THE **SEA** OF THE FUTURE

Uncovering the Productivity Promise of Rural Education

Editors:
Betheny Gross
Ashley Jochim

Contributing Authors:
Tessie Rose Bailey
Paul T. Hill
Marguerite Roza
Rebecca Zumeta
Rural Education and Technology Consensus Panel

Building State
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About the Authors

Tessie Rose Bailey | Tessie Rose Bailey PhD, is an Assistant Professor of Special Education at Montana State University Billings (MSUB). She received her PhD in Special Education from the University of Utah. Prior to her current position, she was a Senior Research Analyst for American Institute for Research (AIR) in Washington, D.C. In this role, she served as Co-coordinator of Technical Assistance for the National Center on Response to Intervention (NCRTI) and collaborated on the development of numerous national and state technical assistance resources. In addition to classroom special education teaching experience, she has coordinated grants and contracts in various areas, including facilitating statewide RTI implementation, evaluating the efficacy of multi-tiered systems of supports (MTSS), developing model demonstration sites in progress monitoring, evaluating RTI implementation in rural schools, and developing statewide systems of support.

Betheny Gross | Betheny Gross, PhD, is a Senior Research Analyst and Research Director at the Center on Reinventing Public Education (CRPE). She coordinates CRPE's quantitative research initiatives, including analysis of portfolio districts, public school choice, and common enrollment systems. Dr. Gross has examined evidence and outcomes of district reform across the country and has advised and consulted with district leaders to formulate strategy and implementation. She is coauthor of Strife and Progress: Portfolio Strategies for Managing Urban Schools (Brookings 2013) and the author of numerous research reports and articles. Her work has been published in several journals, including Educational Evaluation and Policy Analysis, American Education Research Journal, Journal of Education Finance, and Journal of Policy Analysis and Management.

Paul T. Hill | Paul Hill, PhD, is a research professor at the University of Washington Bothell and the founder and former director of CRPE. His book, Reinventing Public Education (Chicago University Press, 1997), proposed that school districts contract with independent parties for schools, rather than operate schools directly. This book has led to profound changes in public education in many big cities. His most recent book, with coauthor Ashley Jochim, is A Democratic Constitution for Public Education (University of Chicago Press, 2014). Other books by Dr. Hill include Strife and Progress: Portfolio Strategies for Managing Urban Schools (Brookings, 2012), and Learning as We Go: Why School Choice is Worth the Wait (Hoover Institution Press, 2010). Hill is a Senior Fellow at the Hoover Institution. He chaired Brookings' National Working Commission on Choice in K–12 Education, which issued its report, School Choice: Doing It the Right Way Makes a Difference, in November 2003.

Ashley Jochim | Ashley Jochim, PhD, is a Research Analyst at CRPE. Her research focuses on policy analysis and implementation, including work on state education agencies, Common Core standards, and district reform efforts. She is a coauthor (with CRPE founder Paul Hill) of a recent book, A Democratic Constitution for Public Education (University of Chicago Press, 2014), that suggests who governs public education is much less important than what powers they have. Her research can be found in the Policy

Studies Journal, Publius, Politics and Governance, and Political Research Quarterly, as well as numerous edited volumes, including the Handbook of School Choice and the Oxford Handbook of American Bureaucracy. In 2012, she was selected as one of a dozen emerging education policy scholars interested in narrowing the gap between research and policy.

Marguerite Roza | Marguerite Roza, PhD, is a Research Associate Professor and the Director of the Edunomics Lab at Georgetown University and Senior Research Affiliate at CRPE. Dr. Roza's research focuses on quantitative policy analysis, particularly in the area of education finance. Recent research traces the effects of fiscal policies at the federal, state, and district levels for their implications on resources at school and classroom levels. Her calculations of dollar implications and cost equivalent trade-offs have prompted changes in education finance policy at all levels in the education system. She led the Finance and Productivity Initiative at CRPE and served as Senior Economic Advisor to the Bill & Melinda Gates Foundation. Her work has been published by the Brookings Institution, Education Sector, Public Budgeting and Finance, Education Next, and the Peabody Journal of Education. Dr. Roza is the author of the highly regarded education finance book, Educational Economics: Where Do School Funds Go?

Rebecca Zumeta | Rebecca Zumeta PhD, is a principal researcher at the American Institutes for Research (AIR) where she serves as the Project Director for an Investing in Innovation and Improvement (i3) Development Grant, and as Deputy Director of the National Center on Intensive Intervention. She also oversees services of the Response to Intervention Center at AIR and coordinates the Knowledge Utilization service area of the National Center on Systemic Improvement. Prior to AIR, Dr. Zumeta worked for the Washington State Department of Special Education providing technical assistance to support RTI and alternate assessment implementation. Prior to working as a researcher, she taught special education in public and private lab schools in the Seattle area.

Introduction:
Uncovering the Productivity Promise of Rural Education

Betheny Gross
Ashley Jochim
Center on Reinventing Public Education

May 2015

The first three volumes of the SEA of the Future provided new mindsets and strategies for advancing productivity in state education agencies. In this volume, we show why rural schools and districts are uniquely poised to contribute to these efforts. Like their urban counterparts, rural schools and districts are being asked to stretch their dollars further but they are more likely to face limited economies of scale, difficult teacher labor markets, and inadequate access to time and money-saving technologies. And, while rural schools and districts educate millions of American students, they do so with less support and attention than their urban and suburban counterparts.

These challenges obscure the productivity promise of rural education: as this volume details, rural schools and districts are innovative in how they deliver services and reimagining how they recruit teachers, use technology, and serve special populations.

The key question for states is how to better capitalize on and support these vanguard efforts. This volume provides one set of answers and aims to spark discussion among state leaders about the challenges and opportunities of rural education.

Paul Hill, with the Center on Reinventing Public Education, kicks off the volume by detailing why state education agencies should focus on rural schools and districts. His discussion reveals the unique challenges faced by rural school districts and provides suggestions for how states can tailor their offerings to better support the needs of rural educators.

In the second essay, Marguerite Roza, director of the Edunomics Lab at Georgetown University, challenges the assumption that rural districts are necessarily less productive than their urban or suburban peers. Through an analysis of rural district return-on-investment, she finds that rural districts are more likely to "beat the odds," delivering better than expected results without the higher per-pupil price tag.

The next essay reports on the results of a national consensus panel on Rural Education and Technology, which brought together a diverse panel of experts to consider the potential for technology to address common challenges in rural districts and schools and how states can support rural districts to pursue these technology solutions. The panel identifies four ways that technology can be brought to bear on some of the most pressing problems facing rural school systems, including lack of access to specialized content, administrative inefficiencies, and limited professional support for rural educators. But to leverage technology, states must ensure that rural schools are connected to the Internet and are able to redesign how they deliver services to students and educators.

In the last essay, Tessie Rose Bailey, assistant professor, Special Education at Montana State University Billings, and Rebecca Zumeta, senior researcher, Education Program at the American Institutes for Research, discuss the acute challenges rural districts face in meeting the unique needs of special student

populations. They suggest that states can help rural districts and schools meet their obligations by providing greater flexibility around staffing and certification, and reducing the regulatory burden faced by the rural central office.

Together, these essays suggest that state education agencies have an instrumental role to play in supporting the work of rural education. States seeking to turn the ideas in this volume into practice should consider several tools developed by the Center on Innovations in Learning, including a collection of digital resources for educators and a rubric for evaluating state's virtual learning strategies. SEAs seeking more comprehensive support can request a direct consultation from BSCP Center partners, who will work in close partnership with the regional content centers to provide focused and context-specific services.

States Could Do More for Rural Education

Paul T. Hill

Center on Reinventing Public Education

May 2015

In recent years, worries about America's public education system have focused on the country's large urban population of low-income, black, and Hispanic children who enter first grade at a disadvantage and fall farther behind the longer they are in school. States, foundations, and the federal government are pouring billions of dollars into various efforts to improve education in big cities. Current controversies about charter schools, mayoral and state takeovers, union influence, and closing and replacing low-performing schools have focused in big cities and on the disadvantaged children they serve.

All of this makes sense. But from the perspective of our national health and sustaining an opportunity society, Americans are missing a bet. Children in rural areas can be as isolated as urban minority children from the mainstream economy and from the higher education that is the gateway to the best jobs. And there are vast numbers of them. Even after the dramatic rural to urban migration in the mid-twentieth century, more children (5.6 million) attend schools in remote rural and small town areas than in the 20 largest urban school districts.

Defining Rural

The U.S. Census Bureau defines a rural area via negatives: it is neither a city with a population of 50,000 or more, nor a cluster of towns and cities with a minimum of 2,500 people each and a maximum of 50,000 people each.[1] The National Center for Education Statistics (NCES) starts with the Census definition and then defines three kinds of rural areas:

1. Fringe: less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster.
2. Distant: more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster.
3. Remote: more than 25 miles from an urbanized area and also more than 10 miles from an urban cluster.[2]

These definitions are necessary, especially for analysts using hard data to track economic and population changes. But rurality is more than simply an attribute of place. It is an attribute of people who do certain kinds of work (e.g., farming) or have certain relationships to land and community. It is also a set of attitudes about tradition, close-knit community, a relaxed pace, and a preference for recreation in wild and unpopulated areas. These ways of being rural are not perfectly associated with the hard, data-based distinctions used by the Census, the Office of Management and Budget, or NCES. People can be "rural" in attitude and modes of employment even if they live in technically urban places (e.g., metropolitan counties) that contain undeveloped areas and small towns.

This chapter makes the case for why rural education should become a priority for state governments. Rural school systems and their students deserve attention, and states are uniquely positioned to support their improvement.

WHY FOCUS ON RURAL SCHOOLS AND DISTRICTS?

There are three reasons state education agencies (SEAs) must shift their attention toward rural schools and districts. First, schools in rural areas educate millions of students.[3] One student in ten is educated in a remote or fringe district. In half of the states, rural students make up more than one-quarter of the total student population. In six states (Mississippi, Vermont, Maine, North Carolina, South Dakota, and South Carolina), more than 40 percent of the students are rural. There are only eight states in which rural children make up less than 10 percent of the student population (Maryland, New Jersey, Utah, Rhode Island, Nevada, California, Massachusetts, and Hawaii). Moreover, rural student populations in many states include high proportions of minority and poor students whose education has long been a primary focus of federal policy and major philanthropies. In 18 states, more than 25 percent of rural students are black or Hispanic; in 24 states, more than 40 percent of rural students are poor.

Second, the talents of the most capable rural young people are less likely to be fully developed compared to their urban and suburban peers. Despite the fact that rural students, on average, perform better in high school and graduate at a higher rate than students in big cities (79.9 percent vs. 64.1 percent), they are less likely to attend college (33.4 percent vs. 48.1 percent) and far less likely to enroll in graduate and professional programs (3.2 percent vs. 7.6 percent) after college.[4] At a time when the U.S. economy is suffering from a shortage of highly skilled individuals (and from high unemployment among low-skilled workers), rural young people's lack of access to or participation in higher education is a serious matter.

