What's Happening

May 2016

Reshaping rural schools in the Northwest Region: Lessons from federal School Improvement Grant implementation

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Summary

The five states in the Regional Educational Laboratory (REL) Northwest Region have many rural schools that have been designated as in need of improvement. And all five states had rural schools in the first cohort of federal School Improvement Grant (SIG) recipients. To address school improvement, the majority of those schools implemented the transformation model, which requires strategies related to improving instruction, ensuring high-quality staff, and engaging families and communities. REL Northwest Region state and district leaders asked REL Northwest to conduct a study examining the extent to which rural schools across the nation implemented the transformation model, the challenges they experienced, and the technical assistance they received. This report provides information about rural schools using the transformation model. It is not part of the federal evaluation of the SIG program, which provides more comprehensive information about all SIG schools. REL Northwest Region leaders may be able to use this study to inform future assistance for their rural schools in need of improvement.

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Summary

Information about improvement efforts in rural schools is important to state and district education leaders in the Regional Educational Laboratory (REL) Northwest Region, which includes Alaska, Idaho, Montana, Oregon, and Washington. Not only do these states have a large number of rural schools that have been designated as needing improvement, but many of those schools received federal School Improvement Grants (SIGs) and used the transformation model, which requires strategies related to improving instruction, ensuring high-quality staff, and engaging families and communities. In the first round of SIG funding, almost half (23) of the 49 schools awarded an SIG in the REL Northwest Region were rural schools that chose the transformation model for school improvement. Despite the large proportion of rural SIG schools using the transformation model, district and state leaders believed that a sample of 23 schools was too small to provide the broad information necessary for future decisionmaking about rural school improvement in the region. Therefore, to obtain meaningful information about rural school improvement efforts, this study focused on a national sample of all rural SIG schools implementing the transformational model in the first round of funding.

This study is not part of the federal evaluation of the SIG, which provides more comprehensive information. Leaders participating in research alliances with REL Northwest and other regional stakeholders requested this study to learn more about how implementation of the SIG transformation model has played out in rural schools across the nation. This study will inform their support for this model in rural areas of the REL Northwest Region.

The transformation approach has evolved over time. In 2009 federal concern about the nation's lowest performing schools led to an unprecedented infusion of SIG funding, as well as new requirements for schools receiving those grants (U.S. Department of Education, Office of Elementary and Secondary Education, 2011). The first cohort of SIG schools (cohort 1) began implementing the three-year grant programs in the 2010/11 school year. Most rural cohort 1 schools (96 percent) chose to implement the transformation model of school improvement, one of four possible SIG models (Hurlburt, Le Floch, Therriault, & Cole, 2011). As implementation began, education leaders across the country questioned whether rural schools would be able to implement some of the requirements, such as those involving staff replacement and technical assistance, because of the schools' geographic isolation (Klein, 2010). Leaders in REL Northwest alliances had similar concerns and wanted to learn about the extent to which rural schools implemented the transformation model, the challenges they experienced, and the technical assistance they received.

Based in part on concerns about rural schools, the federal government has increased the flexibility of the grant requirements. As of the 2015/16 school year, rural schools with new SIGs are able to reshape some federal program requirements, including how the transformation model is implemented (Final Requirements, 2015). The experiences of the first cohort of rural SIG schools can inform that process based on what worked, what did not, and how schools can do better. This study, drawing information from a national, online survey of rural school principals involved in cohort 1 SIG implementation of the transformation model, provides preliminary insights for the REL Northwest Region.

The survey was conducted in spring 2014, after most cohort 1 grant activities were complete. The survey respondents included 135 principals (67 percent of the 201 schools

surveyed) in rural schools implementing the transformation model. The most salient findings include:

- *Few rural schools fully implemented the SIG transformation model.* Only 5 percent of the principals surveyed said their school had fully implemented the 12 transformation strategies that the survey examined. On average, principals said their school had fully implemented 6 of the 12 strategies.
- *More schools implemented strategies related to improving instruction than strategies related to ensuring high-quality staff or engaging families and communities.* For example, 77 percent of principals reported that their school had fully implemented the use of student achievement data to inform instructional decisions, whereas 52 percent reported that their school had fully implemented staff evaluation systems that tied evaluation to student achievement, and 40 percent reported that their school had engaged families.
- *More schools reported facing implementation challenges related to ensuring high-quality staff and engaging families and communities than challenges related to improving instruction.* For example, almost half (47 percent) of principals reported challenges to rewarding staff financially—a strategy related to ensuring high-quality staff —and about a third (34 percent) reported challenges to engaging families and communities. In contrast, fewer principals (26 percent) reported challenges to expanding learning time to improve instruction.
- *Almost all schools received technical assistance from at least one provider, with districts the most frequently identified provider.* Most principals (93 percent) reported that their school had received technical assistance from at least one provider for at least one of the transformation strategies examined in the survey. More principals reported that their school had received this assistance from their district (91 percent) than from the state (70 percent), a university (19 percent), or another type of organization (42 percent).
- *The more strategies for which principals reported facing challenges, the fewer strategies they reported their school had fully implemented.* When principals reported challenges with three or more strategies, they also reported that their school had fully implemented an average of only 5.2 strategies. In contrast, when principals reported challenges with fewer than three strategies, they reported that their school had fully implemented an average of 7.5 strategies.
- *The more strategies for which principals reported receiving technical assistance, the more strategies they reported that their school had fully implemented.* When principals reported receiving technical assistance for more than 7 strategies, they also reported that their school had fully implemented an average of 7.2 strategies. In contrast, when principals reported receiving technical assistance for 7 or fewer strategies, they reported that their school had fully implemented an average of only 5.7 strategies.

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Why this study?

Federal School Improvement Grant (SIG) funds for improving low-performing schools require actions, such as replacing underperforming staff members, that some rural schools have found difficult to implement (Klein, 2010). Concerns about SIG implementation in rural areas are particularly important among leaders in the Regional Educational Laboratory (REL) Northwest Region states—Alaska, Idaho, Montana, Oregon, and Washington—where many educators were working to improve rural schools. These schools, by definition, were located outside urbanized areas (U.S. Department of Education, National Center for Education Statistics, n.d.), far from the resources enjoyed by city and suburban schools, such as access to technical assistance providers or a robust work force.[1]

In the REL Northwest Region 23 of the 49 schools participating in the first cohort of SIG grants were rural schools using the transformation model, which requires strategies related to improving instruction, ensuring high-quality staff, and engaging families and communities. All five REL Northwest Region states had at least three rural schools using the transformation model. In Montana all SIG schools were rural schools using the transformation model.

