

**Reference Desk Response No. 282:  
Optimal School Size for Cost-Effective Personalized Learning**

Question:

1. What is the optimal school size for cost-effective, personalized teaching and learning?
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**Report:**

Following an established REL-NEI Reference Desk research protocol, we conducted a search for research reports as well as descriptive and policy-oriented briefs and articles in this area. The sources included federally funded organizations, additional research institutions, several educational research databases, and a general Internet search using Google and other search engines. We also searched for appropriate organizations that may act as resources on this issue. We have not done an evaluation of these organizations or the resources themselves, but offer this list to you for your information only.

Our Researchers have found that the literature on school size has various dimensions and there is no general agreement on optimal school size (WestEd, 2001; see below). Research has suggested that small and moderate size high schools foster more positive social and academic environments than large high schools, especially for economically disadvantaged students (Lee and Bryk 1988, 1989; Bickel et al. 2001 as cited by NCES, 2003; see below). Further, some research suggests that having a larger school site is more cost effective must be qualified by the type of student body it serves (Lawrence, 2002, see below).

Question:

1. What is the optimal school size for cost effective, personalized teaching and learning?

- 1.1. Contexts of Elementary and Secondary Education – School Characteristics and Climate – Size of High Schools.** *U.S. Department of Education, National Center for Education Statistics; 2003.*

Source: National Center for Education Statistics

([http://nces.ed.gov/programs/coe/2003/pdf/30\\_2003.pdf](http://nces.ed.gov/programs/coe/2003/pdf/30_2003.pdf))

This short brief provides statistical information on high school size according to enrollment and by location with percentage of regular secondary school teachers who thought that certain issues were a "serious" problem in their schools, by location and enrollment: 1999-2000. It cites the literature pertinent to the relationship of size and achievement: "Large high schools have traditionally been considered more economical and able to support a broader curriculum than smaller ones (Lee et al. 2000). In recent years, however, research has suggested that small and moderate size high schools foster more positive social and academic environments than large high schools, especially for economically disadvantaged students (Lee and Bryk 1988, 1989; Bickel et al. 2001). This research also suggests that students in very small high schools learn less than students in "moderate" size (600–899 students) high schools (Lee and Smith 1997)."

- 1.2. Are Small Schools Better?** *WestEd Policy Brief; October 2001; 4 pages.*

Source: WestEd

([http://www.wested.org/online\\_pubs/po-01-03.pdf](http://www.wested.org/online_pubs/po-01-03.pdf))

"This Policy Brief outlines key research findings and looks at what the research says about why size appears to make a difference, how small is small enough, effective approaches to downsizing, and key barriers. Finally, it offers policy implications and recommendations. ... No agreement exists on optimal school size, but research reviews suggest a maximum of 300-400 students for elementary schools and 400-800 for secondary schools. In general, studies

focused on social and emotional aspects of success conclude that no school should be larger than 500, while those looking primarily at test scores say that somewhat larger is still effective, especially for more affluent students. Perhaps most notably, researchers focusing on the interaction between poverty and enrollment size offer a rule of thumb: The poorer the school, the smaller its size should be” (abstract).

**1.3. Development of a SASS 1993-94 School-Level Student Achievement Subfile: Using State Assessments and State NAEP, Feasibility Study, Working Paper No. 97-44.** *Wu, G., Royal, M. and McLaughlin, D.; 1997; Working Paper Series; 75 pages.*

Source: National Center for Education Statistics

(<http://nces.ed.gov/pubs97/9744.pdf>)

This study is about relating the School and Staffing Survey (SASS) results to student outcomes. It presents wide ranging views of the various aspects of SASS together with school level student achievement data including school organization and size. From page 40, “School size relates differently to achievement at different school levels. While school size is positively associated with achievement at the high school level, it is negatively associated with achievement at the middle school level (though not quite significantly). Among elementary schools, school size and achievement were similarly found to be negatively related when the model was run with unweighted data. With weighted data, however, no significant relationship is evident at the elementary level, for reasons yet to be determined. Taken together, these results may suggest that while elementary and middle school students benefit from the more personalized educational experiences associated with smaller schools, at the high school level the greater diversity of offerings and opportunities associated with larger schools becomes more important. Alternatively, achievement may be greater in urban settings, where large high schools tend to be found, than in rural settings.”

**1.4. A Big Idea: Smaller High Schools.** *Shakrani, S.; 2008; Education Policy Center, Michigan State University; ERIC # ED502129; 4 pages.*

Source: ERIC

([http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/3e/61/2c.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/3e/61/2c.pdf))

From the abstract, “Growing concern about the quality of public education in the United States has driven numerous educational reform efforts across the last three decades. These reforms include increased accountability as exemplified by various requirements of the federal No Child Left Behind Act, the introduction of new curriculum and instructional methods in response to the standards movement and the redesign of public high schools, with an increased focus on creating small schools and small learning communities. Studies suggest students in small public high schools perform better academically, have higher attendance rates, feel safer, experience fewer behavior problems and participate more frequently in extracurricular activities. Additional studies show students who stand to benefit most from small school environments are those most in need, namely low-income students in low-achieving high schools in large urban areas, where graduation rates and low attendance are major problems. A 2007 study by New York University's Institute for Education and Social Policy reported that small schools have been shown to provide a positive social, as well as academic environment for students, and more effective interaction between students, teachers and administrative staff, contributing to higher attendance and graduation rates.”