Caroline Hoxby and Christopher Avery have written about the existence of untapped sources of talent in the United States, especially among young people from low-income families and areas remote from major cities.[5] They critique elite colleges and universities that compete with one another for a tapped-out population of extremely capable students in metro areas and overlook the large pool of capable students elsewhere. They conclude that "the number of low-income, high-achieving students is much greater than college admissions staff generally believe." These

students "come from districts too small to support selective public high schools, are not in a critical mass of fellow high achievers, and are not likely to encounter a teacher or schoolmate from an older cohort who attended a selective college." If the pool of prospective students is to be expanded, it must be found in places, including rural areas, which previously have not been mined for extremely capable students.

Talented young people in rural areas are not the only ones being wasted. Young people in rural areas are much more likely to be idle—meaning not engaged in education or training, not working, and not earning regular income—across the board. This problem is especially acute for rural black and Native American youth, particularly in the West or Southeast. Nearly half of rural high-school dropouts from low-income families (48.5 percent) are idle.[6]

Third, rural schools and districts need the kinds of help that state governments can provide but often don't. Rural schools and districts need policy flexibility to tailor laws and regulations—made with big-city schools in mind—to the needs of educators working in small, often isolated localities. Rural schools and districts also need investment funds to adapt to sudden changes in enrollment, learn how to educate newcomers (e.g., newly settled Hispanic migrants in the West), and exploit technology (see the rural education and technology essay in this volume). The most isolated districts also need better access to teacher training and leadership advice via state-supported support networks and online resources.

RURAL LEADERS NEED HELP

Rural school districts must educate children in every grade, help children who fall behind and motivate the gifted, and provide special education services, transportation, and extracurricular activities. In this, they are like big urban districts. But unlike their urban counterparts, rural districts have access to only a small slice of the teacher labor pool available elsewhere in the state and have particular difficulty attracting and keeping the ablest teachers.

By virtue of their small size, rural districts put tremendous strain on superintendents. It is not uncommon for superintendents to play a large number of roles, from driving buses, teaching, and serving as the chief compliance officer and paperwork wrangler for all federal and state programs. As one superintendent put it, "I'm it! I don't have any support staff like the guys running the large districts. They can delegate the work to staff. But I have to turn in the same reports as they do. It takes a lot of time."

Leaders of rural districts are paid much less than their big-city counterparts, but have to wear many more hats, personally manage issues that would elsewhere be left to human resource specialists, and act as political figures and civic coalition builders.[7] Many are particularly challenged by shrinking economic bases, expensive transportation services, dilapidated or antiquated facilities, and local resistance to taxation.

In isolated rural places, schools serve as the locus for community activities. As mainline churches have consolidated parishes and pulled clergy back into larger towns and cities, school auditoriums, often the largest and best space in town, host such special events as town meetings, memorial services, even retirement parties. And yet, in some rural districts these facilities have aged and deteriorated, becoming millstones around the district's fiscal neck. They can sap resources and open up difficult issues about whether to close a facility that has served an important community purpose. Facilities problems can also make it difficult for a community to find a good superintendent. As one said, "Think about that. With an attitude like that in a community [where people won't pass a building levy], how do you get a good superintendent to go there?"

It's no wonder that many of the best rural leaders will, given the opportunity, leave for better-paid and supported superintendencies in larger jurisdictions. This is a common theme among small-district leaders. In political terms, they need help in reducing this burden, a key factor in superintendent burnout.[8] Declared one weary superintendent: "The state education department needs to become much more user-friendly."

UNIQUE LEADERSHIP DEMANDS

Much has been written about the challenges of leadership in larger, urban school systems. Urban leaders must deal with extremely complex communities that have large numbers of mobilized interest groups including parents, teachers, and businesses. Superintendents are political figures, but are seldom as potent or experienced—or as responsible for the whole community—as big city mayors, councilmen, and members of the state legislature. They must master large bureaucracies and answer to school boards that include politically ambitious individuals who aspire to higher office. They are also likely to be actively covered by newspapers and TV.

The challenges facing rural leaders are different.[9] District leaders can be the most prominent public figures in their towns. They can't be

anonymous or leave thinking about population declines or the local economy to others. Though rural districts lack complex interest group environments or big bureaucracies, some groups (e.g., the American Farm Bureau Federation) can be well organized and demanding. Rural district leaders can also come under the influence of a few individuals who think of themselves as owners of the community.

To be successful, the superintendent of a small rural school district must possess high-end political skills. They must earn the respect of staff and citizenry, identify which issues and initiatives to address and those whose time has not yet come, build coalitions in support of necessary actions, co-opt or neutralize opponents, and micro-manage day-to-day activities while at the same time contemplating and attending to matters at the macro level of long-term strategic importance. What's more, the superintendent must do these things with scant resources—often with little or no staff support and no ability to hire consultants or give money to supportive community groups. All this must be done in a fishbowl environment in which virtually every action or inaction, whether in professional or personal life, is on display.

THE BURDENS OF ISOLATION

Superintendents in rural areas are often on their own. There may be no universities or major corporations in their territories from which to draw specialized help. There may be few civic organizations to provide volunteer enrichment programs. Rural superintendents do not have access to local foundations for special resources. Most urban superintendents can turn to at least some outside institutions for support and rely on well-staffed central offices to apply for competitive grants. These things are frequently not possible in remote districts in the majority of America's rural communities.

Geographic remoteness cannot be entirely overcome by the Internet, Skype, or videoconferencing. District leaders, in part because they are so loaded up with work, acknowledge very little contact with colleagues in other localities and with the state. Those near metropolitan areas have more opportunities for collaboration, but in more remote areas this is extremely difficult. Further, unlike urban superintendents who are expected to take part in regional and national events, rural leaders are expected to stay at home. Those who do travel can be charged with extravagance and indulging in "boondoggles."

Isolated communities are also small. Aside from farms, isolated communities may have only three to five businesses and only one, or no, church. This does not allow for a large pool of people with business or

nonprofit experience to serve on the school board or to provide advice and support to the superintendent.

Isolated rural educators simply do not have the same opportunities to develop the professional connections and contacts that translate into influence with the state department of education or the legislature. One superintendent said the fact that he had worked in state government before becoming head of a small, rural school district meant he knew at least some people in the state capitol. He understood the workings of state government and could, when needed, pick up the phone and talk with someone he knew. He added that others without his unique background likely could not do the same.

Support for rural districts varies tremendously from state to state. In some states, like Idaho, no regional service centers exist to provide managerial help, services to special needs students, and in-service training for teachers. The neighboring state of Washington has addressed this problem through its regional Education Service Districts (ESD). These entities provide technical assistance ranging from compliance matters involving state and federal law, counseling in matters of finance and new initiatives, and help locating specialist consultants.

Some superintendents in isolated but not extremely remote districts have formed alliances with their peers in other small districts. These arrangements provide collegial support and, in some cases, shared resources: in one instance, four isolated districts shared the only qualified chemistry teacher in their rural county. However, face-to-face meetings require a great deal of driving and coordination, and consume a great deal of time.

Isolation isn't just physical: it is also political and psychological. Unlike urban districts whose performance and fiscal soundness can draw the attention of the governor and key legislators, small rural districts can be orphans. A superintendent in a remote place with few inhabitants may have no particular allies in the state capitol. Even their state representatives know that votes are few in the remotest areas, and their time and travel costs are high.

WHAT STATES CAN DO

As states engage more closely with rural districts, they will inevitably learn more about them and generate new ideas about how to help. This chapter (and those that follow) can only prime the pump, anticipating better ideas to develop as smart people engage real problems. But for starters, states should consider the following ideas.

Flexibility in funding statutes and categorical programs. Rural districts, which often have only one professional employee in the central office, have great difficulty managing multiple categorical programs, ensuring compliance with each one, and filling out all the application and progress reporting paperwork. SEAs need to work with their own legislatures and the federal government to consolidate programs and paperwork. States also need to identify aspects of federal and state regulation that are counterproductive in rural contexts and ask for changes or waivers. For example, rural districts, which must employ individual teachers in many different roles, struggle with the "fully qualified teacher" provisions of No Child Left Behind, which discourages use of such generalists. Other elements of NCLB, such as the requirement that children in a failing school have the right to transfer to another school, are dead letters in many isolated rural areas because no such schools exist. Rural districts need pressure to find new solutions to the problems of disadvantaged children, but impossible mandates don't help.

Incentives to share resources, including staff, facilities, and courses. Districts need the financial flexibility to barter or pay one another for staff and facilities, use community facilities rather than dedicated school buildings, admit and issue credits to one another's students, and share good professional development experiences. They should also be free to pay more than full time for teachers taking on unusual responsibilities (e.g., working in two districts some distance apart). Flexibility of this sort is particularly important in geographic areas where there might be only one qualified science or math teacher. Rural districts should also be free to waive licensing and salary scales in order to hire individuals with unconventional education—for example, a license in engineering but no mathematics certification—when certified teachers have much less substantive knowledge.

Unconventional training and career development opportunities. States could provide incentive funding in return for commitments from superintendents and teachers to stay on the job in their district for an extended period of time: enriched professional development and perhaps even year-long, fully paid sabbaticals for superintendents and teachers in hard-to-fill subject disciplines. Superintendents in neighboring districts might job share to allow each other to take extended sabbaticals.

Getting the voices of rural leaders heard in the state capitol. Some rural districts are too small and isolated even to attract candidates for the legislature. The commercial and anti-tax interests in a remote community may be far better represented than education. That, coupled with citizens' reluctance to pay for travel, can exacerbate rural educators' sense of professional isolation and lack of power. An SEA can pay (via

its own funds or philanthropic donations) for rural district leaders to travel to the state capitol, build a joint policy agenda, and meet with their legislators. This can establish channels of communication that rural educators need and help alert policymakers to problems caused by urban-oriented regulations. It can also encourage legislators to more aggressively represent their smallest constituencies.

These possibilities only scratch the surface. State officials can rightly say that district leaders have more flexibility than they know; for example, to adjust staffing patterns or to purchase online services with funds earmarked for salaries or professional development. But working in isolation, many rural leaders struggle to distinguish among hard legal requirements, changeable procedures, and real or imaginary constraints. Rural leaders need people in the state agency to talk with, and to help them find ways of doing what their children and communities need. A distant or legalistic relationship might work for big urban districts, with their own dedicated lobbyists, lawyers, and elected officials. But rural leaders need the kind of leadership that they themselves provide: personal, case-specific, and focused on solutions, not rules.