To obtain the broad information necessary for future decisionmaking about rural school improvement work, research alliances collaborating with REL Northwest requested this study about the implementation of the transformation model in rural SIG schools across the country

Although almost half of REL Northwest Region schools in the first SIG cohort were rural schools using the transformation model, the number of these schools (23) was small. To obtain the broad information necessary for future decisionmaking about rural school improvement work in the REL Northwest Region, research alliances collaborating with REL Northwest requested this study about the implementation of the transformation model in rural SIG schools across the country. The study is not part of the comprehensive series of SIG evaluations being conducted by the federal government, which examine a larger number of SIG improvement models in a wider variety of schools.

REL Northwest Region leaders found a limited range of research evidence to guide the implementation of the SIG program in rural areas. Although two recent national studies showed that SIG schools adopted more federally required improvement strategies than similar schools that did not receive the funding, those studies did not disaggregate the results by geographic location (Dragoset et al., 2015; Herrmann, Dragoset, & James-Burdumy, 2014). Meanwhile, some case studies showed that rural schools and districts faced steep challenges in implementing the staff replacement and parental involvement practices required by the SIG program (Rosenberg, 2011; Rosenberg, Christianson, Angus, & Rosenthal, 2014; Scott, McMurrer, McIntosh, & Dibner, 2012). Despite these studies, little was known about how rural schools implemented the strategies of the SIG transformation model, the specific challenges they have encountered, or the supports for implementation they have received. This study addresses these issues and is particularly relevant for the REL Northwest Region, where rural school improvement is a pressing concern for the research alliances associated with REL Northwest.

This study is also important because as of the 2015/16 school year, the U.S. Department of Education allows rural SIG grantees to make one modification to the grant requirements, as long as that modification meets the original intent of the grant. Additional changes allow states to design their own school improvement models, as long as they align with the federal intent for School Improvement Grants (Final Requirements, 2015). Districts can also choose from models that have improved schools in the past according to at least

one study that meets What Works Clearinghouse standards, a set of federal standards that ensure studies are of high quality (U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse, 2013). As REL Northwest Region states continue to award funds for school improvement, this study provides information about the past use of SIG funds in rural areas that state and district leaders can use to inform their modifications of the SIG requirements for their rural schools.

School improvement models

SIG funding mechanisms have changed over time. Congress put these systems in place as part of the No Child Left Behind Act of 2001 (No Child Left Behind Act of 2001, 2002). In 2009 federal concern about the nation's lowest performing schools led to an unprecedented infusion of funds and guidance for school improvement (U.S. Department of Education, Office of Elementary and Secondary Education, 2011). Through the American Recovery and Reinvestment Act of 2009, the federal government allocated $3.5 billion for School Improvement Grants to support low-performing schools and issued new guidance for the grants. Rural schools made up 24 percent of SIG grantees in the first round, awarded in the 2010/11 school year (cohort 1), and 19 percent of grantees in the second round, awarded in the 2011/12 school year (cohort 2; Hurlburt, Therriault, & Le Floch, 2012).

The transformation model includes specific strategies for school improvement, which fall into three broad areas of reform: improving instruction, ensuring the presence of high-quality staff, and engaging families and communities

Federal guidance for School Improvement Grants has also changed. Under the guidance for the first round of grants, federal funds flowed to states, which were charged with identifying eligible low-performing schools and awarding competitive grants to districts to improve these schools. The schools were required to implement one of four school improvement models (U.S. Department of Education, OESE, 2011):

- *Transformation model,* which replaces the principal and requires a number of activities to improve the school's staff, instructional practices, and family and community involvement.
- *Turnaround model,* which replaces the principal and 50 percent of the staff, as well as requiring operational flexibility needed to implement a variety of school improvement activities.
- *Restart model,* which closes the school and reopens it as a charter school.
- *Closure model,* which closes the school and transfers students to a higher performing school.

Because the transformation model does not require teacher replacement and is less disruptive than the other models, some consider it the most flexible of the four (Klein, 2010). Perhaps because of this flexibility, it was chosen by about three-quarters of grantee schools and 96 percent of rural cohort 1 schools (Hurlburt et al, 2011; Hurlburt et al., 2012). This study focuses solely on the transformation model because of its prevalence among rural schools.[2]

The transformation model includes specific strategies for school improvement, which fall into three broad areas of reform: improving instruction, ensuring the presence of high-quality staff, and engaging families and communities. Schools are required to seek technical assistance to implement the transformation model from state education agencies, local education agencies, or other entities, such as universities or nonprofit organizations.

As of the 2015/16 school year, the U.S. Department of Education allows rural schools to modify any one strategy of the transformation model (Final Requirements, 2015). Deciding which strategy to modify may be difficult because research shows no consensus on what strategies are effective and practical in rural schools. Some studies have revealed challenges in all three areas of the transformation model, as well as in engaging technical assistance providers to support implementation (Rosenberg et al., 2014; Rosenberg, 2011; Sandel & Bhat, 2008; Scott, McMurrer, et al., 2012), while several case studies have shown that rural schools can excel in these areas (Barley & Brigham, 2008; Gordon, 2011; Hammer, Hughes, McClure, Reeves, & Salgado, 2005; Prater, Bermudez, & Owens, 1997; Xu, 2004).

How this study informs rural school improvement efforts

In 2009 the SIG program dramatically increased funding to support school improvement. Accordingly, it has attracted widespread attention, which has pointed to the need for research on its implementation. Have rural schools been able to fully implement the SIG transformation model? If not, which strategies have been most challenging? What types of technical assistance have increased implementation of the transformation model? Results of previous studies are shown in box 1 and appendix A. This study adds to the research literature about the implementation of SIGs in rural schools.

This study includes descriptive information about the level to which the requirements of the SIG transformation model of school improvement were implemented in rural schools, the challenges to implementation, and the technical assistance supporting implementation

What the study examined

This study examines implementation of the SIG transformation model of school improvement in rural schools. It includes descriptive information about the level to which the requirements were implemented, the challenges to implementation, and the technical assistance supporting implementation. This information was collected through a spring 2014 survey of principals of cohort 1 rural SIG schools that were using the transformation model. These schools typically began their three-year SIG grants in the 2010/11 school year. Thus, at the time of the survey, they could be expected to have fully implemented the transformation model and the grant would have officially ended (although schools were allowed to carry over unspent funds).

Box 1. Previous research on School Improvement Grant strategies in rural schools

Recent case studies have provided preliminary answers to the questions of whether rural schools have been able to implement the School Improvement Grant (SIG) transformation model, which of its elements are most challenging, and what types of technical assistance schools have received. However, none has provided a broad, national overview of SIG implementation focused specifically on rural schools. Three studies found that the SIG staffing requirements were challenging for rural schools (Rosenberg et al., 2014; Rosenberg, 2011; Scott, McMurrer, et al., 2012). One study also found that the family engagement strategies were difficult for rural schools (Rosenberg et al., 2014). In contrast, the same study found that implementing professional development and increasing time for instruction were among the most frequently implemented SIG strategies in rural schools (Rosenberg et al., 2014). Recent reports about technical assistance providers in all types of schools suggest that the number of nongovernmental providers is growing (Corbett, 2011), but district and state technical assistance required under School Improvement Grants has been limited (Herman et al., 2013).

