THE BASIC PURPOSES OF THIS LONGITUDINAL STUDY WERE TO ASCERTAIN WHETHER OR NOT SCHOOL DISTRICT REORGANIZATION IS WORTHWHILE IN TERMS OF TIME, EFFORT, AND EXPENDITURES OF FUNDS, AND TO DETERMINE THE EFFECTS OF SUCH SCHOOL DISTRICT REORGANIZATIONS ON THE EDUCATIONAL OUTCOMES OF THE SCHOOL. THE SAMPLE CONSISTED OF 10 WISCONSIN COMMUNITIES, 5 WITH REORGANIZED AND 5 WITH NONREORGANIZED SCHOOL DISTRICTS. THE COMMUNITIES WERE MATCHED ON THE BASES OF SUCH FACTORS AS WEALTH, POPULATION, TOPOGRAPHY, TYPE OF FARMING, NEARNESS TO URBAN AREAS, AND SIZE AND DENSITY OF POPULATION. FIRST GRADE CHILDREN WERE TESTED AND COMPARED IN THESE COMMUNITIES AND RESTUDIED AT GRADES 6, 9, 12, AND WILL BE STUDIED 5 YEARS AFTER GRADUATION FROM HIGH SCHOOL. THIS REPORT IS ON THE TWELFTH GRADE STUDY, 1961-1964, IN WHICH THREE MAJOR HYPOTHESES WERE TESTED. THE OPPORTUNITIES AVAILABLE IN SCHOOLS WERE EXAMINED BY CONSIDERING TEACHING AIDS AND MATERIALS, LIBRARY RESOURCES, STAFF QUALIFICATIONS AND ASSIGNMENTS, BUILDING CAPACITY, CLASS SIZE, PROVISIONS FOR STAFF, AND CURRICULUM OFFERINGS. THE ACADEMIC ACHIEVEMENT, PERSONAL AND SOCIAL ADJUSTMENT OF STUDENTS, AND SOCIO-ECONOMIC CONTACTS OF PARENTS WITH THE VILLAGE CENTER WERE INVESTIGATED. THE RESULTS SHOWED FACTORS FAVORING REORGANIZED SCHOOL DISTRICTS OVER NON REORGANIZED SCHOOL DISTRICTS. A 69 ENTRY BIBLIOGRAPHY IS INCLUDED. (JH)
Long-Term Study of Educational Effectiveness of Newly Formed Centralized School Districts in Rural Areas - Part Two

Burton W. Kreitlow

The University of Wisconsin

Madison, Wisconsin

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SUMMARY

Background

School district reorganization in Wisconsin has progressed for more than a century, but the greatest changes occurred after 1947 legislation established county school committees. Reorganization legislation since 1947 has promoted greater learning opportunities for Wisconsin boys and girls. Legislation in other parts of the nation has followed a similar pattern. In the decade between 1955-56 and 1965-66 the number of school districts in the United States fell to half. Between 1949 and 1966, Wisconsin school districts were reduced from 6,000 to 700.

As the school district reorganization movement gained momentum, parents and educators asked, "Did school district reorganization really improve the education provided for boys and girls?" In answer, in 1949 University of Wisconsin research workers began an intensive study of the effects of school district reorganization on the education of boys and girls and on the communities involved in reorganization.

Objective

The four basic objectives of the study were:

1. To determine the opportunities provided youngsters attending reorganized and non-reorganized (traditionally-organized) school districts.

2. To determine the academic achievement and intelligence level of boys and girls attending reorganized and non-reorganized school districts and to analyze any noted differences.

3. To determine the relationship between academic achievement of the youngsters and the expenditure for education in reorganized and non-reorganized school districts.

4. To determine the effects of school district reorganization on the farmers' social and economic contacts with the village center.
Procedure

The basic design of the study consisted of selecting five communities with newly reorganized school districts and matching them with five communities having traditionally-organized school districts and starting with all of the first-grade students in the sample reorganized and non-reorganized schools comparing them through 12 years of school and beyond. The first pair of communities was selected in 1949-50. Two pairs were selected in 1950-51, and the final two pairs were selected in 1951-52.

Newly reorganized districts were chosen to represent the various levels of reorganization established by educational authorities. Criteria used in selecting reorganized districts included such factors as district enrollment, physical facilities, size of community (community boundaries were made to coincide with trade area boundaries for the village center, and the high school attendance area; hence some reorganized communities also included non-reorganized districts), tax base, bus transportation, and a community with common interests. Then these communities were matched with non-reorganized communities on the basis of wealth, population (size and distribution), topography, type of farming, nearness to cities, and total area.

