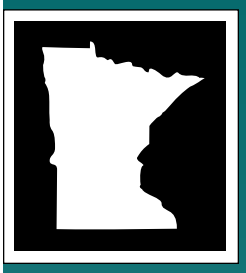
CENTER *for*
RURAL POLICY
and DEVELOPMENT



A Region Apart:

A look at challenges and strategies for rural K-12 schools

With contributions by authors from
Wilder Research, St. Paul
University of Minnesota, Duluth
University of Minnesota, Twin Cities

Seeking solutions for Greater Minnesota's future

The Center for Rural Policy and Development, based in St. Peter, Minn., is a private, not-for-profit policy research organization dedicated to benefiting Minnesota by providing its policy makers with an unbiased evaluation of issues from a rural perspective.

The Center for Rural Policy and Development respects a diversity of opinion and thought. As such, it solicits and supports research from a variety of rural policy perspectives. The contents and opinions expressed in this report reflect the views of the authors.

Center for Rural Policy and Development
600 S. Fifth Street, Suite 211
Saint Peter, Minnesota 56082

Voice: (507) 934-7700
Toll free: (877) RURALMN
Fax: (507) 934-7704
Web: www.ruralmn.org

A Region Apart:

A look at challenges and strategies for rural K-12 schools

With contributions by authors from
Wilder Research, St. Paul
University of Minnesota, Duluth
University of Minnesota, Twin Cities

April 2009

Table of Contents

Introduction

When this research report was first conceived, the current economic crisis was only just on the verge of revealing its full extent. But economic crisis or no economic crisis, over the years funding for PK-12 education has been a constant struggle. And while all schools continue to face difficulties, for various reasons rural schools have different and unique sets of hurdles to overcome, largely due to factors not faced by most urban and suburban schools: declining enrollment, an aging taxpayer base, and distance, distance, distance. The intent of this research, therefore, is to present solutions, or at the very least, recommendations for changes that could be made to help maintain and improve student achievement while not increasing cost.

Ideally there would be limitless funds for education, but in the real world this cannot happen. The research presented in this report, however, will hopefully present ideas that legislators and administrators can use to perhaps reshuffle funds without having to increase them, or alter practices that could make life more efficient and practical for everyone involved.

To begin with, we have a brief summary of the demographic and economic situation facing rural school districts. Following that is a review by Wilder Research staff of current and past literature looking to identify strategies for rural schools that have been shown to maintain or improve student achievement at less cost or at the same cost to the school district. To achieve this, they reviewed studies of strategies addressing issues such as distance education, a four-day school week, collaboration, consolidation, reducing facilities costs, teacher recruitment and retention and charter schools. In the process, they rated the quality of the studies and the apparent effectiveness of the strategies.

The second report, from the University of Minnesota, Duluth, used a survey and focus groups to identify the top priorities and needs expressed by public school superintendents and principals in educating their students. From this

information the authors gleaned recommendations for policy and resource changes that help address administrators' needs and priorities.

In the third report, the authors look at four specific approaches to addressing declining enrollment and high school completion rates: high-quality public preschool programs, smaller class sizes, programs intended to stem dropout rates, and consolidation.

Finally, the researchers produced a list of overarching policy recommendations that arose from the three reports. Although the researchers all approached the issues facing rural districts from different directions and with different tactics, they all seek to address them from the same standpoint: controlling costs without sacrificing quality. We hope this research will produce a healthy discussion of the issues and the strategies.

A Summary of the Demographic and Economic Future for Rural School Districts

Prepared by:
Paul Anton
Wilder Research

Economic and demographic projections indicate that rural school districts will face a number of common challenges in the coming decades, challenges that will require fresh thinking and new strategies.

Many districts have experienced and will continue to experience declining enrollments. Projections point to sustained net declines in school-aged populations in the Northeast and Southwest areas of the state and only slow growth in the Northwest and Southeast, while the Central region will grow most rapidly. Moreover, even in regions where there may be some growth in total enrollments, growth is likely to be concentrated in the large and medium-sized cities in the region, leaving many smaller districts to cope with a net loss of students. Declining enrollments are especially likely in more remote communities farthest from regional employment centers.

The age mix of the student body will change dramatically for many districts. Projections by age group point to significant increases in K-6 enrollments in all five regions of the state during the next decade ending in 2020, even in regions where total enrollment will decline. This trend should be reversed in the following decade as that wave of students mature and enrollments grow in grades 7-12, while K-6 numbers are relatively unchanged in most regions.

Student populations in rural Minnesota will become more diverse during the next two decades. Already the percentage of Hispanic, Black, Asian, and Native America students in districts outside of the seven-county Twin Cities area has begun to rise. Projections indicate that this trend will intensify in coming decades. The state expects the minority percentage of the population to approximately double in Central, Southwest, and Southeast regions of the state and to increase by approximately 50 percent in the Northeast and Southwest. As a result, the percentage of minority students in many school districts is likely to rise even more quickly. Among other potential challenges, more rural districts may have to cope with the needs of English language learners, as a result.

Economic factors raise another series of challenges for rural districts as they seek to fund their operations. Almost all districts rely on local levies for funds to supplement the aid they receive from the state, though amounts vary widely. Thus, school funding is dependent on the health of local economies in many districts. Although long-term economic projections cannot be made with precision, some trends are worth noting.

Employment growth is likely to be slower in some rural portions of the state. In particular, districts in the Southwest and Northeast are likely to experience slower economic growth that the state as a whole, while economic growth in the Northwest and Southeast is expected to be about on a par with overall state expansion. Even in these latter regions, many smaller districts may experience stagnant economic conditions since growth will tend to be concentrated in or near regional population centers.

The most direct impact of slower economic growth in most districts will be felt through relatively slow growth in the residential property values which usually serve as the base for the levies that support schools. The recent decreases in real estate values caused by the current recession may raise a challenge for some districts in the very near term. Even though the dollars to districts do not fall because tax rates are adjusted to deliver a certain number of dollars per student, the drop in property values could limit voters' enthusiasm for approving new school levies or reauthorizing existing ones.

Over the longer term, excess levy referenda to support schools could be affected by another demographic trend. The proportion of residents aged 65 and over will rise sharply in all communities across the state. This could affect the willingness of voters to approve future school levies in some communities.

Obviously, the extent and intensity of the factors will vary greatly from district to district. Some small, remote districts will face declining enrollment and, possibly, a loss of local funding while some districts in larger regional cities may be facing rising enrollments while challenged by the growing needs of an increasingly diverse student population. Nevertheless, the need for new strategies to cope with these new challenges is evident across the broad spectrum of rural school districts in Minnesota.

Strategies for Rural Minnesota School Districts
A literature review

Prepared by:
Katie Broton; Dan Mueller, Ph.D.; Jennifer Lee Schultz; Maria Gaona
Wilder Research
Saint Paul, Minn.

Summary

The purpose of this literature review is to gain greater understanding of strategies that can be effectively applied in Minnesota's rural school districts to address their education challenges. In particular, we sought to identify strategies that could either: 1) maintain (or improve) students' academic achievement at less cost to the school district, or 2) improve student academic achievement, or that of traditionally less successful subgroups, at the same cost. For some strategies found in the rural education research literature, study results only addressed the strategy's effectiveness in solving a specific problem (e.g. teacher retention) rather than its impact on student achievement or school costs. We employed a "bottom-up" approach in our investigation by focusing on strategies tried by rural school districts and the evidence for their effectiveness.

Wilder Research librarians searched key databases for literature on strategies that address rural school districts' challenges. The search produced approximately 250 documents dating back to 1970, although the focus of the review was on the more recent of these. A rating was applied to each document to indicate the quality of the evaluation methodology used. This rating is an indicator of the confidence that can be placed in the results of each study and consequently how promising each strategy is believed to be given the level of evidence available. Additionally, 13 educators and rural education experts were interviewed to provide a more complete view of the state of rural education and potential strategies that have not been subjected to formal evaluation yet.

Strategies

The strategies examined in the literature review include the following: distance education, four-day school week, collaboration, consolidation, reducing facilities' costs, teacher recruitment and retention, and charter schools.

The research available on these strategies was quite limited for rural areas, particularly regarding the strategies' impact on student achievement and costs. We rated the quality of the methodology of the studies available using the following scale: *high* – the researchers used an experimental design, one which randomly assigns groups to treatment and control conditions prior to treatment, *medium* – the researchers used a quasi-experimental design, *low* – the evaluation methodology substantially limited the ability to conclude that the findings could be attributed to the strategy, or *very low to none* – the evaluation methodology was very weak or nonexistent. The studies identified in this report fell in the medium or lower categories. Highlights of the results of the review are included below.

Distance education. Distance education refers to instructional methods that link students and teachers who are not physically in the same place. Study results (medium quality) indicate that student achievement using distance education, either interactive television or online education, was similar to the traditional classroom. The limited research (low quality or less) on the cost of distance education does not show a clear benefit over the traditional classroom. The primary advantage of distance education is that it can expand the curriculum available to students. School districts' experiences with distance education suggest that it is important to carefully consider the services available from vendors before making a decision and to provide on-site technical and academic support for students.

Four-day school week. The research available (medium quality) indicates that student achievement with a four-day week is similar to that with the five-day week, after a short adjustment period. While there are anecdotal reports of substantial cost savings using the four-day week, no rigorous studies of cost savings have been published to date. Because the four-day week has broader community impacts, community support is necessary for successful implementation.

Collaboration. School districts may choose to collaborate with other organizations to address issues such as the need to reduce costs or increase services. They may collaborate with other school districts, higher education institutions, community organizations, and other groups (e.g., regional service cooperatives). Regarding achievement and cost reduction impacts, the research literature on collaboration is fairly weak (low quality). However, it suggests that collaboration may maintain or even improve student achievement levels, and potentially reduce district-level costs. School districts' experiences with collaboration indicate that the following factors may help ensure a successful collaboration: strong leadership, recognition of a common purpose, clear expectations, resources, external support, and accountability.

Consolidation. Compared to collaboration, better research (medium quality) is available on the impact of consolidation on student achievement and cost reduction. However, research suggests caution in pursuing this strategy. To the

extent that consolidation results in larger schools, student achievement may suffer, especially for low-income and minority students. Overall, the evidence indicates that the substantial cost savings expected from consolidation efforts have not been realized. In addition, if consolidation results in the loss of a school in a small community, this may have negative consequences for the community's identity and vitality.

Reducing facilities' costs. While facilities represent a significant cost to rural school districts, the available research on this strategy is quite limited (very low to none). The literature available recommends that school districts conserve energy when possible, use energy more efficiently, conduct routine building maintenance, and renovate existing structures before building new ones. Due to the variety of local conditions, an energy audit or feasibility study is also recommended before proceeding.

Teacher recruitment and retention. Rural school districts often face unique challenges in recruiting and retaining quality teachers, and the costs related to teacher turnover and vacancies can be substantial. The research available on the impact of teacher recruitment and retention efforts on student achievement and costs is weak or nonexistent (very low quality). The best research available in this area (medium quality) examines the impact of new teacher induction programs (support, guidance, and orientation efforts for new teachers, such as mentoring) on retention. This research has generally found that induction programs improve teacher retention. Teacher recruitment efforts include initiatives such as targeting specific groups (e.g., local paraprofessionals) or offering incentives (e.g., signing bonus or housing assistance), although there is minimal evidence of effectiveness at this point.

Charter schools. Charter schools are public schools that receive per pupil state funding, but operate under a different accountability system. Given the experimental nature of charter schools, successful ones can potentially serve as models to other schools. Although there are few studies (very low quality) on the achievement impact and cost-effectiveness of rural charter schools, there is evidence that some charter schools have raised student achievement while staying at the cost-per-student levels of local school districts. The innovative and effective techniques used by such schools may warrant consideration by other rural public schools.

Guidelines for successful implementation

Rural school districts and the communities with which they are entwined vary greatly across Minnesota. Given this diversity, there is not one strategy or set of strategies that can effectively solve the education problems of rural school districts, but there are common implementation themes that run throughout individual strategies. The literature suggests that the most successful strategies were applied within a local context and adhered to the following guidelines for implementation:

- Define and agree on the specific problem that needs to be addressed
- Focus on increasing student achievement as the motivating force for change
- Build upon a foundation of broad-based community support that emphasizes local values
- Identify a visionary leader who can clearly communicate with stakeholders
- Seek external support and resources as necessary
- Adapt to changes, re-examine practices, and stress continuous improvement

Local implications

This literature review highlights a number of strategies to address rural education challenges, but it is important to note that none serve as a universal prescription. Each rural school district should evaluate their situation and adjust chosen strategies to fit their schools and community. A one-size-fits-all approach is inconsistent with the needs and values of many rural school districts.

All seven of the strategies identified in this review have the potential to solve certain educational challenges in rural school districts. However, the limited amount and low quality of research on rural education, especially regarding cost-effectiveness, does not allow us to broadly recommend one strategy over another. More high quality research that is applicable to the unique challenges of rural school districts is necessary for such conclusions to be made. Consolidation, however, has been more rigorously studied and the findings suggest that school districts proceed with caution in pursuing this strategy. Although consolidation has the potential to solve some problems, it has not been shown to improve student achievement or cut costs.

In addition to the specific strategy selected to address the challenges faced by local school districts, the process of improvement also carries serious implications for success. Strategies that "serve as a catalyst to stir school personnel and community leaders to reexamine their practices and dream of better things" are often the most effective in traditional Midwest communities (Nachtigal, 1982, p.274). Positive change takes time, so patience is critical, particularly for communities where consensus building is needed. Overall, the best results have come from rural areas that recognize where the community and school district are at, where they want to be in the future, and construct a plan of how to get there together.

Policy implications

Besides actions taken by rural school districts to address educational challenges within the current policy framework, state policies have the potential to alleviate some of the hardships that districts currently face. An exhaustive policy analysis is beyond the scope of this review, but policy plays a critical role in any comprehensive approach to address rural education problems. The literature review highlights the importance of flexibility in order to address these challenges. Therefore, policies created to address the needs of Minnesota's rural school districts should create options and opportunities for districts to reach a determined outcome instead of mandate a fixed plan.

There are a number of existing policies, both within and outside of Minnesota, that provide flexibility and decentralized decision-making within a given parameter to ensure certain standards are met. For example, Minnesota law allows local districts to approve flexible school week schedules, usually consisting of four or five days of instruction per week, as long as the total time requirement is met. This flexibility allows districts to choose the schedule that works best for their community without forfeiting accountability measures tied to total instructional hours. Also, one charter school highlighted in this review utilizes project-based learning that emphasizes interdisciplinary education, but embeds multiple state standards within each single project. Although traditional subject classes are not taught, students still learn the required material in each subject area. Finally, in a number of Midwest states, districts are required to provide some sort of new teacher induction program, which studies have shown improves teacher retention. Specific components and details of the support program are left up to the local district. States with such policies have a higher percentage of all districts, and especially small rural districts, that provide some sort of new teacher induction program, and these programs are generally more comprehensive than those in states that do not have a policy in place (Hare et al., 2001).

The three examples mentioned above are brief illustrations of policies that embrace the singularity of rural school districts without sacrificing standards or accountability. While such policies may be difficult to enact, the problems facing rural school districts cannot be fully solved within the constructs of the current system. Policy change is needed for Minnesota's rural school districts to be able to successfully educate our students.

Introduction

Background and purpose

Over a third of Minnesota's school districts are classified as rural, enrolling 27 percent of the public school student population (Johnson & Strange, 2007). The majority of these school districts are facing declining enrollments, changing cultural values and demographics, and an increase in financial challenges due to loss of per-pupil state revenue and depressed economic circumstances (Kyte, personal communication, November 19, 2008; McMurry & Ronningen, 2006). Furthermore, the new era of accountability has changed the goal of education from "access for all" to "achievement of all," creating a competitive environment for which the current school system is not designed (Graba, personal communication, November 3, 2008; Warne, personal communication, November 6, 2008).

The consequences of increased strain are severe. As schools lose revenue, they must "make deep cuts in existing staff, programs, and resources" (Jimerson, 2006, p.6). Persistent revenue loss "affects staff morale, professional growth, and makes strategic planning extremely difficult" (ibid, p.6). Many districts feel that they have already cut everything possible without causing detrimental harm to student learning (Warne, personal communication, November 6, 2008). Declining enrollment may also result in the closure of small schools, potentially creating longer commutes to larger schools, which have been linked to "declines in parental involvement, decreases in student participation in extra-curricular activities, and a severing of close connections between school and community" (Jimerson, 2006, p. 6).

Clearly, it is essential that action be taken to alleviate the educational challenges facing our rural communities, many of which already face other hardships and distress. The Minnesota constitution states, "it is the duty of the legislature to establish a general and uniform system of public schools" (Article XIII, Section 1). Moreover, it is our moral and ethical obligation to provide the same quality of education to all children, regardless of whether they remain in rural communities or not.

The purpose of this literature review is to gain greater understanding of strategies that can be effectively applied in Minnesota's rural school districts to address their current education challenges. In particular, we sought to identify strategies that could either:
1) maintain (or improve) students' academic achievement at less cost to the school district, or 2) improve student academic achievement, or that of traditionally less successful subgroups, at the same cost. We employed a "bottom-up" approach in our investigation by focusing on strategies tried by rural school districts and the evidence for their effectiveness.

Organization of the review

The literature review begins with a summary of the methods used in the review, including the search procedures and the rubric used to judge the rigor of each study's evaluation methodologies. The strategies section then describes the key rural education strategies that emerged from the review in detail.

Each strategy's description includes general findings, quality of evidence, case examples, and implementation considerations, as appropriate. Finally, the conclusion section summarizes the review.

Literature review methods

Search procedures

Wilder Research librarians searched the following databases for literature on strategies that address rural school districts' challenges: ERIC, MegaFile, Electronic Collections Online, Periodical Abstracts, WilsonSelectPlus, and WorldCat. They also conducted a general web search using the Google search engine, focusing on the following sites: Center for Rural Policy and Development, Rural Information Center, Center for Rural Education, Rural Policy Research Institute, North Central Regional Education Laboratory, National Education Association, Rural School and Community Trust, Center for the Study of Small/Rural Schools, Foundation for Rural Education & Development, and the Rural Assistance Center.

The search produced approximately 250 documents including research studies, program evaluations, policy briefs, and anecdotal case examples dating back to 1970. However, this approach produced a limited amount and quality of evidence on many of the strategies. To address this problem, we both constructed criteria for identifying strategies with the best evidence of effectiveness and provided additional explanations regarding the rigor of evaluation methodology used in each strategy. Due to the low quality and general lack of research on rural education, higher quality studies dating back to 1980 were accepted for this literature review. Additionally, a number of educators and rural education experts, particularly those connected to Minnesota, were identified through the literature and research centers listed above. Thirteen were interviewed to provide a more complete view of the state of rural education and potential strategies that have not been subjected to formal evaluation yet. Their expertise is integrated throughout the review and was particularly useful in writing the background section. A full list of the interviewees can be found in the Appendix.

Quality of the studies

Strategies were given a rating for the quality or rigor of the evaluation methodology. The rating scale is as follows: *high, medium, low*, and *very low to none*.

While the ratings were assigned somewhat subjectively, the following definitions provide examples of the types of evaluation studies that fall into each category. Due to the limited nature of research focusing on rural education, all of the evidence falls into the lowest three categories.

- *High* – the researchers used an experimental design (i.e., participants in the treatment and control groups are randomly assigned prior to program entry), allowing one to draw confident conclusions about the strategy's impact and the size of the effect.

- *Medium* – the researchers used a quasi-experimental design (e.g., matched comparison groups, statistical analyses with multi-variate controls, or meta-analyses) that allowed one to conclude that the general results are likely to be reliable. However, the size of the effect may not be accurate given the limitations of the study design.
- *Low* – the evaluation methodology substantially limited the ability to conclude that the findings could be attributed to the strategy alone and not to other factors (e.g., due to convenience sample comparison groups, or systematic examination of effects lacking a comparison group or statistical controls for key factors).
- *Very low to none* – the evaluation methodology was very weak or nonexistent (e.g., case examples, briefs, or anecdotal evidence) to the extent that it was difficult to judge whether the findings were meaningful, even if they appeared to be favorable. Much of this evidence is susceptible to significant biases.

Additional explanations about the quality of the studies for individual strategies are provided below. Besides the quality of the studies, we also share the study findings regarding the effectiveness of the strategy.

Strategies

Distance education

Distance education refers to a variety of instructional methods that link students and teachers who are not physically in the same place. Some of the earliest forms of distance education took the form of mail correspondence courses and radio broadcasts. However, distance education strategies of today almost always utilize some form of modern technology. Advocates of this strategy believe that cost savings can be realized through reduced teacher salary costs while maintaining current levels of academic achievement. Use of distance education has the potential to cut transportation and facility costs if students do not attend school at all on certain days of the week, or increase revenue through fees acquired by providing courses to students from other districts (Hobbs, 2004). The quality of the studies available on this strategy is *medium* for achievement studies and *low to very low* for cost studies. These studies have generally found that while student achievement remains about the same, the evidence for cost savings is mixed when distance education is used.

Interactive television (ITV) allows teachers and students to see and hear each other in real time allowing for interactions similar to those in a traditional classroom. Brent (1999) expands the literature on ITV by utilizing both primary and secondary data to compare academic results for a given cost (Brent et al., 2004). Cavanaugh (2001) employed a meta-analysis approach using 19 experimental and quasi-experimental studies focusing on interactive distance education. Based on these results, there is strong evidence that ITV expands the curriculum for participating schools, and student achievement is comparable to traditional instruction (Brent, 1999; Brent et al., 2004; Cavanaugh, 2001). However, even though academic achievement is similar, the cost-effectiveness of ITV remains unclear. Brent (1999) examined the efficacy of ITV using budget and expenditure data as well as observations and interviews in nine rural and suburban New York school districts that are part of a regional service cooperative (collaborative organization that provides programs and services to school districts and other entities). In all districts, Brent found that the cost to provide individual courses on-site was far less than providing it via ITV due to ITV's capital, maintenance, and other hidden costs, such as scheduling conflicts, insurance, teacher and course preparation, and lost instructional days. However, the costs have the potential to change in favor of ITV if it is also utilized for professional development and community education; no teacher is available to teach in-person; a volunteer supervised the classroom; or a grant covered start-up expenses (Hobbs, 2004). Before implementing ITV, each district should examine its needs, resources, and goals given the mixed cost savings results.