Research questions

Survey data were collected to address four research questions:

- How did principals of rural SIG transformation model schools rate their school's implementation of the model's requirements?
- To what extent did principals report challenges to implementation of the transformation model?
- To what extent did principals report that their school received technical assistance for the implementation of the transformation model?
- To what extent were principals' reports of challenges and technical assistance related to implementation?

Survey participants

Rural SIG transformation schools in cohort 1 represented 42 states and the Bureau of Indian Education. These schools served all grade levels and had an average of 460 students. On average, 65 percent of their students were a racial/ethnic minority, and 72 percent were eligible for the school lunch program, a proxy for low income and a characteristic associated with low-performing schools (see table B2 in appendix B).

Survey respondents included nearly three-quarters (74 percent) of the principals from the 201 rural SIG cohort 1 transformation schools that were still open and still employed staff members who had been employed during the SIG funding period and thus knew enough about SIG implementation to respond to the survey. Because 83 percent of schools had replaced their principals at some point during the three-year grant period, many principals were new.

Survey respondents included nearly three-quarters of the principals from the 201 rural SIG cohort 1 transformation schools that were still open and still employed staff members who had been employed during the SIG funding period and thus knew enough about SIG implementation to respond to the survey

Cleaning the data reduced the sample size to 135 principals (67 percent of the 201). Surveyed principals served schools that were similar in size and student characteristics to the total sample. Information about the survey administration and respondents is in appendix B; the survey instrument is shown in appendix C.

The study analyzed relationships between implementation and challenges and between implementation and technical assistance. More information about the survey and the analysis methods is given in box 2 and appendix D.

Box 2. The survey instrument and analysis methods

Developed and administered by Regional Educational Laboratory Northwest, the spring 2014 survey asked principals in rural schools 12 questions about implementation of the School Improvement Grants (SIG) transformation model, as described in federal guidance (U.S. Department of Education, OESE, 2011). The following list shows how the survey items related to the federal requirements of the transformation model.

Improving instruction

- Provide staff with ongoing, high-quality, job-embedded professional development (1 survey item).
- Use data to identify and implement new research-based curricula (1 survey item).
- Promote the continuous use of student achievement data in order to inform and differentiate instruction (1 survey item).
- Establish schedules and strategies that provide expanded learning time (1 survey item).
- Use operational flexibility—such as staffing, calendars/time, and budgeting—to improve instruction and student outcomes (1 survey item).

Ensuring the presence of high-quality staff

- Use rigorous, transparent, and equitable staff and principal evaluation systems that take into account data on student growth, as well as other factors (1 survey item).
- Identify and reward staff, school leaders, and other staff members who improved student outcomes (1 survey item) and identify and remove staff members who did not (1 survey item).
- Implement strategies designed to recruit (1 survey item), place, and retain staff (1 survey item).
- Replace the principal who led the school prior to commencement of the transformation model (no survey items represented this element since responding principals were not present when the original principal was replaced).

Engaging family and community

- Provide ongoing mechanisms for family (1 survey item) and community (1 survey item) engagement.

Technical assistance

- Ensure that the school receives ongoing, intensive technical assistance and related support from the district, the state, or an external organization (the survey included a series of items about district, state, university, and other assistance, for previously described strategies).

To analyze the data, the study team used descriptive statistics for each survey item. It examined the percentages of principals who reported that their school had implemented each transformation model strategy, percentages who reported challenges to each strategy, and percentages who reported receiving technical assistance for each strategy.

In addition, the study team examined percentages of principals who reported implementation challenges and technical assistance across all strategies in the survey. For example, it calculated the percentages of principals who said their school had implemented all the strategies, the percentages reporting at least one challenge to implementation, and the percentage reporting receiving technical assistance for at least one strategy.

Finally, the study team explored relationships between implementation and challenges, as well as relationships between implementation and technical assistance.

For more on survey methods, see appendix B; for the survey instrument, see appendix C; and for analysis methods, see appendix D.

What the study found

This study confirmed previous research that found certain strategies in the SIG transformation model were challenging for rural schools—particularly those related to ensuring high-quality staff (Rosenberg et al., 2014; Rosenberg, 2011; Scott, McMurrer, et al., 2012) and engaging families (Rosenberg et al., 2014). It also found that schools that had implemented more strategies reported fewer challenges and more technical assistance.

The six most salient findings are listed below and described in this section. Additional findings are in appendix D.

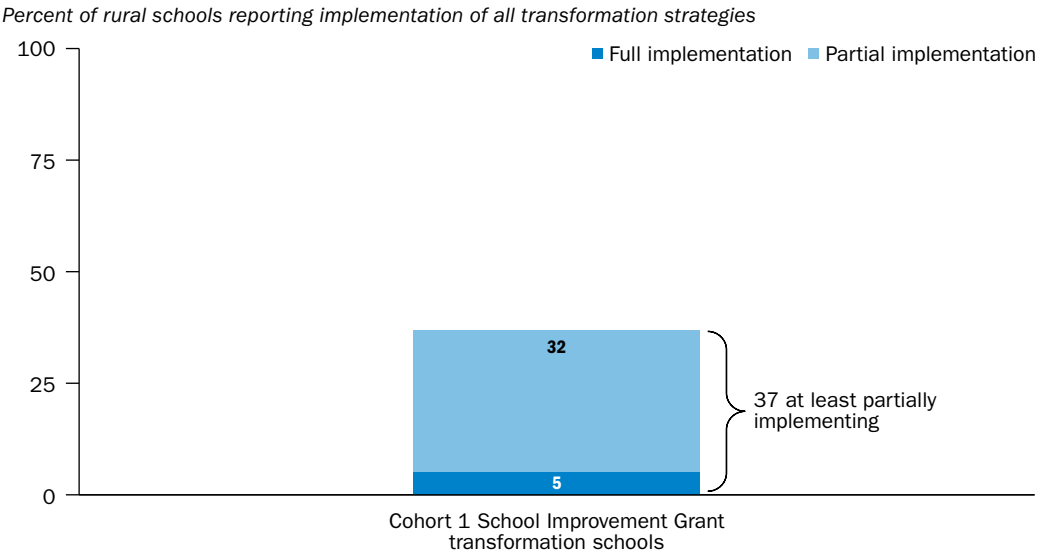
- Few rural schools fully implemented the SIG transformation model.
- More schools implemented strategies related to improving instruction than strategies related to ensuring high-quality staff or engaging families and communities.
- More schools reported implementation challenges related to ensuring high-quality staff and engaging families and communities than challenges related to improving instruction.
- Almost all schools received technical assistance from at least one provider, with districts the most frequently identified provider.
- The more strategies for which principals reported challenges, the fewer strategies they reported that their school had fully implemented.
- The more strategies for which principals reported receiving technical assistance, the more strategies they reported that their school had fully implemented.

