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Grade-Span Configurations

Where 6th and 7th grades are assigned may influence student achievement, research suggests

By Craig B. Howley

The relative benefit of one particular grade configuration over another has been the subject of debate for years. Which configuration for a school is most cost effective? Which yields higher student achievement? How does grade configuration effect the community?

There are no easy answers to these questions nor is there any conclusive evidence that one grade configuration is better than another. School districts poised on the brink of making these decisions must take into account factors beyond simply what is best for the students. They also must consider projected enrollments, transportation costs, number of transitions to be made by students, size of the school and overall school goals.

These discussions and their ultimate outcomes are not without controversy, especially in rural areas where reconfiguration is often the first step toward closing small schools. This can have far-reaching effects on not only the staff and students but on the community itself.

School Consolidation

Prior to 1948, the majority of schools in the United States were one-teacher schools typically serving a small rural community and enrolling about 30 children in the elementary grades. However, beginning in 1915, when Teachers College professor Ellwood Cubberley proposed that large schools in central locations could provide more and better education and resources, administrators accelerated the merging of one-teacher schools into larger graded schools. As a result, the K-8 configuration became a popular plan.

Perhaps because many farm families in the early 20th century regarded high school as irrelevant, building a separate 9-12 high school for a limited number of students did not always make sense. In any case, the distinctly rural K-12 schools came into being. (It's important to realize that the high school is responsible for nearly all the proportional growth in school-age enrollment in the 20th century.)

As roads improved after World War I to accommodate automobiles, better transportation, rural economic decline and a focus on efficiency of educational management drove

consolidation across larger geographic areas. As a result, smaller schools closed and many K12 schools began to close as well. The result was districts and schools that had larger enrollments than ever before.

In 1997, of approximately 82,000 public schools in the United States, only about 1,100 were K-12 schools, and for the most part, those schools served rural areas. Today, the most common grade-span configurations are K-5, K-6, 6-8 or 7-9 and 9-12, with the popularity of each configuration varying according to locale.

For example, the percentage of K-5 schools in urban districts is significantly higher than in rural areas (43 percent urban vs. 18 percent rural) and the percentage of K-8 schools, is higher in rural areas than in suburban areas, (10 percent rural vs. 4 percent suburban). Although little solid research exists regarding the reasons for the popularity or unpopularity of these particular configurations in these locales, it could be a function of sparse rural population. More K-8 and K-12 schools survived, meaning fewer 6-8 schools were created.

One result of today's schools' narrower grade-span configuration is that the number of students per grade is higher than it has ever been. A K-2 school enrolling 360 students doesn't seem large compared to all those hefty suburban high schools enrolling 2,000 or more students, but with 120 5- to 8-year-olds per grade it's a very large school (and that's become our standard). K-2 schools are among the largest schools in the nation with regard to enrollment and, surprisingly, they are most common in rural areas and small towns.

The popularity of K-2 schools might be the result of excessive concern with developmentally appropriate expertise for early childhood instruction. Large size is the price of expertise. In rural areas, this price might be higher because of centralized school locations and poor funding for capital outlay.

Is Bigger Better?

We've addressed the consolidation of schools, especially in rural areas, based on suggestions that larger, more centrally located schools provide more and better services to students. What direct effect, if any, does grade-span configuration have on student achievement, our ultimate outcome?

At the ERIC Clearinghouse on Rural Education and Small Schools, we are often asked questions like "What research shows that K-2 schools are superior to K-3 schools?" The answer is easy: none. Research surrounding the benefits of specific grade-span configurations is seriously wanting. On the other hand, a large amount of prescriptive literature exists around that particular topic, especially with regard to middle schools.

Six recent studies, however, have addressed the issue of configuration and student achievement, and their conclusions, combined with the research on school size, suggest the need to re-examine the popular notion that fewer grades per school is better.

Placement of Grades

Much of the public debate about grade-span configuration has focused on the middle level and which grade configuration best meets the developmental needs of young adolescents. Where should the 6th and 8th grades reside? Two studies-one in Connecticut and one in Maine-addressed the issue of whether these grades are best included with the elementary grades or with the secondary grades.

Their conclusion was that student achievement was higher when the 6th and 7th grades were included in the elementary school.

In Connecticut, 6th-grade student achievement was higher in schools that configured grade 6 with lower grade levels (K-6, K-8, etc.) versus those that placed grade 6 with the secondary school levels. Similarly, in the Maine study, the researchers concluded that 8th-grade students' achievement was higher when the 8th grade was included with elementary grades (K-8, 3-8, K-9, etc.) rather than as part of junior and senior high schools or within the various middle-grades configurations.

The findings that students in grades 6 and 8 achieve at higher levels when grouped with the lower grades are strongly suggestive but not conclusive. The samples were from two states in the New England region, and situations in different states and regions vary. Such studies need to be replicated in other states before we can draw durable conclusions.