Online education allows for a student or group of students to access text- or graphic-based instruction via the Internet. Communication is often delayed by the use of email or chat boards, and students work at their own pace within given parameters. Students may take a single online course in a subject that is not offered at their school or enroll full-time. Minnesota law requires online

Wyoming E-Academy of Virtual Education (WeAVE) operated by Ft. Washakie Charter High School (FWCHS)

Students from the Wind River Indian Reservation traveled long distances to school, had highly inconsistent attendance and a 60-70 percent drop-out rate. To address this community's needs, a public online high school was created, accredited, and embraced after some initial skepticism. FWCHS is the only online public high school in Wyoming and the only one operated by a Native American school district in the country. It is a creative solution given the need for flexible scheduling, non-competitive learning styles, self-paced coursework, and visual and hands-on learning. The admissions process is rigorous, carefully screening for motivated and self-disciplined learners. Many of the students had previously dropped out of high school, were below grade level, or otherwise at-risk. Some are part-time students from other districts looking to take advantage of an online course not offered at their school, such as oceanography. All students have an Individualized Education Plan, and while most instruction occurs online, traditional face-to-face support is available as well as some onsite classes and extracurricular activities, such as the art of pipe making.

Since the school's inception in 2004, enrollment has averaged 50 full-time and 50 part-time students. After two years of operation, five students have graduated. While it may seem like a small number, the community and educators are proud and feel that it proves that taking a risk can be successful (Stafford, 2006).

courses to be rigorous with standards equivalent to non-online courses, and "actual teacher contact time or other student-to-teacher communication" is an expected learning component (Minnesota House of Representatives, 2003, p.1). Minnesota does not have a state-designated virtual school, but rather relies on charter schools, school districts, higher education institutions, regional service cooperatives, and private firms to design and deliver online courses. Districts considering this venture as a way to increase revenue by enrolling student from other districts in their courses should conduct a feasibility study as start-up costs can be quite high.

While limited, the research on the academic- and cost-effectiveness of online education is generally favorable, especially given its variability and relatively recent development. One meta-analysis of 14 web-delivered distance education programs found no significant positive or negative effects on academic achievement, suggesting that its impact is comparable to traditional instruction (Cavanaugh et al., 2004). However, most educators agree that online learning is not appropriate for all students and achievement may depend more on the context and quality of instruction (Cavanaugh et al., 2004; Stafford,

2006). A knowledge brief comprised of expert interviews and recent literature recommends the following to encourage the academic success of students enrolled in online classes: use quality online curriculum both in terms of pedagogical approach and content standards, provide students with academic and technological support, and assess students' progress through monitoring (Aronson & Timms, 2004). Even though online education's impacts are unclear, particularly regarding cost savings, experts consistently reported that they expect the online learning trend to continue growing in the future.

Implementation considerations

Research suggests the following guidelines be followed before implementing a distance education program:

- Research vendors, including private firms, regional service cooperatives, and local school districts, for both curricular and technical expertise before deciding who will supply and receive courses. Arrange for onsite academic and technical support as necessary (Marcel, 2003).
- Agree on cost and scheduling details including how many students and courses will be shared, time and length of the class, and specific days in the semester, excluding holidays, or accept the amount of instructional time that will be lost because of scheduling conflicts and malfunction (Stafford, 2006).
- Talk with teachers or the teachers' union to make sure they are comfortable with the proposed changes (Brent, 1999).

Four-day school week

Motivated by long bus rides and diminishing financial resources, some rural school districts have turned to the four-day school week. Longer but fewer days have the potential to save money through decreased transportation, energy, and maintenance costs without losing any instructional time or impacting student achievement. While it generally seems like a cost-effective solution, and Minnesota law does allow local districts to approve flexible school week schedules, the quality of studies available on this strategy is *medium* for achievement studies, and *very low to none* for cost studies. Study findings generally conclude that although student achievement is generally unchanged by the implementation of the four-day school week, the evidence for cost savings is inconclusive.

Achievement

Daly and Richburg (1984) gathered longitudinal student achievement data from five rural Colorado school districts that all switched to the four-day school week in the early 1980s. They examined test scores from the Iowa Test of Basic Skills (ITBS) over a total of four years, from two years before the change and two years after the change, both by student cohort and single-grade analysis. They concluded that there was no systematic change in student academic achievement after a short adjustment period. In other words, the students enrolled in the four-day school week scored comparable to when they were enrolled in a five-day school week and to students in the same grade who were enrolled in a five-day school week (Daly & Richburg, 1984). These findings are also in alignment with tentative results produced by the earliest known evaluation research on the four-

day school week, by Richburg and Edelen in 1981 (Daly & Richburg, 1984).

Sagness and Slazman (1993) utilized a pre-post cohort design to examine the ITBS and Tests of Achievement and Proficiency (TAP) student achievement scores of the same students in an Idaho suburban school district one year before and one year after the district implemented the four-day school week. Average test scores before and after the schedule change were then compared using statistical tests to determine any significant differences. The study found that student achievement increased for some grade levels on some subtests, and was generally comparable with achievement in previous years in other grade levels and subtests (Sagness & Slazman, 1993).

Cost-effectiveness

The limited amount and quality of data focused on the actual cost savings associated with the four-day week found that school districts anticipated saving money in the following areas: building costs related to heating fuel, electricity, water, sewer, and general wear and tear; substitute teacher salaries; support staff salaries; and transportation including fuel, supplies, and personnel. Unfortunately, to the best of our knowledge, there has not been a rigorous comprehensive study that calculated the overall savings for a four-day school week. The only evidence is comprised of specific examples from school districts that reported a wide range of savings. For example, Sagness and Slazman's (1993) impact study found a savings of 1.6 percent of the total operating budget. Richburg and Sjogren (1983) averaged cost-savings across 12 rural school districts and found that gasoline and electrical consumption decreased 23 percent, heating fuel use decreased 7-25 percent, and the districts used substitute teachers an average of 24.5 fewer days. However, they did not analyze how these consumption declines impacted actual budget savings. It should also be noted that not all districts realized savings (Beesley, 2007).

Additional factors

While this review focuses on student achievement and cost in evaluating the merit of the four-day schedule, there are a number of unintended benefits and weaknesses associated with this strategy. Limited evidence (anecdotal) mentions the following advantages associated with the shortened school week: ease in making up canceled school days quickly, student and teacher attendance improvements, fewer distractions leading to more focused learning, and fewer disciplinary referrals. Alternatively, some reports cite concerns regarding childcare, possible learning retention loss over the three-day weekend, student fatigue related to the long length of the school day, and loss of wages or jobs, particularly for support staff (Beesley, 2007; Chmelynski, 2003; Dam, 2006; Grau & Shaughnessy, 1987; Johnston, 1997; Mitchell, 2006; Reeves, 1999; Yarbrough & Gilman, 2006).

Implementation considerations

Due to the schedule change's impact on the broader community, widespread support is necessary for successful implementation. While case examples report high levels of community satisfaction with the four-day week, a 2003 Gallup poll found that only 24 percent of rural residents favored a four-day school week with longer days (Dam, 2006; Ray, 2003; Sagness & Slazman, 1993).

Collaboration

Rural areas have a strong tradition of working together to accomplish large projects. Collaboration within and between communities may provide one of the most immediate and feasible strategies for districts that wish to reduce costs and increase educational services while retaining independence. The quality of the studies available on this strategy is *low*. The available reports generally do not provide data on student achievement or cost-effectiveness, but do offer a number of examples where collaborative efforts helped solve a specific problem.

Collaborate with school districts and other partners

Resource sharing: When school districts are faced with a challenge that extends beyond their resources, they can informally work with a neighboring district, create a more formal cluster district with neighboring school districts, or turn to a regional service cooperative (RSC). Unlike neighboring districts that informally share resources, cluster districts are comprised of three of more school districts and tend to have a contractual, long-term relationship with each other. Regional service cooperatives are independent organizations that provide cooperative purchasing, education services, special programs, insurance, and other services to school districts, nonprofit organizations, and government agencies (Minnesota Services Cooperative, nd). These three partnership options provide various levels of formality, commitment, and resources for any given problem.

Brent and colleagues (2004) identified three tangible lines of evidence suggesting that RSCs are cost-effective. The review of several studies suggested that school district administrators were satisfied with both the quality of services and the cost-effectiveness of services provided by the RSCs. Third, when the costs of locally provided versus RSC-provided services were compared, RSC-provided services were generally less expensive (Brent et al., 2004). However, Galvin (1995) warns that benefits are not distributed equally and depend on organizational characteristics such as the size, location, and wealth of each partner.

Some of the most common shared resources include:

- Staff including teachers, therapists, counselors, nurses, technology coordinators, curriculum coordinators, business managers, custodians, bus drivers, and other support staff (Berliner, 1990; Jolly & Deloney, 1993; Plucker et al., 2007)
- Supplies and equipment including paper and other office supplies, curriculum including textbooks, computers and other technology, food, fuel, and machinery including snow plows and lawn mowers (Berliner, 1990; Jolly & Deloney, 1993)
- Professional development and other opportunities to reduce professional isolation (Berliner, 1990; Jolly & Deloney, 1993)
- Classes including foreign language, vocational, advanced-level, and special education, or an entire grade level is combined (Berliner, 1990; Jolly & Deloney, 1993)
- Early childhood, adult basic, and continuing education services (Berliner, 1990; Jolly & Deloney, 1993)

- Extracurricular activities (Berliner, 1990; Jolly & Deloney, 1993)
- Grant applications written and applied for together (Jolly & Deloney, 1993)

Partial reorganization: Partial reorganization alternatives are intended to increase the size of the population served with certain services while retaining organizational autonomy. There are numerous combinations of arrangements, but some of the most common are outlined in the table below. Reports on this alternative do not include student achievement or cost-effectiveness data.

Table 1: Partial reorganization alternatives.

Type of partial reorganization	**Membership**	**Services provided**
Shared superintendent	Two or more school districts	Superintendent duties for each local school district reporting to two or more school boards (Decker & Talbot, 1991)
Shared central administrative office	Two or more school districts	Superintendent duties, business manager services, technology, curriculum coordinator, food service, and transportation duties for each local school district reporting to each school board (Plucker et al., 2007)
Central high school	Two or more school districts	School districts combine their high school programs, but retain authority over elementary schools (Monk & Haller, 1986)
Cross-functional administrator[a]	One school district and a local social service agency or government entity	Broad leadership and general management duties for the school district and the social service agency or government entity reporting to each member board (Monk, 1991)
Cross-functional administrative office[a]	One school district and a local social service agency or government entity	Broad leadership and general management duties, business services, technology, food service, and transportation duties for the school district and the social service agency or government entity reporting to each member board

[a] *An additional education consultant would need to be hired for curriculum development, teacher performance reviews, or other specialized tasks (Monk, 1991).*

Implementation considerations

It is clear that some forms of collaboration, such as sharing a lawn mower, are much easier to achieve than others, such as sharing a superintendent. Some educators recommend starting with a relatively small project, and gradually adding components as opportunities arise, such as the retirement of a staff member (Graba, personal communication, November 3, 2008). Regardless, there are a number of steps that can be taken to promote the success of collaboration efforts:

- Identify and recruit suitable member school districts. The most successful cooperative arrangements generally contain two to eight member districts of similar size within a reasonable distance (Jolly & Deloney, 1993; Nachtigal & Parker, 1990).
- Establish leadership. Each member district should have a leader who can garner the support of the faculty, school board, and community in the collaboration process. The leaders must make a significant time commitment to the project, and be willing to work with and listen to leaders from other districts as well as their own (Jolly & Deloney, 1993; Nachtigal & Parker, 1990).
- Define and agree upon a common purpose. The reason for collaborating must address a specific and common problem clearly defined by member school districts (Jolly & Deloney, 1993; Nachtigal & Parker, 1990).
- Outline expectations. Member districts should be aware of the short- and long-term goals of collaborating as well as the proposed reciprocal benefits (Decker & Talbot, 1991). Nachtigal and Parker (1990) recommend a three-year commitment, at least, in order to establish a trusting relationship and develop and implement programming.
- Commit resources. Member districts must be willing to commit financial and human resources, including regular attendance at collaborative meetings (Nachtigal & Parker, 1990).
- Identify and seek out potential sources of support. Personnel from local colleges, the state department of education, or outside social service agencies can be useful in providing technical and strategic support as well as serving as a facilitator of the process. However, it is crucial that these outside agencies empower member districts and not create dependency (Jolly & Deloney, 1993; Nachtigal & Parker, 1990, Warren & Peel, 2005).
- Establish an accountability framework. While a highly bureaucratic organizational structure is undesirable, sufficient documentation and periodic assessments are essential to future planning and for reporting purposes (Nachtigal & Parker, 1990).

These elements of successful collaboration in rural education are consistent with the general research literature on collaboration (Mattessich et al., 2001).

Collaborate with higher education institutions

Colleges located in rural areas are a great resource to local school districts. Partnerships between these institutions have the potential to improve student achievement with very few to no additional costs for the school district. Some of the most common examples include:

- High school students can enroll in a Post Secondary Enrollment Options (PSEO) program that offers expanded curricular offerings and allows students to earn college credits by taking college classes on campus free of charge (Jolly & Deloney, 1993).
- College faculty and staff can be helpful in aiding school districts in strategic planning and larger reform initiatives (Warren & Peel, 2005).

- College faculty and staff can provide professional development opportunities for teachers and other school staff in person (Jolly & Deloney, 1993).
- College faculty and staff can provide professional development through webcam observation and feedback sessions (Vernon-Feagans, personal communication, November 17, 2008).
- College students can serve as tutors at a local school, and education students can be recruited to fill teacher vacancies once licensed (Elliot, 2008; Hare et al., 2001).
- College campuses can host summer programming for local students to help them improve academic achievement while being exposed to a new environment (Jolly & Deloney, 1993).

Collaborate with communities

Small rural communities and school districts have the ability to engage in a reciprocal relationship to provide educational, social, cultural, and recreational opportunities for community members of all ages. By utilizing the strengths of each partner in the school district and community, both student achievement and costs can potentially be improved. However, the available studies do not provide any data regarding achievement or cost savings for the following initiatives:

School as a community center

- Schools can lease unused space to local businesses or social services agencies. This provides districts with additional revenue and students with better access to counseling, health, or other support services that the local school may not be able to provide on its own. During the summer, temporary programs or camps can rent unused school space (Lawrence, 2004; Miller, 1993).
- The media center can be opened to the public; a small fee can be charged for printing or faxing materials to help offset the costs while providing a valuable service. School gyms can be used as workout facilities and kitchens for community meals (Lawrence, 2004; Scheie, 2001).
- Reliance on volunteers can go beyond tutoring and classroom support to include building repairs, clerical tasks, and assistance with extracurricular activities (Lawrence, 2004).

Community as the curriculum

- Community members can serve as supplemental education guides during classes on topics related to their career, interests, or talents. Examples include community fire fighters teaching about safety; hospital staff speaking on health topics; and a local meat locker integrating math, science, and communication skills into a three-month sausage project (Miller, 1993; Scheie, 2001).
- Students can conduct historical research by interviewing local elders; monitor groundwater, air, and local lakes for quality providing useful information to county and regional officials; or write and produce the local newspaper. One district purchased a farm where model irrigation techniques were taught to students and farmers (Gjelten, 1982; Scheie, 2001).

School-based enterprise

- After surveying the community to find out what business needs exist, students can start and operate those businesses with the aid of a teacher. Examples include repair shops for bicycles, engines, and shoes; convenience stores specializing in coffee, school apparel, or produce grown in the school garden; website design and development; and a heavy equipment operation and maintenance service. Students learn valuable business and technical skills while filling a community need (Miller, 1993; Gjelten, 1982; Rosenfeld, 1983; Scheie, 2001).

Birch Grove Elementary School & Birch Grove Foundation

In 1986, Birch Grove Elementary was shut down by a district that concluded it was too small to be cost-effective. Students were bused to a neighboring elementary school, many riding nearly three hours per day. This northern Minnesota community was distressed by the school closure, and after much discussion and consultation, they decided to create the Birch Grove Foundation. The foundation is a private entity with one paid employee whose job is to build partnerships to help create opportunities for the community utilizing the elementary school building to defray costs.

The foundation leases the entire building from the district and then leases a portion back to the district for use as a school. The rest of the building is rented to other users who do not interfere with its primary use as a school. A medical clinic rents space to offer a foot care clinic for senior citizens, and also provides care for students and community members. A job training center opened in the school after a major employer left the area. The foundation raised funds to create a media lab staffed by a volunteer. It also serves as the location for technology-related community education classes as well as a summer computer camp for senior citizens. In addition, a national program rents the facilities for a summer camp where students conduct mutually beneficial community service projects. Parts of the school are even turned into a youth hostel on weekends and during vacation given the school's proximity to recreational areas (Lawrence, 2004).

In 2007-08, Birch Grove enrolled 46 K-5 students and made adequate yearly progress (based on No Child Left Behind criteria) for the third year in a row. About three-quarters of students were proficient in reading and math. Six in 10 students are considered low-income and 2 in 10 qualify for special education services (Minnesota Department of Education, 2008). Additionally, Birch Grove was granted a 2008 School Finance Award for financial management (Birch Grove Community School, 2008). Although 'making it all fit together' is a continual challenge, the community believes that it is well worth it if it means keeping their elementary students close to home (Lawrence, 2004).

Consolidation

The idea and practice of consolidating multiple small rural school districts into one larger school district in the name of increased efficiency has been around for over a century, but its lasting power does not mean that it is without controversy. Multiple studies have been conducted on the topic of consolidation, but the overall quality of the studies available on this strategy is *medium*. These studies generally found that small schools have at least comparable and sometimes greater levels of academic achievement in relation to larger schools. Small schools also mitigate the negative effects of poverty on achievement better than larger schools. On balance, the studies have also found that consolidation has not reduced costs in any significant way. Given the level of evidence and these findings, consolidation is not generally recommended since it has not been shown to improve student achievement or cut costs.

Achievement

Lee and Smith (1997) investigated how students' academic growth is influenced by high school size, with a particular focus on which high school size has a more equitable distribution of achievement. They conducted a two-level analysis (students nested in schools) on a large nationally representative sample of students followed through high school. Findings from this study showed that student achievement is higher in small- to medium-sized schools than in large schools when controlling for characteristics such as race, income, and gender. Furthermore, the smaller enrollment size has a stronger positive effect on learning in schools with high concentrations of low-income and minority students (Lee & Smith, 1997). This is a particularly noteworthy finding given Minnesota's projected demographic changes in the coming decades. A number of state-specific studies report similar findings regarding the academic benefits of smaller schools (Caldas, 1993; Coldarci, 2006; Howley & Bickel, 1999; Johnson, 2006).

In addition to school size, research from the past two decades clearly shows that location does not necessarily adversely affect student learning. Academic achievement results from the National Assessment of Educational Progress (NAEP) showed that on a national level, rural twelfth-grade students outperformed non-rural students in math achievement, and these effects go beyond the influence of school-level composition and individual-level student characteristics (Lee & McIntire, 1999). Additionally, in Midwestern states, rural students generally scored higher than their non-rural peers, particularly in science (Teixeira, 1995).

Cost-effectiveness

Decades of educational economies of scale research have provided no clear consensus on what the optimal school size is or if one even exists. Fox (1981), in his seminal review of size economies research in education, found that research in this area is severely limited both theoretically and empirically. The only consensus that has been reached is that the average cost curve appears to be U-shaped with diseconomies of scale for very small and very large schools (Andrews et al., 2002; Fox, 1981; Lee & Smith, 1997). Specific enrollment guidelines vary so considerably that it is not worth mentioning them until more reliable research is conducted.

Streifel's (1991) comprehensive study of the financial effects of consolidation identified 19 school consolidations across the nation for which longitudinal pre- and post- aggregated financial data were available. Researchers averaged these districts' costs from three years before consolidation and three years after consolidation to reduce the chances of an anomalous year impacting the data. Next, these three-year cost averages were compared to equivalent state data to take into account normal changes due to inflation or other state-wide factors across six expenditure categories. Results indicated that of the six expenditure categories (administration, instruction, transportation, operations and maintenance, total costs, and capital projects), only administration indicated a statistically significant savings as a result of consolidation since administrative costs increased at a slower rate than state averages. Considering administrative costs are generally less than 5 percent of the total cost, a small savings in this area has little impact on total costs, which is consistent with Streifel's results. Furthermore, post hoc analysis found no difference in cost savings when districts of various sizes consolidated (Streifel et al., 1991). Given this study and others, cost savings are not necessarily inherent in the consolidation process, although specific sites results' vary considerably (Bard, 2006; Brent et al., 2004; Rural School and Community Trust, 2006; Sher, 1988).

Community factors

Small rural schools are not only important for the students who attend them and their families, but are also vital for their communities. Rural communities rely on schools to meet their educational needs; provide social, cultural, and recreational opportunities; provide employment; bring generations together; and forge community identity (Lyson, 2002). In addition to promoting social vitality, local schools are essential for ensuring the economic vitality of rural communities (Beaulieu & Gibbs, 2005).

Implementation considerations

Although consolidation is not broadly recommended as a strategy to maintain or improve student academic achievement while mitigating the loss of revenue, there may be situations where consolidation is the best strategy for a given school district and community. Given the raw data that some school districts save money through consolidation while others spend more, Streifel (1991) recommends that each school district considering consolidation should closely analyze the various financial implications as well as the educational and community impacts. Chance and Cummins (1998) interviewed rural superintendents who experienced school consolidation in hopes of providing useful information to districts in similar situations. The superintendents emphasized that the primary focus of school consolidation should be on expanding curriculum and opportunities for students. In addition, the superintendents indicated that the consolidation's success depends on a well-written and communicated consolidation plan as well as the following: guarantee of job security, input sessions, joint board meetings, and maintaining all school sites.

