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AUTHOR Ramirez, Al
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ABSTRACT

A literature review examines research and reports on school and school district size as they relate to educational quality and finance. Sections cover: (1) research on the relationships of size to course offerings, teacher qualifications, student achievement, student behavior, student participation, and school climate; (2) state level reports concerned with school or district consolidation efforts, with examples illustrating how cases for and against consolidation are typically framed; and (3) publications and reports on the issue of equity in school finance. The research shows that any type of school (small or large, urban, suburban, or rural) can achieve successful outcomes. Much of the confusion around size issues is related to asking the wrong questions or putting questions in the wrong context. A school is not a building, but rather a learning community. The organization within the building is a key element to be considered. School district size is an even more elusive variable to judge since the nature and mission of the school district are not uniformly defined. Institutional arrangements peculiar to each state affect the resources and services available to small districts. New technology has the potential to make many size issues insignificant. The optimum size for educational institutions is an elastic concept related to institutional mission and setting and available resources. Researchers and policymakers should consult those affected by size decisions to gain perspective on the historical, cultural, and political context of the affected community. (SV)

Size, Cost, and Quality of Schools and School Districts: A Question of Context

Al Ramirez
Springfield, Illinois

Introduction

The issues of school size and school district size have been discussed and debated on a continuous basis since the beginning of public education in America and remain a central theme in many present day school reform initiatives. This paper will investigate the issues of school size and school district size from the perspectives of cost and quality of education. Through a wide-ranging review of the research literature, the following questions will be addressed: What are the best indicators of the quality of education offered by a school or district? What is the relationship between a school's size, cost, and quality? What is the relationship between a school district's size, cost, and quality?

Background

As early as the colonial period in the United States, one can find evidence of size issues related to organizing public education. For example, the colonial legislature of Massachusetts in 1647 passed a law requiring that, "every town having fifty households at once appoint a teacher of reading and writing, and provide for his wages in such a manner as the town might determine; and every town having one hundred households must provide a grammar school to fit youths for the university...." (Johns, Morphet, Alexander, 1983).

Today, the dialogue concerning school and school district size continues, not only as a part of designing school reform, but also in an attempt to measure the impact of reform efforts on schools. A recent example is found in a survey of elementary school teachers in Chicago—site of one of the most sweeping school reform initiatives in the history of public education—which revealed that "reports from small schools are consistently better than reports from medium and

large schools" relative to a list of quality indicators tied to the school reform legislation (Charting Reform, 1992). School size and school district size remain a point of study and controversy in the continuing exchange about good schools and the delivery of educational services through school districts.

There are a vast number of reports, articles, and studies related to the topic of school size and school effectiveness. These studies have been undertaken for reasons that range from justifying school or school district consolidation to providing support for maintaining schools of varying sizes. Other reasons for reports of this type concern the equity question as related to expenditures per student or quality of programs in schools within a local, state, or regional system. Additional areas of the literature germane to the topics of this report fall under the category of school finance and equality of educational opportunity. Closely tied to the theoretical base of this part of the literature are court cases which have established standards for determining equity among schools or school districts. These legal standards often offer points of reference when investigating questions of cost and quality.

The material reviewed below is grouped into three broad categories. The first part looks at research reports related to the topic of size. These reports are analyzed for their design, the procedures used in the study, and the instruments employed. The population investigated and sampling techniques are also explained when appropriate. The variables of the reports are defined and the studies critiqued in relation to their implications for this investigation.

The second part of the literature review focuses on state level reports that address the areas of study concerned with school or district consolidation efforts. Two representative examples of these reports are included to illustrate how cases for and against policies pertaining to school

or district size are framed. The third section of the review of research comments on studies, reports, articles, and books that are oriented to the finance and equity issue, outlining the questions under study within the context of the school finance equity debate.