Finally, it must be said that state legislators should increase their presence and familiarity with the trials, tribulations, and potential of the state's small, rural school districts. Their infrequent visits—not to mention the absence of these elected leaders—is a deficit that demands correcting. Rural educators, including board members, in remote communities may not be miracle-workers, but they sometimes come close. With some fresh, concentrated attention, many of the problems confronting these communities could be overcome, or at least ameliorated.

ENDNOTES

1. "Urban and Rural Classification," U.S. Census Bureau, 2010, www.census. gov/geo/reference/urban-rural.html.

2. "Rural Education in America," National Center for Education Statistics, Institute for Education Sciences, U.S. Department of Education, 2006, www. nces.ed.gov/surveys/ruraled/definitions.asp.

3. Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics*, 2012 (Washington, DC: National Center for Education Statistics, 2012).

4. Four-year graduation rates: large cities 64.1%, rural 79-9%, suburban 80.7; total enrollment in colleges and universities: large cities 48.1%, rural 33.4%, suburban 43.0%; enrollment in graduate and professional programs: urban 7.6%, rural 3.2%, suburban 5.9% (with rates for males alone 6.8%, 2.2%, and 5.0%, respectively). See Susan Aud et al., *The Condition of Education*, 2013 (Washington, DC: National Center for Education Statistics, 2013).

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6. Anastasia Snyder and Diane McLaughlin, *Rural Youth Are More Likely to Be Idle*, Paper 36 (Durham, NH: The Carsey School of Public Policy at the Scholars' Repository, 2008).

7. Educational Research Service, National Survey of Salaries and Wages in Public Schools, 2005-06.

8. On issues of turnover and superintendent pipeline development, see Stephen L. Jacobson, "Effective Superintendents of Small, Rural Districts," *Journal of Rural and Small Schools 2*, no. 2 (1988): 17-21; Mary Jean Ronan Herzog and Robert Pittman, "The Nature of Rural Schools: Trends, Perceptions and Values," in *Leadership for Rural Schools: Lessons for All*, ed. Donald M. Chalker (Lancaster, PA: Technomic Publishing Co., 1999); Geoffrey J. Tagg, "The Trials and Tribulations of a Rural Superintendent." Paper presented at the annual convention of the American Association of School Administrators, New Orleans, 1982.

9. See Tod Allen Farmer, "Unique Rural District Politics," *The Rural Educator* 30, no. 2 (2009): 29-33; see also Kathleen Budge, "Rural Leaders, Rural Places: Problem, Privilege, and Possibility," *Journal of Research in Rural Education* 21, no. 13 (Dec 2006): 1-10.

Promoting Productivity:
Lessons from Rural Schools

By Marguerite Roza
Edunomics Lab

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A longstanding narrative persists when it comes to public education in rural school districts, a narrative that usually includes descriptors such as *expensive, lacking teaching talent*, and *poorly performing*. As traditional thinking goes, a rural school needs the same mix of staff as an urban school (a principal, counselor, chemistry teacher, and so on) but may have trouble luring good staff to rural communities.[1] And then, when dividing the salaries of these positions by the lower student counts, the lack of scale creates a higher cost per pupil in rural areas.[2] The result is a deficit mindset that permeates state education finance systems and may actually serve to reinforce the narrative of struggling rural schools.

An Edunomics Lab at Georgetown University analysis suggests that previous thinking on what rural districts need may be flawed.[3] It is true that *on average*, rural remote districts live up to their reputation of providing lower returns on the education dollar. In fact, remote rural districts exhibit the lowest average return on investment (ROI) among different geographic types, meaning that even with their higher costs, the student outcomes are lower than the state's norm adjusted for the mix of student needs.

But those results don't tell the whole story. Parsing evidence on a state-by-state basis shows that another narrative may also be at play. Careful analysis of the full range of data reveals that some remote rural districts are actually outliers in that they are beating the odds by producing higher than expected results—and doing so without a higher per-pupil price tag. In other words, examining the relationship between spending and outcomes across all districts reveals that rural districts are occasionally the most productive, even when compared to their more urban peers. Studying these most productive districts—outliers because they get high outcomes for students at average spending levels or lower—reveals that being rural can actually be an advantage. State education agencies and leaders willing to examine rural education funding and ROI can extract opportunities to improve productivity across their state.

THE "COST" OF A RURAL DISTRICT IS DETERMINED BY THE STATE FUNDING FORMULA

Many state leaders point to economies of scale to explain the higher cost of small and rural districts. Conventional wisdom says lower population districts have a set of unavoidable "fixed costs" that drive up per-pupil spending when divided among smaller enrollments.[4] These fixed costs might include the superintendent, payroll clerk, librarian,

nurse, counselor, physical education teacher, and other fixtures of public education. Add in costs for busing kids long distances to school and other transportation needs, and it makes sense that the per-student costs are higher in rural areas.

As a result, many states have structured their state education finance systems so that rural districts receive more funds per pupil than do their more populated or urban counterparts. According to a 2010 *Education Week* report, 29 states have an explicit "weight" in their state allocation formula to account for district size. Others fund staff, services, or programs to serve an entire district; therefore urban, more populated districts operate at a lower per-pupil cost and rural, lower-populated districts appear to cost more. Still others factor in population density, so low-density population rural districts receive even more funds.[5]
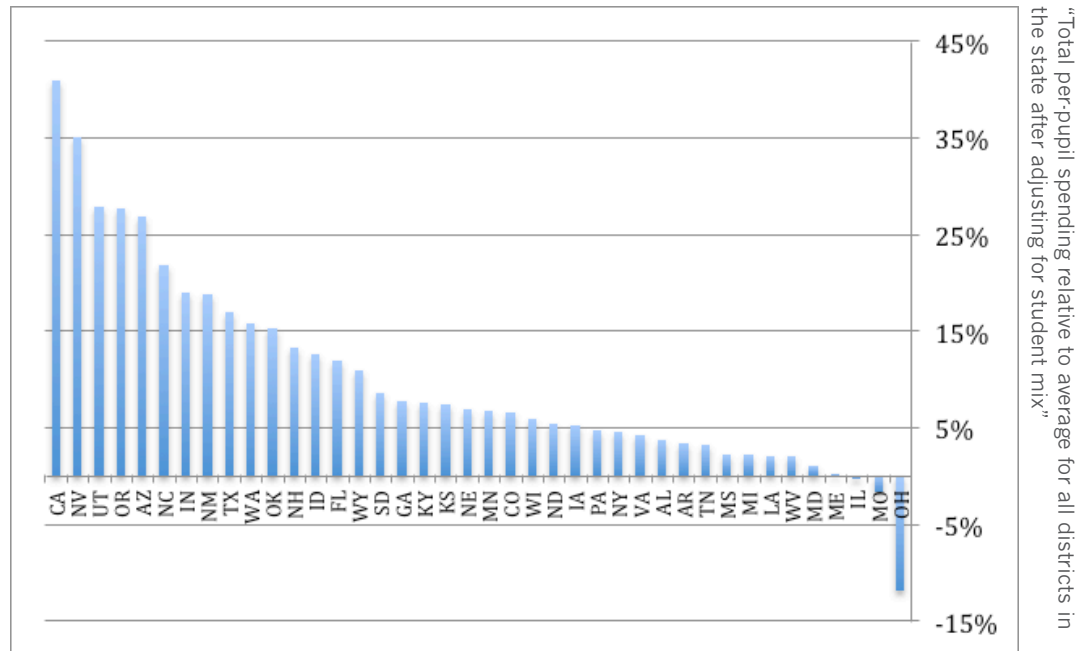
These higher spending levels are the product of state policy that assumes the need for a specific complement of staff in order to provide a specific set of services in a specific way. But the assumptions are just that—assumptions—and are not the only way to staff schools and serve students. For all districts, the "cost" of services is equal to the total funds provided. Therefore, when districts receive more revenues, the costs are higher. When they receive fewer funds, the costs are lower. Rural districts "cost" more when the state and local revenue structure allocates them more money. The question for state leaders is whether rural districts have any other options for delivery. As the data below indicate, options exist.

NOT ALL SMALL OR RURAL DISTRICTS "COST" MORE

Figure 1 focuses on a specific class of rural districts categorized by the National Center for Education Statistics (NCES) as "rural remote," meaning the district is in a "census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster."[6] For this analysis, per-pupil revenues were adjusted for the mix of students served.

Most states have school finance systems in place that allocate higher per-pupil amounts to rural remote districts than the state average. In fact, 25 states allocate an extra 5 percent or more to remote rural districts than the state average.

Figure 1. Remote Rural Districts Receive Higher Allocations in Nearly All States

"Total per-pupil spending relative to average for all districts in the state after adjusting for student mix"

While the data do show that many states fund small and rural districts at higher than average rates, the scope of that subsidy varies substantially. Looking closer at state school finance systems, the total subsidy is often the result of a random aggregation of disparate funding policies, not a clear, strategic, or transparent finance strategy. District revenues are mostly a product of both state and local monies with both funding streams determined by myriad factors.[7] A district's state allocation may include some level of base (or foundation) funds, plus earmarked dollars for specific services or purchased inputs, plus a series of adjustments which may include hold-harmless amounts or grandfathering clauses. That said, in 14 states, rural districts receive within 5 percent of the state's average (adjusted for the mix of students served) and a few operate with the same or lower level of per-pupil revenues as their larger, more urban peers. This finding suggests that not all rural districts cost more. And in fact, in these 14 states, costs are comparable.

RURAL DISTRICTS ON AVERAGE HAVE LOW ROI

Our analysis draws on a large-scale study by Ulrich Boser of the Center for American Progress (CAP) designed to measure the academic achievement a school district produces relative to its total spending (controlling for district demographics and cost of living factors.) The CAP dataset pairs 2008 data on current expenditures (excluding capital spending) with achievement data from the same year. The academic achievement data measures the percentage of students scoring proficient or above on state assessments in reading and math in the 4th, 8th, and 10th grades.

Figure 2 shows the results, with each dot representing a different state. Student outcomes in remote rural districts don't appear higher (adjusted for the mix of students) in states where those districts receive disproportionately more funds than their peers in the same state. In other words, where remote rural districts do receive more money than their peer districts, academic outcomes aren't any better on a relative basis. That said, it is important not to draw too many conclusions, as the data analysis leaves out many relevant variables. For instance, size, context, and geography of remote rural districts differ by state, as do those of their peers. And in states that regulate how services should be delivered in each district, the higher spending in districts might be better correlated with those state regulations than with student outcomes. But on the whole, overfunding remote rural districts doesn't seem to pay off in better student outcomes.