Reducing facilities' costs

Facilities represent a significant cost to school districts and serve as an opportunity to reduce spending without directly affecting student achievement. The quality of the studies available on this strategy is *very low to none*. These reports do not include any data on student achievement or cost-effectiveness, but rather give advice on how to use and maintain facilities more efficiently.

Since the following ideas have not been formally evaluated, it is recommended that school districts work with professionals to conduct a feasibility study or energy audit before proceeding:

Energy efficiency and conservation

- Create awareness of the issue, and ask staff and students to conserve energy whenever possible (Harmon, 1997; Lawrence, 2002).
- Place timers on heating and cooling systems to reduce usage when the building is not occupied. Require after hours facility users to pay a utility fee (Harmon, 1997).
- Try to install insulation and weather-stripping; thermal windows and doors; energy-efficient machines; and utilize alternative energy forms such as solar, wind, and geothermal for long-term energy savings (Dewees & Earthman, 2000; Harmon, 1997; Lawrence, 2002, 2003).

Keeping up with maintenance

- Make small routine repairs rather than waiting until a more serious and expensive problem occurs (Lawrence et al., 2002; Lawrence, 2002).
- Avoid deferring maintenance, since doing so can create poor conditions that negatively affect student learning, health, safety, and morale (Eathman, 2000; Lawrence, 2003).

Renovation and building considerations

- Avoid building a new school if another facility can be renovated or adapted; it is often cheaper to renovate after the comprehensive costs of

Explore alternate options

Littleton High School was crowded, but instead of building more classrooms, they went to the community's redevelopment program for assistance. The school found out that the local candy store not only needed help in advertising, web design, and their e-business, but they were willing to renovate business building space to house students. Now, the high school's business academy is located in the basement of the candy store and a second academy is located in a Main Street bank studying spatial information technology. The high school obtained two new classrooms in the community at a cost of $3,500, which opened up space at the high school and benefitted the community (Bingler, nd; Lawrence, 2002).

building (including construction of sewer, water, telephone, electricity, and roads as well as demolition of the old site) are considered (Lawrence, 2002).
- Plan with the community and professionals if building new is the best option; build only what you need; use local labor and supplies; support technology infrastructure; and provide flexible space to accommodate various teaching activities and formats (Dewees & Earthman, 2000; Lawrence, 2002).

Other financial considerations
- Encourage students and community members to participate in maintenance and repair projects, after appropriate safety precautions are taken (Lawrence, 2003).
- Seek bids and compare prices for all purchases; combine bids with other schools or school districts for additional savings (Harmon, 1997).
- Pay bills promptly when discounts are available (Harmon, 1997).
- Utilize creative financing options such as state capital funds, federal funds, state building authorities, interest-free or tax-credit bonds, and private donations (Dewees & Earthman, 2000; Lawrence, 2002)

Teacher recruitment and retention

Quality teachers are crucial to any school district, but small rural areas often have unique problems in recruiting and retaining teachers. Minnesota, like most of the nation, does not have an overall teacher shortage, but rather a problem with the distribution of teachers across subject and geographic area. To compound the problem, a survey of 710 principals throughout Minnesota found that principals were much more likely to describe the average teacher leaving the profession as effective or highly effective (57%) rather than ineffective (6%), and nearly three-fourths (73%) of Minnesota teachers leave for reasons other than retirement (Hare & Nathan, 1999; Ingersoll, 2001). Teacher position vacancies and high turnover rates negatively affect the quality of education and school morale. Additionally, costs related to teacher vacancies and turnover conservatively average between $3,000 and $4,000 per teacher according to one Texas-based study (Texas Center for Educational Research, 2000).

Given the negative effects on learning and finances due to teacher vacancies and attrition, steps taken to address these problems have the potential to improve student achievement and cut costs in schools with staffing concerns. The quality of studies available for this strategy is *very low to none* on the topic of teacher recruitment and *medium* with regard to teacher retention. Study findings do not provide any data on student achievement or cost-effectiveness. Studies of induction programs, including those related to teacher support, guidance, and orientation, report favorable results regarding teacher retention.

Possible recruitment initiatives

While administrators often need to recruit teachers, very few recruitment initiatives have undergone any sort of evaluation process, resulting in limited to no evidence regarding the effectiveness of the following initiatives:

Local incentive offered through mixed-use facility

Moderately priced housing was in short supply on Little Cranberry Isle, Maine, making it difficult to recruit teachers. Recognizing this problem, officials decided to turn the unused spacious attic of the elementary school into an apartment and rent it to teachers. It took some creative thinking, but a teacher and his family now rent the apartment year-round and provide a certain level of security to the building during the summer when much of it is not in use (Lawrence, 2002).

Target specific groups

- Target local paraprofessionals or service-oriented people and encourage them to become licensed teachers through "grow your own programs" that often partner with a nearby college. Current teachers can also be retrained to fill high-needs areas (Beesley et al., 2008; Hare et al., 2001; Hare & Nathan, 1999; Hirsch, 2001; McCaw et al., 2002; McClure & Reeves, 2004).
- Encourage promising students to become teachers individually or start a Teachers of Tomorrow club (Hines & Mathis, 2007; McCaw et al., 2002).
- Target teachers from rural areas as they are more likely to adjust to the unique rural lifestyle (Beesley et al., 2008; Elliott, 2008).
- Lure retired teachers back into the classroom or ask them to delay retirement (Hirsch, 2001).
- Recruit teachers from other countries, particularly to fill foreign language positions (McCaw et al., 2002).

Offer incentives

- Provide targeted incentives such as a signing bonus, differential pay, professional development allowance, sabbatical, gas allowance, generous retirement plan, full benefits package, or scholarship forgiveness, including the facilitation of federal scholarship forgiveness programs. However, monetary incentives alone are not a sufficient recruitment strategy (Beesley et al., 2008; Elliott, 2008; Hare et al., 2001; Hare & Nathan, 1999; Hines & Mathis, 2007; Hirsch, 2001; Osterholm et al., 2006; Rowland & Coble, 2005).
- Provide location-specific incentives such as help in identifying or providing affordable housing; mortgage assistance; reduced interest rates; waived phone, bank, and utility introductory fees; or a parcel of land after a specified term of employment (Beesley et al., 2008; Elliott, 2008; Osterholm et al., 2006; Rowland & Coble, 2005).
- Work with the community to provide employment opportunities for the teacher's spouse, as applicable (Hare, 1991).

Seek broader involvement in the hiring process

- Include building staff or other stakeholders in the hiring process to help convey the culture of the school and community to increase the likelihood of a good match (Beesley et al., 2008; McClure & Reeves, 2004; Osterholm et al., 2006; Rowland & Coble, 2005).
- Establish connections with college teacher preparation programs, especially those located in rural areas or with a rural education focus (Elliott, 2008; Hare et al., 2001).

Offer alternatives to licensure

- Hire under temporary license, support alternative certification, or obtain waivers from state certification requirements (Hare & Nathan, 1999; Harmon, 1997; Hirsch, 2001; McClure & Reeves, 2004).

Make moving easier

- Revise transfer and pension policies to reduce barriers for potential hires from other districts (Hirsch, 2001; Rowland & Coble, 2005).

Potential retention initiatives

Due to the high number of teachers who leave the profession each year, recruitment initiatives must be coupled with retention efforts to address the school staffing problem. Borman and Dowling (2008) conducted a comprehensive meta-analysis of 34 quantitative studies to better understand why teacher attrition occurs and what changes can be made to reduce it. The literature's broad conceptualization of the problem does not allow for much in-depth analysis, but new teacher induction programs, those related to support, guidance, and orientation, show potential for improving teacher retention. Specifically, greater participation in school mentoring programs for beginning teachers, a greater prevalence of school-based teacher networks, and opportunities for collaboration resulted in statistically significant higher rates of retention (Borman and Dowling, 2008). Furthermore, Smith and Ingersoll (2004) found that participation in induction programs had a statistically significant positive cumulative effect. In other words, the more beginning teachers participated in components of a program such as working with a mentor in the same field, utilizing common planning time, and participating in a collaborative network, the higher their retention rates were. However, an important limitation to this research is the lack of specific information regarding the details of induction programs, rendering a cost-effectiveness analysis impossible.

There is strong support for the establishment of mentoring programs in Minnesota; over 80 percent of principals agreed that such programs would help retain teachers (Hare & Nathan, 1999). New teacher programs are also an area where rural districts are lagging behind their peers statewide, as only 59 percent of rural Minnesota districts have some sort of a new teacher support program compared to 89 and 80 percent of suburban and urban districts, respectively.

In addition to induction programs, single studies indicated that higher teacher retention rates are also related to regular and supportive teacher-administrator communication, teacher input into school decision-making, extra help in the classroom, reduced student discipline problems, opportunities for

Establishing a formal mentoring program

Chinook's Edge School Division (CESD), in a rural area of Alberta, Canada, struggles with recruiting and retaining teachers. Social and professional isolation coupled with a lack of anonymity in the community exacerbate the problem. To address part of this issue, CESD established a series of optional support meetings made up of a structured discussion followed by an informal social gathering. The meetings received mixed reviews, but from them grew the idea of establishing a formal mentoring program and evaluating it through an exploratory study. Through the board's commitment and targeted use of resources, about twenty mentors and twenty protégés enrolled in the first year of the program.

Due to the problems associated with finding mentors in small communities, retired teachers in addition to veteran teachers were recruited and given four days of substitute pay for their service. Mentors also received a small mileage allowance to aid in transportation costs as well as for its symbolic value of appreciation. In addition to their individual meetings, the district organized regular dinner seminars for the mentors and protégés to help with networking. Finally, protégés were encouraged to take two half-days off for reflection, although few took advantage of this component. Survey and interview results from the first year of the formal mentoring program were quite favorable although it is too early to make any broad generalizations. Nonetheless, the following benefits to protégés were highlighted: the opportunity to voice opinions, a sympathetic ear, an 'insider' view of the professional context, help in navigating their first explorations of the 'real world' of teaching, and assistance with establishing routines. The researchers have also recommended making the two reflection half-days mandatory to reduce any stigma associated with taking this time off as they still believe that it is a valuable component of the program.

CESD identified a weakness in their school system and took steps to address it. Although the first attempt at creating a series of support meetings was less than successful, they approached the problem from a different angle instead of giving up. They were innovative in utilizing quality retired teachers to serve as mentors and compensating them within their means. Moreover, they structured multiple components into the mentoring program to address the multiple needs of the new teachers (Goddard & Habermann, 2001).

teacher advancement, and lower levels of administrative bureaucracy (Borman and Dowling, 2008; Ingersoll, 2001; Smith & Ingersoll, 2004).

Implementation considerations

Retention and recruitment initiatives, like many rural education initiatives, should be strategic, specific, and sustained. Local needs and resources should be analyzed to determine what can be offered most effectively. Efforts should be focused on a particular subject or school to ensure the best fit possible and should be re-evaluated regularly (McClure & Reeves, 2004).

Charter schools

Charter schools are public schools that receive state funding and are designed to "improve or increase pupils' learning opportunities, create different and innovative measures of learning outcomes, create new forms of school accountability, encourage different and innovative teaching methods, or give teachers new professional opportunities" (Larson, 2005, pg. 2). Given the experimental nature of charter schools, successful ones can serve as models of how to improve student achievement using a similar amount of resources. The quality of the rural studies available on this strategy is *very low to none*. The available studies often lack data on student achievement and cost-effectiveness, but there is some evidence of their success in raising student achievement while staying within current cost per student levels.

Some traditional public schools see charter schools as competing for students and the state funds that schools receive on a per pupil basis (Collins, 1999; Ellis, 2008). One Minnesota school superintendent said his district had lost about 300 students to charter schools, equivalent to a loss of around $2 million dollars in funding over the past few years (Robertson, 2003). The community is divided by this contentious topic, leaving little room for collaboration and sharing of best practices between these public schools. In general, the transfer of knowledge between charter and traditional public schools has not taken place even though many educators believe it has the potential to raise student achievement without raising costs (Education Evolving, nd; Ellis, 2008).

Rural communities that have lost their local school sometimes try to create a charter school in its place. However, Jim Griffin, president of the Colorado League of Charter Schools, warns against rural communities converting traditional schools to charter schools solely to address their school closure problem. Instead, he urges "parents and educators to re-examine the way a school operates, how its children are taught, and its academic goals" rather than merely changing the name (Richard, 2004; Wittmeyer, 2006). The potential strengths of charter schools include focusing on accountability, being mission-driven, teaching for mastery, valuing professional learning, and providing student support services (U.S. Department of Education, 2006). The innovative and effective techniques that are leading to increased student achievement at some charter schools may also benefit traditional public school instruction as well.

Minnesota New Country School

Based in rural Henderson, Minnesota New Country School (MNCS) has become a national leader in project-based education and was recently featured in a national report on successful charter schools (U.S. Department of Education, 2006). Instead of required courses, students work with teachers to create an individualized plan of multi-disciplinary projects that meet state standards. Projects are presented to the community three times per year and are evaluated by a team of school staff to determine the number of credits awarded. The idea is that students learn best when they are motivated to explore what interests them, and that most professions call for problem solving, reading, writing, math, technology, communication, and management skills to be used in unison. Examples of projects include a study of chemicals in fast food that developed into a presentation on nutrition; working at an auto mechanic shop to build a dune buggy and a super mileage car; researching the Victorian era and sewing 18th century clothing; and developing and maintaining websites for area businesses (Nathan & Accomando, 2007; U.S. Department of Education, 2006).

MNCS's focus on college preparation is clear: approximately 75 percent of students enrolled in Post Secondary Enrollment Options classes at a local college prior to graduation; the majority of students take the ACT and average more than two points higher than the national average; nearly all students are accepted into college; and it has one of the lowest percentages of students needing to take a remedial course once enrolled in college in the state (Nathan & Accomando, 2007; U.S. Department of Education, 2006). In 2007-08, about three-fourths (73%) of MNCS students raised their reading levels one year or more through an individualized reading plan (Sonnek et al., 2008). Furthermore, MNCS is achieving these results with a higher percentage of special education students (37% v. 14%) and low-income students (29% v. 22%) than the local high school (Minnesota Department of Education, 2008). While the open-space, no-bells, and no-grades charter school may not be the best fit for all students, and the math program lags, some of the project-based learning concepts could be incorporated into parts of the traditional public school system to raise achievement within the current state funding level.

Conclusion

All of the strategies identified in this review have the potential to solve certain education challenges. Given the level of evidence and variety of rural school districts and communities, one strategy is not recommended over the others, although consolidation should be pursued with caution. It may matter *how* the process of improvement is carried out as much as *what* is being done to address the unique challenges of rural school districts. Strategies that "serve as a catalyst to stir school personnel and community leaders to reexamine their practices and dream of better things" are often the most effective in traditional Midwest communities (Nachtigal, 1982, p.274). Positive change takes time, so patience is critical, especially for communities in transition. The best results have come from rural areas that recognize where the community and school district are at, where they want to be in the future, and construct a plan of how to get there together.

A summary table of the strategies and level of evidence available is located in the Appendix.

References

Andrews, M., Duncombe, W., & Yinger, J. (2002). Revisiting economies of size in American education: Are we any closer to a consensus? *Economics of Education Review*, 21(3), 245-262.

Aronson, J., & Timms, M. (2004). *Net choices, net gains: Supplementing high school curriculum with online courses.* San Francisco, CA: WestEd.

Bard, J. (2006, Winter). National rural education association report: Rural school consolidation: History, research summary, conclusions, and recommendations. *The Rural Educator*, 27(2).

Beaulieu, L., & Gibbs, R. (2005). *The role of education: Promoting the economic and social vitality of rural America.* Mississippi State, MS: Southern Rural Development Center.

Beesley, A. (2007, Fall). The four-day school week: Information and recommendations. *The Rural Educator*, 29(1).

Beesley, A., Atwill, K., Blair, P., & Barley, Z. (2008). *Strategies for recruitment and retention of secondary teachers in central region rural schools.* Denver, CO: Mid-continent Research for Education and Learning.

Berliner, B. (1990). *Alternatives to School District Consolidation*. San Francisco, CA: WestEd.

Bingler, S. (nd). *Community-Based School Planning: If Not Now, When?* Retrieved December 18, 2008, from http://www.edutopia.org/community-based-school-planning-if-not-now-when

Birch Grove Community School (2008). *2008 Evaluation Report.* Retrieved December 22, 2008, from www.birchgroveschool.com

Borman, G., & Dowling, M. (2008, September). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research*, 78(3), 367-409.

Brent, B. (1999, Fall). Distance education: Implications for equity and cost-effectiveness in the allocation and use of educational resources. *Journal of Education Finance,* 25(2), 229-254.

Brent, B., Sipple, J., Killeen, K., & Wischnowski, M. (2004, Winter). Stalking cost-effective practices in rural schools. *Journal of Education Finance*, 29, 237-256.

Caldas, S. (1993, March/April). Reexamination of input and process factor effects on public school achievement. *Journal of Education Research*, 86(4), 206-213.

Cavanaugh, C. (2001). The effectiveness of interactive distance education technologies in K-12 learning: A meta-analysis. *International Journal of Educational Telecommunications,* 7(1), 73-88.

Cavanaugh, C., Gillan, K., Kromrey, J., Hess, M., & Blomeyer, R. (2004, October). *The Effects of Distance Education on K–12 Student Outcomes: A Meta-Analysis.* North Central Regional Educational Laboratory. Retrieved October 21, 2008, from http://www.ncrel.org/tech/distance/index.html

Chance, E., & Cummins, C. (1998, Winter). School/community survival: Successful strategies used in rural school district consolidations. *Rural Educator*, 20(2), 1-7.

Chmelynski, C. (2003, January). Four-day school weeks? Only if they fit. *The Education Digest.*

Coldarci, T. (2006, Fall). Do smaller schools really reduce the "power rating" of poverty? *The Rural Educator*, 28(1), 1-8.

Collins, T. (1999). *Charter schools: An approach for rural education?* Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools.

Daly, J., & Richburg, R. (1984). *Student achievement in the four-day school week.* Fort Collins, CO: Office for Rural Education.

Dam, A. (2006, July). *The 4 day school week.* Denver, CO: Colorado Department of Education.

Decker, R. & Talbot, A. (1991, Summer). The shared superintendency. *Journal of Research in Rural Education,* 7(3), 59-66.

Dewees, S., & Earthman, G. (2000). Trends and issues affecting school facilities in rural America: Challenges and opportunities for action. In S. Dewees, & P. Hammer (Eds.), *Improving rural school facilities: Design, construction, finance, and public support* (1-20). Charleston, WV: Rural Education Specialty, AEL, Inc; Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement.

Earthman, G. (2000). The impact of school building conditions, student achievement, and behavior. In Organization for Economic Cooperation and Development (Ed.), *The appraisal of investments in educational facilities* (181-194). Paris, France: Programme on Educational Building.

Education Evolving (nd). *The case for creating an open sector in American public education.* Retrieved October 21, 2008, from www.educationevolving.org/pdf/EEOpenSector.pdf

Elliott, K. (2008). *Teacher recruitment, rural schools and student teachers' perceptions of effective teacher recruitment strategies in North Carolina.* Retrieved November 12, 2008, from www.wcu.edu/WebFiles/PDFs/Teacher_Recruitment_Research_Study.pdf

Ellis, K. (2008, Spring). Cyber charter schools: Evolution, issues and opportunities in funding and localized oversight. *Educational Horizons*, 142-152.

Fox, W. (1981, Winter). Reviewing economies of size in education. *Journal of Education Finance*, 6, 273-296.

Galvin, P. (1995, Fall). The physical structure of regional educational service agencies: Implications for service and equity goals. *Journal of Research in Rural Education,* 11(2), 105-113.

Gjelten, T. (1982). Staples, Minnesota: Improving the schools to save the town. In P. Nachtigal (Ed.). *Rural education: In search of a better way* (247-265). Boulder, CO: Westview Press.

Goddard, T., & Habermann, S. (2001, Fall). Accessing the knowledge base of retired teachers: Experiences in establishing a formal mentoring program in a rural school division. *Journal of Research in Rural Education,* 17(2), 92-101.

Grau, E. & Shaughnessy, M. (1987). *The four day school week: An investigation and analysis*. Portales, NM: Eastern New Mexico University Psychology Department.

Hare, D. (1991). Identifying, recruiting, selecting, inducting, and supervising rural teachers. In A. DeYoung (Ed.), *Rural education: Issues and practice* (149-175). New York: Garland Publishing, Inc.

Hare, D., Heap, J., & Raack, L. (2001, June). *Policy issue 8: Teacher recruitment and retention strategies in the Midwest.* Retrieved October 23, 2008, from www.ncrel.org/policy/pubs/html/pivol8/june2001.htm

Hare, D., & Nathan, J. (1999). *The need is now: Dealing with Minnesota's teacher shortages.* Mankato, MN: The Center for Rural Policy and Development.

Harmon, H. (1997, October). Rural schools in a global economy. *School Administrator*, 54(9), 32-37.

Hines, D., & Mathis, K. (2007). *Regional specific incentives for teacher recruitment and retention.* Retrieved November 12, 2008, from www.dpi.state.nc.us/docs/intern-research/reports/incentives-trr.pdf

Hirsch, E. (2001, February). *Teacher recruitment: Staffing classrooms with quality teachers*. Denver, CO: State Higher Education Executive Officers.

Hobbs, V. (2004). *The promise and the power of distance learning in rural education.* Arlington, VA: The Rural School and Community Trust.

Howley, C., & Bickel, R. (1999). *The Matthew Project: National report.* Randolph, VT: Rural Challenge Policy Program.

Ingersoll, R. (2001, Fall). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499-534.

Jimerson, L. (2006). *The hobbit effect: Why small works in public schools.* Arlington, VA: The Rural School and Community Trust.

Johnson, J. (2006). *More doesn't mean better.* Arlington, VA: The Rural School and Community Trust.

Johnson, J., & Strange, M. (2007). *Why rural matters 2007: The realities of rural education growth.* Arlington, VA: The Rural School and Community Trust.

Johnston, R. (1997, November 19). A matter of time: Schools try four-day weeks. *Education Week,* 17(13).