Review of Research

School Size

One of the largest related studies undertaken in the area of equality of educational opportunity among high schools was "High Schools in the South," conducted under the auspices of the George Peabody College in Nashville, Tennessee, in 1965 (Vance, 1966). The report was commissioned to determine the status of high schools in eleven southern states. School size, finances, personnel, professional qualifications, educational programs, and teacher load were investigated. Information gathering techniques included a review of official records maintained by the various state departments of education. The data was analyzed to discover relationships among the variables listed above. Findings of the study indicated that small schools in the South were the biggest obstacle to a quality education. The report associated fewer course offerings, less qualified staff, and inefficient organizational patterns as being associated with schools of under 500 students.

This investigation was one of the prime movers in the educational reform effort that began in the southeastern United States during the mid-1960s. School organizational reform directed toward larger comprehensive high schools was initiated in the South.

By way of contrast, Kleinfeld, McDiarmid, Williamson, and Hagstrom (1985) conducted a study of rural high schools in Alaska. The investigation looked at educational program

offerings, service delivery problems, and strategies for school improvement. A random sample of 32 schools, or 20 percent of the total, were studied using surveys, telephone interviews, site visits, and student achievement data. Two notable findings of this study were that size does not determine the quality of the educational experience nor the extent of student achievement on standardized tests.

The study, "Alaska's Small Rural Schools: Are They Working?" offered a number of suggestions for developing successful school programs in rural Alaska. Among the areas mentioned were course offerings, vocational education, college preparation, and guidance programs. The study placed too much emphasis on personal interpretation and testimonials from those within the schools under study. It lacked appropriate objective standards of control and, accordingly, findings are suspect.

The school size variable has been studied from a variety of perspectives over the years. For example, in 1978, Cusick, Martin, and Palonsky explored the effects of school organization on student behavior in their report "Organizational Structure and Student Behavior in Secondary School." They reviewed the findings of four studies which focused on student behavior in high school. The hypothesis of the study was that school size affected student behavior. Investigation techniques of the reviewed studies included observations of students and teachers and interviews with staff and students.

Cusick, et al. found a relationship between school size and levels of student involvement. Larger schools, they reported, tended to direct students towards periods of time that were totally staff directed and required little of students. Small alternative schools, on the other hand, created more opportunities for student involvement in which students had a "high level of

existence." The researcher also concluded that small schools valued students more and that this was apparent to students.

In his report, "What Research Says About Schools and School Districts," Clifton Forstad (1973) compiled an enormous amount of information on the school size and quality debate. Numerous summary tables are included which provide data about student achievement, per pupil costs, course offerings, qualifications of staff, and related matter associated with school size comparisons. The author used the vast information base to identify variables that are common to schools that offer a quality program and that use resources efficiently. The school size issue was measured against student achievement, costs per student, staff certification, course offerings, school organization, and extracurricular offerings. The report also provided some objective measures for determining quality schools and effective use of resources.

Illinois State University's Center for the Study of Educational Finance undertook a study which set out to determine the relative equity among vocational education programs in Illinois high schools (Lynn, Shade, and Hickrod, 1983). The study, "A Pilot Study to Explore the Equity Issues and Problems in Vocational Education in Illinois," zeroed in on wealth and size of school districts as factors most likely to have an impact on the equity question. The investigation used a stratified sample of schools and school districts to achieve a representative mix of size and wealth. Two major adjustments to the research plan were made once the study was under way. First, the diversity of the program offerings led them to drop their plan to statistically measure the numerous variables. Second, the vast flexibility in local decision making made it impossible to determine if the programs resulted from size or wealth problems.

This was because school districts investigated in the study were allowed to determine how they deployed the vocational education financial resources. As a result, the study was inconclusive.

"A Study Reporting Secondary Course Offerings in Small and Large High Schools," (Barker, 1985) used a random sample of schools with enrollments under 400 and over 1,000. Four hundred and seventy-five small schools and nine hundred large schools were sent surveys that listed possible course offerings. Frequency distributions were assembled to compare the results of the survey. Findings indicated that small schools were at a decidedly greater disadvantage in the area of course offerings than larger schools. Art, business education, foreign language, industrial arts, and higher mathematics were examples of courses less likely to be found in the small schools. However, it was reported that vocational agriculture and animal husbandry courses had a higher frequency in the small schools.

