

School Size and Its Relationship to Student Outcomes and School Climate

A Review and Analysis of Eight

Kenneth R. Stevenson

University of South Carolina

April 2006

Introduction

As many researchers and writers have pointed out, until relatively recently the trend across the country has been to create larger schools through consolidation and restructuring (Cotton, 1996, Howley, 1997). Historically, larger schools have been advertised as providing a more comprehensive curriculum than possible in smaller schools, while reducing per pupil operating costs (Conant, 1956; Cubberly, 1922). As a result, during the past seventy-five years in the United States the number of school buildings has decreased from almost 250,000 to approximately 95,000 (Kennedy, 2003). At the same time the K-12 public school enrollment has risen from about 28,000,000 students to over 53,000,000.

However, a growing body of evidence has accumulated during the past fifteen years that raises significant questions about if larger schools provide better academic outcomes and whether, in fact, when all factors are considered, they are less expensive to operate. After an in depth analysis of previous school size research, Cotton (1996, 2001) concluded that smaller schools produce better academic results and provide a better school climate. Raywid (1999) has further pointed out that studies indicate smaller schools allow more opportunities for students to be involved in co-curricular activities. Coudeacavonducted in the 1990s have not

ool size is a significant factor in school

Obviously, the existing literature and research provide conflicting perspectives on what size schools should be. Because of the inconsistency in findings, it is imperative that the question of what school size best supports and optimizes learning continue to be explored. The remainder of this paper focuses on adding to that body of knowledge with the expectation that more informed policy decisions arise from as comprehensive a data set as can be provided.

**Facilities Conditions Versus Middle School Student
Academic Performance**

High School Studies

In addition to the research done on elementary and middle schools, three state-wide studies have been conducted on the relationship of the size of South Carolina high schools to student academic outcomes. Two of these focused on student performance versus school enrollment, while the third sought to build a comprehensive model depicting the relationships among variables that could affect school outcomes, including school size. As with the elementary and middle school studies, findings at the high school level have been varied.

High School Size and Student Performance Using the MAT-7

In her 2001 study Durbin focused on three relationships concerning school size and student achievement. Durbin's population consisted of the 19

White (2005) in her study of South Carolina elementary schools found a strong, negative correlation between school size and per pupil operating expenditures, even when controlling for the effects of poverty. That is, smaller schools in her sample cost significantly more to operate regardless of the percentage of students on free and reduced lunch. Similarly, in Roberts' (2002) study of South Carolina middle schools, data indicated that larger schools were significantly less expensive to operate. However, because he found that smaller schools were associated with higher levels of student performance, Roberts concluded that, "Smaller schools cost more but produce better achievement results (p. 79)." Further, Durbin (2001) found that at the high school level in South Carolina "...as school size increased, per pupil expenditure decreased significantly ...even when partialing out the significant SES effect (p. 63)." While the results have varied across studies in regard to the relationship of school size to student academic performance and school climate, all studies have affirmed that at the macro-level of analysis larger schools at all grade spans are less expensive to run when comparing per pupil operating costs.

However, some intriguing sub-themes have emerged related to cost. Stevenson as early as 1996 reported that school size effects may vary among elementary schools depending on the socio-economic level of the student body served. This raises the question of whether larger schools are cost efficient for all categories/types of students.

Further, McCathern found that for two of his elementary samples, "...per pupil expenditures had a significant, positive correlation with student achievement (p. 205). This would seem to indicate that determining the cost efficiency may be much more complex than merely comparing an aggregate cost per student figure against overall size and/or outcomes.

Summary and Discussion of State-wide Studies on School Size

The research findings from the eight studies in South Carolina in a sense mirror the literature reviewed for this paper. That is, the results were varied and, to some extent, conflicting and contradictory. Because of the nature of the studies, seven issues emerge that require discussion and further research.

in some schools, higher operating expenditures are associated with better math and reading scores. Is it possible that for students in high poverty, smaller schools, which on average require greater per pupil operating dollar expenditures, are in effect cost efficient? That is, if smaller schools tend to keep poor children in school longer, prepare them more fully academically, and generally better fill their personal needs, might not the upfront cost be offset by the efficiency of not having such students drop out?

Five: Elementary Climate Factors.

White in her 2005 study of elementary schools found few differences in school climate across schools of all sizes. However, the differences she did discover are intriguing and certainly beg for further study. White's research found that larger elementary schools tended to a) suspend/expel greater percentages of students and b) retain more children than in smaller schools. This raises the question of whether larger schools are less "personal" in their dealings with students, and how this affects students over time?

Six: Differing Measures of Outcomes.

As a quick review of the literature will attest, some of the results of the South Carolina studies are different from those done in other settings. Interestingly, the results within South Carolina have been varied as well – even when using the same sample set. This is an important point to consider when reviewing all of the literature on the effects of school size. Studies often use different measures to study how size of enrollment relates to student learning. For example, at the high school level in South Carolina, Stevenson (2001) used

References

- Crenshaw, M. (2003). *The relationships among school size, school climate variables, and achievement ratings in South Carolina high schools: A conceptual model*. Unpublished doctoral dissertation, University of South Carolina, Columbia.
- Caldas, S. J. (1993). Reexamination of input and process factor effects on public school achievement. *Journal of Educational Research*, 86(4), 206-214.
- Conant, J. B. (1959). *The child, the parent and the state*. Cambridge, MA: Harvard University Press.
- Cubberley, E. (1922). *Rural life and education: A study of the rural-school problem as a phase of the rural-life problem*. NY: Houghton-Mifflin.
- Cotton, K. (1996, December). Affective and social benefits of small-scale schooling. *ERIC Digest*. Clearinghouse on Rural Education & Small Schools (EDO-RC-96-5).
- Cotton, K. (2001, December). *New small learning communities: Findings from recent research*. Portland, OR: Northwest Regional Education Laboratory.
- Durbin, M. K. (2001). *The relationship of high school size, student achievement, and per pupil expenditures in South Carolina*. Unpublished doctoral dissertation,