Figure 2. Poor Relationship Between Relative Spending and Relative Outcomes for Rural Remote Districts
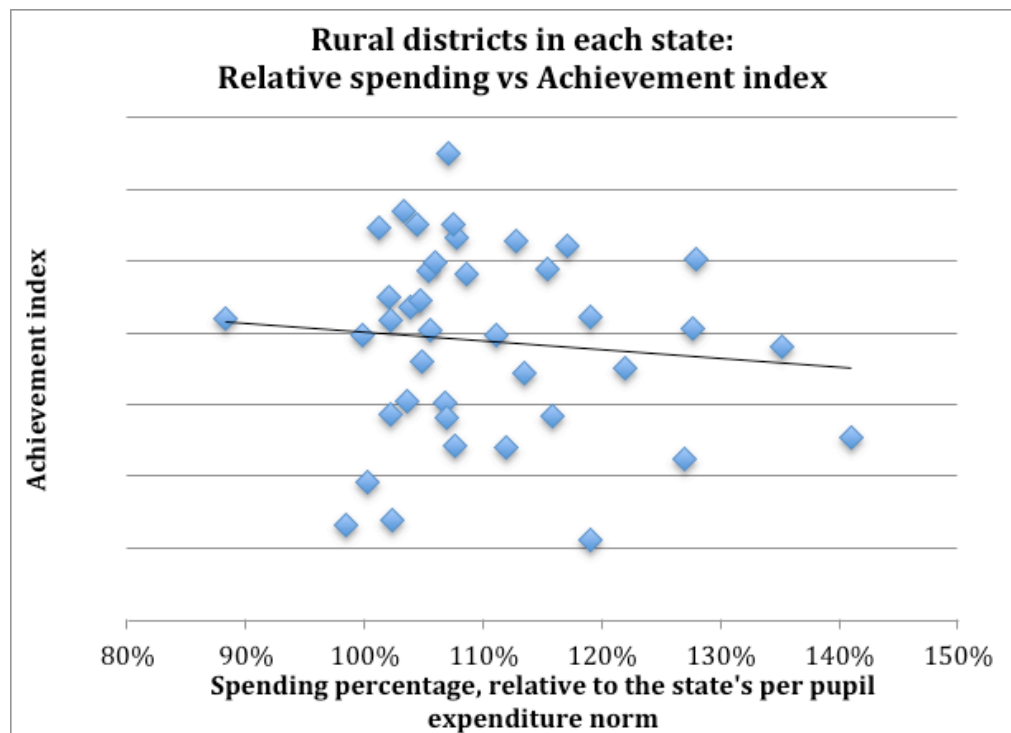
SURPRISINGLY, REMOTE RURAL DISTRICTS ARE HEAVILY REPRESENTED AMONG THE HIGH RETURN ON INVESTMENT OUTLIERS

In order to explore the return on investment for rural districts relative to non-rural districts, we use CAP's "Production ROI index" for each district. To compute the index, the CAP analysis uses a regression equation to predict what achievement a district should have relative to other districts in the state given its mix of student needs and its spending level.[8] Districts with the highest ROI scores are those where achievement beats expectations given current spending and demographics. With this index, districts with high-poverty students aren't clustered at the bottom of the achievement spectrum, as the achievement index adjusts for the mix of students in each district relative to the state norm.[9] In this way, a moderately spending district with many poor students can rank high if its achievement levels exceed those typical of low-income students in the state.

The CAP analysis computes an ROI measure for each district, with the best overall scores given to those with the highest achievement (relative to their student mix) but with spending levels at or below the state norm. Consistent with common assumptions about remote rural districts, the data suggest that they have the lowest average ROI among any sector.[10]

Despite remote rural districts' overall low ROI, deeper analysis of the spending and outcomes data offers some promise for this sector. Specifically, while the average rural remote district produces a poor return on the dollar, outliers persist. In fact, examining distribution of the "super-high ROI" districts across all sectors provides a useful measure of what's possible. Super-high ROI districts boast the highest outcomes relative to the predicted outcomes based on spending and demographics within a given state.[11] Put simply, these super-high ROI districts are beating the odds.

It turns out that remote rural districts have the highest odds of being a super-high ROI district among all district types. As Figure 3 shows, distribution of super-high ROI districts varies across district types, but one in five remote rural districts is a high-performing outlier.

Figure 3. One in Five Remote Rural Districts Is a High ROI Outlier

Odds of a district being a high ROI outlier
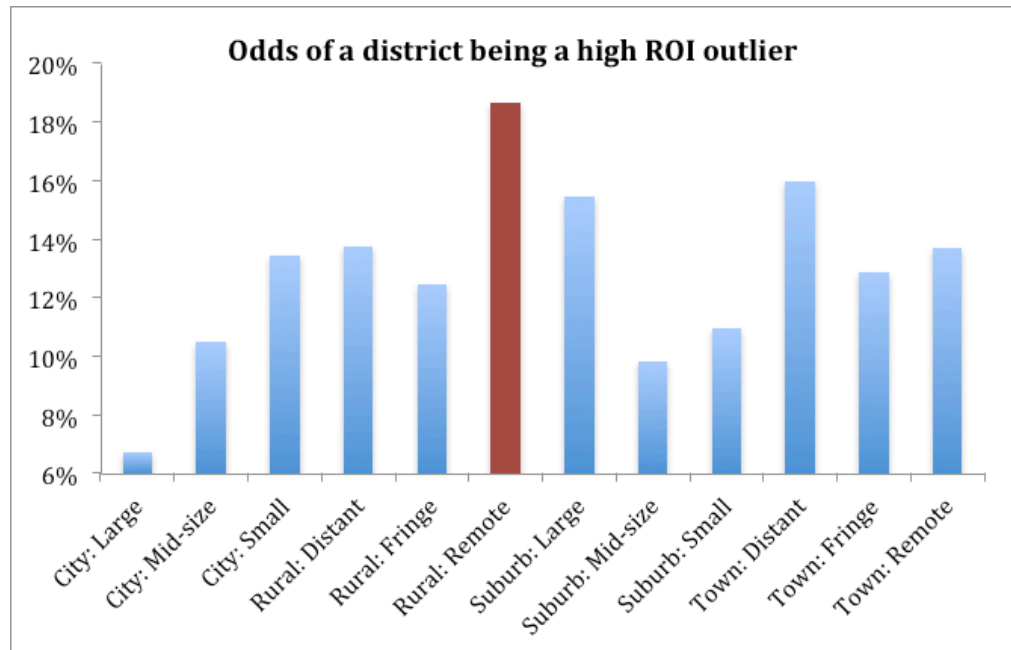
BEYOND THE DEFICIT MINDSET

Why might so many remote rural districts pop up as productivity exemplars when the average remote rural district produces such lackluster outcomes? While the dataset alone doesn't provide us answers, building on these exemplars might mean capitalizing on the strengths that we know isolated rural communities have.

We might consider how isolation and smallness could foster conditions that increase the chances of education innovation, seeing these rural factors as opportunities instead of only deficits. Where districts don't have the need or capacity to implement large operational systems, perhaps they are better able to capitalize on the strength of specific staff or community. Or perhaps the personal relationships that can flourish in smaller settings between teachers and students result in increased student motivation.

Anecdotally, we hear how some are able to leverage their rural context to their advantage. One remote district strategically relies on key staff—the football coach and principal—to oversee student work in online courses, ensuring students stay on track toward completion. In another district, schools are closed on Wednesdays to save on transportation funds, but students are assigned substantial homework on those days to keep up learning. A district in Hagerstown, Indiana, responded to shrinking student enrollment by adding hands-on agricultural classes in which its own students raise cattle, supplying cheaper, healthier food for the school cafeteria. In addition to reducing district costs, leaders expect to cultivate local agricultural talent to preserve this farming community.[12]

We know some rural districts purchase services from other providers and may be more effective in their role as contractors than direct providers. For example, one rural high school that couldn't offer a full complement of on-site electives had been using online classes for years during the school day to create more student offerings. In a different remote district, officials contracted with a personal trainer to work with students in lieu of hiring a full-time PE teacher.

Perhaps these super-high ROI districts are beating the odds because they tap the local ingenuity long thought to be part of the rural mindset in order to meet students' most pressing needs. It is possible that the very smallness of a district allows it to be more nimble, making micro-adjustments in reform efforts on a more regular basis. Moving beyond the deficit mindset may allow more rural districts to convert factors that have traditionally been viewed as constraints or limitations into strengths and opportunities. However, without additional study of the causes of success in the super-high ROI rural districts, we can only speculate.

THE OPPORTUNITY FOR STATES

This research challenges many long-held policy assumptions about rural schools. It challenges the assumption that rural schools must offer services in the same way as more densely populated regions, as current state funding formulas often imply. It challenges the notion that because isolated rural districts often suffer from a talent gap, they can't produce outcomes as high as other districts without vastly more money. And it challenges the push for district consolidation, as such moves might inhibit the very conditions that currently make super-high ROI results more likely in isolated rural districts.

The findings have important implications for state finance policy. Where states hope to get better outcomes in rural districts, leaders might move away from the notion that what's been learned in more populous regions ought to be imposed on rural settings. Rather, states might enable rural districts to harness their communities' independent, nimble, and entrepreneurial spirit, empowering them to innovate toward improving services in the context of limited resources.

To foster innovation and improve ROI in rural communities, states might consider the following:

- **Developing information systems and training opportunities to identify high ROI districts and allow for learning across all districts.** Sharing productive and innovative practices across districts will allow local leaders to pick and choose strategies or elements that may work in their community.

- **Allocating funds based on students and student characteristics.** Staffing expectations, cost reimbursements, or other input requirements constrain decisions for rural communities.

- **Eliminating specifications around service delivery.** Each rural community has different resources available and different constraints. Allowing these districts to create service delivery structures that take into account local schedule preferences and maximize locally available resources may provide a higher ROI.

- **Promoting shared services across districts, instead of consolidation.** Consolidating rural districts may impede a district's ability to be innovative, nimble, and more highly productive. Where districts lack productivity, districts might instead seek efficiencies by sharing services across districts, while maintaining flexibility.

- **Providing innovation grants to promote redesigned delivery models that enhance ROI.** To challenge the status quo, small injections of innovation seed funding may help rural district leaders create new strategies that reduce current costs and positively impact ROI.

For states, the opportunity is clear. Rather than viewing rural districts as the expensive, low-performing portion of a state's education system, states might see these districts as engines of innovation. In this mindset, states can empower these districts to innovate toward improved services in the context of limited resources and might then uncover new delivery models that could serve as exemplars not only for rural schools, but for all the state's schools.

ENDNOTES

1. Lenay Dunn, *Urban and Rural Staffing Challenges* (Sacramento, CA: Center on School Turnaround, 2013).

2. J.A. and Kathryn Albertson Foundation, *Five questions about education funding in Idaho. The ReThink Series* (Boise, ID: J.A. and Kathryn Albertson Foundation, 2014).

3. Edunomics Lab analyzed data provided by Center for American Progress. See citations in analysis later in this chapter.

4. J.A. and Kathryn Albertson Foundation, *Five questions about education funding in Idaho.*

5. Amy M. Hightower, Hajime Mitani, and Christopher B. Swanson, *State Policies That Pay: A Survey of School Finance Policies and Outcomes* (Bethesda, MD: Editorial Projects in Education, 2010).