This study confirmed previous research that found certain strategies in the SIG transformation model were challenging for rural schools

Few rural schools fully implemented the School Improvement Grant transformation model

Only 5 percent of rural schools fully implemented all SIG transformation strategies, and 32 percent partially implemented all strategies (figure 1). Other principals reported that

Figure 1. Only 5 percent of rural schools fully implemented all School Improvement Grant transformation strategies, and 32 percent partially implemented all strategies in 2014



Source: Authors' analysis of School Improvement Grant rural principal survey data.

their school was either still considering how to implement one or more strategies or did not intend to implement one or more strategies. At the time of the survey, most of the three-year grant activities were expected to be complete, although schools were allowed to roll over unused grant funds.

On average, the 134 principals who responded to survey questions on implementation reported that their school had fully implemented at least 6 of the 12 strategies and had at least partially implemented 10. Reports ranged from no strategies fully implemented (2 percent of principals) to all 12 strategies fully implemented (5 percent of principals).

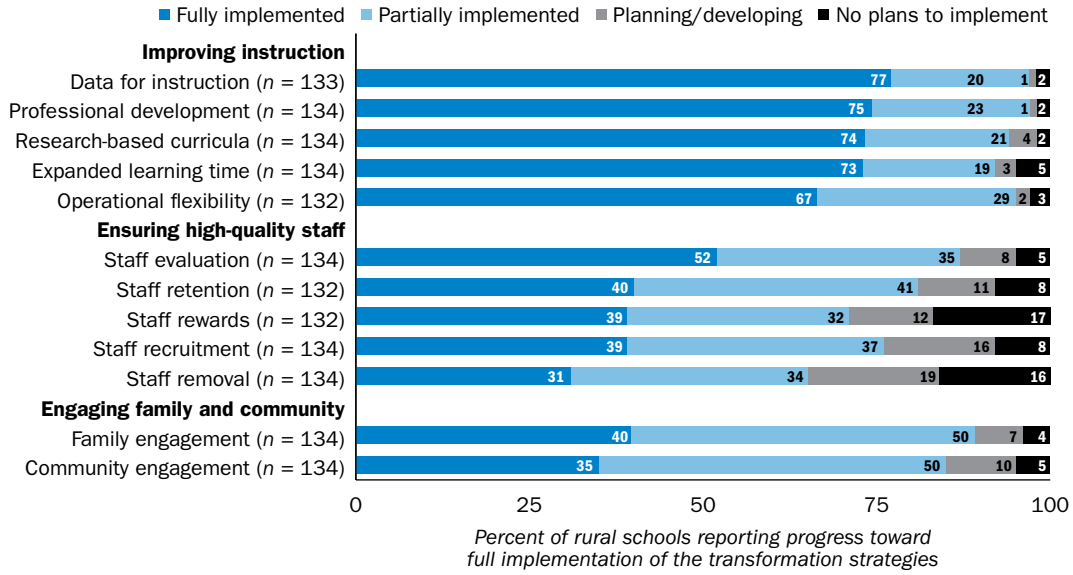
More schools implemented strategies related to improving instruction than strategies related to ensuring high-quality staff or engaging families and communities

Strategies for ensuring high-quality staff and engaging families and communities were fully implemented by a third to a half of schools

More than two-thirds of principals said that their school had fully implemented transformation strategies to improve instruction, such as using student data to tailor instruction, providing professional development, and expanding learning time (figure 2). Strategies for ensuring high-quality staff and engaging families and communities were fully implemented by a third to a half of schools, according to survey responses.

If principals reported full implementation of a strategy, they were also asked whether this strategy was essential to their school improvement efforts. Almost all reported that the fully implemented strategies were essential (see table D2 in appendix D for more details).

Figure 2. More than two-thirds of principals said that their school had fully implemented transformation strategies to improve instruction in 2014



Note: The number of schools reporting differs across strategies because respondents were removed if they left the item blank. Percentages for all response categories are reported in table D1 in appendix D and may not sum to 100 because of rounding.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

More schools reported implementation challenges related to ensuring high-quality staff and engaging families and communities than challenges related to improving instruction

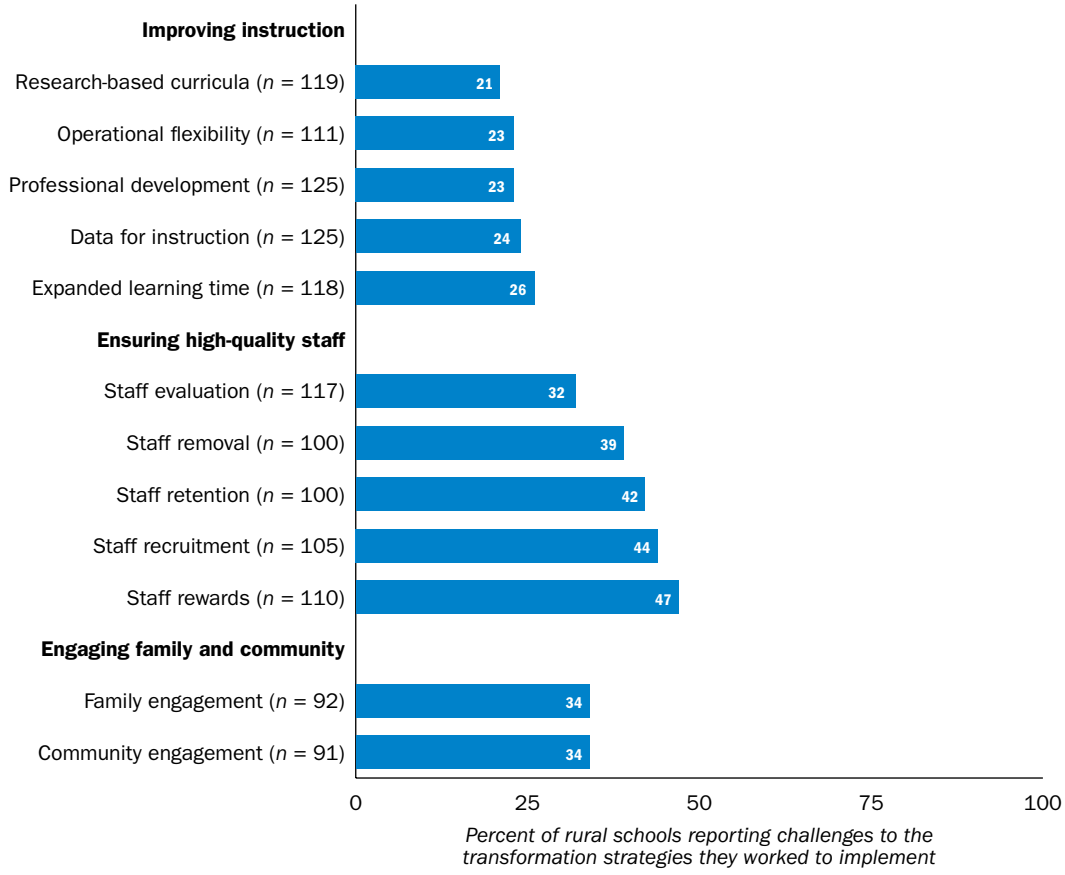
Principals reported many challenges to implementing the transformation model, including insufficient funding, staff expertise, staff time, technology, teacher support, and district support (see table D3 in appendix D for the specific challenges principals identified).

