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Montana Legislative Services Division

Office of Research and Policy Analysis

*Joint Select Subcommittee
on Education Funding*

EXHIBIT NO. 3

DATE 3-30-05

BILL NO. Discussion

To: Interested Parties
Fr: Christopher Lohse, Legislative Research Analyst
Re: School Size and Implications for Educational Praxis
Date: 29 March 2005

Members of the Education Community:

Legislative staff was directed to assemble a review of pertinent education research as it relates to school size. The following policy memorandum represents the culmination of that brief review.

Review of Literature: School Size

Problem Statement

The present document seeks to provide some sense of the research landscape as it relates to school size and a variety of school parameters. Specifically, it attempts to determine what consensus, if one exists, suggests about the optimal size for a public school.

Methods

The present analysis retained and reviewed 23 documents identifying some relationship between school size and important school characteristics. Of the 23, 11 were primary research sources; 12 were secondary research sources; and 2 were excluded from inclusion based on irredeemably faulty research premises. Five of the twenty-one included studies were focused solely on secondary schools, two on elementary schools, and the remaining fourteen examined both levels of instruction.

No study was exhaustive in its analysis of all parameters that the collective documents addressed. Listed below are factors related to size that studies investigated:

- Costs
- Diversity of curricula
- Achievement
- Student attitudes
- Extracurricular participation
- Attendance
- Dropout rates

Other, more affective, domains have also been analyzed, attempting to quantify the extent to which students and teachers feel isolation in the school setting. Much of this qualitative research is very sound, and overwhelmingly in favor of small school settings, but was excluded.

The lack of a definitive large or small school presents particular challenges in assimilating the recommendations and data sets of these diverse studies. No special effort has been paid to constructing a sound statistical analysis of the data sets, given the limited time frame

for the preparation of this document. In general, the research seems to coalesce around a definition of small that encompasses schools with 200-800 students, a definition that cautions strongly against the strident use of the present findings in analyzing many rural Montana schools.

History & Context

Throughout most of the 20th Century, the preponderance of educational research viewed small school size as a hindrance in the development of effective school learning communities. Many educational theorists observed business practices -- in everything from railroads to steel manufacturing -- that created both vertical and horizontal co-operations within and among industries. These new business practices focused on efficiency through economies of scale. According to theory, bigger organizational entities enabled higher levels of productivity and efficiency, inviting innovations like supervision over staff, increasing specialization in instruction, and volume purchasing. By the 1950's, school consolidations were routinely proposed as linch-pins of vital school reform in rural areas.

The nudge toward larger schools became a push with the 1959 publication of Harvard President James B. Conant's *The American High School Today*, something of a national call-to-arms for redoubled devotion to science instruction in the wake of the launch of *Sputnik*. Conant's seminal argument was that at least 100 students should graduate from any given school each year in order to ensure a cost-effective school size capable of providing a diverse, robust curriculum with particularly rich science laboratory offerings. It should be noted that Conant's work, frequently cited by advocates of large schools, actually projected an optimal size for American high schools of somewhere between 400 and 600 students, a size achieved by few schools at the time of publication, but that would be viewed presently as an extremely small school in most urban areas.

Policy-makers apparently heeded the call for consolidation. In the 50 years between 1940 and 1990, the total number of public elementary and secondary schools *declined* 69 percent in the United States against the backdrop of a 70 percent *increase* in the school age US Population.

As research products accumulated on the effectiveness of large school reforms, the few researchers who routinely argued on behalf of small schools began to grow. At least three of the review studies examined in preparation of this document saw the year 1975 as a turning point in much of the research on school size. First, reports began confirming no statistically significant differences between schools related to size. Next, studies issued a recognition of modest ameliorations in performance in smaller school settings. And finally, today, researchers speak in a virtual clamor for small schools that is nearly as optimistic about their success as was the support for larger schools in previous decades.

Summary of Findings

I. Costs

Research on school size does not demonstrate a clear relationship between increased size and cost-savings, and in some limited studies, an inverse relationship has been

noted. In a 1987 Phi Delta Kappa publication, researcher Tom Gregory summarized much of the research on costs well, by arguing that:

The perceived limitations in the program that small high schools can deliver and the presumed high cost regularly have been cited as justifications for our steady march toward giantism [*sic*]. The research convincingly stamps both of these views as misconceptions.

At this point, this writer feels it important to mention a potential flaw in much of the data on costs. Few studies examined manage to control effectively for socio-economic status (SES) or family structure of students. Many of the large schools enrolled for study came from relatively less stable central city schools, while many of the small schools enrolled were situated in more stable suburban and rural schools.

II. *Curricular offerings*

Most of the research supported a neutral value-added gain for large schools in terms of curricular offerings. Several found that rather than adding high-level courses, most large schools simply offer non-core, introductory courses that do little to contribute to the eventual academic success of their students.