6. Identification of Rural Locales, National Center for Education Statistics, www.nces.ed.gov/ccd/rural_locales.asp.

7. Federal monies account for roughly 12.5% of a district's total revenues. Revenues for public elementary and secondary schools, by source of funds and state or jurisdiction: 2010-11, National Center for Education Statistics, www.nces.ed.gov/programs/digest/d13/tables/dt13_235.20.asp.

8. Ulrich Boser, *Return on Educational Investment* (Washington, DC: Center for American Progress, 2011): 22.

9. The CAP report provides three different indices, each of which has been critiqued for its shortcomings (see for instance, Bruce Baker, *Deficiencies and Misinterpretations in the Center for American Progress Method for Measuring and Comparing School District Return on Investment* (Boulder, CO: National Education Policy Center, 2011). This analysis selects the production ROI index from the three because it adjusts expectations for achievement based on each district's demographics.

10. One of the critiques of the ROI measure is that it doesn't adjust for district size or sparsity, which allows us to see how rural districts then compare.

11. The regression model used by the CAP study adjusts for spending level and the percentage of students in free lunch, special education, and bilingual education. See Boser, *Return on Educational Investment.*

12. Steven Yaccino, "A Lesson in Farming, Classroom to Cafeteria," *New York Times*, May 11, 2014.

How Technology Can Boost Productivity in Rural School Systems

Rural Education and Technology
Consensus Panel

May 2015

Rural districts struggle to deliver the same educational experiences provided by their larger suburban and urban peers and often operate with higher per-pupil costs and stretched budgets. Technology's ability to bridge distance, increase administrative efficiency, and customize experiences at relatively low cost holds great promise for rural communities working to improve outcomes for students and leverage their existing resources toward even greater impact. But in order to deliver on the promise of technology in rural education, policymakers need a better evidence base about how technology can be brought to bear on the challenges facing rural educators and what policies and systems need to be put into place to ensure they can be utilized.

This chapter reports on the results of a national consensus panel to evaluate the role of technology in rural education and identify opportunities for states to support the use of technology. The consensus panel includes a mix of experts in rural education and technology, technical assistance providers, and researchers (see Box 1).

Box 1: Technology and Rural Education Consensus Panel Members

- Laura Anderson, Associate Director, Edunomics Lab at Georgetown University, BSCP Center Partner
- Betheny Gross, Ph.D., Research Director, Center on Reinventing Public Education
- John Hill, Ed.D., Executive Director, National Rural Education Association
- Ashley Jochim, Ph.D., Research Analyst, Center on Reinventing Public Education
- Paul Koehler, Director of the West Comprehensive Center at WestEd
- Karen L. Mahon, Ed.D., President and Founder of Balefire Labs
- Marilyn Murphy, Ed.D., Director, Center on Innovations in Learning
- Dean Nafziger, Ph.D., Director, BSCP Center at Edvance Research, Inc.
- Sam Redding, Executive Director, Academic Development Institute, BSCP Center Partner
- John D. Ross, Ph.D., Technical Assistance Specialist, Appalachia Regional Comprehensive Center
- Marguerite Roza, Ph.D., Director of the Edunomics Lab at Georgetown University, BSCP Center Partner
- Mike Siebersma, Director, Northwest Comprehensive Center at Education Northwest
- Heather Zavadsky, Ph.D., Research Associate, BSCP Center at Edvance Research, Inc.

The consensus panel drew from background framing and research commissioned by the Center on Reinventing Public Education and produced by Bryan Hassell and Stephanie Dean at Public Impact. Lynn Schnaiberg helped write and edit this essay, which summarizes the panel's conversation.

First, we explore the ways in which technology can help rural schools and districts address the issues of cost and quality. Then we turn to the supports and systems that are required to put these solutions into practice, including access to broadband Internet, which remains all too limited in rural communities. Finally, we conclude by summarizing recommendations for state education agencies interested in improving rural communities access to and use of technology.

LEVERAGING TECHNOLOGY TO ADDRESS COSTS, IMPROVE QUALITY

The consensus panel identified four ways technology can be used to support rural school systems' work and advance productivity: 1) virtual learning, 2) blended learning, 3) virtual professional networks, and 4) technology-based data input, analysis, and retrieval systems. While these approaches can benefit any school system, they offer rural systems particular advantages and address some of their most pressing problems.

Virtual Learning

Compared to their urban and suburban peers, rural school systems typically employ smaller teaching forces and are challenged to offer specialized content and talent on site. Virtual education can help address these issues.

Virtual learning programs have evolved and matured so that today many are interactive, incorporate video and other media, promote collaborative and shared workspaces, and can be accessed on smartphones and other devices. While it is unlikely that K–12 system will ever shift to a fully virtual environment, rural areas can use virtual learning as a complement to traditional classrooms or to fill holes in their curricular offerings.

Rural districts may choose to more selectively deploy virtual learning, using remote teachers for hard-to-fill roles, such as STEM subjects, world languages, and Advanced Placement (AP) courses, within the physical school setting. Many rural school systems are already leveraging virtual learning for credit recovery and to provide students with access to courses the school cannot offer due to lack of specialty teachers. Through a grant from the U.S. Department of Agriculture's Rural Utility Service program, schools in the Itasca Area Schools Collaborative offer "telepresence" classes (using immersive video technology) in Spanish, Ojibwe (a nearly extinct Native American language), and chemistry. The new content became so popular that participating school systems had to align bells and bus schedules to accommodate demand.

Virtual content can also give rural students access to institutions beyond the K–12 system, connecting them to museums, universities, and other cultural and scientific resources. Aspirnaut, founded in 2006 by two Vanderbilt faculty

members, lets students become rural scientists engaging in hands-on, inquiry-based STEM labs led by university faculty, postdoctoral fellows, and graduate and undergraduate students. Weekly labs are streamed or video-conferenced to the rural school. Onsite at the rural school a teacher or aide, sometimes with the help of Aspirnaut high school research intern alumni, facilitates the lab session by helping students, troubleshooting, and ensuring student safety.[1]

State-sponsored virtual schools in 26 states offer students a wide array of online courses such as AP and honors-level courses, foreign languages, and less common electives that allow students to explore unique interests. Concerns persist over the quality of the offerings from many online providers.[2]

Seven states have established "course choice" frameworks that allow and fund students to access virtual courses for credit, with varying restrictions on the type and amount of courses and course providers. Often led by a remote instructor via the Internet, these courses can either be synchronous (students and instructors interacting in real time) or asynchronous (students complete work and participate in discussions on their own timing). If top-notch teachers give these classes, students in remote locations could have greater access to great teachers in tough-to-staff subjects.

Blended Learning

Blended learning is "a formal education program in which a student learns at least in part through online learning, with some element of control over time, place, path, and/or pace."[3] Rural areas could use blended learning to improve instruction and rethink the school schedule and classroom structure, possibly saving money.[4]

Technology opens the possibility of more meaningful at-home work that students can do independent of a teacher's physical presence. Some online setups let teachers closely monitor and respond to student progress whether students are working at school or at home. And even if the student has no Internet access at home, readily available, high-quality, stand-alone apps and content can be used off-line on mobile devices to make this scenario technologically feasible. Some examples include Native Numbers, Bugsy's Kindergarten Reading School, and Dwelp. Some school systems have even tried to capture otherwise wasted time on long bus rides—not uncommon in far-flung rural districts—and use it as a study hall of sorts by equipping buses with wireless Internet access.[5]

When leveraged appropriately, blended learning may allow schools to reduce the number of days students are on campus, thereby reducing transportation costs (which can be two to three times that of urban districts), and freeing up independent or collaborative work time for teachers and students. A four-day week may create child-care headaches for families, but may be workable in the upper grades where these concerns are less acute.

The Miami R-1 School District in Bates County, Missouri—a rural district about an hour south of Kansas City—shifted to a four-day week schedule in 2013 as it ramped up its technology use. Although the scheduling change was controversial, the district claims that it is working well: ACT scores are at their highest over the past decade, and teachers get time on Mondays for professional development and technology training.[6]

Unfortunately, a paucity of research exists on the overall effectiveness of a four-day school week. In general, achievement effects appear neutral. Some fiscal analysis shows transportation costs could be reduced by up to 20 percent, but overall cost savings are relatively low (one estimate provides a maximum of 5.43 percent of a district's total budget).[7] And savings can only be repurposed toward other activities if state policy enables flexible deployment of unused transportation funding.

Blended learning can also be an effective strategy to enhance what good teachers do already: differentiate instruction and provide students deep learning experiences.[8] Technology enables a rethinking of the classroom where all instruction no longer comes directly from the classroom teacher (opening the possibility to leverage other resources, such as instructional aides). The teacher is not limited to playing the role of "sage on a stage" in front of a class full of students. Students use mobile devices either in a one-to-one setup or in small groups, freeing the teacher to differentiate student learning and take it deeper with more nuanced craftwork, problem solving, and troubleshooting.

Software that is able to adapt to student performance and provide a customized learning path is becoming more prevalent in schools. ST Math, Achieve 3000, I-Ready, Think Through Math, and Lexia Learning are a small sample of adaptive programs that tech-enabled and blended learning schools are using to deliver and assess content.

Rural communities may be particularly suited to using technology to differentiate instruction. Some boast deep school-to-home connections and many have relatively small class sizes, potentially keeping technology-based instruction from becoming impersonal.

Although independent studies of blended learning effectiveness are few,[9] software firms have funded academic studies and published data that show students using their products are faring better than those who are not.[10] In addition, practitioners and qualitative researchers have documented blended learning users who perceive a profoundly positive impact on student learning: Students, teachers, and administrators often express that blended learning is so advantageous they cannot imagine going back to the old way of doing things.[11]

Virtual Professional Support and Development

Technology can also be tapped to connect rural educators and provide professional development. Rural teachers often feel professionally isolated, sometimes lacking subject or grade-level peers in their community. Online professional learning communities, online training, or online resource banks that allow teachers to share and review instructional materials may be especially helpful for a rural workforce.

Teachers are already reaching out online to develop their own "professional learning networks." In a February 2013 survey of more than 20,000 teachers, 65 percent reported that they seek out professional advice online, and 57 percent use technology to collaborate with teachers they wouldn't otherwise know.[12] Online communities of practice, like ConnectedEducators.org, enable rural educators to connect with other educators and share what works.

The Wabash Valley Education Center in West Lafayette, Indiana, helps communities of schools learn from each other, enabling a rural algebra teacher to connect not just with other algebra teachers, but with those teaching in similar rural settings. About once a week the center facilitates a virtual teacher meeting using Elluminate (virtual conferencing software).[13]

Technology offers promise for professional development, too. States and districts should be careful that rigid requirements around professional development do not require educators in rural areas using online resources to jump through multiple hoops to deliver online training or be forced to settle for less convenient or less effective training.[14] For example, in some districts, professional development is delivered online, but teachers must drive to the central office after completing a module to sign a form confirming their "attendance." Moving professional development online will have its greatest advantage when these programs fully leverage the potential of the online environment.