Jolly, D., & Deloney, P. (1993). *Alternative organizational plans: Options for consideration.* Washington, D.C.: Office of Educational Research and Improvement.

Larson, L. (2005, November). *Charter schools.* Saint Paul, MN: Minnesota House of Representatives Research Department. Retrieved December 16, 2008, from http://www.house.leg.state.mn.us/hrd/pubs/chrtschl.pdf

Lawrence, B. (2002). *Lowering the overhead by raising the roof…and other rural trust strategies to reduce the cost of your small school.* Washington, D.C.: The Rural School and Community Trust.

Lawrence, B. (2003). *Save a penny, lose a school: The real cost of deferred maintenance.* Washington, D.C.: The Rural School and Community Trust.

Lawrence, B. (2004). *The hermit crab solution: Creative alternatives for improving rural school facilities and keeping them close to home.* Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools.

Lawrence, B., Bingler, S., Diamond, B., Hill, B., Hoffman, J., Howley, C., Mitchell, S., Rudolph, D., & Washor, E. (2002). *Dollars & sense: The cost effectiveness of small schools.* Cincinnati, OH: KnowledgeWorks Foundation.

Lee, J., & McIntire, W. (1999, April 19). *Understanding rural student achievement: Identifying instructional and organizational differences between rural and nonrural schools.* Paper presented at the annual meeting of the American Educational Research Association. Montreal, Quebec, Canada.

Lee, V., & Smith, J. (1997, Fall). High school size: Which works best and for whom? *Educational Evaluation and Policy Analysis,* 19(3), 205-227.

Lyson, T. (2002, Winter). What does a school mean to a community? Assessing the social and economic benefits of schools to rural villages in New York. *Journal of Research in Rural Education,* 17(3), 131-137.

Marcel, K. (2003). *Online advanced placement courses: Experiences of rural and low-income high school students*. Boulder, CO: Western Interstate Commission for Higher Education, WCALO Special Studies.

Mattessich, P., Murray-Close, M., & Monsey, B. (2001). *Collaboration: What makes it work (2nd ed.).* Saint Paul, MN: Wilder Research Center.

McCaw, D., Freeman, R., & Philhower, S. (2002, Spring). Teacher shortages in rural America and suggestions for solution. *Rural Research Report*, 13(8).

McClure, C., & Reeves, C. (2004, November). *Rural teacher recruitment and retention: Review of the research and practice literature*. Charleston, WV: Appalachia.

McMurry, M., & Ronningen, B. (2006, Fall). Rural Education in Minnesota. *Rural Minnesota Journal*, 1(2), 1-19.

Miller, B. (1993, Fall). Rural distress and survival: The schools and the importance of "community." *Journal of Research in Rural Education*, 9(2), 84-103.

Minnesota Department of Education (2008). School Report Card. Retrieved from http://education.state.mn.us/ReportCard2005/index.do

Minnesota House of Representatives (2003). *2003 On-line learning option act*. Retrieved December 2, 2008, from http://www.house.leg.state.mn.us/hrd/issinfo/ssoloa.htm

Minnesota Services Cooperative (nd). Retrieved December 23, 2008, from http://www.mnmrsa.org/

Minnesota State Constitution (nd). Article XIII, Miscellaneous Subjects. Retrieved December 29, 2008, from http://www.house.leg.state.mn.us/cco/rules/mncon/Article13.htm

Mitchell, D. (2006, December 24). Schools count on 4-day week: Districts eye better scores, lower costs. *The Advocate.*

Monk, D. (1991). The organization and reorganization of small rural schools. In A. DeYoung (Ed). *Rural education: Issues and practice*. New York: Garland Publishing, Inc.

Monk, D., & Haller, E. (1986, December). *Organizational alternatives for small rural schools. Final report to the legislature of the state of New York.* Ithaca, NY: Cornell University.

Nachtigal, P. (1982). Rural America: Multiple realities. In P. Nachtigal (Ed.). *Rural education: In search of a better way* (269-277). Boulder, CO: Westview Press.

Nachtigal, P., & Parker, S. (1990). *Clustering: Working together for better schools.* Aurora, CO: Mid-continent Regional Educational Laboratory.

Nathan, J. & Accomando, L. (2007). Questioning conventional wisdom about Minnesota's public schools. *Rural Minnesota Journal*, 2(2), 61-92.

Osterholm, K., Horn, D., & Johnson, W. (2006). Finders keepers: Recruiting and retaining teachers in rural schools. *National Forum of Teacher Education Journal*, 17(3).

Plucker, J., Spradlin, T., Magaro, M., Chien, R., & Zapf, J. (2007, Summer). Assessing the policy environment for school corporation, collaboration, cooperation, and consolidation in Indiana. *Center for Evaluation & Education Policy Education Policy Brief*, 5(5).

Ray, J. (2003, September 16). *Americans resist idea of four-day school week.* Retrieved November 12, 2008, from www.gallup.com/poll/9256/Americans-Resist-Idea-FourDay-School-Week.aspx

Reeves, K. (1999, March). The four-day school week. *School Administrator*, 56(3), 30.

Richard, A. (2004). Hard-pressed rural school is 'chartering' a new course. *Education Week,* 23(41), 10.

Richburg, R., & Sjogren, D. (1983). The four-day school week: What are the advantages for schools? *National Association of Secondary School Principal's Bulletin*, 67, 60-63.

Robertson, T. (2003, December 5). Charter schools pose unique challenges in rural Minnesota. *Minnesota Public Radio.* Retrieved November 12, 2008, from http://news.minnesota.publicradio.org

Rosenfeld, S. (1983, December). Something old, something new: The wedding of rural education and rural development. *Phi Delta Kappan*, 270-273.

Rowland, C., & Coble, C. (2005, November). *Targeting teacher recruitment and retention policies for at-risk schools.* Retrieved November 12, 2008, from www.ncrel.org/policy/pubs/pdfs/pivo120.pdf

Rural School and Community Trust (2006, March). Anything but research-based: State initiatives to consolidate schools and districts. *Rural Policy Matters*.

Sagness, R., & Slazman. S. (1993, October 1-2). *Evaluation of the four-day school week in Idaho suburban schools.* Paper presented to the annual meeting of the Northern Rocky Mountain Educational Research Association. Jackson, WY.

Scheie, D. (2001). *Strengthening schools and communities through collaboration: Final evaluation report on school/community collaboration in the Center for School Change's phase II grant sites, 1997-2000*. Minneapolis, MN: Rainbow Research.

Sher, J. (1988). *Class dismissed: Examining Nebraska's rural education debate*. Hildreth, NE: Nebraska Rural Community Schools Association.

Smith, T., & Ingersoll, R. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal*, 41(3), 681-714.

Sonnek, A., Lind, D., Kotasek, N., Thomas, D., Weiderich, D., Rice, D. et al. (2008). *The fourteenth year: A study of the Minnesota New Country School District #4007*. Retrieved December 18, 2008, from http://www.newcountryschool.com

Stafford, S. (2006). *One small school making big dreams come true.* Alexandria, VA: Center for Public Education.

Streifel, J., Foldesy, G., & Holman, D. (1991). The financial effects of consolidation. *Journal of Research in Rural Education*, 7(2), 13-20.

Teixeira, R. (1995). Rural education and training: Myths and misconceptions dispelled. In E. Castle (Ed.), *The changing American countryside: Rural people and places* (419-435). Lawrence, KS: University Press of Kansas.

Texas Center for Educational Research (2000). *The cost of teacher turnover*. Austin, TX: Texas State Board for Educator Certification.

U.S. Department of Education, Office of Innovation and Improvement (2006). *Charter High Schools: Closing the Achievement Gap.* Washington, D.C.: Author.

Warren, L., & Peel, H. (2005, Winter). Collaborative model for school reform through a rural school/university partnership. *Education,* 126(2), 346-352.

Wittmeyer, A. (2006, August 16). Rural charter schools are striking a chord. *The Denver Post*.

Yarbrough, R., & Gilman, D. (2006, October). From five days to four. *Educational Leadership*.

Acknowledgments

Wilder Research staff who contributed to the completion of this report are: Amanda Eggers, Louann Graham, Heather Johnson, and Kerry Walsh.

Key informant interviewees:

Belinda Biscoe, University of Oklahoma
Thomas Farmer, National Research Center on Rural Education
Joe Graba, Education Evolving
Jill Hamm, University of North Carolina at Chapel Hill
Matt Irvin, University of North Carolina at Chapel Hill
Charles Kyte, Minnesota Association of School Administrators
Chris Richardson, Northfield Superintendent
Kai Schafft, Pennsylvania State University
John Sipple, Cornell University
Paul Theobald, Buffalo State College
Doug Thomas, EdVisions Cooperative
Lynne Vernon-Feagons, University of North Carolina at Chapel Hill
Lee Warne, Minnesota Rural Education Association

Appendix

Summary of strategies and available level of evidence

Strategy	Strategy components	Student achievement[a]	Cost-effectiveness	Other	Implementation considerations
		Level of evidence including quality of studies and effectiveness of strategy			
Distance education	interactive television (ITV)	*Medium*: similar level of achievement	*Low*: potentially not cost-effective, but inconclusive	*Medium*: Expands the curriculum	Research vendors; Have onsite technical and academic support available
	online education	*Medium*: similar level of achievement	*Very low to none*	*Medium*: Expands the curriculum	
4-day school week		*Medium*: similar level of achievement	*Very low to none*		Widespread impact on community
Collaboration	with school districts and other partners	*Low*: potentially maintain or improve achievement, but inconclusive	*Low*: potentially cost-effective, but inconclusive		Recognize a common purpose and develop clear expectations
	with higher education institutions	*Very low to none*	*Very low to none*		Be aware of power dynamics; college personnel should empower districts
	with communities	*Low*: potentially maintain or improve achievement, but inconclusive	*Low*: potentially cost-effective, but inconclusive		Create mutually beneficial relationships
Consolidation		*Medium*: small schools have equal to greater levels of achievement, especially for low-income and minority students	*Medium*: consolidation has not reduced costs in a substantial way	*Low*: Rural communities rely on schools socially, culturally, recreationally, and economically	Focus on expanded opportunities for the students
Reducing facilities' costs		*Very low to none*	*Very low to none*		Conduct a feasibility study or energy audit

Teacher recruitment and retention	teacher recruitment	*Very low to none*	*Very low to none*		Initiatives should be strategic, specific, and sustained
	teacher retention	*Very low to none*	*Very low to none*	*Medium*: induction programs improve teacher retention	
Charter schools		*Very low to none*	*Very low to none*		Replicate the successful innovations

[a] *"Similar level of achievement" means similar to the traditional classroom or school, or school week.*

Note: *Level of evidence including quality of studies refers to the following definitions (also found in more detail on pg. 8): Medium – the researchers used a quasi-experimental design, Low – the evaluation methodology substantially limited the ability to conclude that the findings could be attributed to the strategy, or Very low to none – the evaluation methodology was very weak or nonexistent to the extent that it was difficult to judge whether the findings were meaningful.*

Learning Communities in Transition
The Voices of Rural Administrators

Prepared by:
Julia Williams, Ph.D.; Gerry Nierengarten, Ed.D.; Kim Riordan;
Bruce Munson, Ph.D.; Dan Corbett
University of Minnesota, Duluth
Department of Education

Executive Summary

Administrators in rural school districts are continuously faced with the challenges of trying to meet their educational goals with limited resources. Current conditions that disproportionately affect rural schools in Minnesota include population decline, allocation distribution according to the state's funding formula, and mandated reform initiatives. This study is an attempt to give voice to the needs of Minnesota's rural districts, needs distinct from those of urban districts.

Electronic surveys were sent to all of the superintendents, principals, and business managers in the 141 school districts that belong to the Minnesota Rural Education Association. As a means of triangulating the study results (looking at the research from several perspectives) researchers conducted focus groups of school administrators in each of six regions of Minnesota. The focus group responses supported and expanded on the results gathered from the survey as well as supported the priorities identified in the literature.

Rural administrators report their top education priorities are: student performance and achievement, fiscal management, and curriculum and instruction. Among the many needs that surfaced as school administrators considered these priorities, six categories emerged as the top-ranked needs for assistance or policy change in addressing these priorities:

1. Testing and Annual Yearly Progress
2. Balancing budgets
3. Student achievement
4. Transportation and sparsity
5. Professional development
6. Data analysis

This study does not attempt to be yet another plea for idyllic funding for schools. Instead, this study identifies needs for policy and process revision that levels the playing field *within the current funding allocations* for schools in small-town Greater Minnesota. Two categories of recommendations were offered most frequently: policy recommendations related to the state funding formula and resource recommendations related to Minnesota Department of Education functions and services.

Introduction

Rural schools in Minnesota have unique needs and circumstances that impact the education of 30% of PreK-12 students in the state (*Why Rural Matters, 2007*). Declining enrollments as well as the means by which state funds and services are disbursed create educational crises because of the loss of per-pupil state revenue used to finance most school programs. Rural schools, which often have chronic enrollment decline because of the changing economic base in rural areas (Thorson & Maxwell, 2002), also experience challenges to educational excellence because of operational expenses like rising health care costs, transportation costs for districts covering large geographic areas, increasing costs for special education services, and other expenses that impact educational services provided to students.

Yet the rural Minnesota districts remain centers of community in small cities and continue to survive, some very creatively, using shared services and other means to provide as best as possible for their students. This study attempts to provide a means to synthesize priorities for needs and assistance that exist in Minnesota's rural schools in order to recommend policy that does not create or continue obstacles and inequities and make it more and more difficult to maintain, at least at a base level of adequacy, education across our state.
Part of the disparity in funding between large urban school districts and smaller rural districts is simply due to economies of scale. The report, *Small Schools Under Siege* (Thorson & Maxwell, 2002), points out that it costs smaller districts more per pupil to educate students than it does for larger districts. But there is also a social need to maintain the commitment to rural students and communities as is pointed out in the report, *Breaking the Fall: Cushioning the Impact of Rural Declining Enrollment* (Jimerson, 2006). This report asserts that "states and local communities must act to sustain and improve small rural schools with declining enrollment. There are always students "left behind" in these communities and they have the same rights to an equal educational opportunity as those who leave (for larger schools). Indeed, our society's obligation to educate is not dependent on demographic good fortune and cannot, and should not, be compromised by geography."

Rural school administrators understand the current educational opportunities and constraints in Minnesota, and they have a wealth of knowledge and experience to share. Administrators in rural school districts are continuously faced with the inequities and challenges of trying to meet both their educational goals and those educational mandates presented to them with limited resources. Smaller districts in Minnesota have achieved some success in developing models for sharing services and resources through Special Education and Cooperative Service Units.

This study gathers the perspectives of rural administrators to identify priorities and issues challenging rural school districts; identifies exemplary practices in collaborative and shared initiatives; and recommends policy changes which could improve the educational effectiveness in rural school districts.

Methods

A six-page electronic survey was developed as a means to acquire and amplify the "voices" of rural schools to share the issues and learned insights important to rural schools in Minnesota. Survey priorities were developed from current literature about rural education priorities, Minnesota's current legislation regarding shared and collaborative services for schools, and shared services models as a means of meeting these priorities with current funding. Using the membership listing of the Minnesota Rural Education Association (MREA), superintendents, business managers, and principals in member schools and districts were asked to share school demographic information and insights about school priorities, needs, best practices, and policy suggestions.

The survey was sent electronically to the MREA membership and made available to them through Survey Monkey® from November 25 through December 8, 2008. The first two questions dealt with demographics. Question 3 asked the administrators to rate the priorities that had been established by the literature review, considering their specific role within their school or district. Questions which followed specifically asked how the administrator defined and responded to meeting the top two identified priorities. In relation to the top two identified priorities, the administrator was asked to (1) identify practices that their district or schools have in place that seem to be working in relation to that priority, (2) report if they considered any of these practices exemplary and if they partner or collaborate with an outside agency, service or organization to assist in achieving their goals for the priority, (3) identify disadvantages with the partnerships, (4) suggest state policy changes that would be most helpful to address the priority, and (5) in addition to increased funding, identify what local or state resources would be most helpful to address the priority.

Anticipating that the response rate would be low and as a means of triangulating the results, researchers also conducted focus groups of school administrators in each of six regions of Minnesota. The survey results were used to formulate more in-depth questions for the focus groups. The focus groups offered more detailed data about collaborative efforts to reduce cost while offering quality education in rural schools. Focus groups also generated suggestions from rural administrators about policy and procedural changes that would benefit rural schools. The focus group responses supported and expanded on the results gathered from the survey as well as supported the priorities identified in the literature.

The survey results were analyzed and the most significant priorities were noted. Themes emerging from the narrative responses were identified, and exemplary practices and recommendations were summarized.

Results

Respondent Demographics

Electronic surveys were sent to all of the superintendents, principals, and business managers in the 141 school districts that belong to the Minnesota Rural Education Association for a total of 465 surveys. This convenience sample represented self-selected rural school districts in Minnesota. Email addresses for potential respondents had been collected through the Minnesota Department of Education and through the MREA school district web sites.

Table 1: The school district roles of respondents.

School District Role(s)	Percent of Total Respondents*
Superintendent or District Administrator	26.8%
School Principal	52.4%
District Business Manager	12.2%
Mixed roles of more than one of above	8.5%

* *N=82*

Of the 465 surveys sent, 33 were returned as undeliverable despite double-checking addresses and resending email invitations to participate in the survey. It is assumed the remaining email addresses were correct and 432 surveys were delivered to potential respondents. Of these, 82 (19%) were returned by the intended respondents: superintendents, principals, and school district business managers. Some additional surveys were returned by district staff other than the intended audience; these surveys were not included in the analysis. Table 1 shows the distribution of the intended respondents.

Survey respondents represented school districts that varied in size. They included one large district of over 8,000, but most were very small districts, and in fact more than two-thirds of the participating school districts served less than 1,000 students. As might be expected in rural areas, these school districts served small communities. Among those who indicated community size on the survey, 83% stated the community where they were located was under 5,000 in population. Even though rural school districts often serve more than one community in addition to a rural area, 91% reported their school served less than 800 students. The number of "mixed roles" respondents included in the survey (see Table 1) may indicate some of the challenges faced by small rural districts where administrators need to carry out duties that merit separate specialists in larger districts.

The data from survey and focus groups was collected from school districts distributed among six Minnesota regions (see Figure 1). While respondents were distributed throughout the state and represented all six regions, the majority came from the western rural regions of Minnesota (see Table 2), which was

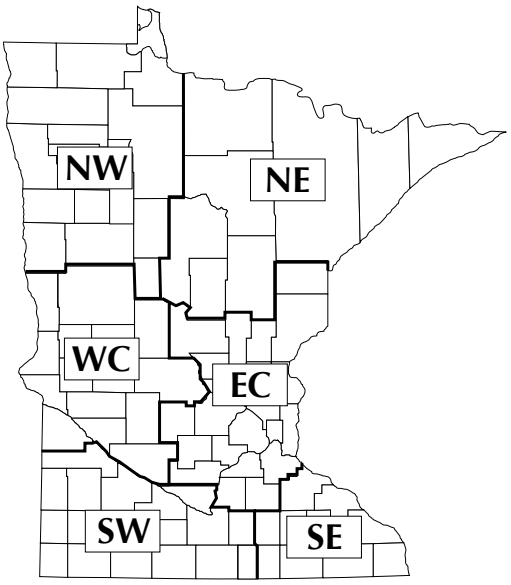


Figure 1

Table 2: Percentage of respondents by region.

Region	Percent of Total Respondents*
NW (Northwest)	30.5%
NE (Northeast)	6.1%
WC (West Central)	23.2%
EC (East Central)	7.3%
SW (Southwest)	19.5%
SE (Southeast)	13.4%

** N=82*

expected since the membership of the MREA is also primarily from the western, rural areas of Minnesota.

Rural Priorities

Survey respondents were asked to rank a list of priority concerns that commonly involve school district administrators. Among the 13 priorities presented in the survey (see appendix), "Attainment of student performance

Table 3: School district priorities ranked by administrative roles.

	School District Priority ranked 1 or 2		
Administrative Role	**Student Performance & Learning Goals**	**Fiscal Management**	**Curriculum and Instruction**
Superintendent	11	18	18
School Principal	32	2	2
District Business Manager	0	8	0
Mixed Roles from above	5	6	0
Total	48	34	20

Note: These results represent 82 respondents to the survey. The respondents included 22 superintendents, 42 school principals, 10 district business administrators, and 7 who indicated they held mixed roles in their district.

Table 4: Themes of needs affecting school administrator's priorities.

Themes of Needs	# Administrators Expressing this need	Priority Area
Testing and AYP	53	Student Performance and Learning Goals
Balancing budgets	43	Fiscal Management
Student achievement	32	Student Performance and Learning goals
Transportation/ sparsity	26	Fiscal Management
Staff/Professional Development	24	Student Performance and Learning Goals
Data Analysis	24	Student Performance and Learning Goals
Curriculum Alignment with Standards	18	Curriculum and Instruction
Offering a rigorous curriculum	13	Curriculum and Instruction
Salary & Retention of HQ teachers	12	Fiscal Management
Special Education Needs	15	Student Performance and Learning Goals

and learning goals" was ranked as 1 or 2 by respondents representing all of the surveyed administrative roles (see Table 3). In contrast, "Fiscal Management" was ranked second, but largely by superintendants rather than principals. The third ranked priority was "Curriculum and Instruction," which again was identified by superintendents as a high priority, but very few school principals identified it as one of their top two priorities. These three priorities dominated the first- and second-place rankings of respondents. The remaining administrative priorities received only a few first- or second-place rankings by respondents.

Rural Needs

As respondents considered their top two priorities, they offered narratives about their needs for assistance or services within the priorities. The research team read through these narratives and independently identified 12 themes among the needs that were described. The narratives were then coded according to the 12 themes (see Table 4).