Two of the reorganized communities met the established criteria sufficiently well to be classified as "well-organized communities." Two were considerably smaller in enrollment, area, wealth, and potential educational program than demanded by the criteria. While the fifth reorganized community met some of the criteria, it did not meet others.

The first year that the communities were involved in the study, their first-grade pupils were tested and compared. This same group of students was also tested at grades 6, 9, and 12. The group will be studied further five years after graduation from high school. When this original group had reached sixth
grade, a replication study was started with first graders. The same pattern of
testing and comparing was followed for the replication group as was outlined for
the original group.

Hypotheses in this report were tested on the basis of twelfth-grade data that
were analyzed during the period covered by this project. Major hypotheses tested
herein are as follows:

$H_{01}$ "There are no differences between reorganized and non-reorganized school
communities in opportunities available to students and teachers."

$H_{02}$ "There are no differences between reorganized and non-reorganized school
communities in academic achievement and personal and social adjustment
of boys and girls."

$H_{04}$ "There are no differences between reorganized and non-reorganized school
communities in the social and economic contacts of parents with the
village center."

Another major hypothesis $H_{03}$ is not reported here because no additional data
pertaining to it were analyzed at this stage of the investigation. Previously it
had been concluded that school district reorganization led to greater expenditure
of funds at the elementary level as well as to greater academic achievement.

Results

1. Opportunities Available

To test $H_{01}$, data were organized and analyzed or described to provide
judgment on six sub-hypotheses. These sub-hypotheses dealt with differences be-
tween reorganized and non-reorganized communities in these areas of opportunity:

$H_{1a}$--teaching aids and materials

$H_{1b}$--library resources

$H_{1c}$--staff qualifications and assignment

$H_{1d}$--building capacity and class size

$H_{1e}$--provisions for staff

$H_{1f}$--curriculum offerings
Analysis of the data collected on the availability of teaching aids and materials (H₁a) at the high school level revealed that reorganized districts were significantly better equipped with micro projectors and overhead projectors. There were no significant differences between the reorganized and non-reorganized districts on the availability of radio and television in the classroom or in expenditure per pupil for audio-visual equipment.

An examination of the extent of library resources in the reorganized and non-reorganized communities (H₁b) revealed that there were significant differences showing that the reorganized communities had a greater expenditure for library materials than did the non-reorganized communities. No important differences were noted in terms of 1) number of volumes in the library, 2) number of volumes added, 3) number of obsolete volumes discarded, and 4) the number of class periods assigned to library work.

Descriptive data on staff qualifications and assignments (H₁c) were analyzed and no marked differences between reorganized and non-reorganized schools at the high school level were identified except in the significantly higher participation of teachers in reorganized districts in summer session and correspondence study.

Findings related to building capacity and class size (H₁d) were not consistent and none of the differences noted were of sufficient size to reach the level of significance. Factors with minor advantages to reorganized districts were in pupil/teacher ratio, and duties assigned to high school principals.

Minor advantages to non-reorganized districts were in fewer classes of over 35 pupils, and assignment of responsibilities for health and guidance activities. Both reorganized and non-reorganized communities had average pupil enrollments at the high school level that were less than sufficient for curriculum flexibility, and both types of districts were operating near to maximum building capacity.
Of the professional opportunities for continued learning for the staff ($H_{le}$),
the reorganized districts provided significantly more days for in-service study
and had a significantly larger professional library available for the use of the
teaching staff.

A comparison of high school curricular offerings ($H_{lf}$) in the two types of
school districts showed marked differences favoring reorganized districts in
foreign language and art and favoring non-reorganized districts in the physical
education program. Other curricular offerings were identical or showed only minor
variations.

In terms of hypothesis $H_{o1}$, six sub-hypotheses were tested and compared by
statistical and descriptive methods. Twenty-three factors, other than curriculum,
and 15 curriculum factors were analyzed. Six of the factors which favored the re-
organized school communities and one factor which favored the non-reorganized were
significant at the $P \geq .05$ level. On the basis of these findings, Hypothesis $H_{o1}$
was rejected in part.

2. Achievement

Data related to hypotheses $H_{o2}$ were subject to statistical analysis involving
mean scores on academic achievement and personal and social behavior mean scores.

At grade twelve, those boys and girls who were in the non-reorganized part of
the initially selected reorganized district were compared with those in the re-
organized part on both $H_{o2x}$ academic achievement and $H_{o2y}$ personal and social
behavior. The hypotheses failed to be rejected so the data were pooled and
classified as reorganized in testing the major hypothesis $H_{o2}$.