Online professional development can give rural educators access to timely learning experiences while reducing travel and facility costs.[15] Arkansas created a state-funded portal in 2006 providing thousands of free online professional development courses; teachers earn 19 hours on average.[16] The Teach LivE program, developed at the University of Central Florida and now used in 42 sites across the nation, populates virtual classrooms with student "avatars" to help teachers learn new skills and hone their instructional practice. The University of North Carolina at Chapel Hill's LEARN NC charges nominal fees for online workshops and helps rural schools deliver state-mandated training if they lack capacity themselves.[17] Nearly 70 percent of the state's rural schools use www.learnnc.org. Research suggests quality online professional development is a viable option. A rigorous 2013 study found online professional development has the same effect on student learning and teacher behavior as more traditional in-person models.[18]

Technology can help hold teachers more accountable for professional development outcomes, too. Often, accountability in face-to-face workshops simply means signing an attendance sheet. Technology enables measurement of changes in knowledge (like a simple pre/post training survey), changes in teacher practice (sample lesson plans, digital recording of a live lesson), and changes in student performance (digital portfolios, online assessments) that are embedded within or linked back to online professional development opportunities.[19]

TECHNOLOGY-BASED DATA INPUT, ANALYSIS, AND RETRIEVAL SYSTEMS

Most states are scurrying to simplify compliance reporting for districts—a particular concern for time- and capacity-strapped rural administrators forced to wear multiple hats. Early efforts to find software solutions to streamline such reporting have run up against roadblocks (every state and federal funding stream has its own application and reporting requirements); this area seems ripe for development.

Systems like WestEd Tracker, a web-based data and information management system used in seven states, streamlines compliance reporting and school improvement efforts. Sometimes, however, simplifying compliance reporting comes in the form of a self-designated "champion" of sorts within the SEA who has the leeway to reduce crossover reporting requirements. SEAs could formalize these "champions" so reduced burdens become a matter of course rather than luck.

Programs like Indistar, a product of the Academic Development Institute, helps districts organize school improvement data, easing the work of school and district staff working to drive improvement in student outcomes. Used in 22 states, Indistar is a web-based system implemented by a state education agency, district, or charter school organization for use with district and/or school improvement teams to inform, coach, sustain, track, and report improvement activities. The system is customizable for reporting to several SEA departments through a single portal, resulting in less duplication. Several states use it as their sole school improvement planning system, including things like Title I reports.

Rural school systems also need access to data systems and platforms to track how students are performing and act on student-level data. In 2009, the Georgia Department of Education created a "tunnel" that links data from a single state system directly to district-level student information systems, helping districts better identify best practices. Texas created a set of dashboards for teachers to deliver more timely data and allow them to better monitor and act on a student's progress. Delaware used Race to the Top money to aggregate data to provide teachers, principals, and other staff a comprehensive view of each student and school. After building a statewide

longitudinal data system, Oregon invested in training teachers how to use data in making decisions—an effort that has paid off for teachers and students alike.[20]

WHAT WILL IT TAKE TO PUT THESE SOLUTIONS INTO PRACTICE?

Technology Infrastructure

More than 70 percent of the 26 million people without high-speed Internet access live in rural areas. Fixing this inequity is paramount for rural schools and communities to be able to fully leverage technology.[21] Connection speed and bandwidth can determine whether or not students can access critical educational opportunities. A 2011 national survey found two-thirds of U.S. schools operate at speeds slower than 25 Mbps, the Federal Communications Commission's (FCC) new minimum definition (as of 2015) of what qualifies as "broadband Internet." Under the FCC's new standard, one-fifth of Americans lack access to "high-speed" Internet, which is a far lower transmission speed than broadband.[22] Fewer than 50 percent of educators nationwide have an Internet connection that meets their teaching needs.[23]

Flexibility to Try Alternative Teaching and Learning Models

Several of the ideas presented above would require fundamental changes in staffing patterns, student assignments to classrooms, and how schools spend money on personnel, facilities, and technology. Depending on the state policy context, these strategies might be difficult or impossible to implement within state constraints on school spending, teacher compensation, class sizes, seat-time, paraprofessional roles, and other matters.[24] For example, though well intended, state policies such as class size and line-of-sight restrictions—policies that dictate the number of students who are in a classroom or are within eyesight of a certified teacher—make it challenging for local schools to group students in ways that incorporate digital learning time facilitated by a paraprofessional.[25] Similarly, digital learning models that change the traditional classroom challenge efforts to incorporate value-added measures, which require a consistent set of students be assigned to a teacher, into a teacher's evaluation.

Effective Training for Teachers and Administrators That Incorporates Technology

Teachers' lack of comfort and familiarity with technology-based education solutions is a key barrier to more effectively leveraging them in schools.[26] Anytime we ask a teacher to adopt a new practice, their learning must be supported. Keeping teachers up to date with fast-changing technology requires thoughtful, ongoing training, not just a one-time static approach. Similarly, administrators may have a limited understanding of technology's true potential

to meet teacher and student needs and require guidance in their technology leadership. Many focus on using technology for drill-and-practice, credit recovery, and student testing. In focus groups, for example, rural Tennessee administrators often equated online learning solely with credit recovery programs.[27]

Access to High-Quality Content and Materials

While technology-based content—including apps, virtual schools, and distance learning programs—has the potential to revolutionize rural education, if it's not high-quality content, its benefits are moot. Research suggests that quality varies tremendously.[28] Rural educators will need help identifying online instruction and/or software that can yield solid results. Roughly one-third of teachers spend an hour or more each week searching for educational technology, and 91 percent use technology to find and share lesson plans.[29] Many feel overwhelmed by the array of digital offerings and need help sorting out which are effective and how they might be used.[30]

Access to Skilled Technology Staff

Rural areas often have a harder time attracting skilled, certified technology staff (like technology coordinators and certified network personnel) than higher-paying urban-suburban areas. Rural areas have to be resourceful, deploying as tech staff teachers or others who may be self-taught in technology but have gaps in their education and training (e.g., the former tech-savvy classroom teacher that, over time, becomes the network administrator). Groups like the Consortium for School Networking give guidance on job requirements, skills, and knowledge that tech staff should have, but finding such a person in a rural area can be challenging.

HOW CAN SEAS HELP?

Respect Local Context

Recognize that the state plays a limited but critical supporting role. While many smaller, rural districts appreciate state support, universal mandates are less likely to be responsive to local needs and can become a political lighting rod. Idaho's state school superintendent Tom Luna in 2011 pushed through the legislature a set of state-mandated digital learning requirements, including online courses. The teachers union maintained teacher jobs would be lost to pay for these requirements and successfully rallied voters to reject the package.

Prioritize Broadband Internet Access

Access to broadband Internet is by far the largest challenge for rural communities both in the school and in the home. Until this digital divide is closed, rural schools and communities cannot fully integrate technology and bolster productivity. States must prioritize broadband Internet access.

In late 2014, the federal government dramatically overhauled the E-rate program, which grants discounts to schools and libraries for advanced, affordable telecommunications services, Internet access and internal connections. The changes prioritize expanded support for broadband Internet and wireless connectivity (making online learning faster and more reliable) and add $1.5 billion in new funding for a total of $3.9 billion. Several new rules that could benefit rural schools will take effect in 2016. States can help ensure their rural systems maximize the revamped federal program.[31]

In the past, for example, schools have been barred from using the E-rate to build their own fiber-optic networks. Rural districts have found this especially difficult, since more than a quarter of them cannot find more than one bidder for broadband connectivity services on the private market.[32] The new rules will ease that challenge by allowing for "self-provisioning" when no other affordable high-speed option is available. In another change, schools can apply for E-rate funding to use so-called dark fiber (cable not currently used), which the FCC thinks will help small and rural districts.

The prices and terms providers charge schools will be published for E-rate supported services starting in 2016, helping systems negotiate lower prices. Rural areas pay more for connectivity and tend to have less competition for E-rate bids than larger urban or suburban systems, with vast price tag differences even among rural areas.[33] The new rules also encourage more purchasing in bulk and through consortia. States are well positioned to help connect rural systems to create these bulk orders and/or consortia.[34]

To control costs and fund broadband Internet expansion efficiently, states and districts need to clearly understand actual broadband supply and demand to prioritize improvements. Using tools such as the National School Speed Test, state education leaders could develop a school-by-school inventory of current Internet infrastructure. Combined with a survey to assess readiness to implement blended and virtual learning, speed testing can help states target broadband expansion to areas where demand is greatest but broadband capacity is weakest.

State education agencies can also partner with existing research and education networks (RENs) to bring broadband Internet to K–12 school districts. For example, North Carolina's School Connectivity Initiative is working to bring the benefits of its REN, originally designed to serve higher education, to school districts and charter schools across the state. The initiative is working to expand the number of schools with broadband Internet, selectively build out networks to rural and under-performing schools, and develop a scalable model for statewide implementation.[35] North Carolina's state education agency also provides local districts with comprehensive support to ensure maximum access to E-rate funds. Since 1998 the agency has helped local districts secure more than $650 million in E-rate discounts. States like Idaho, West Virginia,

Maine, Nebraska, and Utah have developed statewide broadband networks.[36] Virginia and Arkansas are working with the nonprofit Education Superhighway to coordinate statewide connectivity infrastructure and clear barriers.

Connect Rural Educators to Quality Professional Support and Content

States can connect local education agencies (LEAs) to existing curated technology-based content and professional development: they should not reinvent the wheel. States should recognize that teachers do not have the time or expertise to be curators themselves.

Existing resources are plentiful. For example, Balefire Labs offers free access to more than 3,500 reviews of educational apps, professionally and independently evaluated according to best practices of instructional and usability design. The Learning Registry shares data on how learning resources relate or align to Common Core standards, ratings and opinions from educators across multiple states, and descriptions of resources from multiple education portals. The Center on Innovation and Learning, a federally sponsored content center specializing in innovation in education, curates a collection of technology resources for educators on EdShelf and includes descriptions and educator reviews of different resources.

States can connect LEAs with the International Association for K–12 Online Learning (iNACOL) and the state and national affiliates of the International Society for Technology Education (ISTE), which offers regular webinars and other professional development around teachers and technology. iNACOL's 2013 annual report emphasizes the need for systematic, ongoing professional development on integrating technology in the classroom.[37]

Many sectors outside education require their workforce to use technology and have dedicated information technology people who help with tech mentoring and/or training. States can support tailored training for teachers to help them adapt technology tools for use in their own classrooms. SEAs could work with districts and technology providers to ensure that such technology training counts toward continuing education requirements for certification renewal. Some consensus panel members identified the need for a "Geek Squad" equivalent (tech setup, install, and support) to help teachers better understand how the technology products they are expected to use actually work and give them more fluidity and comfort in using them.