Phil Schoggen (1984) studied "Student Voluntary Participation and High School Size"; this was a unique study with a not very surprising conclusion: students in small schools are more active in extracurricular programs. The research was conducted by surveying yearbooks from twenty-four schools with a combined enrollment of 9,000 students. The large schools offered more opportunities for involvement, but had greater numbers of non-participating students. Small schools, conversely, had fewer options for students, but greater student participation.

In 1976 a study was conducted in Montana to determine the relationship between school size and student achievement. "The Basic Quality of Secondary Education in Rural Montana" (Kimble), was conducted by administering the Stanford Achievement Test to five percent of the high school students in the state. The sample included 1,311 sophomores and 875 seniors. Regression analysis was used to determine the effect of school size on student achievement and

the interplay of other variables such as socioeconomic status. Findings of the study presented one interesting result. While differences existed among student mean test scores for students from different size schools at the sophomore level, this difference was not apparent at the senior level. Socioeconomic factors were, however, significantly related to student achievement.

Shamus Mehaffie (1983) repeated a survey he had undertaken in 1973. The survey targeted 402 teachers and administrators in 44 small secondary schools in West Texas. Personnel in the schools with enrollments of 200 or fewer were queried about school size, location, best and worst features of the school, and the future of their schools. Findings in both studies revealed positive regard for the schools in terms of their educational programs and social environments. However, the limited availability of media resources was viewed as a negative aspect of the small schools. Compared to the 1973 study, the 1983 survey revealed more positive expectations about offering a quality educational program for students now and in the future. Finally, smallness was seen as a unique characteristic requiring different approaches from those used in the urban schools.

School and School District Consolidation

The question of school and school district consolidation has been debated intensively for the past fifty years. Prior to World War II, there were 119,000 school districts in the country; today there are 15,000 (Rodgers, 1986). States such as Arkansas, Iowa, Illinois, Nebraska, North Carolina, Ohio, and South Dakota are currently involved in efforts to consolidate schools or school districts. Reasons given for these state level initiatives usually fall under the headings

of economic efficiency, broader course offerings, quality of teaching staff, and better student performance.

Predictably, these state efforts have not proceeded without controversy. The pattern of development for these consolidation efforts often starts with a study commissioned by the legislature, governor, or state education department. The gamut of variables associated with schools and school districts are investigated and the rational findings usually discovered are that small schools or school districts are economically inefficient and educationally inadequate. Armed with a mountain of statistics, education reformers charge forward with their findings only to find enormous resistance from the schools and districts effected by the consolidation effort.

Studies designed to counter the state reports are commissioned by school boards and administrator associations. These local studies find justification for maintaining the smaller units. Typical of the state level reports is "School District Reorganization in Illinois," May 1985. This study followed a pattern similar to that found in reports from other states. The report will be reviewed in conjunction with "Heavy Meddle, A Critique of the North Carolina Department of Public Instruction's Plan to Mandate School District Mergers Throughout the State" (Sher, 1986), which is an example of a counterreport from a school boards association.

The Illinois report studied the issues related to school consolidation through the investigation of variables such as school size, course offerings, ACT scores, proficiency test scores, quality of instruction, and per pupil expenditures. Using measures to determine distribution frequencies, measures of central tendency, analysis of variance and regression, the investigation concluded that school size and student achievement were related. The study recommended that reorganization of schools and districts should take place to assure

that high schools of adequate size are available for all students "to provide a curriculum that will be responsive to student needs; to better coordinate services to students through a K-12 organizational pattern; and to assure adequate and equitable distribution of resources."

The North Carolina School Boards Association report systematically refuted its state education agency's report by dealing in turn with the issues of economics, education, social considerations, and political realities. The report was successful in presenting an argument that countered the state-mandated consolidation effort of small schools and districts. The North Carolina report suggests that sweeping consolidation mandates cannot deal with the complex issues associated with such change and that these steps should be taken on a case-by-case basis. It also points out that good schools and good school districts "come in all shapes and sizes" so broad policy objectives are inappropriate. Finally, the report falls back on the political axiom that such decisions are best made at the local level.