Most principals (78 percent) reported facing at least one challenge to at least one strategy. On average, principals reported that their school had experienced implementation challenges for three of the strategies they had attempted to implement.

The percentage of principals reporting challenges varied by transformation strategy (figure 3). More principals reported challenges implementing strategies related to ensuring high-quality staff and engaging families and communities than reported challenges implementing strategies related to improving instruction, but at least 20 percent of principals reported implementation challenges for each strategy.

On average, principals reported that their school had experienced implementation challenges for three of the strategies they had attempted to implement

Figure 3. More principals reported challenges implementing strategies related to ensuring high-quality staff and engaging families and communities than reported challenges implementing strategies related to improving instruction in 2014



Note: The number of schools reporting differs across strategies because respondents were removed if they said their school did not attempt to implement the strategy, if they did not know whether the strategy was challenging, or if they left the item blank.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

Almost all schools received technical assistance from at least one provider, with districts the most frequently identified provider

Most schools (93 percent) received technical assistance from at least one provider for at least one transformation strategy examined in the survey. The percentage of principals reporting that their school had received technical assistance varied across strategies. At least one technical assistance provider delivered support for each strategy, but not all schools received support for each strategy (see table D4 in appendix D).

More schools reported that their technical assistance came from districts than from the state, universities, or other types of organizations (figure 4). This was true across all strategies and for each strategy.

Principals who reported receiving technical assistance were asked the extent to which the technical assistance was sufficient. Among the schools receiving technical assistance, regardless of the type of service provider, 69–100 percent of principals agreed that it was sufficient to help the school implement that aspect of the transformation model (see table D5 in appendix D).

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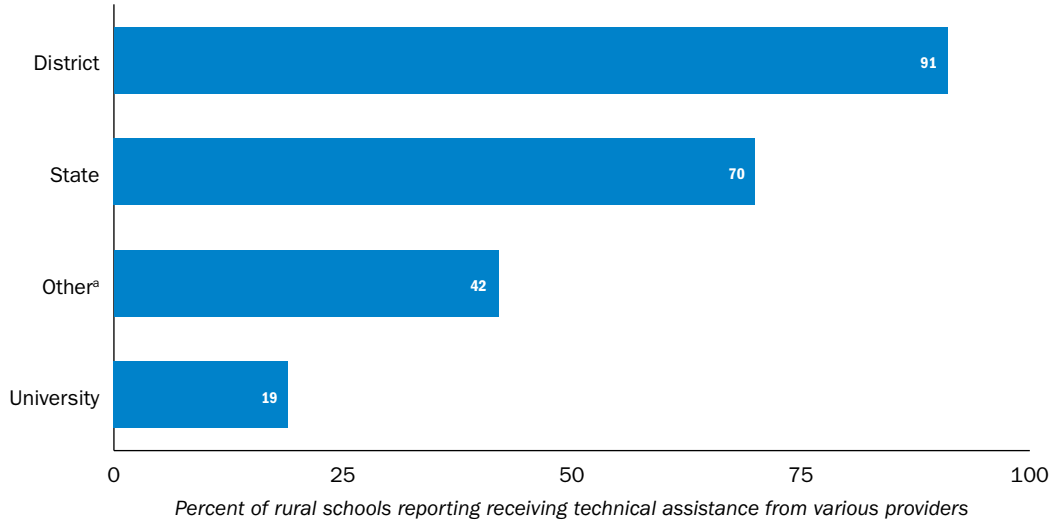
The more strategies for which principals reported challenges, the fewer strategies they reported that their school had fully implemented

Principals identified an average of three transformation strategies that their school found challenging to implement. As the number of challenges increased, the number of strategies fully implemented decreased (see appendix D). When principals reported 3 or more strategies with challenges, they also reported that their school had fully implemented an average of 5.2

Figure 4. More schools reported that their technical assistance came from districts than from the state, universities, or other types of organizations in 2014

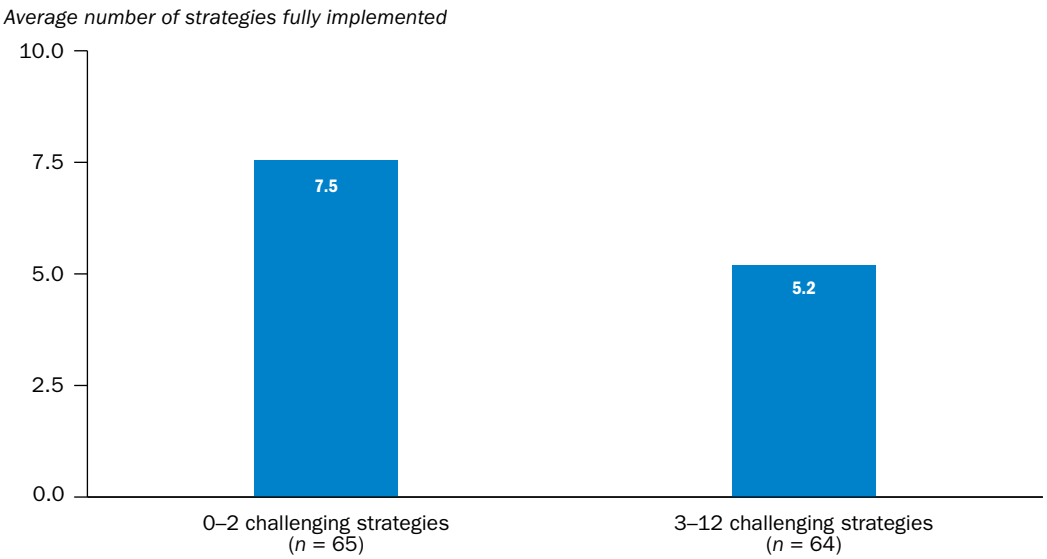


a. Includes private or government organizations, individuals, teachers unions, and unknown. See figure D1 in appendix D for more information.

Note: *n* = 135.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

Figure 5. When principals reported 3 or more strategies with challenges in 2014, they also reported that their school had fully implemented an average of 5.2 strategies



Source: Authors' analysis of School Improvement Grant rural principal survey data.

strategies. In contrast, when principals reported fewer than 3 strategies with challenges, they reported that their school had fully implemented an average of 7.5 strategies (figure 5).