The dominant need/issue identified by the surveyed administrators was, not surprisingly, related to testing and AYP (annual yearly progress). The administrators' concerns were expressed through statements on the surveys and reinforced in focus groups with statements such as:

> Making sure all students earn at least proficient marks on test scores, while providing a high quality education with rich content that encourages creativity and critical thinking. Test scores have become a priority and the balance of the curriculum has suffered for it. Our district has consistently made AYP and our community members, parents, and students expect us to continue to do so. I am concerned that under the current system, it is a matter of time before the district will not make AYP for special education scores. (697284962)

> Student Achievement has been artificially prioritized, often at the expense of student learning and growth. Meeting AYP is a top priority. Our school does a superb job in spite of the punitive accountability measures of NCLB. (699548853)

> Well, with that student achievement I'm not even sure why I'm going with this, but I know, with the data, with the assessments and that, it seems like everybody is using different types of tests. You're looking at the MCA's, or the things that are expected, and it's like, what should we be using? Is there some way we can work better together to get those results with assessments? (Focus Group Principal I7)

> …the MCAs, like XX said, they're not very user-friendly as far as looking at trend data and breaking things down, so we do them after the NWEA as a data-type tool to get some trend data, figure out where we'll go with things. They do that twice a year. And [when] we get into the spring, the kids are doing the MCAs, then they're doing the NWEAs, and that's all time that gets screwed up that we could be spending on curriculum-driven things, and it's frustrating and it's a built-in redundancy. What I'd like to see is either a useable tool that the state's going to hold us accountable with and only have to do it once, or have the state jump onto an NWEA-type thing. Just would make more sense and would save us more instructional time and student contact time in the classroom. I'm hearing more about the AimsWeb, which is even more the individual student need, too, that's a good program. (Focus Group Principal R5)

> You look at your district data … it just feels like a conspiracy, because if you do a presentation to the community on your district data, the message is, "The longer kids stay in school, the dumber they get." (Superintendent focus group BP4)

Balancing budgets and inflation was the second most commonly identified need/issue that was either stated by administrators or could be inferred from their comments. These concerns were expressed through comments such as:

> The spike in gasoline and diesel was unexpected last year. All of our new revenue from the state increase of 1% on the foundation formula and an additional 1% of one-time revenue was used to pay off our gasoline and diesel bill…. Even though we are fortunate to have a slight

> increase in enrollment over the past four years, the increases in state revenue do not even come close to covering the inflationary costs of a school district. Schools face a much higher inflation rate than the rest of society. Transportation, food, health insurance, text books and paper products are increasing at a much faster rate than the general inflation rate. (700631303)
>
> Making cuts as far from the classroom as possible. Keep curriculum intact. Encourage senior staff to retire. (695202699)
>
> To have them just, you know, walk in our shoes wanting to do everything we can for our students but just not always having the funds and programs to provide the same thing. Something as simple as… it's kind of off the topic, but our athletic events. I mean, for us to run a schedule of competitive games for our kids, we can't get there and back in a half hour. We've got to get on a bus and go 50 to 60 miles, as opposed to three miles, to another high school … and that's just a small example of the issues that we face in rural education. That's across our state. I mean, even, let's say, bring the kids to the Aquarium in Duluth, and you have to ask parents for the money, and the parents don't have it. Spending $1,000 for a bus to the Twin Cities. (Focus Group Principals I11)

The third most commonly identified need/issue on the survey was student achievement. This theme was often linked to the concept of testing, but the statements demonstrated a concern for having students achieve according to their abilities.

> We work to keep a high level of student achievement as the number 1 outcome of success. We strive to keep a strong fund balance while maintaining facilities, curriculum offerings, and access to technology. (695270099)
>
> Student performance. Getting students to achieve at a personal level and to increase the rigor in our curriculum. (699619031)
>
> That requirement for high school that Pawlenty is talking about is if you don't have connectivity, how are you going to get there? How are you going to have higher student achievement? We've got a quadrant in our district that doesn't have broadband access yet. … if we ever get to the point where we require kids to do work from home online, good luck. (Superintendent's Focus Group BP4)

The categories of needs/issues identified as themes in the narratives become useful factors in further developing and expanding on the responses to other open-ended questions on the survey.

Table 5: Categories of "exemplary practices" used to address priorities as per survey responses.

Focus of Exemplary Practice	Number of references
Developing district relationships	4
Response to Intervention (RTI)	4
Success w/ special needs students	4
Reading programming	3
Staff development	3
Fiscal management	3
Teacher study groups (learning communities)	3
Technology use	3
Collaborative goal setting/planning	2
Collaborative data analysis	2
College in schools	2
Preschool programming	2
Use of Advanced Placement	2
Schedule changes	1
Testing & individualized instruction	1
ITV	1
Securing grants	1
Innovative administrative configurations	1
Online learning	1
School w/in school	1
Collaboration efforts	1

Exemplary Practices

The second goal of this study was to identify exemplary practices currently valued by individual Minnesota rural schools and districts. When survey respondents were asked if they had engaged in "exemplary" practices as they addressed their administrative priorities, only 35% stated their efforts were exemplary. Exemplary, for the purposes of this research is defined as a practice that is ideal and/or commendable. (Another 14% stated they considered their practices just part of normal practices for their schools or districts.) A wide range of exemplary practices, however, was identified as relevant and useful in the respondents' schools and/or districts. RTI (Response to Intervention) and individualized programs that facilitated educational success for special needs students were the most frequently identified exemplary practices. The second most common category of exemplary practices identified efforts related to

facilitating professional relationships and collaborations. Professional learning communities, collaborative planning, collaborative data analysis, and dedicated efforts to build relationships within the district all were cited as exemplary efforts in helping districts meet their educational and fiscal goals. Staff development was another exemplary practice that was mentioned as assisting in the development of professional relationships and collaborations.
Although there were a few categories of exemplary practices that were most frequently mentioned, about half of the exemplary practices were mentioned by only one or two respondents on the survey. Participants in the regional focus groups eagerly contributed successful practices to the discussions. All of the exemplary practices below, and more, were identified in both the survey and the focus groups.

Collaborations

As with "exemplary practices," collaborations included a wide range of goals and efforts. While just over half (51%) of the survey respondents indicated they collaborate with an outside agency, service, or organization to assist in achieving their goals for their administrative priorities, all of the focus group participants shared more than one successful current collaboration. The top four most frequently mentioned goals in the survey were staff development, general support, online courses, and special education. These goals were present in regional focus groups as well. *Staff development* was the most frequent goal for collaborative efforts, with administrators reporting collaborations with neighboring districts and service cooperatives to achieve these goals. Another goal frequently cited was to *provide special education services*. Again, collaborations with neighboring districts and/or service cooperatives were the most common approaches to meeting these goals. Collaboration with county agencies to provide valued *mental health services* appeared in each of the regional focus groups. Collaboration with Midstate Educational Telecommunications Cooperative (MSET) and with Infinity for *online courses* were other frequently reported collaborative efforts.

Goals for existing collaborations also included:

Providing social services
Building administrative leadership
Continuous school improvement
Curriculum
Financial services
ITV
Science
Engineering and mathematics education
Advanced Placement programs
Facilities management
Legal support
Planning
Response to Intervention
Sports programs
Security/police support
Participating in joint purchasing
College classes
General services
Early child education
Health insurance
Sharing teachers
Technology
Alternative
Data analysis
Foster care
MCA remediation and support
Post-Secondary Options
Software support
Student recognition

Collaborators in these efforts included local organizations or programs, neighboring districts, educational agencies, and universities. Respondents offered a variety of examples of successful collaborations. For example, consider these responses (edited to assure anonymity for the respondent):

> … We have a children's mental health group, and that's county wide. We have mental health workers that come in and out of our schools on a regular basis and work with those kids that are considered at risk. That's a great connection for those kids and those families with other agencies. (Focus Group Principals BP2)

> Another very successful program – early childhood program – is *EEEE*. We have blended programs, that is community ed is working together with Head Start and even some of our early childhood special ed. It provides wrap-around services for students. … That started out with a big grant … that had to prove itself and also a national study going on right now. (Focus Group Principals BP6)

Respondents demonstrated a significant commitment to developing collaborations to extend the potential of their educational efforts. For example, consider this response (edited to assure anonymity for the respondent):

> We have many partnerships to gain positive returns: XXX Education District - for special education and early childhood education needs. MSET - for technology (Internet, two-way interactive television classes, technical advances and assistance with our technical systems. YYY - for volume purchasing, fiscal management assistance, data processing of student test and other data. ZZZ - for volume purchasing (state and national volume contracts), health insurance purchasing, health and safety program and service purchasing. MSBA - for legal issues assistance and model policy development. MREA - for rural educational leadership and legislative influencing. The Local Lions Club - for major economic assistance for numerous smaller programs (impossible to offer without their help), The AAA Ballpark Association - for ball field development and maintenance. Experience Works - a national organization that provides senior citizen employment for helpful positions within our district. Rural Minnesota CEP - for youth employment to assist custodial and clerical work needs. BBB Education District - for Career and Technical Education (CTE) assistance. The County Interagency Coordinating Council - for numerous programs shared by city, county and school systems, including family and child social, health, and mental health issues. (694988500)

> The other thing that I think this community does really well, and this would reflect on all of the three schools as far as elementary, middle school, is that we are really big into collaborative efforts with our social services, our juvenile justice system, our probation folks. We

> work really, really well together as a community. (Principal's Group RF).

Collaborative efforts may appear to be a significant win-win type of opportunity for schools and districts. However, respondents noted there can be challenges or even disadvantages to collaborative efforts. The most commonly noted challenges or disadvantages related to collaborative efforts are summed up in the one of the administrator's comments:

> Our region is so sparsely populated that in order to get a grant, several school districts or counties must participate. By the time we take care of the paperwork, travel, meetings long distances away, shared resources and other bureaucracy, there is very little that trickles down to our students. (698713741)

This observation held across the regional focus groups as well:

> … It seems like the last few years there's more and more emphasis on money going into grants and things like that. To me, then, the state is taking it off the table. Again, the small district is very much disadvantaged to getting a grant. We do not have a grant writer. So, we have to go out and hire somebody. Plus, the grants that I have applied for seem like they're very aimed at minority, low-income districts. I mean, if you look at who gets them…. But I wish there was a better way to do granting so all districts would have a better chance to get them. A possibility would be, "OK, this money is available if you're willing to put this (program) – you're willing to document that you put this (program) in. Then you get some of the money." (Superintendent's focus group BP 4)

> I'm a former president of Minnesota XX Association so, I got to set where board meetings were. We had one in Detroit Lakes, and I had people coming from all over the state to come to Detroit Lakes on a Saturday morning. Most of them came Friday night to stay, etc., and of course we get there and heard, "Man, it's a long way," and I said, "Just remember, I drove two hours straight south to get here. I mean, we've got two and a half hours straight north and still are in Minnesota. You drove four hours to get here, I'm driving the same, so I got to drive that plus the two hours besides, and they said, 'Oh wow!'" I mean, there's just not an understanding, and I don't expect them to because it's just not in their realm of experience. They just don't have a clue, and again I don't complain about it, because it does absolutely no good. (Principal's Focus Group RF)

Policy and Resource Recommendations from Rural Administrators

Administrators had many suggestions for how policies and resources could be improved to help them meet their priorities for their schools and districts. Two categories of recommendations were offered most frequently:

policy recommendations related to the state funding formula and resource recommendations related to Minnesota Department of Education functions and services.

Approximately 30% of the administrators surveyed and 100% of regional focus group participants noted that the current funding formula made providing equitable, quality education difficult. There were several references to the negative impacts of "unfunded mandates" in providing a quality education for all students. Administrators used many terms to get across the idea that they wanted a funding formula to provide a "dependable," "reliable," "constant," "sustainable," "consistent," funding level that would provide at least the basic level of desired education according to state standards. "Inflation-indexed" funding from the state was suggested as one approach to providing a consistent, dependable funding level. Applying the formula after transportation was covered was another. Some administrators stressed their need to use appropriate levy options to meet local needs and goals for education.

Rural administrators have very limited personnel resources to help them address their curriculum needs to make Annual Yearly Progress as is required by the No Child Left Behind Act. As was already noted under the section on collaborative relationships, rural administrators are working creatively and collaboratively to address their priorities. However, rural administrators believe the Minnesota Department of Education (MDE) should provide more support. Specifically, support should be brought out to rural areas. For that to happen, MDE needs to have the staff resources and travel resources to bring expertise to rural school districts. A sense of the rural perspective is conveyed by these responses:

> Allow for state-based resources and people the ability to come to outstate districts without making the excuse of it being to far to go in a day... (694909782)

> It would be helpful to receive more direction from the state on some things. Greater Minnesota administrators generally have to travel quite a distance to attend these meetings. This is difficult when we wear so many other hats. (694976335)

> Smaller districts, with the budget cuts, don't have curriculum people. They don't have test coordinators. They don't have test assessment. You don't have those things…. So if somebody in the district has to pick that up, the cuts at the state departments disproportionately affect the smaller school. (Superintendent Focus Group BP4)

> We've been given a lot of accountability and compliance issues to deal with, and some people would call that a vision for education in the state of Minnesota; every child should be able to do mathematics well enough in order to pass the MCA2. Every child should be able to read well enough to pass the MCA2. OK. I think that vision stops a little short. And, I think that we would benefit at a policy level from a state embrace of some kind of larger vision. There was

> a great superintendent group that put out a document, Minnesota Promise, and there were 25 or so superintendents, maybe close to 30 superintendents who worked on that document. It talked about a vision for online. It talked about a vision for global. It talked about a vision for learning taking as long as it takes. But have we seen state actions that complement a vision document like that as much as we have seen state vision coming at us with new requirements or unfunded mandates? And the state doesn't articulate much in terms of what it would [want] to see us have for class sizes. I can tell you our failed referendum here puts us in a position where we've got elementary classes at 30. I've been talking about this with our neighbor to the south, XXX, and he's got closer to 20 in his K-4 classes. XXX has 20 in their K-2 classes. XXX has 20 per class. My surrounding neighbors have significantly smaller class sizes for their early learners. And we've done it. We all have our own salary structure. We all have to fit into what our budgets are. But there's not a real vision coming out of leadership at the state level in Minnesota saying, "Here's what really works. Here's what your communities ought to be shooting for around class size or global education and diversity training, and a whole host of other issues that don't have a test." So I wish there were more of that. (Superintendent Focus Group BRP4).

One administrator stated, perhaps in exasperation:

> The State Department is so short of help that they are not useful anymore. (697389338)

> There is no Department of Education, because you can't go there and find an expert on any given subject. It used to be there was a reading specialist, there was a science specialist, and those people were there and were available.... Right now, you're literally on your own. And the smaller the district, the more you're alone. (Superintendent Focus Group BP4).

Another theme that emerged in the administrator's policy and resource recommendations was the need for staff development. This theme represents both a potential policy and a resource need. The resource need for staff development overlaps some with the comments about the MDE, and some administrators recommended systematic state-supported staff development. Several administrators suggested that the 2% set-aside for staff development be increased to provide more adequate staff development to meet the districts' educational goals and priorities. Many administrators, however, simply stressed the need for more staff development, period. Since they had also noted a variety of collaborative approaches to gaining staff development tailored to unique district needs, it cannot be concluded that rural administrators simply want more staff development provided by MDE. Examples of administrative comments encouraging policy changes for staff development included:

> Time. But I guess time is money, so to speak. We simply do not have the staff development time we need. (697775651)
>
> More local control over the 2% set-aside to assure district K-12-focused utilization of staff development funds. (696207136)
>
> We ordered some Smart Boards and got them. Now they sit, because we've got to send people to training. I've never run a Smart Board. I don't know how to do it. I mean, I could train them if I knew how to do it, but we've got to send them to training. But when, and who's going to pay for it, and how are we going to do it? So technology's great, but we've got to have the ability to get people trained and maintain it, and when all those upgrades happen, who spends the time and upgrades all the computers? In a little district, that's what we struggle with, because our IT person is also teaching, and they're also teaching all the computer classes, so I guess that's what we struggle with. (Principal's Focus Group RF).

Table 6: Themes identified in policy and resource recommendations from the survey.

Themes	# administrators using this theme	Total # references to this theme
State funding formula	24 (29%)	28
MDE procedures	24 (29%)	28
State testing	14 (17%)	18
Staff development	14 (17%)	15
Special ed	12 (15%)	13
Unions	8 (10%)	11
Technology	5 (6%)	6

N = 82

Summary of data gathered

Rural administrators report their top education *priorities* are:

- Student performance and achievement
- Fiscal management
- Curriculum and instruction

As the administrators address these priorities, many *needs* emerge. Six categories surface as the top-ranked needs for assistance or policy change in addressing these priorities:

1. Testing and Annual Yearly Progress
2. Balancing budgets

3. Student achievement
4. Transportation and sparsity
5. Professional development
6. Data analysis

Rural administrators reported some exemplary practices as they address their priorities and needs. They also commented on a wide range of collaborations in their efforts to meet their educational goals. Their recommendations for improving education for Minnesota's rural schools include policy recommendations for reforming the funding formula and improving staff development. They also recommended improving services for rural schools through the Minnesota Department of Education and through support for staff development.

Context for Recommendations

"Nor rural sights alone, but rural sounds, exhilarate the spirit, and restore the tone of languid nature." This quote from William Cowper's epic poem, *The Task,* poetically idealizes the rural experience. The reality of this experience for Minnesota's rural PK-12 schools, however, is far from idyllic.

This study does not attempt to be yet another plea for idyllic funding for schools. Pleas from Minnesota's PK-12 public educational representatives to legislators to increase, or at least maintain, levels of funding for public schools from all districts across the state seem to be part of the wallpaper as legislative session after legislative session convenes. The voices of Minnesota's rural schools have perhaps had insufficient distinction in the decade-long requests for resources from local and state policy makers. This study is an attempt to give voice to the needs of Minnesota's rural districts as distinct from those of urban districts. This is not a request for more funding, but an attempt to identify policy and procedures that originate in St. Paul that currently hinder and provide obstacles to rural districts as they attempt to balance budgets and address accountability mandates. Although public funding is the foundation for public school's viability, increasing funding is not the only means by which the work of public education can be supported. This study identifies needs for policy and process revision that levels the playing field within the current funding allocations for schools in outstate, small town, Minnesota. Our state constitution, written in 1856, states:

> The stability of a republican form of government depending mainly upon the intelligence of the people, it is the duty of the legislature to establish a general and uniform system of public schools, the legislation shall make such provisions by taxation or otherwise as will secure a thorough and efficient system of public schools throughout the state (Minnesota Department of Education, n.d., n.p.).

In these difficult economic times, increases and decreases in allocations that do not include examination of policies and procedures impacting rural schools (disproportionately, relative to urban and suburban schools) seems not to be in keeping with the responsive, representative and constitutional government

believed to be taking place in Minnesota. Three current realities in particular affect rural schools in Minnesota disproportionately: population decline, allocation distribution according to the state's funding formula, and mandated reform initiatives.

Since 1995, as a result of legislation, indexed, inflation-adjusted PK-12 revenue per pupil (less building debt and special education expenses) in Minnesota has held relatively steady (Minnesota House of Representatives Research Department, 2008). This, despite increased expectations and expenses in schools, has sent rural and urban districts scrambling for inevitable cuts, and prioritizing vital programs and staff, in order to balance decreasing budgets each year. Declining student enrollment alone in rural schools creates educational crises because of the loss of per-pupil state revenue currently used to fund most school programs. Rural schools, however, have had to address both decreased per-pupil allocations and a steady decline in rural populations, particularly due to lack of employment opportunities in traditional rural occupations such as mining and farming. Rural schools, which often have chronic enrollment decline because of the changing economic base in Minnesota's rural areas, also experience challenges to educational excellence because of operational expenses like rising health care costs, transportation costs for districts covering large geographic areas, increasing costs for special education services, and other expenses that impact educational services provided to students.

The impact of declining enrollment on Minnesota's rural schools is challenging in terms of school effectiveness in offering quality education to students that is equal to that offered in districts with stable or increasing enrollments. More critically, the impact of declining enrollment on Minnesota's rural schools is immediate. According to a February 2006 report from the Fiscal Analysis Department of the Minnesota House of Representatives titled *Minnesota School District Enrollment Trends* (Crowe, 2006), "by the year 2009, 272 of the State's 343 school districts (79%) will be experiencing declining enrollment. Much of that decline will occur in rural parts of the state, with the Northeast section projected to have 90% of its districts in enrollment decline, the Northwest section projected to have 85% of districts in decline, and the Southwest section of the State projected to have 86% of its districts in decline." It is now the year 2009. In addition, revisions to the state funding formula over the past five years, seem to have accentuated the gap between what can be provided to rural vs. urban students in public schools due to levy capacity and basic per-pupil allocation adjustments (Thorson & Maxwell, 2002; Fitzgerald, 2008). Simply stated, rural schools currently attempt to provide education to their students for significantly less funding per child each year than non-rural schools (Thorson & Edmondson, 2000; Thorson & Maxwell, 2002)

Touted as the "Minnesota Miracle" in 1971 (Minnesota House of Representatives, 2008), Minnesota's innovative funding allocation allotments for schools attempted to address and account for questions of equality, adequacy and equity, thus balancing the capacity of a district to produce local referendum resources with the democratic principle of equal access. The era of the Minnesota Miracle has been defined as a foundation program with state share exceeding 50% (Melcher, 2005). The 1971 platforms of Governor Wendell Anderson's administration, however, were based in another time, in another economy,

and may need more than the present state of revision in order to address, with equity, the current needs of students across our state. Legislative sessions since 1971 have consistently added amendments, additions, and adjustments to the "miracle" that, at most, increased inequity and appear to have eroded the basic premise of adequacy for all before increase for some (Fitzgerald, 2008; Thorson & Anderson, 2006). In 1991, a consortium of districts initiated a lawsuit, *Skeen v. Minnesota*, against state funding practices, challenging equity and adequacy as rights of citizens under the state's constitution, and won in district court (Strom, 2008; Thorson & Anderson, 2006). That decision, however, was overturned by the State Supreme Court in 1993. In 2001, significant changes to Minnesota's school funding shifted the burden of district funding to the state, initiating full state funding of state formula with two-tiered equalization. This era subjected school funding to state-level decisions, including cuts due to slowing of the state's economy (Melcher, 2005). The results of the 2001 legislation included disproportionate increases to wealthy school districts and relief to the taxpayers in wealthy districts, with significantly less increase to rural, lower-income districts (Thorson & Anderson, 2006). Under Gov. Tim Pawlenty's administration, adjustments to school financing have included increased levy options and caps, allowing localities to add revenue without former limits (favoring the wealthy), and industry- and commerce-saturated municipalities. Generally, the adjustments serve to increase the capacity gap between the haves and have-nots for schools. At the very least, modifications to the original 1971 Minnesota Miracle have obfuscated transparency of the allocations.