The purpose for presenting the previous two contrasting reports is to illustrate the diversity of opinion extant in the school and district size debate. It is also important to recognize that all reports and studies of this type, whether state generated or originating from other organizations, claim to consider the equity question among educational programs.

In 1959, J. B. Conant released his landmark study, "The American High School Today: A First Report To Interested Citizens," in which a vast number of equity issues were addressed. Among the major findings of the study was the verification that large numbers of high school students were being educated in schools that offered inadequate course offerings. He reported that thirty-two percent of graduating seniors were from classes of less than one hundred.

Economy of scale offered by the comprehensive high school was proposed as one of the solutions to the problem of disparity in educational opportunity among high school students.

In contrast to the opinions that larger is better, other studies have emerged that have extolled the benefits of smaller high schools and exposed the problems of the large urban schools. Barker et al. (1964) studied the affective aspects of the school size question. Their book, *Big School Small School: Studies of the Effects of High School Size Upon the Behavior and Experiences of Students*, determined that schools should be small enough so that each student is a valued member of the enterprise. The authors suggest that in large schools some students become redundant and are treated as such. The qualitative aspects of a small school, such as individual attention and a sense of community, enhance the learning environment for the student. Marginal students are reported to do better in the small schools and drop-out rates, for example, are lower.

Some of the current thinkers in education have also discovered the value of smaller high schools. John I. Goodlad (1984) in his book *A Place Called School* claimed that high schools with 500 to 600 students are the optimum size for effectiveness. His extensive study concludes that this size high school achieved the best results defined by various qualitative and quantitative indicators.

Similarly, Ernest Boyer (1983) in his study "High School: A Report on Secondary Education in America" recognizes that, while large schools are a fact of life in American secondary education, their ability to provide a quality education is diminishing. He advocates the concept of "schools within schools" as a means of capturing the benefits of the

small school setting. Small schools, reports Boyer, do a better job of involving students, offer greater emotional support, and are more cohesive.

Roweton and Bare (1990) in their study "Profiling High Schools with High/Low 'Holding Power': A Comparative Study" determined that small schools, particularly in rural communities and small towns, had the best "Holding Power." These small schools did a better job on average of keeping at-risk students in school. This survey of 77 high schools used data from a survey of 7,100 students, hundreds of teachers, and dozens of principals.

In *Politics, Markets and American Schools*, John E. Chubb and Terry Moe (1990) touch on the school size issue as they study school effectiveness. Their research, based to a large extent on data from the Administrator and Teacher survey and the High School and Beyond survey, advances some suggestions that the original rationale from years past, which encouraged the formation of large schools to gain economic efficiency, may have been in error. They believe the data suggest small schools may offer more for the individual student. They found no clear evidence to support the concept that bigger schools are better. Similarly, the authors point out that the inevitable diversity of the clientele, coupled with the necessarily broad school district mission found in large urban districts; contributes to the paralysis and ineffective bureaucracies so characteristic of these systems.

Similarly, the article "Financial Effects of Consolidation" (Streifel, Foldesy, Holman, 1991) points out that recent studies have shown that school district consolidations have few fiscal advantages and may, in fact, sacrifice student achievement and community support. They note that the fiscal categories of instruction, transportation, operations and

maintenance, total costs, total revenue, and capital projects showed no significant differences in the rates of change when compared to state averages.

Finance and Equity Issue

Constitutional Reform of School Finance (Alexander, Jordan, Forbis, 1973) is a masterful work which provided an extensive treatment of the statutory and judicial influences which have an impact on school finance today. A more succinct work, published by the Education Commission of the States, is *School Finance Reform in the States*, (Odden and Augenblick, 1981). Odden (1990) in his work *The Changing Contours of School Finance*" provides a panorama of issues related to the equitable funding of schools. The works cited here offer information on legal and statistical standards that address the educational equity questions. These studies, along with a host of textbooks dedicated to school law and school finance, serve to establish well-defined criteria for determining equity in the funding of schools. Such criteria are important aspects of any discussion about school or school district size.