Ensure Virtual Content Providers Are Held to the Same Standards as Brick-and-Mortar Schools

Quality varies significantly among virtual education programs.[38] While providing information to school districts about quality is an important first step, states can and should ensure that virtual education providers are held accountable to the same standards for student achievement as brick-and-mortar schools.

One way to ensure high-quality virtual content is via performance-based state finance formulas. New Hampshire funds its virtual online academy to help ensure quality online instruction; the academy is not paid for by the number of students enrolled, but by the number of course completions. Completion, in turn, is not determined by seat time, but by demonstrated mastery of a course-specific set of competencies.

Seed Regional Collaboratives to Foster Technology-Based Economies of Scale

Collaboratives can leverage small rural districts' buying power to support technology use. The Ohio Appalachian Collaborative in 2013 received a $15 million, four-year innovation grant from the Ohio Department of Education to develop a networked 6th to 12th grade blended learning and dual-enrollment system spread across 27 school districts.[39] The rural collaborative's work ("developed by districts, for districts") impacts more than 48,000 students in the region. The state seed money has helped purchase technology (iPads, laptops) to enable more blended learning classrooms and build the infrastructure (video conferencing equipment, projectors, smart boards) to share teaching across the collaborative. Stated goals and work include establishing a sustainable rural education collaborative, giving teachers support and professional development around new standards and assessments, and granting them the ability to network with other rural educators. The collaborative intends to boost student aspiration for postsecondary education, reduced higher-education costs through college credit earned in high school, and contribute to rural economic development by preparing more qualified workers to attract business to the region. Districts saved more than $260,000 via pooled purchasing in 2014, a savings of nearly $6 per student across all districts.

Eliminate Regulatory Barriers to Using Technology in Rural Schools

In response to district plans to use flexible technology, SEAs can identify and advocate for barrier-clearing policies that allow re-grouping of students, either through relaxation of constraints, or waivers and exemptions. Local innovation is facilitated when a district has the ability to shift funds for textbooks, materials, or non-essential staff positions to lease or purchase laptops,

establish a more powerful data system to personalize instruction, or provide much-needed training to staff as they implement blended learning techniques. For example, the Mooresville Graded School District in North Carolina is achieving notable outcomes after making a district-wide shift to technology-based classrooms within current budgets.[40] Texas, one of the earliest adopters of digital textbooks, changed state law to enable districts to use textbook money on digital resources.[41] SEAs can support this type of local innovation by advocating for funding models that give districts greater control over how they use state funds, particularly funding that is tied to specific input categories or position types. If a district is able to offer students a better instructional program using online resources or a new combination of teachers and class sizes, they should not lose access to state funds that are locked into non-strategic categories.

SEAs can also help districts take advantage of existing flexibility in the Elementary and Secondary Education Act to more creatively utilize federal dollars. While the amount of money associated with Title I, Title II, or Title VI may be small for a small district, combining them could enable them to, for example, create a mobile lab that serves all the targeted program beneficiaries.

Make Clear Who at the State Level Owns Technology Issues

Responsibility and accountability must be clearly defined. As technology use takes root and grows in schools, states need to make clear who is responsible for technology issues and ensure that those individuals understand and can support the particular needs of rural communities. States interested in better supporting technology can turn to the Center on Innovations in Learning, one of seven national content centers funded by the U.S. Department of Education, which established the League of Innovators to identify problems related to technology use in member states and work on solutions. Technology-oriented professional societies including CoSN, SETDA, and ISTE also can help connect SEA staff to quality professional development and support.

CONCLUSION

States have a strong supporting role to play in helping rural schools leverage technology. The actions suggested here can ensure that rural communities can use technology to its fullest potential, simplifying the responsibilities of rural administrators, better supporting rural educators in their work, and enabling students to access diverse curriculum. States have an essential role to play in closing the digital divide, leveling the playing field for rural schools and communities to access the best instruction and content available for students and teachers alike.

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How States Can Help Rural LEAs Meet the Needs of Special Populations

Tessie Rose Bailey and Rebecca Zumeta

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All local education agencies (LEAs) struggle to meet the unique needs of special student populations, but providing appropriate services can be especially difficult for those in rural areas. By understanding the rural context, state education agencies (SEAs) can play an important role in helping rural LEAs meet the learning needs of all students.

This chapter highlights common challenges faced by rural LEAs and shares innovative ways SEAs are helping them provide specialized services. The challenges expressed by urban and suburban schools, for example, diverse student populations, limited resources, limited access to qualified staff, are often magnified in rural LEAs, as teachers and administrators attempt to provide specialized services and supports and comply with state and federal regulations.

UNDERSTANDING THE CHALLENGES OF RURAL LEAS

Special student populations include English Language Learners (ELL), students with disabilities (SWD), and students identified as gifted and talented (G&T). Rural LEAs report three significant challenges in meeting the needs of these students: (1) recruiting, retaining, and professionally supporting teachers to deliver specialized services, (2) meeting the demands of state and federal regulatory requirements, and (3) providing services when resources are limited or unstable.

Recruiting, retaining, and professionally supporting teachers to deliver specialized services. Of all the challenges faced by rural LEAs in meeting the needs of special populations, teacher recruitment, retention, and support are among the most significant. Many rural administrators report difficulty in attracting qualified staff to fill special education[1] and ELL[2] positions. While a lower percentage of rural schools have ELL and special education openings compared to suburban and city schools, rural LEAs are much more likely to have difficultly filling these positions, and thus often begin the school year with unfilled positions.[3] In a recent study,[4] more than 50 percent of rural administrators reported moderate to severe challenges in finding teachers qualified to teach SWD.[5] Similarly, rural administrators reported challenges in recruiting teachers qualified to provide specialized services to ELL and G&T students.[6]

With no other choices, many rural LEAs are forced to fill critical positions with teachers who do not meet state and federal requirements. Rural LEAs in states where categorical special education licensing still exists are at an even greater disadvantage. Small enrollment numbers for multiple individual disability categories make it difficult to recruit a single teacher endorsed in multiple areas. Even when rural schools have candidates for positions, these schools tend to hire weaker and less experienced teachers.[7]

Many rural LEA administrators blame low salaries for their difficulty in competing with urban and suburban LEAs to hire and retain trained teachers.[8] Even for those with the resources to offer higher salaries, inflexible state funding

policies can make this difficult. For example, Kentucky uses a common statewide salary schedule and places caps on local district funds through taxation, making it impossible to offer higher salaries to staff with specialized qualifications.[9]

When rural LEAs are successful in recruiting for these positions, data suggest they experience special education attrition rates of 30 percent, with some having 100 percent staff turnover within three years.[10] While some report leaving for higher paying positions,[11] more teachers reported leaving for reasons unique to rural schools,[12] including not being prepared for life in a rural setting,[13] struggles with separation of work and social life, and the demands of the job, coupled with low levels of support and professional isolation.[14]

Face-to-face professional development opportunities might alleviate some of the professional isolation inherent to teaching in rural schools, where it is rare to have other special education teachers with whom to collaborate. However, these resources are often expensive or unavailable locally, requiring teachers to travel, sometimes overnight, to attend face-to-face training. Thirty-two percent of teachers reported unrealistic travel times to attend available professional development sessions, and 33 percent reported challenges covering specialized classes while they were away.[15]

Meeting the demands of state and federal regulatory requirements. Because rural teachers and administrators often serve multiple roles and have limited administrative support, their compliance responsibilities can be significant. Some rural ELL teachers report that paperwork significantly impedes instructional time, with one teacher claiming she completes "three hours of paperwork per hour of teaching."[16] Non-instructional travel and paperwork time may be further increased for teachers serving multiple schools or LEAs, which is common in rural areas. Almost half of rural special populations teachers (43 percent) reported being burdened by a significant amount of non-instructional activities associated with their position.[17] Rural administrators also report spending a significant amount of time completing paperwork.[18]

Paperwork and other non-instructional demands increase when SEAs designate separate funding streams and reporting mechanisms for different programs serving similar purposes and target populations. At times, the accountability and paperwork demands for each project can interfere with the school's ability to effectively work with students. For example, two projects at a rural northwestern school required a data system, but the LEA was not allowed to use the same data system for both projects. This kind of inflexibility around funding can lead to wasted resources, competing activities, and limited impact on student outcomes.[19]

Limited local resources and inconsistent funding to support special populations. While all districts face funding constraints in providing

appropriate services for special populations, rural districts are particularly constrained. Rural districts in many areas have made significant efforts to access local tax dollars to address funding shortages. However, local community support for such activities is decreasing.[20]

While federal mandates prescribe state and local responsibilities with respect to SWD, wide variation exists in how states require LEAs to fund and support ELL[21] and G&T students.[22] Rural districts already struggling to meet federal special education funding requirements often lack the tax base to acquire additional resources and funds for developing innovative programs for other special populations. As a result, special populations like G&T students in rural settings rarely receive instructional programs designed to meet their unique needs.[23]

Inflexible funding streams from federal and state sources and minimum enrollment requirements for services make it difficult to serve often small and fluctuating numbers of special populations. For example, an LEA may find itself with six new ELL students with no immediate funding or resources to provide those services. Low incidences of special populations can also limit access to state programs and funds, especially when SEAs require a minimum number of students in order to qualify.

STRATEGIES FOR HELPING RURAL LEAS MEET THE NEEDS OF SPECIAL POPULATIONS

SEAs can play a vital role in helping their rural LEAs to meet these challenges. The following section provides six recommendations, drawn from research by state and federal agencies, as well as lessons learned from SEAs attempting to implement innovative solutions.

Support efforts to recruit qualified staff to provide special education, English language, and gifted and talented services. SEAs can support a greater pool of local talent by providing rural teachers alternative routes for licensure or endorsement and by supporting "grow your own" programs. While this approach has its opponents, high-quality alternative routes to licensure have the potential to address shortages in specialized areas.

Most alternative routes for licensure provide prospective teachers new ways to access traditional college courses, making them particularly appealing for rural teachers who are geographically isolated. For example, Boise State University's Technology Accentuated Transformative Education of Rural Specialists is a collaborative two-year online program that allows teachers to receive state certification in special education.[24]

SEAs can partner with institutions of higher education (IHEs) to create distance or online teacher preparation programs for practicing teachers.

Montana, which struggles with special education teacher shortages in rural areas, developed a statewide collaboration with five IHEs[25] to provide graduate level courses, onsite mentoring, and tuition waivers for general education teachers who commit to at least two years teaching in a special education setting. The program has helped rural LEAs fill 336 special education positions since its inception in 1989.

