presents a very delicate problem in public relations. No differentiation in entrance age could be made without years of preparation and more research. Whenever possible, the parents of boys should be informed of observed differences in achievement before their sons are enrolled, and perhaps more concrete action can be taken at a later date, when research is more conclusive and public opinion more favorable.

As in most research of this type, the need for further study is obvious. The evidence presented here does, however, warrant serious consideration in any future discussion of changing the entrance age for Pasco schools.

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APPENDIXES

APPENDIX A

ADMISSION REQUIREMENTS

- 1. AGE
 - a. The age for entrance to kindergarten shall be five (5) years on or before October 31; the first grade shall be six (6) years on or before October 31 of the year in which the pupil enters school.
 - b. All children entering kindergarten and the first grade are required to funish birth certificates.

2. SCHOLASTIC

Pupils may enter any grade above the first on evidence that they have completed the work of preceding grades.

3. RESIDENCE

Unless special arrangements have been made through the principals concerned and the office of the superintendent, a pupil must attend that school serving the area in which he resides.

4. TRANSFER

Transfer students will be assigned grade placements commensurate with the abilities. Recommendations of previously attended schools will be considered in making assignments. Kindergarten and first transfer pupils must meet the district's entrance age requirements to be eligible for assignment to those grades. Questionable cases should be referred to the Superintendent of Schools.

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Board of Directors' Policies

Pasco School District No. 1

August 10, 1959

APPENDIX B¹

KITTITAS COUNTY SCHOOLS J. E. Miles, County Superintendent Ellensburg, Washington

Dear Parents:

At their annual spring meeting in 1959 the school directors of Kittitas County legislated an entrance age regulation for children beginning kindergarten and first grade. Starting with the opening of school this year (1959) kindergarten enrollees will have had to reach their fifth birthday on or before September 10th. Beginning in 1960 first grade enrollees will have had to reach their sixth birthday on or before September 10th.

The school directors, in their desire to provide proper opportunities for all youngsters, deemed it desirable to permit entrance in kindergarten and first grade on a basis of exceptional maturity even when the chronological age is below the recommended level.

Parents interested in establishing the recommended level of exceptional maturity for their youngsters should process the attached letters. The forms, properly signed, should be presented to the principal of the child's school. He will make the final decision about the child's placements.

Kittitas County School Administrators

¹(This letter is used by the Kittitas County School Administrators to inform parents of district policy. The form for the psychologist and for the physician follow. Also included is a list of approved psychologists in several cities which will not be included here.)

APPENDIX C

KITTITAS COUNTY SCHOOLS J. E. Miles, County Superintendent Ellensburg, Washington

Dear Doctor:

Kittitas County school officials, in an effort to avoid an arbitrary regulation for enrolling children in kindergarten based on chronological age alone, have agreed to permit entrance of under-age children when certain evidences of exceptional maturity are apparent.

The following criteria have been set up as a guide to those qualities of maturity which we feel are necessary for an under-age child to properly adjust to the tasks of school.

- 1. Fifth birthday must occur between the opening day of school and December 31st.
- 2. An intelligence quotient on theStanford-Binet of at least 130 or a mental age of six years, or be above an equivalent proportion of children in ability shown on the W. I. S. C.
- 3. Results of a vocabulary test which shows strong verbal power.
- 4. Evidence of adequate speech patterns.
- 5. A high quality of social maturity.
- 6. A high level of emotional maturity.
- 7. Medical evidence of physical readiness for kindergarten. Adequate physical health and development.

Your recommendation, together with that of a physician, will be used to provide a basis for school enrollment for this child.

Kittitas County School Administrators

Because I recognize in this child the qualities stated in the criteria listed above, I recommend that he be considered for enrollment in school at this time.

(This letter is for the Certified Psychologist)

APPENDIX D

KITTITAS COUNTY SCHOOLS J. E. Miles, County Superintendent Ellensburg, Washington

Dear Doctor:

Kittitas County School Officials, in an effort to provide unusual educational opportunities for exceptional children, have agreed to permit entrance of under-age children in instances where evidence of unusual maturity is apparent.

Your signature on this form will be our guide in recognizing in this child a point of unusual physical maturity and stamina. Your recommendation, together with that of a psychologist, will be used to provide a basis for a decision regarding school enrollment for this child.

Kittitas County School Administrators

The results of my examination of this child indicate an unusual level of physical maturity and stamina. I recommend that ______ be considered for

enrollment in school at this time.

(This letter is for your family doctor)