The more strategies for which principals reported receiving technical assistance, the more strategies they reported that their school had fully implemented

Principals reported that their school received technical assistance for an average of seven strategies. As the number of strategies for which schools received technical assistance rose, the number of strategies fully implemented also rose (see appendix D). When principals reported receiving technical assistance for 7 or fewer strategies, they reported that their school had fully implemented an average of 5.7 strategies. In contrast, when they reported that their school received technical assistance for more than 7 strategies, they reported full implementation of an average of 7.2 strategies (figure 6).

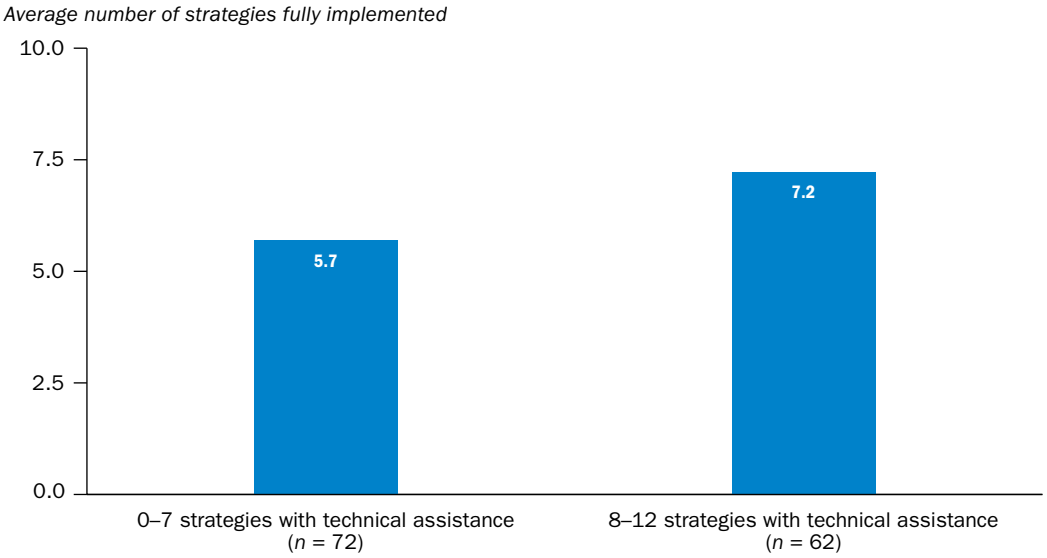
For 7 of the 12 strategies, when principals reported receiving technical assistance, they were significantly more likely to report full implementation of that strategy

Receiving technical assistance appears to be associated with achieving full implementation of strategies. This is also true for many individual strategies. For 7 of the 12 strategies, when principals reported receiving technical assistance, they were significantly more likely to report full implementation of that strategy.[3] These included:

- Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes.
- Using data to identify and implement a new research-based curriculum.
- Identifying and removing staff who have not improved student outcomes.
- Using staff evaluation systems that account for student growth.
- Implementing strategies to recruit staff who are highly qualified.
- Identifying and rewarding staff who have improved student outcomes.
- Providing mechanisms for community engagement.

(See table D7 in appendix D for more information about this analysis.)

Figure 6. When principals reported receiving technical assistance for 7 or fewer strategies in 2014, they reported that their school had fully implemented an average of 5.7 strategies



Source: Authors' analysis of School Improvement Grant rural principal survey data.

Implications of the study findings

The study findings could inform future modifications of the transformation model for rural schools in the REL Northwest Region. Using research to guide these modifications is important because the federal grants increased flexibility starting in the 2015/16 school year.

Rural schools are challenged by staffing changes and by engaging families and communities

Education leaders in the REL Northwest Region might want to focus modifications on strategies that the survey showed were implemented less frequently. For example, 77 percent of schools fully implemented the use of student data to inform decisions, while only 52 percent fully implemented staff evaluation, and 40 percent fully implemented family engagement strategies. Based on these findings, leaders may wish to focus funding and attention on the strategies that are more difficult for rural schools to implement. However, this study did not examine whether full implementation of these strategies leads to improvement in schools, so leaders should monitor school improvement during implementation to ensure that these efforts are helpful to schools.

State and district leaders in the REL Northwest Region may want to consider modifications that alleviate challenges and funnel technical assistance to rural SIG schools

Rural schools working on improvement need help beyond grant funding

Across the 12 transformation strategies explored by the survey, the fewer strategies found to be challenging, the more strategies that were fully implemented. In addition, the more strategies for which technical assistance was reported, the more strategies that were fully implemented. Based on these results, state and district leaders in the REL Northwest Region may want to consider modifications that alleviate challenges and funnel technical assistance to rural SIG schools. However, because this study is descriptive rather than

experimental, the results cannot determine whether challenges directly inhibited implementation or whether the technical assistance directly caused full implementation. Therefore, states or other entities need to draw on other data to ensure that the recommended technical assistance providers and their support for alleviating challenges have a track record of success.

Ninety-one percent of principals reported that they had received technical assistance from their districts, possibly because of districts' geographic proximity to their rural schools or because of the pre-existing relationship between the district and the school. District leaders may feel obligated to provide extensive technical assistance, rather than hire outside organizations to provide assistance, because of their traditional role supporting schools. In addition, districts apply for SIG funding on behalf of their schools. To complete these grant applications, districts must have grant-writing capacity. Districts with successful SIG applications may have more grant-writing resources, and more capacity in general, including that needed to provide technical assistance.

Fewer principals (70 percent) reported receiving assistance from their state. While this study cannot determine the optimal level of state assistance to SIG schools, REL Northwest Region policymakers may want to consider enhancing state supports, particularly for strategies for which the survey found that technical assistance was associated with full implementation. For example, policymakers and other education leaders in the region might provide more state funding or supplement state support with technical assistance from other agencies, such as regional education agencies or nonprofit organizations. Federal agencies, such as comprehensive centers, content centers, and regional educational laboratories, might also work with REL Northwest Region states to enhance state supports for rural low-performing schools in the future.

REL Northwest Region policymakers may want to consider enhancing state supports, particularly for strategies for which the survey found that technical assistance was associated with full implementation

Limitations of the study

This study has several limitations. First, assessment of SIG implementation is based solely on principals' or their proxies' ratings of their own schools; other informants with knowledge of the same schools, such as teachers or district or state administrators, might have different perspectives.

Second, principals' responses may be positively biased by the tendency to provide socially acceptable answers on surveys. However, principals showed a range of responses, so the confidentiality of the survey may have helped guard against positively skewed results.

Third, the principal turnover at the schools participating in the study may have had an impact on the quality of the responses. However, because principals who were not familiar with SIG implementation could designate another administrator or teacher at the school to complete the survey, the study used responses from the most knowledgeable person available.