K-12 Attainment

Although K-12 schools seem to be a thing of the past, researchers have found they have a positive effect on student achievement. The Louisiana research team of Bobby Franklin and Catherine Glascock compared student outcomes in grades 6, 7 and 9-12 among four configuration types: elementary, middle, secondary and K-12 schools.

Sixth- and 7th-grade students in Louisiana performed equally well when their grade was part of an elementary school configuration and when it was part of a K-12 school. In addition, their achievement level was higher than that of 6th- and 7th-grade students who attended middle schools.

Students in grades 9-12 in K-12 schools performed as well academically as those students enrolled in separately standing 9-12 high schools but scored higher on measures of attendance, expulsions, suspensions and dropout rate. The average size of these K-12 schools was probably small, and such positive results have been long reported as effects of smaller size.

My colleague Robert Bickel at Marshall University organized a team of researchers to study grade-span configuration in Texas. We determined that attending a K-12 school in Texas was a strong positive influence on achievement.

Texas, like Louisiana, is one of the few states with a large number of K-12 schools. In fact, every K-12 school in Texas constitutes the only school in that district. Careful review of the data also shows that the number of high schools in a district is negatively related to 10th grade achievement and the number of grades in a school is positively related to 10th-grade achievement.

With regard to student achievement, this conclusion flies in the face of conventional wisdom. Yet in Texas as in Louisiana and other states, K-12 schools tend to be smaller and, as such, improve performance among students of low socioeconomic status. This additional influence among low-Income schools is also at work in K-12 schools in Texas, according to our study. This means attending a small K-12 school in Texas provides a triple achievement benefit. Common sense suggests that such a solid benefit must be worth money, right?

That's, in fact, what we found. All else equal, Texas schools with a broad grade-span configuration are more cost-effective than other schools in producing a given level of 10th grade achievement. That is, if one were to design a school in Texas with the goal of producing student achievement in a cost-effective way, a single-school district operating a K-

12 school would be a good choice.

The finding about the cost effectiveness of K-12 schools is surprising but not difficult to understand. Our study used current achievement level as a control variable-one way to level the playing field-in predicting per-pupil expenditures. Taking into account achievement levels, school size, community affluence, the number of schools in a district, student ethnicity and so forth, the number of grades in a school exerts a negative influence on per-pupil expenditures. This minimization of per-pupil expenditures, in view of achievement levels, can be thought of as real-time savings.

In Texas, savings were maximized, of course, in K-12 schools, because they have the broadest grade-span configuration, tend to be small, often serve poorer communities and tend to be the only schools in their districts. The real wonder is that at the same time, these K-12 schools, because they tend to be small and serve poorer communities, boost overall 10th-grade achievement (with background conditions controlled-something accountability systems often disregard).

This "Texas Miracle" goes unacknowledged, I believe, because legislatures, educators and the public hardly ever use achievement as a control variable when predicting expenditures. It makes perfect sense, however. If you wanted to predict expenditures per cow in a ranching operation, you'd naturally include average weight gain per cow in your calculations. It's a question of price per given outcome.

The research method does accept as a fact that not every school or student will be excellent. Compared to this problem of mere rhetoric, however, the study suggests that improving the odds for poor schools is not just laudable, but feasible.

Rural Reconfiguration

Student outcomes are not, of course, the only results about which we should be concerned. Rural areas face particular challenges as smaller, locally accessible schools are closed in favor of larger, more remote schools. Predictable results might include longer bus rides, reduced parental involvement, declining extracurricular participation and less sense of community ownership.

A study of national and regional data on grade configuration that I conducted with my colleagues revealed that between 1987 and 1991, the percentage of all schools nationwide that were middle schools rose by about 20 percent in rural areas, while elsewhere the proportion of middle schools remained constant or even fell-as it did in urban areas.

In Appalachia, one of the nation's most rural regions, the increased number of middle schools was associated with a 24 percent decline in the number of K-8 schools. Interestingly, the schools in all three configurations-K-8, lower elementary (K-5 or K-6) and middle schools Increased in size. Thus, reconfiguration not only closed some schools, it made the remaining, more narrowly configured schools significantly larger.

The number of times students must change schools may affect student achievement. John Alspaugh, professor of education at the University of Missouri, investigating the relationship between grade-span configuration and high school dropout rates in 45 Missouri schools, focused on the grade level of transition to high school as related to three grade-span configurations: 7-12, 9-12 and 10-12.

The Missouri study raises an important issue related to student achievement not considered by the Connecticut, Maine or Texas studies. Creating more narrowly configured schools in a

system increases the number of transitions students must experience during their K-12 careers.