Ramirez (1990) investigated high schools in Nevada to determine the relationship between school size and equality of educational opportunity. Impetus for the research came from a desire to test the state funding formula for public schools, which has as its goal the provision of a relatively equal educational opportunity for all students in the state.

In the study, forty-nine comprehensive high schools were organized into four groups based on school size for comparison purposes. Group 1 had 12 schools that ranged in size from 22 to 99 pupils; Group 2 had 16 schools that ranged from sizes of 109 to 440; Group

3 was comprised of eight schools ranging in size from 530 to 1,468; Group 4 was made up of the 13 largest schools and ranged in size from 1,609 to 2,493 students.

Analysis of variance and correlation analysis were the primary statistical measures used to compare the data among the school size groups. Measures of quality and student achievement were compiled to assess if differences existed among high schools of varying sizes. Indicators of quality, such as student-teacher ratio, media resources, certification of staff, and course offerings, were reviewed. Student achievement data consisted of college entrance examination scores, state basic skills tests required for graduation from high school, and student grade point averages for high school and college.

Findings of the study revealed some differences in the qualities associated with school size, but, overall, these quality indicators tended to balance out among the schools. Each school size group had its own set of qualitative advantages. No material differences were identified in the area of student achievement. Data on college freshmen from the high schools in the study was inconclusive. Recommendations related to funding for public school education suggested specific programs to target areas of need. It appeared from the study that the basic state funding mechanism was meeting its goal.

The literature review presents material from an array of sources that are of significance to this paper. Research articles were selected to demonstrate the scope of studies undertaken in the area of school and school district size, quality, and equity. The design of these investigations ranged from explorations with rigid statistical constructs to sociological investigations that try to capture the tone and quality of the issue. Most of the available research on this issue uses either correlational studies or opinion survey data as the research method, and

this should serve as a word of caution to anyone making decisions based on this type of research information. Major works that have provided bench marks in the development of educational thought were also considered in this paper. Next, an attempt is made to draw from this research material to frame some overarching parameters for consideration in this study.

Discussion: Problems and Possibilities

In order to cope with the avalanche of data and information derived from the numerous studies and reports of quality, size and economy, it is important to establish some working definitions around key terms. The term quality needs to be defined as well as what constitutes a small school.

The American Heritage Dictionary (1985) defines quality as "the essential character of something . . . superiority of kind; degree or grade of excellence." Applying this definition to our discussion about schools and school districts quickly points up the problem of using a term with subjective interpretability. To help circumscribe the definition a little more, researchers and policymakers are forced to identify available objective standards and measures in order to determine the relative "degree or grade of excellence" in the institutions under question.

Standards and measures, as is seen above in the review of research, exist in a variety of areas. However, they basically fall into one of two broad categories. The first category covers those things generally thought of as being inputs to the educational process, e.g., teachers, books, curriculum, and so forth. The second category can be labeled "outcomes," which are typically seen as test scores, graduation rates, data from opinion surveys, and other measures of results.

Generally, the objective measures are related to the organizational mission and services, e.g., graduating students, college admissions, test scores or unit cost per mile for each student transported, number of students per class, average per pupil expenditure. They are used as objective points of comparison as investigators try to make comparisons and analyze data. And, they inform policymakers as they deliberate over resource issues.

Small and large are also relative terms when applied to schools and school districts. For example, the Chicago Public Schools is one of 950 school districts in Illinois. Chicago has 410,00 students in 540 attendance centers. The next largest school district in the state, Elgin, has 29,000 students and fifty attendance centers (Illinois State Board of Education, 1992). Half the districts in the state have fewer than 800 students and the average number of schools per district is about four. Compared to Chicago, all other school districts in the state are small.