Fourth, 135 principals provided usable surveys, which represented 67 percent of all rural SIG transformation schools in cohort 1. The survey respondents may have differed in important ways from those who did not respond. However, the study team was able to determine that survey respondents came from schools that were similar to the total population of rural SIG transformation schools on important characteristics, including average

student enrollment, average percentage of racial/ethnic minority students, and average rate of eligibility for the federal school lunch program, an indicator of poverty.

Fifth, the study provided information only about cohort 1 rural SIG schools implementing the transformation model and did not report on other cohorts or other types of improvement models.

Finally, the study can make no causal claims concerning how challenges or technical assistance affected implementation of the transformation model strategies.

Appendix A. Previous studies offer mixed findings

This study grouped the elements of the School Improvement Grants (SIG) transformation model into three broad categories: improving instruction, ensuring high-quality staff, and engaging family and community. Many education leaders anticipated that rural schools would have difficulty meeting some of these requirements (Klein, 2010). Past research has shown that rural schools faced challenges in all three areas, but some case studies showed that some rural schools excelled in these areas. Similarly, technical assistance to rural schools to support these areas has worked in some instances but has been less successful in others. This appendix provides an overview of past rural school research in improving instruction, ensuring high-quality staff, and engaging family and community, as well as of technical assistance supporting these improvement efforts in rural schools.

Improving instruction

SIG transformation model strategies for improving instruction include providing professional development, implementing a research-based curriculum, using data to inform instruction in the new curriculum, extending the school day, and providing the operational flexibility to make these things happen.

Recent case studies showed that these elements were implemented frequently in rural schools (Rosenberg et al., 2014). Other research suggests that improving instruction in rural areas is possible using innovative approaches, such as online events and mentoring (Beesley, 2011) and online learning for teachers (Gordon, 2011). It also shows that successful professional development training must be tailored to meet the needs of rural schools (Howley & Howley, 2005). Finally, while much research shows that adding high-quality learning time to the school day improves student outcomes (ECONorthwest & Chalkboard Project, 2008; Kidron & Lindsay, 2014), rural schools face multiple challenges to extending the instructional day, such as limited availability of private and community partners such as tutoring organizations or recreational organizations to assist with before- and after-school instruction, long bus rides, and high transportation costs (Sandel & Bhat, 2008).

Ensuring high-quality staff

To implement the SIG transformation model, schools must evaluate the effectiveness of staff members, remove ineffective staff members, recruit effective staff members, and reward and retain effective staff members. Studies of small numbers of rural SIG schools found that the staffing elements of the transformation model were particularly difficult to implement in rural areas (Rosenberg et al., 2014; Rosenberg, 2011; Scott, McMurrer, et al., 2012; Yatsko, Lake, Nelson, & Bowen, 2012).

Several studies found that recruiting and retaining high-quality staff members is more difficult in rural areas (Hammer et al., 2005; Monk, 2007) because of lower salaries in rural schools (Johnson, Showalter, Klein, & Lester, 2014) and long commute times for teachers (Scott, McMurrer, et al., 2012). These challenges may be exacerbated by the fact that small rural schools must hire more teachers per 100 students than nonrural schools to cover all grade levels and content areas. (Levin, Manship, Chambers, Johnson, and Blankenship, 2011).

Other studies have shown that some rural schools solved their staffing problems through partnerships with outside entities, mentoring programs, and distance learning initiatives (Barley & Brigham, 2008; Gordon, 2011; Hammer et al., 2005). Universities have offered multiple certifications so that teachers in small rural schools can teach multiple grade levels, provided online and community college courses to rural teachers and teacher candidates, and recruited teacher candidates who already live in rural areas (Barley & Brigham, 2008). In addition, teachers may see the low student–teacher ratio in small rural schools as an advantage (Barley & Beesley, 2007).

Engaging family and community

Family and community engagement is another SIG transformation model requirement that was particularly difficult for rural schools, according to a recent set of case studies of nine rural SIG schools (Rosenberg et al., 2014).

Much of the research literature on family and community involvement in K–12 school settings has focused on urban and suburban settings (Semke & Sheridan, 2012). Involvement includes traditional parent and teacher meetings and community volunteers in schools, as well as partnerships between schools and family and community organizations. Rural schools experience barriers to this type of involvement according to some research (Semke & Sheridan, 2012). Other research has shown that rural communities are close knit, that parents visit rural schools more frequently than in other locales (Prater et al., 1997), and that they are more involved in homework (Xu, 2004). Yet, rural teachers reported that lack of time kept parents from becoming involved in schools (McBride, Bae, & Wright, 2002). Also, parents and community members in rural areas sometimes mistrust school officials, especially those who come from outside the local area (Owens, Richerson, Murphy, Jageleweski, & Rossi, 2007).

Technical assistance

To support implementation, SIG guidance mandates that SIG schools receive technical assistance from states, districts, or other providers, such as nonprofits or universities. A recent study of state and district supports for schools found that it has been limited and has varied across states and districts; however, this study did not explore differences in support for rural schools (Herman et al., 2013). Similarly, a Government Accountability Office report expressed concerns about state and district capacity to monitor the work and impact of external technical assistance providers but did not examine rural schools in particular (Scott, Sirois, et al., 2012).

Few large-scale research projects have examined technical assistance for the improvement of rural schools, and some of this research is contradictory, perhaps because the results may relate to the technical assistance provider. Although regional differences were not its primary focus, a study of external supports for low-performing schools in Chicago and in urban, suburban, and rural areas of California found that participants viewed the assistance as peripheral, and rural respondents questioned whether providers understood the rural context (Finnigan, Bitter, & O'Day, 2009). In contrast, a study of a regional partnership to provide technical assistance to rural schools in Missouri found that schools receiving assistance made progress in adopting a standards-based curriculum, increased focused professional development offerings, and improved teacher buy-in to district reform activities (Harmon, Gordanier, Henry, & George, 2007).

Appendix B. Survey creation and administration

Regional Educational Laboratory (REL) Northwest created the survey for the 211 cohort 1 rural School Improvement Grant (SIG) schools implementing the transformation model. The survey was based on a review of the literature on SIG grants and rural schools and on staff members' past work on SIG evaluation (Scott, Davis, & Krasnoff, 2012; Scott & Lasley, 2013, 2014). The full survey is in appendix C.

Survey description

The survey's introductory section asked principals to state when they became an administrator at their school and whether they were familiar with SIG implementation there. Principals who were not administrators at the school during the SIG funding period or were not knowledgeable about School Improvement Grants were directed to designate a proxy. (More information about this process is in the section about collection of information, which follows.)

The first substantive section of the survey asked principals or their proxies to rate their school's implementation of the required transformation model strategies.[4] These questions were based on a similar survey conducted by this study team for the Center on School Turnaround (Scott & Lasley, 2013, 2014).

Principals rated the implementation on a scale of 1 to 4 in which:

1 = N/A (not intending to implement).

2 = Planning/developing (planning and preparing to implement this activity).

3 = Partial implementation (actively implementing this activity, but some aspects are not yet completely integrated into routines).