Data used in the analysis were only for those boys and girls who had been
in one of the 10 study communities (5 reorganized--5 non-reorganized) from grade
one through grade twelve and for whom the necessary achievement and background
data were available.
Hypothesis H2a tested the difference in academic achievement between boys and girls in the reorganized and non-reorganized study communities. The analysis led to a rejection of the null hypothesis, with girls having the higher mean score. The differences were significant at the $P \geq .05$ level on 10 of 15 measures. Boys had a mean score higher than girls (not significant) only on the Physical Science test.

Tests of significance on hypothesis H2b showed a continuation of the pattern established after grade one. Boys and girls in reorganized school communities scored higher on standardized achievement tests than did those in non-reorganized school communities. Boys in the twelfth grade of reorganized districts scored higher than those in non-reorganized districts on 11 of 15 achievement measures. The differences were significant at the $P \geq .05$ level in Reading Vocabulary and Biological Science as well as in Mental Age. Girl's differences, significant on the same factors, favored those in reorganized districts on 13 of the 15 measures.

Differences between boys and girls in Personal and Social Behavior scores followed the general pattern established earlier in the investigation. Sub-hypothesis H2c was rejected with a significantly higher mean score $P \geq .05$ favoring the girls over the boys on five of six measures. There were no differences of Feeling of Belonging and on Socio-economic Status and Parent Choice of the Level of the Child's Future Education.

For sub-hypothesis H2d, the parts related to Socio-economic Status and level of education parents desired for their children failed to be rejected. On the parts of the sub-hypothesis related to Social and Personal Behavior, the differences between boys in reorganized and non-reorganized which were noted as significant at grade six, Sense of Personal Worth, and Total Personal-Social scores were again of sufficient magnitude to cause this part of the hypothesis to be rejected. The higher mean score favored boys in the non-reorganized communities.
On the basis of these findings hypothesis \( H_{o2} \), "there are no differences between reorganized and non-reorganized school communities in boys' and girls' academic achievement and personal and social behavior" was rejected in part. \( H_{o2} \) was rejected with higher mean scores favoring reorganized communities as follows:

1. In Mental Ages for both boys and girls.
2. In Reading Vocabulary for both boys and girls.
3. In Biological Science scores for both boys and girls.

\( H_{o2} \) was rejected with higher mean scores favoring boys in non-reorganized communities as follows:

1. In Sense of Personal Worth scores.
2. In Total Personal Social Behavior scores.

The factors on which differences were noted on the basis of ANOVA were subjected to Analysis of Co-variance controlling selected factors related to such achievement. As a result of this analysis, \( H_{o2} \) was rejected for the sub-hypothesis dealing with differences between reorganized and non-reorganized school communities on the Total Personal Social Behavior test with sixth-grade Socio-economic Status controlled. Boys in non-reorganized school communities had the higher mean score.

When Mental Age was controlled by use of Analysis of Co-variance, no significant differences remained between reorganized and non-reorganized communities on academic achievement factors. The sample of students in the reorganized and non-reorganized communities began their education with less than one month difference in mean mental age in months. During the course of 12 years of education in reorganized and non-reorganized school communities, greater measured mental development occurred in the reorganized communities. Where no significant difference was found in the early years of the investigation, by the time the same
youngsters reached grade twelve, the difference was significant and $H_{02}$ was rejected on the factor of mental development.

3. Socio-Economic Contacts

Data gathered from parents of the sample at first and twelfth grades were analyzed to test hypothesis $H_{04}$ dealing with social and economic contacts of parents with the village center.

Hypothesis $H_{4a}$ tested whether or not there were differences between total contacts with the village center between parents living in reorganized and non-reorganized school communities when the sample youngsters were in first grade (1950-1952) and in twelfth grade (1961-1963). The changes in contact noted during this period were small for both reorganized (up 4 percent) and non-reorganized (down 2 percent). The percentage using the village center for services at the twelfth-grade level were 44 percent in reorganized and 43 percent in non-reorganized. Null hypothesis $H_{4c}$ failed to be rejected.

Sub-hypothesis $H_{4b}$ was analyzed by examining for significant differences on each of 11 services independently. Only minor differences existed. At twelfth grade, parents of students in reorganized districts had more contacts on seven and parents of students in non-reorganized districts had more contacts on four of the selected services. On the basis of a Chi-square test of significance, the hypothesis $H_{4b}$ failed to be rejected.