The Minnesota PK-12 Omnibus bill is systematically re-authorized bi-annually, and each re-authorization over the past two decades has brought debate, new mandates, new requirements, and changes in the allocation codes and percentages (Melcher, 2005). Once authorized, the biennial bill's disbursements are still subject to shifts in the state's revenue and adjustments in the form of additional cuts, carried by schools each year. Accurate predictions for school budgets based on state allocations more than nine months out, under the current funding formula, seem to have been impossible since the early nineties.

Piled on top of decreased and unstable funding, Minnesota's rural schools have faced and responded to two decades of concurrent and consecutive state and federal reform initiatives and mandates, inclusive of the federal No Child Left Behind Act of 2002 with accompanying state testing requirements, reporting, and threats of sanction. As state resources have dwindled, agencies such as the Minnesota Department of Education have found direct support for outlying districts fiscally unfeasible in light of increased fuel costs and shifting priorities, compounding the distance issues between metro and rural access to services and information.

Recommendations

After analysis of this study's survey responses and focus group participation, the needs and priorities collected from leaders of rural school districts indicate opportunities to review and revise current Minnesota funding policies, as well as considerations to modify or review procedures employed by state agencies, professional education organizations and Minnesota colleges and universities.

Both the administrators surveyed and the participants of the regional focus groups identified their priorities to be: (1) student achievement, (2) fiscal management, and (3) curriculum and instruction. From within these priorities, the participants identified needs for specific assistance priorities, starting with testing and adequate yearly progress, balancing budgets, student achievement, transportation/sparsity, professional development, and data analysis. Policy recommendations followed from the needs and priorities, with the participants identifying opportunities for policy revision that included changes to the state funding formula regarding sparsity or rural populations and per-pupil weight, and staff development funding. Other recommendations fell into procedure categories, such as Minnesota Department of Education practices regarding state testing and service provision.

Policy Recommendations

The voices of the participants of this study identified a need to re-visit the current state funding formula in several areas. General dissatisfaction with the allocations was prevalent, with a majority of the participants identifying a disconnect between the reality of a small, rural school district and lawmakers in St. Paul. The problems of distance and economy were expressed in each region, as administrators related the difficulties of busing, fuel prices, and the expenses of travel and supervision that compound disparate funding. *This study recommends that this legislative session reconfigure the funding categories of elementary and secondary sparsity and transportation sparsity to reflect increases in fuel costs, the combined effects of lower enrollment and lower capacity of rural districts to raise additional local funds, and the additional costs of transportation that include access to inter-district travel for enrichment, athletics, shared provision of curricular offerings for students, cooperative staff development, and collaborative planning.*

Professional development of staff to affect student achievement was cited predominately in each region as difficult to provide due to distance, but also due to lack of sufficient incentive to dedicate the current required 2% set-aside without exercising waiver options. *This study recommends that this legislative session maintain the current 2% General Fund requirement for staff development and increase incentives for rural schools not to exercise the current waiver options.*

In addition, all regions referred to the difficulties of rural schools relative to an unpredictable accurate budgeting process. Capacity to attract and retain quality staff, to maintain buildings, and to purchase cooperatively are directly affected by the possibility each year of funding falling short of spring projections. In urban areas, shifts in district allocations do not necessarily result in families of workers being geographically stranded as well as unemployed. *This study recommends that legislation reflect the disproportionate effects of inexact budget predictions for rural districts and limit variability via guaranteed allocations after spring projections of the preceding school year for districts identified as rural.*

Procedure Recommendations

Participants in each region repeatedly offered possibilities for change in practices by the Minnesota Department of Education, professional education organizations and unions, and colleges and universities that could directly and positively affect rural districts. Although the researchers requested policy

recommendations, it became apparent that policies and procedures were not separate in the perspectives of the participants. In order to provide a voice for the specific needs of rural districts, this study offers the following recommendations concerning procedures:

State testing changes: The most prevalent requests for assistance were in regard to the Minnesota state tests and procedures. Most often recommended was change in the Minnesota Comprehensive examinations to reflect growth within, rather than across cohorts, and for results to be provided to districts to use formatively for those students taking the tests. Most often mentioned as exemplary were the procedures of the North West Evaluation Association. *This study recommends that MDE continues to pursue options to define and measure growth in student learning of the Minnesota State Standards effectively and efficiently.*

Staff development via online delivery: Distance to attend state-level staff development and cost to the districts in outstate Minnesota to bring MDE staff and other professional development providers to the locations impedes rural educators' equal access to information and opportunities. *This study recommends that MDE, colleges and universities, and professional education organizations offer online modules, learning units, or courses for initiatives defined in work or action plans. Additional consideration for establishment of on-line professional learning communities with focus on issues of data analysis for decision-making, student achievement, and special education would provide rural educators opportunities to apply best practices across contexts, and to address isolation and access to collegiality in addressing student achievement.*

Sustaining the work of grants: Regional focus groups revealed increasing frustration with the pattern of gains in programs and services due to grants and the subsequent loss of promising practices and programs as grant funding ends. Participants, who have increasingly sought grant funding in order to offset increased costs, expressed disappointment in the loss of time and revenue used to establish collaborative grant work and the lack of continuous funding for programs that have provided effective interventions. *This study recommends that colleges and universities partner with regional rural districts to study and document the effectiveness of grant initiatives and provide documentation for districts seeking continued funding for best practices. Consideration of the establishment of a statewide registry of active grants to schools from all funding agencies, with access to reports from active grants and concluded grants, could benefit districts, institutes of higher learning and state-level decision-makers.*

Training in use of collaboratives: When asked to identify successful partners, collaborators, and shared services initiatives, participants in this study identified several dozen examples, with few repeated. The range of successful collaborations was impressive, from police services to shared administration, from early childhood education to technology, yet not all in each focus group or across focus groups were aware of the collaborations and shared initiatives of others. *This study recommends that state agencies, professional organizations and colleges and universities (especially those who prepare school administrators) provide instruction and networking for current and potential successful collaborators.*

Venues for Sharing Best Practices: In completing the survey, it was noted by the researchers that relatively few (45) practices considered exemplary were offered by the respondents. Perhaps modesty or other cultural norms affected survey entries; focus group participants were also reticent to offer examples of best practices in initiatives affecting identified priorities. *This study recommends that state agencies, professional organizations and colleges and universities provide electronic or other means by which best practices in schools or districts that show positive effects in student performance, fiscal management, and curriculum and instruction can be shared and/or mentored.*

On-line learning communities designed for students with isolated academic needs: Focus group participants identified collaborative and individual district use of on-line vendors for student coursework, with mixed reports of satisfaction, student success, and alignment with building and district needs. Participants reported difficulty in administrative decision-making with reduced funds regarding course offerings for college-bound, at-risk, and isolated interests of rural students. *It is recommended that MDE and colleges and universities identify the needs of isolated rural learners and offer on-line courses designed for at-risk and enrichment using regional, place-based curriculum.*

Appendix A

Survey Priorities

1. Attainment of student performance and learning goals.

2. Curriculum and instruction.

3. Diverse learner needs.

4. Fiscal management.

5. Professional development and/or mentoring services.

6. Recruitment of qualified teachers and other professionals.

7. Retention of qualified teachers and other professionals.

8. Sparsity and transportation.

9. Staff/student ratio.

10. Strategic planning.

11. Students with special needs (IEP or 504).

12. Use of instructional technology.

13. Working with school board members.

References

Crowe, G. (2006). Minnesota school enrollment trends. *Money Matters, 6(2).* Minnesota House of Representatives Fiscal Analysis Department; St. Paul, MN

Fitzgerald, J. (2008). A chilling call to St. Paul: School superintendents speak out about Minnesota's failed funding system. *Minnesota 20/20*. St. Paul, MN: Minnesota 20/20. Retrieved January 18, 2009 from http://www.mn2020.org/vertical/Sites/%7BE87029B4-3CCA-40B0-8DE9-3BD2A16A9DB9%7D/uploads/%7BC0346A22-6FFE-414A-AB4E-FFA33FB31C51%7D.PDF

Jimerson, L. (2006). Breaking the fall: Cushioning the impact of rural declining enrollment. *Rural Trust Policy Brief Series on Rural Education*. The Rural School and Community Trust: Arlington, VA.

Johnson, J., & Strange, M. (2007). Why rural matters in 2007: The realities of rural education growth. *Rural Trust Policy Brief Series on Rural Education*. The Rural School and Community Trust: Arlington, VA.

Melcher, T. (2005). Minnesota school finance history 1949-2005. *Minnesota Department of Education*. Retrieved January 19, 2009 from http://education.state.mn.us/mdeprod/groups/Finance/documents/Publication/004107.pdf

Minnesota Department of Education. (n.d.). Questions and answers on Governor Pawlenty's education budget proposal. *Minnesota Department of Education*. Retrieved February 9, 2005, from http://education.state.mn.us

Minnesota House Research Department. (2008). Presentation to the Minnesota School Boards Association. *State of Minnesota*: St. Paul, MN. Retrieved January 12, 2009 from http://www.house.leg.state.mn.us/hrd/issinfo/schoolfinanceover_files/frame.htm

Strom, T. (2008). Minnesota school finance: A guide for legislators. *Minnesota House Research Department*. Minnesota House of Representatives: St. Paul, MN. Retrieved January 19, 2009 from http://www.house.leg.state.mn.us/hrd/pubs/mnschfin.pdf

Thorson, G. & Anderson, J. (2006). The Minnesota Miracle abandoned? Changes in Minnesota school funding, 2001-2007. *Rural Minnesota Journal, 1(2).* Retrieved January, 19, 2009, from http://www.mnsu.edu/ruralmn/pages/Publications/rmj/RMJ2-06/rmj2-06thorson.pdf

Thorson, G. & Maxwell, J. (2000). Making difficult times worse: The impact of per pupil funding formulas on rural Minnesota schools. *Center for Rural Policy and Development.* Minnesota State University: Mankato, MN.

Thorson, G., & Maxwell, N. (2002). Small schools under siege: Evidence of resource inequality in Minnesota public schools. *Center for Rural Policy and Development.* Minnesota State University: Mankato, MN.

Cost-Effective Policies to Improve Rural K-12 Education in Minnesota

Prepared by:
Elton Mykerezi, Ph.D.; Judy A. Temple, Ph.D.; Kristine Lamm West
University of Minnesota, Twin Cities
Department of Applied Economics

Introduction

Significant declines in enrollments across Minnesota's rural school districts have generated financial strain, potentially compromising the quality of education available to rural youth (Crowe, 2006; Thorson and Maxwell, 2002; McMurry and Ronningen, 2006). High-quality schools are needed to ensure the long-term vitality and economic development prospects of rural communities (Gibbs, 2005). Given scarce resources, policies are needed to help mediate effects of declining enrollments and to improve the effectiveness of dollars spent in rural public education.

The research in this study identifies differences in student characteristics and schooling outcomes that vary across rural and non-rural school districts in Minnesota. We then discuss three promising school policies and programs that have demonstrated cost-effectiveness and provide some information about their likely benefits and costs if implemented in rural Minnesota districts. These programs and policies include high-quality public preschool programs, smaller class sizes, and programs intended to reduce high school dropout rates. All three of our proven educational programs and practices have been demonstrated to increase high school completion rates for children from lower-income families.

In the second part of the paper, we examine the consequences of school consolidations by estimating the negative consequences to rural townships from being located at a further distance from a public school. School district consolidations have been the primary tool used to cope with declining enrollments. While there is no consensus on the optimal school size, research suggests that very small schools face challenges in providing comprehensive curricula and require very high per-pupil costs (Andrews, Duncombe and Yinger, 2002; Fox, 1981).[1] District mergers could mediate problems associated with very small schools by combining student populations into moderate size schools. These policies, however, may come at significant costs to individuals

and communities and have historically met resistance from community leaders. Longer bus commutes may decrease student performance and increase safety hazards (Purcell and Shackelford, 2005). Decreased student performance in school may translate into increased high school dropout rates and lower postsecondary education attainment. Loss of schools is also suspected to damage the social fabric of communities, as rural schools often host various community activities. Therefore a closer look into the contributions of socio-economic wellbeing that proximity to schools affords rural Minnesota communities will help shed important light on the consequences of school closings.

While the concerns of urban districts may be more visible in news reports and are more often the target of education reforms, rural districts are also deserving of the attention of policymakers and voters. In Minnesota, more than one-third of all children live in rural school districts. In focusing on both proven education programs and on the consequences of rural school consolidation, this research seeks to improve understanding among taxpayers, educators and policymakers on how policies and programs to improve rural education can make a difference in promoting school success.

Overview of public school districts in Minnesota

To better understand how rural districts and students differ from their urban and suburban counterparts, we provide descriptive statistics to show how public school characteristics and student outcomes vary between rural and non-rural districts. We also highlight the consequences of socioeconomic disadvantage for school districts by providing information for school districts with higher and lower proportions of low-income families.

We obtained data on school district enrollment and student performance from the Minnesota Department of Education. We assigned each district a location code representing urban or rural location using information from the U.S. Department of Education's Common Core of Data for the most recent year available, which was 2005-2006. The National Center on Education Statistics (NCES) identifies rural and urban locales using a classification system that ranges from 1 to 8. A code of 1 is assigned to school districts that are located in a large city having more than 250,000 residents. For the category of suburban and large towns, we combined NCES locale codes 2 through 5. These locales include mid-size cities and large towns having populations between 25,000 and 250,000. Districts located in "urban fringe" areas of these cities and large towns are also included as suburban. Our rural category consists of NCES codes 6 though 8. They include small towns of less than 2,500 residents and other areas not included in the above categories. Over one–third of Minnesota public school students attend schools in rural districts.

Tables I and II (found at the end of this article) show enrollment information for Minnesota public school districts in 2005-2006. The number of districts in our sample is 500 and includes traditional districts frequently consisting of multiple schools, as well as a number of smaller charter or alternative schools that are considered separate districts. Some charters and alternative schools listed in the Minnesota database were not included in the U.S. Common Core of Data and were excluded from our sample. Although only two cities in Minnesota are

considered urban by the NCES classification, these cities contain approximately 58 districts because there are over 50 smaller charters or alternative schools in Minneapolis or Saint Paul that are considered separate districts in the Minnesota Department of Education database. They are also included in the enrollment totals.

In Table II, data on eligibility for the free or reduced-price school lunch program provide information on the family incomes of students enrolled in Minnesota schools overall and by urban, suburban, or rural location. These means are estimated using averages for each district weighted by district enrollment. While there are 58 urban districts listed in Table I, the free or reduced price school lunch mean of 70% for urban students comes mainly from the two largest urban districts. Students in rural districts have somewhat higher-than-average eligibility for school meal programs and clearly are more likely than suburban or large-town students to come from low-income families. In some of the analyses discussed below, we report information on schooling outcomes separately for low-income districts in order to see how test scores, special education placement rates, and high school graduation rates vary according to this measure of family socio-economic status. For this purpose, we define "low-income" as districts with more than 50% eligibility for free or reduced lunch. We will compare these districts to higher income districts where fewer than 25% of students are eligible for the program.

In Table III, we report means of special education enrollment and average class size by urban, suburban, and rural district location. These means are weighted by district level enrollment. The overall special education placement rate is 13% for public school students in Minnesota. Higher-income school districts have a lower special education placement rate of 11%. Special education placement rates clearly vary with economic disadvantage. For both suburban and rural students, low-income districts have a greater proportion of students receiving special education services. Importantly, low-income rural districts enroll 17% of students in special education programs.

We next examine average class size statistics to see how these vary across rural and urban schools and across higher- and lower-income districts. Admittedly, useful information on class size is difficult to obtain with aggregated data at the district or even the school level. Average class size here is determined by dividing total district enrollment by the number of full time equivalent (FTE) teachers in the district using information from the U.S. Department of Education's Common Core of Data. However, some teachers may not work full time in the classroom if they serve as coordinators or hold other administrative posts. Moreover, class sizes may vary greatly within a district and this information is not captured by an average class size measure. Despite the difficulties with this measure, we report average class sizes in Table III. Rural districts overall appear to have smaller class sizes than urban or suburban districts, but more research is needed to learn whether rural class sizes are smaller or if these figures could be due to a proportionally larger number of teachers serving in non-class room positions.

In Tables IV and V we report student educational outcomes in terms of test scores and graduation rates. For test scores, we use the average of the reading and mathematics scale scores from the Minnesota Comprehensive Assessments

(MCA-II) given in third grade. By construction, these scores range from 300-399 for third grade students. The average scores for the state and for urban, suburban, and rural districts were computed by weighting the individual district averages by district enrollment. For our sample, the statewide average was 365. Low-income urban districts had the lowest scores, while rural students on average scored below the statewide mean. For both rural and suburban students, there were sizeable gaps in test performance corresponding to differences in family incomes.

Table V reports high school graduation rates. The attention paid to school accountability as a result of No Child Left Behind led to increased awareness that there was no standard method for calculating high school graduation rates. As a result, the National Governors Association (NGA) forged agreements with all 50 states on a preferred method of calculating graduation rates that divides the number of graduates in a particular year with the number of students enrolled in 9th grade four years earlier. This denominator is adjusted for transfers in and out of the school district. As a four-year, on-time graduation rate that does not include GED recipients as high school graduates, the NGA graduation rate allows for consistent comparisons of high school completion across districts and states. In Table V, the on-time graduation rate for Minnesota public school students is 77.7%. While rural and suburban students in higher-income districts have graduation rates of 83%-85%, graduation rates are significantly lower for students in lower-income districts. For rural students, this difference in family incomes is associated with a nearly 12 percentage point gap in high school graduation rates.

Proven policies or programs to improve education in rural districts

Our research capitalizes on the recent interest by economists and other researchers in identifying cost-effective educational practices and programs as part of a growing "what works" movement in education policy. Levin and Belfield (2007) recently conducted an exhaustive review of the literature looking for evidence from randomized or well-controlled statistical studies that estimated a causal effect of K-12 educational policies on high school graduation. They list several interventions such as small class sizes and dropout prevention programs that have proven effectiveness either through randomized experiments or through well-designed non-experimental studies and also have precise information on program costs. A similar report was written by Reynolds and Temple (2008) for educational programs covering the preschool to third grade years. Below we discuss the likely benefits to rural schools and communities in Minnesota of creating high-quality public preschool programs, reducing class sizes, and providing a mentoring program in high school intended to reduce truancy and increase student interest in school.

Elsewhere in this volume Broton, Mueller, Schultz, and Gaona (2009) summarize a sizeable body of literature outlining promising practices and programs to improve education in rural communities. This paper takes an alternative approach that focuses on a small set of policies and programs that have been studied closely by researchers and have information available about their benefits and their costs. These programs have been shown to have the

largest benefits for students from economically disadvantaged communities but are likely to benefit children from middle-income families as well. Because education reform frequently starts with attempts to understand and improve the quality of education in urban settings, the most recent information on these proven policies and programs are not drawn specifically from rural samples. However, we argue that it is likely that the school success of both rural and urban low-income children can be improved by programs to increase the availability of early education, reduce class sizes, and enhance student involvement in school.

Early childhood education

Although preschool for four year olds is the fastest growing category of school expenditures in the U.S., Minnesota ranks 37th in enrollment rates out of the 38 states that fund public pre-kindergarten (Reynolds, 2007). High-quality preschool programs have been shown to improve school readiness and test scores in the early years of elementary school. High-quality programs that offer parenting support services have been shown to generate long-term benefits to society in terms of reductions in the need for special education services, reductions in rates of grade retention, increased high school graduation rates and even reductions in juvenile and adult crime (Temple and Reynolds, 2007). A recent report from Wilder Research (Chase et al., 2008) looks more narrowly at the benefits to the K-12 system itself and provides a sizeable list of benefits that may accrue to Minnesota schools from public investments in a high-quality preschool program. The benefits that accrue to K-12 schools from improvements in school readiness include increases in state aid as more students remain in school until graduation, reductions in costs needed to serve English language learner (ELL) populations, and reductions in costs for school safety resulting from reductions in problem behaviors caused by participation in high-quality preschool with family support. Additional discussion of the benefits to the school district from investments in programs to improve school readiness can be found in Belfield (2004).

Smaller class sizes

Once students enroll in elementary school, one well-known educational intervention consists of providing smaller class sizes especially in grades K through three. Reductions in small class sizes to improve school performance have been undertaken by a number of states, including Tennessee, California and nearby Wisconsin. A well-known randomized study called the Tennessee STAR experiment found that reductions in class sizes in the early years of elementary school were associated with increases in test scores in the short run and eventually increases in rates of high school graduation (Finn et al., 2005).

For both preschool and small class sizes, policymakers are faced with two important issues when making implementation decisions. First, should these programs be made universally available or targeted toward students from lower-income families? Research shows that the largest benefits are obtained from targeting children most at risk of school failure due to socioeconomic disadvantage. The benefit-cost ratio for high-quality preschool programs indicate that the societal benefits are over $7 for each additional dollar spent when targeted toward children from poor families (Temple and Reynolds, 2007).

Similarly, Finn et al. (2005) report much higher effects of small class sizes on high school graduation for children eligible for free or reduced-price school lunches. Levin and Belfield's (2007) summary of the Tennessee STAR results indicate that spending on small class sizes of $12,840 per student (over 3 or 4 years) is associated with increases of 18 additional high school graduates when small class sizes are targeted toward children eligible for school lunch subsidies.

A second question concerns the duration of services offered. In studies of the Perry Preschool program and the Chicago Child-Parent Center program, children received one or two years of services (with an average of 1.5 years in the Chicago study). The current trend in a number of states (but not Minnesota) is to provide one year of universal preschool for a year for children age 4. One recent report recommending preschool investments in Minnesota outlines some of the costs and benefits of two years of preschool (Chase et al. 2008). There is a need for more research on the benefits of one versus two years. Similarly, more research in the small class size literature is needed to understand the benefits of one year of small class sizes (perhaps in kindergarten) versus providing small class sizes from kindergarten through third grade.