**1.5. Dollars and Sense: The Cost Effectiveness of Small Schools.** *Lawrence, B., Bingler, E., Diamond, B., Hill, B., Hoffman, J., Howley, C., Mitchell, S., Washor, E., Rudolph, D.; 2002 Knowledge Works Foundation.*

Source: General internet search using Google

(<http://www.earlycolleges.org/Downloads/reslib79.pdf>)

From page 6, “The research about the value of smaller schools shows that small schools are safer schools and better places for students to work with adults who know them and whom they trust.”

From page 11, “Researchers at New York University's Institute for Education and Social Policy examined 128 high schools using school-by-school budget information for 1995-96.

They found that schools with fewer than 600 students spent \$7,628 per student annually, \$1,410 more than was spent by schools with more than 2,000 students. The cost per graduate, however, at the small schools was \$49,553, slightly lower than the per-graduate cost of \$49,578 at larger

schools. This is because dropout rates at the small schools were much lower—64 percent of small-school students graduated in four years compared with 51-56 percent of the students in large schools with 1,200-2,000 or more students.”

### Additional Organizations to Consult

- **The Small Schools Workshop.**  
(<http://www.smallschoolsworkshop.org/>)  
Founded in Chicago in 1991, the Small Schools Workshop has become the premier resource for small schools creation, design and restructuring. The Workshop provides schools and school districts with an experienced team of school design coaches and teacher professional development experts that can guide the school transformation process from beginning to end.
- **The Small Schools Project.**  
(<http://www.smallschoolsproject.org/index.asp?siteLoc=home>)  
The Project provides support and assistance to high schools and districts committed to high school redesign and graduating all students college and work-ready. We work with both new small schools and those created by redesigning large comprehensive high schools into smaller, autonomous ones.

### Resources on Small School Size in General

- **Strategic Designs: Lessons from Leading Edge Small Urban High Schools.** *Shields, R., Miles, R.; 2008; Education Resource Strategies.*  
Source: General internet search using Google  
([http://www.educationresourcestrategies.org/documents/FINALREPORTSTRATEGICDESIGNSE RS\\_5-19.pdf](http://www.educationresourcestrategies.org/documents/FINALREPORTSTRATEGICDESIGNSE RS_5-19.pdf))  
From the Executive Summary: “This report summarizes our four main findings from detailed case studies of nine small urban high schools. This report explores how the Leading Edge Schools organize their resources — people, time, and money — including how they take advantage of their smallness to improve student performance. The report also looks at how much each of these schools spends to achieve their organizational designs and how the local context — funding levels, administrative policies, and union contracts — affects resource decisions. Although these schools spend varying amounts per pupil and organize resources in unique ways, they share a set of practices that distinguishes them from typical large urban high schools.”

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### Key words and search strings used in the search:

Optimal School Size OR School Size AND cost effective OR Personalized Learning OR Optimal Schools OR School Size OR School Expansion OR Small Schools OR Best School Size

### Search databases and websites:

Institute for Education Science Sites: Regional Educational Laboratory Program (REL); What Works Clearinghouse (WWC); Doing What Works (DWW); National Center for Education Statistics (NCES); Institute for Education Sciences (IES); IES Practice Guides.

Other Federally Funded Sites: The Assessment and Accountability Comprehensive Center; The National High School Center; The Center on Innovation and Improvement; The Center on Instruction; Common Core of Data (CCD); Education Finance Statistics Center (EFSC/EDFIN); Center for Data-Driven Reform in Education (CDDRE); National Research Center on Rural Education Support; Center for Comprehensive School Reform and Improvement; Small Learning Communities Centers.

Additional Data Resources: WestEd; American Institutes for Research; PSK12; Kids Count; School Data Direct; The Education Trust; SRI International; ERIC; EBSCO Databases; ProQuest; <http://www.google.com>; <http://www.gogglescholar.com>; general internet search.

### Criteria for inclusion:

When Reference Desk Researchers review resources, they consider, among other things, four factors:

1. **Date of the publication:** The most current information is included unless in the case of nationally known seminal resources
2. **Source and funder of the report/study/brief/article:** Priority is given to IES, nationally funded, and certain other vetted sources known for strict attention to research protocols;

3. **Methodology:** i.e. Random control trial studies, surveys, self-assessments, literature reviews, policy briefs, etc. Priority for inclusion is given generally to random control trial study findings; however, the reader should note at least the following factors when basing decisions on these resources: Numbers of participants (just a few? Thousands?); Selection (did the participants volunteer in the study, or were they chosen?); Representation (were findings generalized from a homogeneous or a diverse pool of participants? Was the study sample representative of the population as a whole?)
4. **Existing knowledge base:** Although we strive to include vetted resources, there are times when the research base is slim or non-existent. In these cases we have included the best resources we could find, which may include newspaper articles, interviews with content specialists, organization websites, etc.

### **REL Northeast and Islands**

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