All of the studies that found a neutral value-added gain in terms of curricular diversity defined "small schools" as somewhere between 300 and 600 students, far larger than the definition of "small" most rural Montana communities would offer. Moreover, SES and family structure may confound results in ways similar to the studies of costs.

III. *Achievement*

Another review of literature examined for the present analysis (and used as a template for this review) summarizes the work reviewed in its preparation in the following way:

About half the student achievement research finds no difference between the achievement levels of students in large and small schools, including small alternative schools. The other half finds student achievement in small schools to be superior to that in large schools.

No study finds large schools to be superior to small schools in any sort of large-scale context, though highly successful large schools certainly exist. Interestingly, though, one study that took the data sets of existing studies and controlled for SES found far less significant gains in the small school setting than originally reported. Indeed, with regard to achievement, more attention is paid to SES and family structure as confounding variables than in the other studies. Another study complementary of

achievement in small schools points out that many of the small schools it enrolled were rural schools. The study goes on to openly wonder if it might be the rural environment, rather than the small school environment, that contributes to student success.

Minority students and students of low SES seem to fare best in small schools. Pedro Noguera and Deborah Meier are particularly strident in arguing for small schools as a necessary policy lever in encouraging equity.

One study suggests that large schools accelerate the performance of affluent, white students in relation to their peers.

IV. *Student Attitudes*

The research on student attitudes toward school and individual curricular offerings (science, mathematics, language arts, and social sciences) strongly favors small school settings. And as with achievement analyses, the attitudes of low SES and minority students appear to benefit the most from small school settings.

V. *Extracurricular participation*

Levels of extracurricular participation seem to be universally higher in small schools than in large schools. The logic describing the findings suggests that in small schools every student is needed in order to adequately populate student governments, athletic teams, and service clubs. Though several studies point out the greater selection offered in large school settings, they also demonstrate that fewer students actually choose from the diverse offerings.

VI. *Attendance*

Small schools have higher attendance rates in the studies examined, and one study even demonstrated how attendance rates improved for students who transferred from large schools to small schools.

VII. *Dropout rates*

All studies examined demonstrated either a neutral effect, or a benefit of small schools in retaining students.

Few of the studies, however, controlled for many of the frequent problems in examining dropout data, namely the lack of uniformity among schools and districts in reporting a

dropout. High transiency rates in urban areas, with a strong bias for large schools, are frequently misdiagnosed as attrition rates, as an example.

Conclusions

By almost all measures, small schools vacillate between demonstrably neutral and strong value-added gains. Anecdotally, however, strong large schools and weak small schools certainly exist; size is not a panacea in and of itself. As at least a few studies point out, the success of most any school reform is dependent upon strong faculty and staff coalescing around essential goals and values. Successful large schools, for the most part, house faculties committed to the mission statement of the school. As Pedro Noguera points out:

Beyond size, all schools must have a clear mission that is understood and meaningful to teachers, students and parents. Teachers must be skilled and knowledgeable in the subjects they teach, and students must be encouraged to take responsibility for their own learning. Basically, unless all of the essential features associated with school effectiveness are present in small schools, they are unlikely to be any better than the big schools we presently have.

One of the "essential features" Noguera sees in effective schools is strong teacher and administrator support. Thus, as a policy recommendation, Noguera argues that any drive toward smaller schools must be necessarily coupled with input and cooperation from the enacting school community.

Schools are not like other organizations (i.e. businesses, universities, or the military) that can be moved and changed by directives from a central executive. Schools are decentralized, "loosely coupled" institutions that have their own unique culture and climate. Unless reformers work with educators to adopt changes in the way schools are run, and unless those who work there feel some degree of ownership and responsibility over their work, even the best ideas can be sabotaged or made unworkable.

Instead of imposing small learning communities on schools, it is more prudent and effective for educational leaders to work with teachers in conceiving of new schools through a process that is voluntary, creative and organic. When educators are united around a common theme or idea, as has occurred at several charter schools, the sense of ownership and responsibility over the work they do is greatly enhanced. Rather than passively complying (or not) with directives from District-level administrators, educators who are empowered and enabled to create new schools bring a sense of passion to their work that can make extraordinary things happen. The benefits gained from the opportunity to explore and innovate when creating new schools is precisely what many stagnant systems need to improve.

It is also important to note that the research examining Schools-Within-a-School (SWAS), a policy alternative proposed by those attempting to bring about the benefits of small school

settings in existing large school infrastructures and communities, does not offer the same clear gains in comparison to other large schools, and in several instances SWAS are contraindicated by experimental evidence. Because SWAS were not the focus of this study, and only tangentially examined, this product cannot definitively caution against SWAS, but does suggest that such a policy determination ought be undertaken with great care and a more exhaustive review of research.

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