Sub-hypothesis $H_{4c}$ analyzed differences between those living in the farm service area of reorganized and non-reorganized school communities as to their socio-economic contacts with the village center and changes in these contacts between the time sample students moved from grade one to grade twelve. For this portion of the total sample, there was a small increase (19 to 26 percent) in contacts in reorganized communities and a very slight decrease (38 to 36 percent) in non-reorganized communities. On the basis of a Chi-square test, $H_{4c}$ was rejected.
Sub-hypothesis H4d dealt with the nature and extent of change of contacts with the village center in each community in each pair of reorganized and non-reorganized communities. The small increases (two to seven percent) in four of the reorganized communities and the small decreases (one to seven percent) in non-reorganized communities were not sufficient to show statistical significance. Therefore, sub-hypothesis H4d failed to be rejected.

One statistically significant difference between reorganized and non-reorganized districts was found in the sub-hypothesis H4c of the major hypothesis H04. H04 failed to be rejected for sub-hypotheses H4a, H4b and H4d. Some consistencies of increasing contact with village centers in reorganized districts and decreasing contact in non-reorganized districts accounts for the one significant sub-hypothesis. The rejection of H4c makes essential the reexamination of H04 in the replication, even though three of the four sub-hypotheses failed to be rejected.

Conclusions and Implications

Conclusions

The conclusions which follow were made with special reference to the high school level of education in reorganized and non-reorganized school communities. Where possible, general references were made to the two types of school organization being analyzed in terms of the total program from grades one through twelve.

Most of the analyses are subject to replication in five years. Thus, tentative conclusions can be reexamined.

1. Opportunities

Opportunities provided for the educational development of students were significantly greater in reorganized than in non-reorganized school communities. The differences were not as extensive as those noted at the elementary level. This can be explained in part because in the elementary grades, the non-reorganized pattern of attendance was in a variety of separate school districts and different
attendance centers. At the high school level, non-reorganized communities as well as the reorganized tended to establish a single attendance center—the high school.

In matched pairs of communities, as was the case in this investigation, the continuation of part of the large number of opportunity differences at the elementary level into the high school level was a most important finding and leads to the conclusion that the organization of the school districts over all or part of 12 years of education was indeed associated with learning opportunities provided for boys and girls.

The boys and girls in reorganized communities had greater learning opportunities than did those in non-reorganized communities.

2. Achievement

In academic achievement the boys and girls in reorganized districts outperformed those in non-reorganized districts. The evidence throughout 12 years of education indicated that the contact with greater opportunities did make a significant contribution to mental development. Although the mean grade twelve academic achievement test differences in Biological Science and Reading Vocabulary were significantly different, they were reduced when mental age was controlled by statistical tools. The factor responsible for this initial difference was mental age. At first grade there were no differences in mental age and 12 years later the differences were significant and favored those boys and girls in reorganized districts. On the basis of the findings, it is concluded that the type of school district structure was responsible for the significant increase in mental maturity.

The major achievement differences that were developed between grade one and grade six were maintained between grade six and grade nine, and they showed only minor regression during the high school years into grade twelve. This consistency, in a study using control groups, is sufficient to conclude that administrative organization of a community's school into a single kindergarten or first to
twelfth-grade system is superior to the forms of multi-district organization once so typical of the Midwest.

In personal and social behavior, the boys in non-reorganized communities continued to show a significantly higher mean score on Total Personal Social Behavior than did those in reorganized communities. This difference occurred when the first analysis was made on grade six scores, appeared again at grade nine, and still existed at grade twelve. The point of greatest score differences favoring boys in non-reorganized districts was at grade nine when significant differences at the \( P > .05 \) percent level were present on five separate parts as well as on the Total Personal Social Behavior test score.

No data comparable to that gathered on the test of Personal and Social Behavior was available at grade one. The differences noted in grades 6, 9, and 12 may have existed at grade one, but this cannot now be determined. The fact that these data are missing does not preclude the tentative conclusion that boys in non-reorganized school communities became better adjusted personally and socially than boys in reorganized communities. Based on the same kinds of data, a tentative conclusion can be made that the measured personal and social behavior patterns of girls were not influenced differentially in reorganized and non-reorganized districts.