Other alternative routes allow teachers to more quickly and easily obtain multiple endorsements and licensing. For example, a new program at the University of Nebraska's Kearney campus reduced the preparation requirements needed for a rural LEA to fill a single K–12 special education teacher position. Previously, the state required aspiring teachers to complete two separate programs for K–6 and 7–12 licensure.[26]

SEAs can also support rural LEAs in accessing local talent.[27] In "grow your own" teacher models, rural LEAs partner with SEAs or IHEs to identify and prepare local talent for positions that are difficult to fill. Given that most teachers tend to stay near their community,[28] these strategies hold great potential for addressing recruitment and retention issues in rural LEAs. The Illinois Grow Your Own Teacher Education Initiative involves partnerships between IHEs, LEAs, and community-based organizations that work together to recruit and develop local talent. Though currently administered by the Illinois Board of Higher Education, the Illinois SEA was instrumental in creating the project, which has graduated teachers prepared to teach special education and bilingual education in rural settings.[29]

Support efforts to implement e-mentoring programs to retain quality teachers of special populations. Many new rural teachers of special populations feel that they lack access to adequate resources, knowledge, and quality professional development. SEAs can reduce professional isolation and improve access to professional development by providing innovative approaches to online mentoring.[30] These programs provide new teachers opportunities to engage in professional collaborative problem solving to address challenging situations, navigate complicated state and federal paperwork requirements, and provide immediate access to answers. These types of programs are also extremely valuable in providing support to unqualified teachers working toward certification. Evidence suggests that these programs have a direct impact on student achievement as well as teacher retention.[31]

E-Mentoring for Student Success

Supported by the Kansas State Department of Education, E-Mentoring for Student Success focuses on curbing attrition of new special education teachers by providing a matched mentor. The mentor and the rural teacher meet at least two times a week, and the mentor is always available via email. Mentors cost about $3,000 annually, depending on the number of mentees, and districts pay $1,200 per teacher to participate.

Ensure rural LEAs have access to alternative methods of service delivery for special populations. Technology has significant potential to help overcome the challenges of providing services and supports to students with unique needs when qualified staff are not available. While many options are available, two that hold significant promise in rural areas are online learning and teletherapy.

For rural LEAs unable to provide access to certain courses or opportunities because of low teacher-student ratios or unfilled positions, the use of distance or virtual education may be the only viable option.[32] While distance education for students has been used in rural schools for decades, it is becoming more cost effective and accessible. Virtual schools can provide rural LEAs with the resources to ensure G&T students can access advanced coursework. Evidence suggests that high-quality distance education may decrease racial/ethnic achievement gaps and increase scores on college readiness exams.[33]

Although more research is needed, recent evidence suggests that online schools also have the potential to support delivery of special education services[34] and instruction for ELLs.[35] In fact, the U.S. Department of Education requires that students attending virtual schools must be afforded the same protections under federal law as their peers in traditional settings. SEAs can support rural LEAs by ensuring that rural schools are prepared to support online learning for special populations, comply with state and federal compliance requirements, and ensure individual student needs are met. The Arkansas Department of Education provided state grants to rural LEAs to address the initial start-up costs associated with implementing distance education.

While districts may prefer face-to-face delivery of services, evidence from the field suggests that teletherapy has the potential to meet the needs of special populations while maintaining costs and quality. In 2011, *Education Week* reported that speech and language teletherapy is a promising approach for meeting student needs, saving money, and ensuring access to therapists.[36] Over the last decade, several states have piloted teletherapy programs for services delivered by speech language pathologists, occupational therapists,

and physical therapists.[37] The Ohio Masters Network Initiatives in Education found that online speech language pathologist services resulted in similar outcomes as face-to-face sessions and that the program could cost-effectively address state those shortages in rural schools.[38] While the research is limited, the model holds promise for addressing shortages in other hard to fill positions, like ELL teachers.

LEAs will need significant support from SEAs to implement effective teletherapy programs. In Washington State, the SEA provided start-up grant opportunities using IDEA funds to assist LEAs in building capacity for and scale-up of a teletherapy program.[39] This approach provided LEAs the flexibility to develop services that matched student needs and local resources. Rural LEAs used funds to purchase essential equipment and train in-school therapy assistants who assisted the licensed therapist during teletherapy sessions.

Ease the burden of compliance monitoring. SEAs should implement strategies to streamline the amount of paperwork rural LEAs must complete (see Box 1). For example, SEAs could consolidate reporting requirements to simplify the process of reporting progress on multiple projects. Doing so requires SEAs to collaborate across departments to identify and address reporting redundancies in different programs. In addition, SEAs may consider reducing the frequency with which rural LEAs complete and submit certain regulatory documents and making required paperwork more efficient. Comprehensive data systems have the potential to reduce redundancy by allowing LEAs to pull existing information directly into reporting mechanisms.

Box 1: Shifting Monitoring From Compliance to Performance

Because reporting requirements vary, being aware of and ensuring academic achievement for special populations is perhaps the most significant challenge that schools face. According to the 2013 National Assessment of Educational Progress, the academic achievement of students with disabilities lags significantly behind their peers.[40] Yet, states, not schools, determine minimum cell size requirements for analysis of subgroups such as SWD and ELL; these requirements can vary from as few as 5 to as many as 100 students across states.[41] This variation has particular implications for accountability of special populations in rural schools, which often have subgroup representation at rates much smaller than the minimum sample sizes required in their states: in many cases, schools and LEAs are not accountable for how subgroups from certain schools performed on their state assessments. It may also mean that non-accountable schools have little incentive to focus their limited resources on special populations, a risk that may be particularly problematic for rural schools. This hypothesis warrants further empirical investigation.

States must work to pivot their monitoring of rural LEAs from a focus on burdensome compliance to a focus on student achievement. SEAs could:

- Reconsider minimum size requirements that will expand accountability for special populations to more schools, including rural schools.
- Require that school improvement grantees plan specifically for SWD and other special populations as part of their improvement applications. SEAs could also provide technical assistance to rural applicants to help them craft and implement these plans for their specific context.
- Provide training and assistance to help LEAs understand the implications of the U.S. Department of Education's Office of Special Education Programs (OSEP) Results-Driven Accountability initiative, and how it may be implemented in connection with other reform efforts.
- Work to implement a State Systemic Improvement Plan, which provides a framework to create a more integrated approach to serving all students, including those with special needs.

Help rural LEAs maximize federal funding opportunities for special populations. Investing in staff with grant writing skills, along with training and targeted support from SEAs, can increase rural LEA participation in federal grant initiatives. The U.S. Department of Education's Investing in Innovation and Improvement (i3) grant competition provides a unique opportunity for rural LEAs to engage in development and evaluation of models that support at-risk populations. In 2014, $134.8 million was available to support three grant competitions: development, validation, and scale-up.[43] The i3 program supports five priority areas, all of which may be submitted in combination with a sixth priority area, Serving Rural Communities, an important element for rural LEAs. Of the 562 organizations that submitted "Intent to Apply" documents for the 2014 Development pre-competition, only 184 (33 percent) addressed serving rural communities, and very few of these applicants addressed special populations. Of the initial rural submissions, only 14 (2.5 percent) addressed SWD in rural communities, and 18 (3.2 percent) addressed ELL in rural communities. Given that rural communities were deemed a priority in this competition, SEAs could have provided useful support to rural LEAs by advertising these competitions, sponsoring grant-writing workshops, connecting potential partners, furnishing data or letters of support for applicants, supporting dissemination of findings to other LEAs, and helping LEAs identify foundations in the state willing to provide required matching funds to awardees. Although SEAs may not serve as official partners in this work, their knowledge of federal grant-making processes provides a useful catalyst to rural LEAs. And the rigorous evaluation criteria and emphasis on scale-up mean that promising findings for rural projects focusing on special populations could provide useful models for other rural LEAs struggling to serve these groups.

OSEP's State Personnel Development Grant competition provides another useful way for SEAs to support the development of staff who serve special populations in rural LEAs. OSEP typically identifies priority areas for these grants (e.g., response to intervention, teacher professional development), and grant awards range from $80,000 to $2 million, depending on the size of the state or territory. One way that states with significant numbers of rural LEAs could support districts through this competition is to allocate a specific number or percentage of slots for rural sites or staff participation in grant activities. For projects in which these grants include development of model demonstration sites, a representative percentage of these sites should be in rural LEAs. SEAs could also make willingness to serve as a mentor for other LEAs a requirement for participation.

Engage in collaborative conversations with rural LEAs to identify effective solutions and reduce barriers for meeting the needs of special populations. Understanding the issues rural communities face can significantly increase the effectiveness of supports and technical assistance that SEAs provide. The single most effective way to find out what rural LEAs need is to engage in collaborative conversations with them. U.S. Secretary of Education Arne Duncan employed this strategy to learn firsthand about the challenges faced by rural LEAs in various local contexts.[44] See Box 2, outlining five suggestions for increasing how SEAs can be more effective in communicating with and providing supports to rural LEAs.

Box 2: Strategies for Increasing SEA Effectiveness With Rural LEAs

1. **Engage rural distinctiveness.** Ensure that policies and programs align with local goals and values.
2. **Accommodate restraints.** Understand what resources rural LEAs have or are able to have.
3. **Offer opportunities for connection.** Provide networks for collaboration and communication with others.
4. **Enlist rural strengths.** Understand what the rural LEA brings to the table and build on those strengths; avoid focusing on the barriers.
5. **Link assistance to place.** Make the program or support relevant and be sure to leverage community resources and opportunities.

Source: Caitlin Howley, Rooted in Place: Responsive Rural Education Technical Assistance (Fairfax, VA: ICF International, Inc., 2013).

Increasing communication opportunities between the SEA and rural LEAs can significantly reduce the professional isolation felt by staff in many rural LEAs. While not a common practice, the use of satellite SEA offices may remove some of the geographical barriers that often exist between rural LEAs and SEAs.[45] Closer proximity also increases opportunities for rural LEAs to be involved in developing and reviewing policies impacting service availability for their special populations.

CONCLUSION

Rural LEAs face a variety of challenges in their efforts to serve special populations. These challenges are rooted in difficulties recruiting and retaining quality staff, limited financial resources, and burdensome non-instructional demands. By working to provide greater flexibility in program requirements, engaging in collaborative conversations with rural stakeholders, supporting alternative models for helping LEAs access qualified specialists, and developing models for e-mentoring, SEAs have the potential to increase the ability of rural LEAs to improve student outcomes. Although these are systemic and complex challenges that do not have simple one-time remedies, the increasing diversity in American schools—including those in rural areas—makes it imperative for state and local authorities to foster these kinds of collaborative, solution-oriented relationships to ensure that all students, including those with specialized learning needs, have access to a high-quality public education.

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The SEA of the Future is produced by the Center on Reinventing Public Education (CRPE), a non-partisan research and policy center at the University of Washington developing system-wide solutions for K–12 public education. Through research, policy analysis, and technical assistance, CRPE focuses on how states can better support school and district improvement.

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