The estimates reported in Tables III, IV, and V show significant differences by family incomes for test scores, special education placement rates, and high school graduation rates for children from rural school districts. Given scarce economic resources, policymakers should consider implementing preschool programs and small class sizes in schools or districts with higher poverty rates in order to achieve the greatest rates of return on investment. Consistent with the types of benefits for schools resulting from increases in school readiness described by Chase et al. (2008), rural schools can benefit from both preschool programs and small class sizes in terms of fewer local dollars spent on special education services and more state revenues as students stay in school longer.

Preventing dropout

A final policy we consider here is implemented later in a student's schooling career. Evidence-based programs to prevent high school dropout may be a useful component of a plan to improve rural education. In their review of the literature on cost effective programs that have been shown to increase high school completion, Levin and Belfield (2007) discuss findings from a program started at the University of Minnesota called Check & Connect (Sinclair et al. 2005, US Department of Education, 2006). The program Check & Connect provides a mentor or case worker to groups of students considered to be at risk of high school dropout. This mentor promotes student engagement in schooling. The mentor serves as an advocate for students and as a coordinator of services, routinely "checking" student performance in school in terms of attendance, grades, and other behavioral issues. Levin and Belfield (2007) document that this program cost $8,150 per student but suggest that it may be associated with 17 additional high school graduates per 100 students. Along with high-quality preschool education and small class sizes in the early grades, we include this program as an example of successful mentor-based dropout prevention programs that rural school districts may want to consider.

Figure 1 presents some illustrative information about the costs of three proven programs or policies and their estimated benefits in terms of reductions

Figure 1: Comparison of cost-effectiveness of suggested interventions targeted toward students eligible for lunch subsidies.

	Costs per student	Extra high school graduates per 100 students	Costs per additional graduate*	Benefit-cost ratio for high school graduation**
High-quality preschool ½ day, 1.5 years	$8,512	11	$77,382	3.33
Small class sizes in grades K-3	$12,840	18	$71,333	3.53
Dropout prevention (Check & Connect)	$8,150	17	$47,941	5.25

**Cost per graduate is equal to (costs per student *100 students) / (extra high school graduates per 100 students).*
***As estimated by Levin and Belfield, the benefits to the taxpayer for each additional high school graduate is $251,900 in terms of higher taxes, reduced health, crime, and welfare costs.*

in high school dropouts. All three educational interventions could be offered in rural settings, and the benefit-cost ratios listed in the table suggest the kinds of returns that could be expected if these programs were targeted toward children from lower-income families. To simplify the calculations, the benefits considered consist only of increases in high school completion rates. In their research on the consequences to society of high school dropout, Levin and Belfield calculate that the benefits to the taxpayer for each additional high school graduate are equal to $252,000 in terms of higher taxes and reductions in health, crime, and welfare costs.

All three policies or programs have been documented to produce benefits that are significantly larger than costs. A decision to spend an additional dollar in high-quality preschool programs, small class sizes, or high school dropout prevention programs may lead to society receiving more than $3 in benefits assuming these programs are targeted toward more disadvantaged children such as those eligible for free and reduced price school lunches. Note that the $3.33 to $1 benefit-cost ratio reported for preschool understates the $7 to $10 typically reported (e.g., Temple and Reynolds, 2007) as only the benefits resulting directly from high school completion are considered in this table.

Consequences of school consolidations

Existing examinations of the effectiveness of school district mergers focus on estimating the impact of school/district size on either per-pupil costs or on measures of schooling output. Cost-based studies attempt to estimate the district size that minimizes per-pupil costs. Output-based studies, on the other hand, examine the impact that district size has on schooling outcomes such as average test scores, percent of students passing, dropout rates, college attendance and changes in test scores across years (Andrews, Duncombe and Yinger, 2002). While there is no widespread consensus, cost-based studies suggest that districts with 2,000–4,000 pupils seem to be the most cost-efficient. Output-based studies find optimal school sizes that are significantly smaller. For example, Lee and

Smith (1997) find that students perform best in schools of 600 to 900 pupils, while Eberts et al. (1984) show that elementary school students perform best in 300– to 500-pupil schools. Kuziemko (2006) finds that benefits of reducing school size for the average school outweigh costs. No studies, however, account for additional transport costs associated with consolidation, which may lead them to overestimate optimal school sizes (Andrews, Duncombe and Yinger, 2002). This error is of larger consequence for rural areas, where commuting distances may be larger. In addition rural schools serve as centers for civic activity. The loss of social capital associated with consolidations also remains unaccounted for.

This study takes a different approach to quantifying the consequences of school consolidations for rural Minnesota. Instead of looking at consolidation decisions directly, we use township-level data along with data on school locations to examine the impact that access to public schools has on rural community wellbeing in a multivariate regression framework. We investigate whether distance to the nearest school makes a difference for high school graduation rates and other measures of economic success. This approach does not explicitly account for all potential sources of costs and benefits associated with school consolidations, but estimates can be used to infer the overall impact of school consolidation proposals on communities regardless of the channels through which these consequences are generated.

Data, Methodology and Procedures

The primary data sources are the township-level files from the 1990 and 2000 Decennial Censuses (Current Populations Survey, Summary Tape File 3C). For purposes of this part of the study we focus on rural townships and then further identify a subset of rural townships that we describe as "remote." In contrast to the first part of the study, where the definitions of rural were applied to school districts, for this part we use definitions that apply to counties. Specifically, we use 1993 Economic Research Service (ERS) definitions and the accompanying rural-urban continuum codes to classify townships as rural and remote. Rural townships are defined as those that are located in a county that has a rural-urban continuum code of 4 or above. These townships are located in counties that are defined as non-metro by the ERS. We designate as remote townships for purposes of this study those that are located in counties that have an ERS rural-urban continuum code of 8 or 9. In 1990 there were a total of 2,069 rural townships and 593 remote townships. Education, per-capita income, poverty, demographic information and sources of employment are reported for each township.

In addition, we use data on school locations from the National Center for Education Statistics to map all K-8 and 9-12 schools in the state of Minnesota.[2] Physical addresses were obtained from the NCES school locator and were geo-coded using Arcview, a GIS software.[3] Access to local schools is measured by the distance from each township to the nearest public school. This distance is zero for townships that have their own schools.

In terms of outcomes, we estimate the impact of school access on township-level measures of educational attainment, per-capita income, and poverty in a multivariate regression framework. The basic model can be expressed as

$$Y_{it}=\gamma D+X_{it-1}\beta_1+X_{i\text{-}lt\text{-}1}\beta_2+C\beta_3+Y_{t-1}\beta_4+\varepsilon_{it}$$

Where Y_{it} denotes the outcome of interest for township *i* in year 2000, D is a vector of access measures that contains distance to the nearest K-8 school and distance to the nearest 9-12 school in year 2000. The sign and magnitude of the estimated parameter γ quantifies the effect of school proximity on the outcome Y. To assure that we are estimating the actual causal effect of school proximity we condition on a wide set of variables. Specifically, $X_{it\text{-}1}$ is a vector of observed controls measured in 1990. We lagged the controls by 10 years to address concerns that the direction of causality may be unknown. For example, in a regression of per-capita income on education, it may be the case that a more educated population produces higher per-capita income, but it could also be that areas of relative prosperity attract more educated individuals. In our case, income in 2000 could have not caused in-migration of educated individuals in 1990. The vector X is slightly different for each outcome, but it generally contains measures of income, poverty, working-age population, share of population involved in farming, racial and ethnic composition of the population, the economic sector composition of employment and average commuting times to work.

The next set of controls accounts for geographic dependence and geo-political unobserved heterogeneity. Specifically, $X_{i\text{-}lt\text{-}1}$ denotes a 20-mile spatial lag that contains the same vector of controls that are in X, averaged over all communities in the 20 mile-radius around each township. This is done to account for potential spatial dependence. Townships are likely spatially linked through employment patterns (whereby individuals who live in one township may work in another), shopping and entertainment (individuals who live in one township may spend money in another), provision of public goods (townships may share schools, parks, hospitals etc.). So the outcome of interest in one township may directly depend on attributes of surrounding townships and failing to account for these influences would lead to estimation bias. C is a matrix of county-fixed effects intended to account for county-level policies and other attributes that are not directly observed but affect all townships within the county in a similar manner. The variable $Y_{t\text{-}1}$ denotes the outcome of interest measured in 1990. The inclusion of the outcome variable lagged by 10 years helps ensure that the estimated parameter γ measures the causal effect of school proximity on the outcome and does not reflect township-specific omitted variables that affect both school location and the outcome. For example, if schools were initially located in areas of relative prosperity then γ would reflect both the effect of school proximity on income and the fact that schools were located in areas of higher income to begin with and would, therefore, overstate the positive effect of school proximity on income. The inclusion of a time-lagged income measure controls for past prosperity and thus alleviates this problem. The terms γ, β_1, β_2, β_3, and β_4 are parameters to be estimated and ε is a random error.

In terms of outcomes, education is measured by the share of adults (25 years of age or older) with college degrees and the share of adults that did not complete high school in year 2000. Income is measured by the logarithm of the average per-capita income in each township and poverty is measured by the share of township individuals who lived in households with incomes below the official U.S. poverty threshold for the year 2000.

We estimate the impact that distance to the nearest K-8 and the nearest 9-12 school has on the share of adults with college degrees and the share that did not complete high school via a Seemingly Unrelated System (SUR) of equations that allows for arbitrary correlation of the error terms associated with each education equation. Because these are two different measures of education among the population, we suspect that they may be affected in a very similar manner by random shocks that have similar effects on the costs and benefits of education at the township level. The models for income and poverty are estimated via Ordinary Least Square (OLS) estimators.

The estimates of γ can then be used to quantify the likely effect school closings would have on township education, income and poverty in the long run. Overall, this approach does not explicitly model all potential sources of costs and benefits associated with school consolidations, but parameter estimates are used to infer the overall impact of school consolidation proposals on communities regardless of the channels through which these consequences are generated.

Table VI presents means and standard errors of all study variables separately for rural and remote townships. It is worth noting here that remote townships have lower shares of college educated adults, higher shares of high school drop-outs, lower per capita incomes, higher rates of poverty, lower populations and face longer commutes to work. Also notable is the difference in proximity to the nearest K-8 and 9-12 schools, with the average remote community located almost twice as far from the nearest school as the average rural community in the state.

The Effects of School Proximity

Education: Table VII presents results on the effect of being located close to the nearest school on the share of township adults with college degrees in panel A and the share of high school non-completions among adults in panel B. Being located further from the nearest high school appears to reduce the share of college graduates among township adults. Results indicate a 0.7 percentage point decline for every 10 miles of distance from the nearest high school for the average rural township. This amounts to a 4.2-percent decline from the average share of adult college graduates for rural areas in 2000 (16.4 percent). The impact of a 10-mile increase in distance to the nearest high school is higher for remote areas, at approximately 1.2 percentage points, marking an 8.7-percent decline relative to the average share of adult college graduates for remote areas (13.7 percent). So, on average, a high school closing that causes township residents to travel 10 miles further to get to school is expected to reduce the percentage of adults with a college degree living in the township by 4.2 percent for rural townships and 8.7 percent for remote townships. Distance to the nearest K-8 school does not, on the other hand, show a significant association with college attainment for rural or remote areas.

Results also indicate that being further away from the nearest high school is associated with an increase in high school non-completions in remote areas but not in rural areas. The effect is however, very small. A 10-mile increase in the distance to the nearest high school would cause a 0.02 percentage point increase in the share of adult high school dropouts. The effect amounts to a 0.1-percent decrease from the average of nearly 20 percent for remote areas. Distance to

the nearest K-8 school does not, once again, show an effect on the share of high school dropouts.

We must note that proximity to schools increases the share of township adults with college degrees for two possible reasons. On the one hand, proximity to the nearest high school may increase the performance of local youth, their college prospects and their desire to attend college. Many of these educated youth then return to their own or nearby townships after college. It is also possible that proximity to high schools attracts well-educated adults in the area from diverse sources. Due to the use of the aggregate data we cannot distinguish between the two effects, but from the townships' standpoint, it may not matter how proximity to schools increases the share of college educated adults, it may just matter that it does. The same cannot truly be said for why proximity to schools affects high school non-completions. School proximity is likely to reduce non-completions by making schooling more accessible rather then by causing out-migration for non-completers, or in-migration of high school graduates.

We also note that educational attainment and income in 1990 are the best predictors of year 2000 educational attainment, with income being associated with higher college completions and lower high school dropout rates, and higher levels of educational attainment in 1990 persisting to 2000 across both types of locales.

Income: Table VIII presents the effect of school proximity on per-capita income for all rural areas in panel A and those for remote areas in panel B. The first column estimates simple correlations between distance to the nearest schools and the per-capita income. There is little reason to believe that school proximity would affect incomes directly. Unless schools are a source of superior employment opportunities, we only expect school proximity to have an effect on income through altering other factors (such as education). Therefore we start with a simple correlation and then run additional models that hold other factors constant in order to see how the correlation changes as factors like education are added to the analysis. This exercise demonstrates that rural areas that are located further away from the nearest high school have lower per-capita incomes. For example, townships located 10 miles further from the nearest high school show a 0.8 percent lower per-capita income. The parameter associated with distance to the nearest K-8 school is also negative and significant. The next model, however, which holds constant characteristics of the county where the township is located and the 20-mile radius around the township, indicates that there is no association between K-8 school proximity and income among townships located in similar counties and surrounding areas. Therefore we conclude that there is no direct or indirect effect of proximity to K-8 schools on income. The negative correlation between distance to the nearest high-school and income persists, even after accounting for county and surrounding area characteristics. After including all other factors, the negative association between distance to high school and income fully disappears. In fact in exploratory analysis (not presented here but available upon request) we found that the inclusion of education variables alone is sufficient to reduce the association between distance to high school and income to 0. We therefore find that, among rural townships, proximity to schools does not *directly* affect per-capita income, but any negative effect of distance to

the nearest high school is fully explained by the impact of school proximity on education level achieved.

Among remote areas, distance to the nearest high school is not correlated with income, but distance to the nearest K-8 school is. This effect also disappears after the other characteristics are accounted for.

Poverty: Table IX presents the impact of school proximity on the rate of poverty for all rural areas in panel A and those for remote areas in panel B. Similar to the income equations, the first column estimates correlations between poverty and distance to the nearest schools without accounting for any other factors. We expect school proximity to have an effect on poverty through altering other variables (such as education). It may also have a direct effect if schools serve as civic centers, helping create social capital that reduces poverty.

Simple correlations show rural townships that are further away from the nearest high school face higher rates of poverty, but the effect disappears after characteristics of the counties and surrounding areas are accounted for. We also find no effect associated with distance to K-8 schools for all rural areas. For remote areas, on the other hand, results that account for county and surrounding area characteristics suggest that townships that are further from the nearest K-8 school face higher poverty rates. The result implies that a 10-mile increase in distance from the nearest school is associated with a 4 percentage point higher poverty rate. Exploratory analyses (not reported in table) indicates that after controlling for education only, the effect of a 10-mile increase in distance is reduced to 3 percentage points. So essentially townships that are similar in terms of the characteristics of the counties where they are located, the characteristics of their neighbors within a 20-mile radius and the level of education, but differ only on how close they are to the nearest school have poverty rates that differ by 4 percentage points for every 10 mile difference in distance. After adjusting for all other factors and poverty rates in 1990, a 10-mile increase in distance leads to a 2.7 percentage point higher rate of poverty. So in sum for remote townships, a 10-mile increase in distance to the nearest school increases poverty by 1 percentage point through its impact on education, by an additional 0.3 (difference between 3 and 2.7) percentage points through an impact in various other factors accounted for in the analysis, and an additional 2.7 percentage points can be considered as a direct impact, or an impact via factors that are not accounted for in this study (like social capital) for remote areas. We, however, do not find evidence of a similar effect on the average rural township.

Conclusions

Our study consists of two separate types of analyses focusing on the benefits to rural schools of various proposed policies and programs. We find that students in rural school districts with higher proportions of students from lower-income families are less likely than other students to perform well on tests and have lower rates of on-time high school graduation. Importantly, rural districts containing higher shares of lower-income families have significantly higher special education costs. While a portion of special education costs are paid by the federal and state governments, the local school districts are responsible for a sizeable share. The more funds devoted to special education programs, the fewer resources there are available to spend on a variety of educational resources such as smaller class sizes, teacher salaries, and building maintenance. Early educational interventions such as preschool and small class sizes have been show to make a difference in improving school readiness and reducing special education costs. Other cost-effective interventions such as dropout prevention programs including Check & Connect are likely to reduce high school dropout rates if offered more widely in rural schools. Evidence-based initiatives to provide high-quality preschool programs, reduced class sizes in early grades, or dropout may yield benefits as high as $3 to $5 per additional dollar spent assuming that these programs are targeted toward children from lower-income families.

The second part of our study finds that school closings, due to the fact that they cause the distance to the nearest school to increase, have adverse effects on educational attainment for both, the average rural community and for more remote communities in Minnesota. As noted earlier, decreased access to schools may affect communities in ways that extend beyond education, since schools are known to serve as community centers and to increase civic engagement and social capital. We find no evidence of such an additional effect on average per-capita income. The fact that communities that are located further away from schools have lower incomes is fully explained by the effect of school distance on education. So closing schools affects per-capita income, but it does so by lowering educational attainment. We do however find an additional impact of increased school distance on poverty rates but only for remote areas. As noted, remote areas that are located further away from schools face higher poverty. The impact of school proximity on education explains one fourth of the unadjusted gap, and only a modest share of the gap is closed after we adjust for many other community characteristics. A little less then three fourths of the gap remains associated with school distance after adjusting for all covariates, indicating that most of the impact that proximity to schools has on poverty in remote areas is for reasons unrelated to education. We think this effect is due to the loss of the social and civic function that schools may play in remote communities. Further, it is not surprising that this effect is pronounced in remote areas yet not so in the average non-metro area, as non-metro areas may have other civic organizations and institutions that serve as community centers. Our findings suggest that district consolidations and school closings should perhaps be considered as a last resort in the arsenal of policy tools to reduce educational costs. We further conclude that the adverse consequences of school closings may reach beyond impacts on education for remote locations.

References

Andrews, Matthew William Duncombe, and John Yinger (2002) Revisiting economies of size in American education: are we any closer to a consensus? *Economics of Education Review*, vol. 21, 245–262

Bartik, Timothy J. (2006) The economic development benefits of universal preschool education compared to traditional economic development programs. Kalamazoo, MI: Upjohn Institute for Employment Research. www.upjohn.org/preschool/short_report.pdf

Belfield, Clive R. (2004) Investing in early childhood education in Ohio: An economic appraisal. Report prepared for Renewing our Schools, Securing our Future: A National Task Force on Public Education. Columbia University.

Chase, R., Coffee-Borden, B., Anton, P. Moore, C., and J. Valcrose (2008) The cost burden to Minnesota K-12 when children are unprepared for kindergarten. Wilder Research, Saint Paul MN.

Crowe, Greg (2006) Minnesota School District Enrollment Trends, *Money Matters:* Number 06.02 Fiscal Analysis Department, Minnesota House of Representatives

Eberts, R., Kehoe, E., & Stone, J. (1984). *The effects of school size on student outcomes.* Eugene, OR: Center for Educational Policy and Management, College of Education.

Finn, J., Gerber S., and J. Boyd-Zaharias (2005) Small classes in the early grades, academic achievement, and graduating from high school, *Journal of Educational Psychology*, vol. 9, 214-223.

Fox, W. F. (1981). Reviewing economies of size in education. *Journal of Educational Finance*, vol. 6, 273–296.

Gibbs, Robert (2005) Education as a rural development strategy, *Amber Waves*. Economic Research Service, USDA (November).

Grace, Cathy, Elizabeth F. Shores, Martha Zaslow, Brett Brown, Dena Aufseesen and Lynn Bell (2006) Rural disparities in baseline data of the Early Childhood Longitudinal Study: A chartbook (Rural Early Childhood report no. 3). Mississippi State, MS: National Center for Rural Early Childhood Learning Initiatives. Available at http://www.ruralec.msstate.edu/reports/default.htm

Imazeki, J., and Reschovsky, A. (2003) Financing Adequate Education in Rural Settings. *Journal of Education Finance,* vol. 29, 137–156.

Kuziemko Ilyana (2006) Using shocks to school enrollment to estimate the effect of school size on student achievement, *Economics of Education Review*, vol. 25, 63-75

Lee, V. E., & Smith, J. B. (1997). High school size: Which works best and for whom? *Educational Evaluation and Policy Analysis*, vol. 19, 205–227.

Levin, Henry M. and Clive R. Belfield (2007) Investments in K-12 education for Minnesota: What works? Paper prepared for Growth and Justice conference, Minneapolis, MN, November 2007. http://www.growthandjustice.org/Smart_Investment_Summit.html

McMurry, Martha and Barbara Ronningen (2006) Rural education in Minnesota. *Rural Minnesota Journal*, vol. 1.

Purcell, Dennis and Rexanna Shackelford, (2005) An Evaluation of the Impact of Rural School Consolidation: What challenges may a new round of rural school consolidations have on the safety, educational performance and social environment of rural communities? Paper Presented to the National Rural Association Executive Committee January 13-15, 2005.

Reynolds, Arthur J. (2007) Cost-effective early childhood development programs from preschool to third grade. Paper prepared for Growth and Justice conference, Minneapolis, MN, November 2007. http://www.growthandjustice.org/Smart_Investment_Summit.html

Reynolds, Arthur J. and Judy A. Temple (2008) Cost-effective early childhood development programs from preschool to third grade, Annual Reviews in Clinical Psychology, vol. 4, 109-39.

Sinclair, M., Christenson, S., and M. Thurlow (2005) Promoting school completion of urban secondary youth with emotional or behavioral disabilities, Exceptional Children, vol. 71, 465-482.