School size is also an elusive measure and another example from Chicago helps to illustrate this. The average size elementary school in the city's public school system has 675 students. By contrast, the average elementary school in the Chicago Archdiocese and average public elementary school in the rest of the state have an enrollment of about 350 (Don't close schools, 1992). Is an elementary school of 500 students small?

The national picture offers little help with regard to identifying standard measures. Almost 26 percent of the school districts in the United States have fewer than 300 students. However, about 28 percent of the student population can be found in just over 1 percent of the districts (National Center for Educational Statistics, 1990). Average school size among the states also varies considerably. For example, the range of average elementary school size by state has Alaska at 299 and Florida at over twice this size with 698 students per school.

What this information underscores is that there are no easy answers to the questions about size, quality and efficiency. The array of variables associated with those inputs and outcomes, which describe each school or school district are extremely complex and not subject to easy interpretation. Additionally, the unique setting in which the school or school district exist further complicates broad-scale analysis. This type of research environment is subject to high levels of abuse, particularly when it is surrounded by a highly charged political environment.

Conclusions and Recommendations

When is a school too big? When is a school district too small? Is the size of the institution a critical variable important enough to be considered in isolation as a factor contributing to the success of the institution? No one response can satisfy each of these questions. It appears that much of the confusion around these issues is related to asking the wrong questions and not nesting questions about size in their proper context.

As we have seen from the research, a small rural school with a clear mission, community support, and adequate resources may be a very successful institution. Similarly, a small alternative school in an urban area with a discrete mission and proper inputs can be very successful within its niche.

In contrast, many of the best public schools are large institutions found in urban and suburban areas. These flagship schools are successful, not because of size, but because of the outcomes they achieve. They begin with certain inputs, configure these resources to support their mission, and work to continually improve. School size is one of many factors to consider when organizing programs, services, and personnel.

A school is not a building, but rather a learning community. This is an important concept to keep in mind because it has a great influence on what one looks for in large buildings with many students. Schools within schools and other cohort organizations within buildings tell more of a story about a school's size than information about the number of students in a building. The management of large numbers of students is always a challenge, but the basic unit of contact is still the classroom. The organization of classrooms within the building is a key element to understand in any investigation of school size.

School district size is an even more elusive variable to judge. This is partly due to the more expansive and less well-defined mission of a school district. Twenty small districts clustered in a close geographic area may be inefficient, but the historical and political context of their existence may cast a different light on the size question. Additionally, the question of the relationship between the size of a school district and student outcomes becomes very clouded in the research. This is in part because the institutional setting needs to be considered along with many other factors when making comparisons. For example, the role of cooperative agreements and intermediate service agencies in a particular state will effect the mix of resources and services available to students in small districts.

What is not evident in the review of research is the impact technology will have on the questions of size, quality, and efficiency. We can already speculate about how traditional problems of scheduling, geography, and space needs might be affected. The potential impact could render many of the issues related to size insignificant.

Discrete rational models for configuring the delivery of educational services tend to unravel quickly once they reach the real world. Researchers and policymakers must consider the

political realities raised by questions about school or district size. While an optimum size may exist for a particular institution, the size issue is contextual in nature and not permanent. The optimum size for educational institutions is an elastic concept related to the mix of organizational mission, institutional setting, and available resources. At the extremes of the elasticity of effective size are the inefficiencies associated with insufficient economy of scale and bureaucratic gridlock.

Considering the size question in isolation is futile. The focus must be on determining the critical path to the best fit between organizational mission and size. Questions of balance are more important than size. Issues about services, programs, and resources, for the target population are significant; institutional size is secondary. Trade-offs and compromises around size issues are inevitable and part of the process of configuring resources to meet desired outcomes. For these reasons it is important for researchers and policy makers to consult with those affected by decisions about size in order to gain the historical, cultural, and political perspective on the size question for a particular community.

Finally, somewhere in the discussion, the question must be raised about what is best for the child, student, or client affected by decisions of size. Too often, discussions about school or district size stem from established positions and grow to elaborate rationales to justify these positions. This approach can lead to losing sight of the student's interest.

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