3. Socio-Economic Contacts

The pattern of minor variations between reorganized and non-reorganized school communities on socio-economic contacts of farmers with the village center continued. There was less justification at twelfth grade than at grade six to conclude that the nature of the communities' school district organization has little if any effect on patterns of social or economic interchange with the village center. The evidence points less clearly in that direction than it did at grade six. It was considered likely that more engulfing and broader factors than district organization led to adjustments in both reorganized and non-reorganized school communities.
Implications

A longitudinal investigation covering a span of time from grade one through grade twelve with the same sample communities and with data analyzed on the same boys and girls brings to the surface findings and concepts about school district reorganization that have implications for organization of districts in the future.

The remarkable increase in mental maturity of boys and girls in reorganized districts when compared to those in non-reorganized communities is sufficient to make very clear the need to "get on with the job of getting school districts in order." This investigation has not identified a maximum size in pupil population where this increase in mental age would level off, but the data in this study implied that schools with a student population of 1500 boys and girls from first through twelfth grade had not reached the optimum size to take full advantage of the economy of scale as it related to factors of opportunity and achievement.

The findings are sufficiently consistent to identify differential effects of district organization on personal and social behavior of boys and no such differential effects on girls. This factor has implications for further study of personal and social behavior phenomena. These phenomena are often ignored because the instruments of measurement are crude. Social and personal behavior need to be examined in greater detail. Can simple steps be taken in reorganized districts to overcome possible handicaps? Do the findings of Barker and Gump related to greater participation in extra-curricular activities in small schools suggest that special efforts toward more participation in the reorganized districts can overcome handicaps?

School districts in the United States have changed markedly in the last two decades. Year by year districts in the last strongholds of small schools in the

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Midwest are disappearing. Reorganization can and does provide more opportunities. It can and does influence positively the mental development of both boys and girls. But reorganization also appears to have a less than desirable influence on the personal and social behavior of boys. The first two outcomes can be readily supported by theory—more opportunities and greater mental development in reorganized districts was expected. The undesirable outcome was not. What factors are responsible for it? Much remains to be discovered about the effects of school district organization on students and on the community.

Bibliography

There were 69 references listed in the report of Cooperative Research Project 375 which formed the base of the second report. Relevant new findings appear in the footnotes of Project 1318.

Publications

This list includes publications from this study which began in 1949. This was prior to funding as a Cooperative Research Project. This list also includes reports on periphery data (i.e. The 4-H Club Study) since the total research is jointly financed by a number of cooperative agencies.


2. Parts of books, monographs, reports, bulletins, chapters, articles, or other contributions to cooperative volumes.


3. Articles and edited documents in magazines and other periodical publications.


4. Newspaper Articles and Editorials.


5. Television and 16 Millimeter Films.

1. Research Report Number I - 15 minutes
   A summary of the findings of the University of Wisconsin study on school district reorganization. It contains the same basic information on opportunities, achievement, costs, and social-economic changes as found in Special Bulletin No. 6.

2. Research Report Number II - 30 minutes
   In this film the research director, Professor Burton W. Kreitlow, is interviewed by George Tipler, Secretary of the Wisconsin School Boards' Association; Paul Johnson, Editor of the "Prairie Farmer;" William Edwards, a farmer from Kansas; and Vernon Olson, a banker from Spring Green, Wisconsin.

   Questions asked relate to disposition of one-room schools, representation of farmers on school boards, the role of village businessmen in dealing with school improvement problems, cost of instruction in reorganized districts, and others.

3. Research Report Number III - 15 minutes
   A report giving details on the achievement advantages of the reorganized districts in the study. This report is narrated by Professor Kreitlow and contains a series of motion pictures taken in several of the schools in the study. The question is answered as to why the youngsters learn more in reorganized school districts.

4. Research Report Number IV - 30 minutes
   This is a documentary of the progress of the reorganized district in Winneconne, Wisconsin through 12 years. It is narrated by a high school senior. The second half of the film is taken at a community meeting where the administrator, Arthur Lehman, and community citizens discuss plans for the school during the next 12 years.

5. Research Report Number V - 15 minutes
   This is a report on 4-H Club work using the same data in the same communities. It contains the basic findings in a comparison between 4-H Club members and non-members on such factors as intelligence, school achievement, socio-economic background, personal development, and parent interest.

6. Community Schools Can't Stand Still, Research Report Number VI - 40 minutes
   This is a case study of a reorganized school district showing the innovations accepted and the process the community followed in improving education, 1966.
6. Syllabi, Tests, Abstracts


2. Interest Record - Grade 1, Madison: University of Wisconsin, Department of Education, January, 1952.


4. Interest Record - Grade 9 and 12, Madison: University of Wisconsin, Department of Education, 1952.

7. Related Master's Papers and Ph.D. Theses