All else equal, dropout rates were lower in the 7-12 configuration and higher in the 10-12 configuration. School size may have been a contributing factor because the 7-12 schools in Alspaugh's study were much smaller than the 10-12 schools.

Possible Implications

So in view of this partial knowledge of the influence of grade-span configuration, what might be the implications for practice? The following are bold statements that are intended to be provocative because we've ignored the structure of schooling (school size, district size, grade-span configuration and proximity to communities). These provocations derive partly from the thin research base referenced here and partly from my own experience, informed by a lifetime of reading and studying related issues.

First, the evidence rather clearly suggests that the tendency to create narrow grade-span configurations reinforces the bad habit of building larger and larger schools. Larger schools damage educational equity for everyone, and they undercut educational excellence in impoverished communities, according to a growing body of evidence.

Second, every transition from one narrowly configured school to another seems to disrupt the social structure in which learning takes place, lowering achievement and participation for many students. Predictably, this damage will be most severe in the cases of students from impoverished backgrounds. Short of providing an adequate living for poor families, we can at least restructure our educational system to mitigate the detrimental effects of poverty. A logical move seems to be smaller, more broadly configured schools--and smaller districts.

Third, and most surprising, large, narrowly configured schools also seem like a bad investment if school reform is the objective. Per unit of achievement produced (not a metaphor I like, but one that's often used), smaller K-8 (300 and fewer students) and 9-12 (600 and fewer students) schools seem like a much better investment. Schools can be profitably much smaller than those upper limits in impoverished communities. This profitability definitely refers to the efficient and effective use of tax dollars.

Fourth, we should stop fretting about precisely which grade-span configuration might be ideal. One-size-fits-all prescriptions inevitably not only fall far short of the ideal, they've been doing consistent damage for much of recorded history. We seem to have settled on 9-12 as the ideal form for the high school, of course, and that is an inevitable misstep. We're not sure any longer what to do with adolescents, and the high school itself needs major reconfiguration, according to a substantial lineup of major reports.

Fifth, and this might be the most controversial hunch, middle-level students can be wellserved in K-8 schools. Much has been written about the fact that most middle schools fall short of the original student-centered ideal. Part of the issue, in my experience, is also our tendency to segregate students of differing ages. Is this for the benefit of students or for the benefit of staffing, running and coping with the system we've created over the past century? Answers will differ, but my thoughts affirm the latter response. Much of what we do is for our convenience as educators and not for the benefit of kids, families or communities.

Finally, the K-12 school is a vanishing organizational form. Early evidence suggests, however, that the K-12 school is doing good educational work. It would be a better idea to build more of them rather than continue to shut them down. Building more of them, however, will require that we think very differently about educational leadership, educational purpose,

community, the structure of educational systems, and-indeed-about curriculum and instruction. Too many of today's K-12 schools are probably aping the elementary-middle secondary norms of practice-designed for large systems relying on specialists and crowding out generalists and community.

Caution in Order

The six preceding provocations don't present the truth, just a series of strong hunches in need of a lot more work. Don't take them too literally, but don't dismiss them out of hand. Instead, entertain them as possibilities, as another perspective on school restructuring (that is, actually changing the structures as opposed to changing curriculum and instruction).

These hunches are my own, but a few colleagues share them as well. Folks like us expect and welcome-skepticism. That said, I offer a couple of more closely targeted cautions.

First, the research base is very thin. In particular, investigations about K-12, 7-12 and alternative high school configurations are much needed and don't seem to be forthcoming. The research reported here is rare, poorly funded and critical. The results definitely flout conventional wisdom-a fact that makes additional support that much more unlikely because that's the way research works. We tend to research the questions that everyone thinks are important when the most important questions are often invisible to conventional wisdom.

What we don't need is a study of national averages. New research should take the form of multiple replications and extensions of past studies in states whose policies and Circumstances differ on relevant issues. States make decisions about configurations and size, and studies need to address state-level dilemmas, not national averages or generalities.

The most important caution, however, is this: Interest in grade-span configuration rests on the dubious assumption that segregating students by age is a natural law of schooling. In other words-no grades, no school. We ignore the underlying issue when we think like that. The underlying issue is how should we configure educational institutions, not what grade span configuration is best.

A strong potential threat to age-grade segregation already exists: virtual schooling. Age-grade placement eventually may disappear as an expectation and with it the issue of grade span configuration. The progressive notion of continuous progress might stand a better chance under a differently configured system. Many students could finish a K-12 curriculum in 10 years. Many might profit from 15 years. Why should we not permit this variation and hold kids blameless if they finish in fewer or more years?

What keeps us from realizing this alternative? We think that the former route, 10 years, is better than the latter, 15 years. It's not! Both are worthy. However, resources not spent on the former route could be profitably redirected toward the latter. It makes practical and ethical sense. And it would realize the public purpose of education a whole lot better than the configuration of our present system.

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