Temple, Judy A. and Arthur J. Reynolds (2007) The benefits and costs of investments in preschool, *Economics of Education Review*, 26, 126-144.

The Rural School and Community Trust (2003) Alternative ways to achieve cost-effective schools.

Thorson, Gregory R., and Nicholas J. Maxwell (2002) Small Schools Under Siege: Evidence of Resource Inequality in Minnesota Public Schools, Center for Rural Policy and Development.

U. S. Department of Education (2006) Intervention report: Check & Connect. What Works Clearing House, Institute of Education Science. http://ies.ed.gov/ncee/wwc/reports/dropout/check_conn/index.asp

Table I: Distribution of students and school districts by urban/rural location.

	Number of students	% of students	Number of districts
Urban	90,665	11%	58
Suburban or large town	452,950	54%	121
Rural	295,568	35%	321
Total	839,183	100%	500

2005-2006 data from the Minnesota Department of Education.

Table II: Means of free and reduced price lunch eligibility by urban/rural location.

	% eligible for free or reduced price lunch
Urban	70%
Suburban or large town	22%
Rural	32%
Total	30%

2005-2006 data from the Minnesota Department of Education.

Table III: Special education placement and class sizes by location and subsidized lunch eligibility.

	Number of districts	% of students placed in special education	Average class size
Urban total	58	14%	16.7
Urban districts ≤ 25% school lunch eligibility	11	13%	14.8
Urban districts ≥ 50% school lunch eligibility	42	14%	16.7
Suburban or large town total	121	12%	17.6
Suburban districts ≤ 25% school lunch eligibility	67	11%	17.9
Suburban districts ≥ 50% school lunch eligibility	13	15%	17.1
Rural total	321	13%	15.7
Rural districts ≤ 25% school lunch eligibility	68	12%	17.5
Rural districts ≥ 50% school lunch eligibility	65	17%	12.4
Total	500	13%	16.8
Total districts ≤ 25% school lunch eligibility	146	11%	17.8
Total districts ≥ 50% school lunch eligibility	120	15%	15.8

2005-2006 data from 500 districts enrolling 839,183 students.

Table IV: Third-grade test scores by district location and percentage of subsidized lunch eligibility.

Districts by percentage of students eligible for free or reduced price lunch	Third-grade test score
Urban total	350.7
Urban districts ≤ 25%	369.6*
Urban districts ≥ 50%	350.6
Suburban or large town total	363.1
Suburban districts ≤ 25%	364.2
Suburban districts ≥ 50%	351.9
Rural total	361.2
Rural districts ≤ 25%	363.0
Rural districts ≥ 50%	358.0
Total	361.1
Total districts ≤ 25%	363.9
Total districts ≥ 50%	352.1

*Test score is the average of math and reading scores in third grade. * based on one charter school. 2005-2006 data from 377 districts enrolling 821,818 students.*

Table V: High school graduation rates by district location and percentage of subsidized lunch eligibility.

Districts by percentage of students eligible for free or reduced price lunch	Graduation rate
Urban total	50.1
Urban districts ≤ 25%	47.5*
Urban districts ≥ 50%	50.1
Suburban or large town total	80.1
Suburban districts ≤ 25%	83.4
Suburban districts ≥ 50%	68.0
Rural total	81.8
Rural districts ≤ 25%	85.3
Rural districts ≥ 50%	73.8
Total	77.7
Total districts ≤ 25%	83.8
Total districts ≥ 50%	55.5

*2005-2006 data from 359 districts enrolling 817,091 students. * based on information from three charter or alternative schools only.*

Table VI: Descriptive statistics for rural and remote townships in Minnesota.

	Rural		Remote	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Share with BS (2000)	0.164	0.076	0.137	0.065
Share with no HS (2000)	0.184	0.062	0.204	0.072
Percent in poverty (2000)	0.092	0.056	0.100	0.068
Per capita income (2000)	17915.040	3269.720	16793.560	3610.012
Population (1990)	5192.671	7480.207	774.055	686.784
Per capita income (1990)	10828.430	1944.092	9829.805	1923.466
Percent in poverty (1990)	0.134	0.073	0.158	0.089
Percent over age 65	0.151	0.060	0.177	0.076
Percent in farming	0.118	0.194	0.163	0.223
Percent Hispanic	0.007	0.013	0.004	0.010
Percent Black	0.002	0.006	0.001	0.002
Percent other non White	0.021	0.073	0.031	0.102
Average commute to work	17.813	5.569	18.692	6.586
Share employed in manufacturing	0.232	0.093	0.194	0.123
Share employed in government	0.028	0.024	0.035	0.037
Share employed in services	0.296	0.083	0.292	0.100
Distance to K-8	1.316	2.372	2.493	3.413
Distance to high school	1.846	3.057	3.161	4.176
N	2064		590	

Table VII: Impact of school distance on educational attainment.

Panel A — share with bachelor's degree	Rural						Remote					
	No Spatial Lag			With Spatial Lag			No Spatial Lag			With Spatial Lag		
	param	s.e.		param	s.e.		param	s.e.		param	s.e.	
Distance to high school	-0.0093	0.0039	**	-0.0074	0.0039	*	-0.0162	0.0061	***	-0.0129	0.0065	**
Distance to K-8	0.0042	0.0049		0.0016	0.0049		0.0043	0.0075		0.0014	0.0075	
Share with BS	0.7715	0.0240	***	0.7621	0.0241	***	0.5118	0.0499	***	0.5204	0.0500	***
Share with no HS	-0.0731	0.0181	***	-0.0660	0.0183	***	-0.0712	0.0309	**	-0.0556	0.0310	*
Population (1990)	0.0001	0.0002		0.0001	0.0002		0.0054	0.0041		0.0030	0.0041	
Per capita income (1990)	0.0034	0.0007	***	0.0035	0.0007	***	0.0037	0.0014	***	0.0034	0.0014	**
Percent in poverty (1990)	-0.0002	0.0002		-0.0003	0.0002		-0.0004	0.0003		-0.0004	0.0003	
Percent over age 65	-0.0239	0.0215		-0.0167	0.0219		0.0482	0.0370		0.0463	0.0378	
Percent in farming	-0.0150	0.0079	*	-0.0135	0.0080	*	0.0054	0.0149		0.0067	0.0149	
Percent Hispanic	0.0024	0.0884		-0.0033	0.0897		0.3447	0.2008	*	0.1958	0.2019	
Percent Black	0.2100	0.1606		0.1906	0.1603		0.4561	0.8425		0.2087	0.8407	
Percent other non White	-0.0320	0.0157	**	-0.0175	0.0167		-0.0551	0.0259	**	-0.0158	0.0301	
Average commute to work	0.0004	0.0002		00002	0.0002		0.0001	0.0004		0.0004	0.0004	
Share employed in manufacturing	-0.0264	0.0163		-0.0330	0.0174	*	-0.0124	0.0265		-0.0130	0.0297	
Share employed in government	-0.0153	0.0448		-0.0360	0.0463		0.0695	0.0632		0.0552	0.0655	
Share employed in services	0.0120	0.0171		0.0111	0.0172		0.0060	0.0266		0.0204	0.0267	
Intercept	0.0349	0.0162	**	0.0223	0.0235		0.0410	0.0247		-0.0389	0.0394	
R2	0.770			0.778			0.549			0.572		

*Note: * ** and *** denote statistical significance at p=0.1, p=0.05 and p=0.01 respectively.*

Panel B—Share with no HS	Rural						Remote					
	No Spatial Lag			With Spatial Lag			No Spatial Lag			With Spatial Lag		
	param	s.e.		param	s.e.		param	s.e.		param	s.e.	
Distance to high school	0.0001	0.0001		0.0000	0.0001		0.0003	0.0001	**	0.0002	0.0001	*
Distance to K-8	0.0000	0.0001		0.0000	0.0001		0.0002	0.0002		0.0002	0.0002	
Share with BS	-0.1177	0.0261	***	-0.1027	0.0260	***	0.0017	0.0626		-0.0087	0.0632	
Share with no HS	0.3390	0.0197	***	0.3198	0.0198	***	0.2895	0.0388	***	0.2595	0.0392	***
Population (1990)	0.0005	0.0002	***	0.0005	0.0002	***	0.0204	0.0051	***	0.0224	0.0052	***
Per capita income (1990)	-0.0039	0.0007	***	-0.0040	0.0007	***	-0.0054	0.0017	***	-0.0040	0.0018	**
Percent in poverty (1990)	0.0003	0.0002		0.0004	0.0002	**	0.0011	0.0004	***	0.0010	0.0004	***
Percent over age 65	0.0724	0.0234	***	0.0571	0.0236	**	0.0002	0.0465		-0.0103	0.0478	
Percent in farming	-0.0516	0.0086	***	-0.0553	0.0086	***	-0.0390	0.0187	**	-0.0401	0.0188	**
Percent Hispanic	0.4863	0.0962	***	0.4527	0.0969	***	-0.2485	0.2521		-0.0436	0.2552	
Percent Black	0.2557	0.1748		0.3438	0.1732	**	0.9789	1.0576		1.3743	1.0626	
Percent other non White	0.0782	0.0171	***	0.0586	0.0180	***	0.0162	0.0325		0.0057	0.0380	
Average commute to work	-0.0009	0.0003	***	-0.0008	0.0003	***	-0.0007	0.0005		-0.0008	0.0005	
Share employed in manufacturing	0.0113	0.0178		0.0100	0.0188		-0.0309	0.0332		-0.0084	0.0375	
Share employed in government	-0.0594	0.0488		-0.0427	0.0500		-0.1916	0.0793	**	-0.1749	0.0828	**
Share employed in services	0.0035	0.0186		0.0064	0.0186		0.1583	0.0310	***	0.0084	0.0337	
Intercept	0.151	0.018	***	0.175	0.025	***						
R2	0.596			0.610			0.431			0.454		
N	2064			2064			590			590		

*Note: * ** and *** denote statistical significance at p=0.1, p=0.05 and p=0.01 respectively*

Table VIII: Impact of school distance on per capita income.

	No controls			Spatial only			Full controls		
Panel A—All Rural	**param**	**s.e.**		**param**	**s.e.**		**param**	**s.e.**	
Distance to high school	-0.076	0.017	***	-0.040	0.016	**	-0.010	0.014	
Distance to K-8	-0.044	0.022	**	0.007	0.021		0.006	0.017	
Share with BS	na	na		na	na		0.351	0.084	***
Share with no HS	na	na		na	na		-0.428	0.064	***
Population (1990)	na	na		na	na		-0.003	0.001	***
Per capita income (1990)	na	na		na	na		0.033	0.002	***
Percent in poverty (1990)	na	na		na	na		-0.003	0.001	***
Percent over age 65	na	na		na	na		0.022	0.076	
Percent in farming	na	na		na	na		-0.046	0.028	*
Percent Hispanic	na	na		na	na		0.053	0.311	
Percent Black	na	na		na	na		-0.557	0.556	
Percent other non White	na	na		na	na		-0.326	0.058	***
Average commute to work	na	na		na	na		0.002	0.001	***
Share employed in manufacturing	na	na		na	na		0.159	0.060	***
Share employed in government	na	na		na	na		0.284	0.161	*
Share employed in services	na	na		na	na		-0.134	0.060	**
Intercept	9.797	0.005	***	9.776	0.038	***	9.618	0.082	***
R2	0.028			0.188			0.532		
N	2064			2064			2064		

*Note: * ** and *** denote statistical significance at p=0.1, p=0.05 and p=0.01 respectively*

	No controls			Spacial only			Full controls		
Panel B—Remote	**param**	**s.e.**		**param**	**s.e.**		**param**	**s.e.**	
Distance to high school	0.023	0.025		0.030	0.026		0.005	0.024	
Distance to K-8	-0.083	0.030	***	-0.050	0.030	*	0.012	0.028	
Share with BS	na	na		na	na		0.748	0.188	***
Share with no HS	na	na		na	na		-0.213	0.116	*
Population (1990)	na	na		na	na		-0.027	0.016	*
Per capita income (1990)	na	na		na	na		0.021	0.005	***
Percent in poverty (1990)	na	na		na	na		-0.004	0.001	***
Percent over age 65	na	na		na	na		0.072	0.142	
Percent in farming	na	na		na	na		-0.023	0.056	
Percent Hispanic	na	na		na	na		-0.684	0.759	
Percent Black	na	na		na	na		-0.924	3.159	
Percent other non White	na	na		na	na		-0.373	0.113	***
Average commute to work	na	na		na	na		-0.001	0.002	
Share employed in manufacturing	na	na		na	na		0.102	0.112	
Share employed in government	na	na		na	na		0.284	0.246	
Share employed in services	na	na		na	na		-0.002	0.100	
Intercept	9.721	0.011	***	9.713	0.136	***	9.565	0.148	***
R2		0.0106		0.1675			0.3859		
N	590			590			590		

Note: * ** and *** denote statistical significance at p=0.1, p=0.05 and p=0.01 respectively

Table IX: Impact of school distance on poverty.

	No controls			Spatial only			Full controls		
Panel A—All rural	**param**	**s.e.**		**param**	**s.e.**		**param**	**s.e.**	
Distance to high school	0.0181	0.0052	***	0.0033	0.0049		0.0049	0.0039	
Distance to K-8	-0.0006	0.0067		-0.0097	0.0062		0.0032	0.0049	
Share with BS	na	na		Na	na		-0.0135	0.0242	
Share with no HS	na	na		Na	na		0.0725	0.0183	***
Population (1990)	na	na		Na	na		0.0028	0.0002	***
Per capita income (1990)	na	na		Na	na		-0.0032	0.0007	***
Percent in poverty (1990)	na	na		Na	na		0.0019	0.0002	***
Percent over age 65	na	na		Na	na		0.0543	0.0220	**
Percent in farming	na	na		Na	na		-0.0040	0.0080	
Percent Hispanic	na	na		Na	na		0.0523	0.0902	
Percent Black	na	na		Na	na		0.1607	0.1617	
Percent other non White	na	na		Na	na		0.1892	0.0168	***
Average commute to work	na	na		na	na		-0.0006	0.0002	**
Share employed in manufacturing	na	na		na	na		-0.0616	0.0175	***
Share employed in government	na	na		na	na		-0.0851	0.0466	*
Share employed in services	na	na		na	na		-0.0418	0.0172	**
Intercept	0.0883	0.0014	***	0.0662	0.0245	**	0.0870	0.0222	
R^2	0.0087			0.2391			0.5722		
Sample size	2069			2069			2069		

*Note: * ** and *** denote statistical significance at p=0.1, p=0.05 and p=0.01 respectively*

	No controls			Spatial only			Full controls		
Panel B--Remote	**param**	**s.e.**		**param**	**s.e.**		**param**	**s.e.**	
Distance to high school	0.0070	0.0082		-0.0135	0.0083		-0.0022	0.0079	
Distance to K-8	0.0356	0.0100	***	0.0399	0.0098	***	0.0270	0.0093	***
Share with BS	na	na		na	na		-0.0115	0.0613	
Share with no HS	na	na		na	na		0.0795	0.0381	**
Population (1990)	na	na		na	na		0.0138	0.0051	***
Per capita income (1990)	na	na		na	na		-0.0033	0.0017	*
Percent in poverty (1990)	na	na		na	na		0.0015	0.0004	***
Percent over age 65	na	na		na	na		0.0256	0.0468	
Percent in farming	na	na		na	na		0.0236	0.0184	
Percent Hispanic	na	na		na	na		0.0970	0.2493	
Percent Black	na	na		na	na		-0.6739	1.0448	
Percent other non White	na	na		na	na		0.2240	0.0360	***
Average commute to work	na	na		na	na		0.0001	0.0005	
Share employed in manufacturing	na	na		na	na		-0.0783	0.0367	**
Share employed in government	na	na		na	na		-0.1336	0.0806	*
Share employed in services	na	na		na	na		-0.0559	0.0330	*
Intercept	0.0889	0.0035	***	0.0747	0.0441		0.0735	0.0472	
R^2	0.0403			0.2148			0.3937		
Sample size	590			590			590		

*Note: * ** and *** denote statistical significance at p=0.1, p=0.05 and p=0.01 respectively*

Endnotes

[1] Andrews, Duncombe and Yinger (2002) and Fox (1981) provide a comprehensive review of nearly 30 years worth of studies on the economies of size in K-12 education.
[2] We are classifying as K-8 all schools that do not offer a secondary degree and as 9-12 all those that offered secondary degrees.
[3] Two different geo-reference files were used to geo-code addresses of schools; one was obtained from the Bureau of Census and the other from ESRI. The results were not affected by choice of file. A small share of addresses (about 5%) were not matched with locations on the geo-referenced file and were matched manually using Google maps.

Recommendations resulting from the research:

All school districts — and all rural districts — are not alike. While similar circumstances are affecting many rural districts, including declining enrollment, average lower family incomes, changing demographics, and geographic remoteness, the extent and intensity of these factors vary greatly from district to district. Below are recommendations generated by the research in this report.

1. Be open to flexibility. State policies should allow for flexibility in how school districts meet certain educational and state standards. Although many school districts face similar challenges, their economic and demographic circumstances are diverse. For example, areas such as the Northeast and Southwest will likely decline in school population and see below-average employment growth, while Central Minnesota will likely experience growth in both the school population and employment. In addition, the characteristics of the students served and the communities in which they live vary greatly across the state. Given the extent and nature of these differences, the most effective ways to ensure that education standards are met are likely to vary across the state. Therefore, it is recommended that policy makers consciously consider the flexibility of policies as they are created and that school districts and communities be permitted some discretion in choosing the strategies they will use to meet specific state educational standards. Likewise, each district and its communities should look at any proposed strategies for change carefully, keeping in mind their own district's situation and the impacts of such a strategy.

2. Distance is key. Distance is an overriding reality for most rural school districts, eating up time and resources. This report highlights the need to reconfigure the funding categories of elementary and secondary sparsity and transportation sparsity. The reconfiguration should reflect changing fuel costs and the combined effects of lower enrollment and lower capacity of rural districts to raise additional local funds. Reconfiguration should also incorporate costs of transportation that include access to inter-district travel for enrichment, athletics, shared provision of curricular offerings for students, cooperative staff development, and collaborative planning.

3. Consider changes in standardized tests and procedures. According to focus group results, the most prevalent requests for assistance by rural schools were related to state tests and procedures. This report recommends that the Minnesota Department of Education (MDE) continue to pursue measurement of growth in student achievement within cohorts. This approach to reporting test results could be a fairer and more meaningful way to address current AYP requirements for student learning of the Minnesota State Standards. Other suggestions included providing results to districts to use formatively for those students taking the tests and considering the tests and procedures of North West Evaluation Association (NWEA), which were frequently referenced as an exemplary alternative approach to current testing.

4. Help the Minnesota Department of Education help rural districts. Many comments from school administrators expressed frustration with the Minnesota Department of Education, particularly in the areas of testing and staff development. A review of MDE policies and procedures would help determine whether they meet the needs of administrators and teachers, especially in rural districts. A focus on developing ways to give assistance online or over the phone would be particularly appreciated for the state's many remote districts.

5. Engage organizations besides the Minnesota Department of Education. Minnesota has a broad network of colleges and universities (which train teachers and administrators) and professional organizations (which support teachers and administrators) across the state. These organizations should be encouraged to collaborate more intensively both locally and statewide with schools and their staff, particularly in the area of training and staff development. Such collaboration has the potential to strengthen local communities through better schools and better morale and take some of the burden off MDE.

6. Use technology to its best advantage. Technology is invaluable to rural school districts, making it possible to access information and services without extensive, time-consuming travel, but it is not without cost, so it must be used to its best advantage. The research suggests two recommendations:

a. MDE, colleges and universities, and professional education organizations can offer online modules, learning units, or courses for initiatives defined in school planning. Establishment of online professional learning communities with focus on issues of data analysis for decision-making, student achievement, and special education would provide rural educators opportunities to share and apply best practices. Online professional learning communities would also reduce isolation and could improve student achievement.

b. MDE, colleges and universities can also identify the needs of isolated rural learners and offer online courses in general subject areas or for enrichment (college in the schools, advanced placement, advanced-level courses in math, science, and the arts) using regional, place-based curricula.

7. Maintain staff development funds. Professional staff development was cited as a significant need in rural districts. Rural administrators stated there was a lack of sufficient incentive to dedicate the current required 2% set-aside without exercising waiver options. This report recommends that this legislative session maintain the current 2% General Fund requirement for staff development and increase incentives for rural schools not to exercise the current waiver options.

8. Help districts identify promising strategies and funding sources. Although there is a limited amount of formal, high-quality research focusing on rural education, there is a wealth of information from local educators, community members, and other professionals across the state. A valuable project would be to collect, catalog, and disseminate these strategies according to effectiveness

and cost. Additionally, evaluations of the effectiveness of grants and other major initiatives could provide useful information about specific strategies as well as documentation for districts seeking continued funding for successful practices. Consideration of the establishment of such a web-based resource center could benefit districts, higher education institutions, and state-level decision makers.

9. Develop collaboration instead of consolidation. Develop a state policy to help foster collaboration with and between school districts. While consolidation has been a common strategy in rural education, the literature review and new research on cost-effective policies in this report strongly caution against this strategy. It has shown limited benefits and may have negative effects. Collaboration, however, between school districts or with colleges, communities, and professional organizations shows a greater potential for success and is widely used among school districts to help with many issues, including technology and technical support. Effective collaboration, however, has some requirements. Leadership training, which is key, could come from professional organizations, universities, other districts, and experienced individuals. Effective collaboration also requires time commitment and continuing support that goes beyond the grants usually used to start them. Shifting thinking to long-term planning — what to do when the grant expires — would help the stability and sustainability of collaboratives.

10. Collaborate based on issues, not just geography. The research found that district collaborations were most effective when partnerships were based on similarities in size and situation in addition to geographic location. Less concrete forms of collaboration such as issue solutions could be discussed and formulated based on common challenges across the state if collaborative partnerships were improved. This report recommends that state agencies, professional organizations, and colleges and universities create a mechanism, perhaps electronically, that makes it possible to explore common challenges in schools or districts and form coalitions and collaborative efforts based on these challenges.