4 = Full implementation (completely implementing this activity, which is now a routine part of our school).

This scale reflects the stages of implementation developed by Fixsen, Blase, Naoom, & Wallace (2009). Finally, this section asked principals who reported full implementation of an element whether that element was essential to their school improvement plan.

An open-ended question allowed principals to list additional school improvement activities implemented during the SIG funding period. However, few principals responded to this item; thus, the data were not used.

The next section of the survey gathered information about challenges to implementation. For each element, the principals were asked to select one or more challenges. Principals were allowed to select multiple responses because some items could be related to one another. For example, "insufficient funding" may mean that staff members were overworked and, therefore, also had "insufficient staff time" to implement fully. Principals could select both responses if appropriate. They also had the option of selecting "N/A, no challenges," "N/A, no implementation," or "don't know."

Challenges included:

- Insufficient funding.
- Insufficient staff time.
- Insufficient district support.
- Insufficient staff expertise.
- Insufficient teacher support.
- Insufficient technological capacity or equipment.
- Other (list other challenges).

The challenges section included an open-ended question that allowed principals to elaborate on the barriers to implementation.

The last section asked principals to identify the entities that assisted them as they implemented the required transformation model strategies. Technical assistance entities included their district, their state education agency, a university, or another technical assistance provider. This list was based on the entities that other studies found most often assisted with School Improvement Grants (Corbett, 2011; Scott, McMurrer, et al., 2012). Principals who selected "another technical assistance provider" were prompted to fill in the name.

Finally, the principal was asked to indicate on a four-point scale the degree to which assistance from each entity named was sufficient.

This survey did not ask about one element of the transformation model: removal of the principal. The principals who responded to the survey presumably were appointed principal as a result of the SIG award and would not have information about this element or challenges to implementing removal of the previous principal. Instead, the survey asked principals when they had started at their school. Analysis showed that 83 percent of schools did replace their principals at some point during the three-year grant period.

Definition of rural schools and collection of information

This one-time data collection by REL Northwest and its partner, Policy Studies Associates, solicited responses from the 211 rural SIG schools in cohort 1 implementing the transformation model. While there are many definitions of rural schools (Arnold, Biscoe, Farmer, Robertson, & Shapley, 2007), this study defined rural schools using the National Center for Education Statistics locale codes (table B1).

The SIG baseline database created by Hurlburt and colleagues (2012) provided the names and addresses of the rural schools receiving School Improvement Grants and using the transformation model. The database combines publicly available data from state department of education websites, state SIG applications, and the National Center for Education Statistics Common Core of Data. The database includes 15,518 SIG-eligible schools across 50 states, the District of Columbia, and the Bureau of Indian Education. It also designates the 1,247 SIG-awarded schools across 49 states, including the 211 schools of interest to this study.

The study included all 211 cohort 1 rural schools across the nation that implemented the SIG transformation model—193 rural schools from the SIG baseline database plus 18 Bureau of Indian Education schools whose National Center for Education Statistics locale codes were missing from the SIG baseline database, but who have locale codes of 31–43 in

Table B1. National Center for Education Statistics classifications for rural areas and towns, 2014

Locale code	Definition
31 - Town, Fringe	Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area.
32 - Town, Distant	Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area.
33 - Town, Remote	Territory inside an urban cluster that is more than 35 miles from an urbanized area.
41 - Rural, Fringe	Census-defined rural territory that is 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.
42 - Rural, Distant	Census-defined rural territory that is 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.
43 - Rural, Remote	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.

Source: U.S. Department of Education, National Center for Education Statistics, n.d.

the National Center for Education Statistics preliminary 2011 data (U.S. Department of Education, National Center for Education Statistics, 2013).

The procedure for collecting information included four steps: a pilot survey, an initial invitation letter, the actual survey, and follow-up contacts. Between October 23 and November 8, 2013, REL Northwest and Policy Studies Associates conducted a pilot of the survey instrument with seven principals from rural SIG schools that had received cohort 1 funding and had used the transformation model. This pilot allowed analysis of participant responses item by item and facilitated revision of the survey to ensure that all items and instructions were relevant and easily understood. The pilot also tested the data collection procedures. Principals who participated in the pilot had the opportunity to update their online pilot survey responses when the actual survey was administered from April 1 through June 13, 2014.

After clearance from the federal Office of Management and Budget, data collection began. REL Northwest and Policy Studies Associates sent an introductory letter to superintendents and school turnaround leaders in state departments of education, superintendents of districts, and principals of rural SIG transformation schools emphasizing the importance of the study and stating that those who responded to the survey would receive a link to the published study and would be invited to participate in multiple webinars to discuss the study results. The letter also stated that an online survey link would be emailed within a week.

The letter asked recipients who were unfamiliar with SIG at their current schools to fill out only the beginning of the survey, which provided instructions for designating a proxy (another administrator or teacher leader) to complete the survey (appendix C). The letter also explained that principals who were at their school during the time period being studied could designate a proxy if it would help the school complete the survey promptly.

Policy Studies Associates then emailed an invitation to cohort 1 rural SIG transformation principals inviting them to complete the online survey via Survey Gizmo, a survey

administration software program. Principals were sent two reminders to complete the online survey.

Because return rates were less than 50 percent after the second reminder, gift cards were offered to increase the response rate. The pilot had shown that offering an incentive (an Amazon electronic gift card) after several reminders increased the response rate from 44 percent to 77 percent. Several research studies support the use of incentives (Armstrong, 1975; Church, 1993; James & Bolstein, 1992), particularly for online surveys of principals (Jacob & Jacob, 2012). Principals who completed the survey before the second reminder were sent the incentive retroactively. After additional reminders, nonrespondents were offered a Word document version of the survey via email and U.S. Postal Service mail, in case they preferred to respond in one of these formats.

In the process of emailing and phoning to remind participants to respond to the survey, Policy Studies Associates determined that 1 of the 211 schools had closed and 9 had turned over their staff completely. This decreased the universe of respondents to 201. Ultimately, survey respondents represented a total of 148 (or 74 percent) of the 201 still-intact rural SIG transformation schools, (that is, those that were still open and still employed staff members who were there during the SIG funding period). Cleaning the data to remove duplicates,[5] incomplete responses, and nonresponses resulted in 135 useable surveys (67 percent of the target sample). Characteristics of the responding schools were similar to those of the total population (table B2).

Of the 135 respondents, 23 were proxies designated by the current school principal. All 23 reported that they were familiar with SIG implementation. In addition, 18 of these respondents indicated that they were a school or district administrator, 2 were teacher leaders, 2 gave titles that did not clearly indicate whether they were teachers or principals, and 1 did not give a title.

Table B2. Characteristics of schools in the population compared with respondent schools, 2014

	Average student enrollment		Racial/ethnic minority students		Students eligible for school lunch program	
Schools in population and survey	Number of students	Number of schools	Percent of students	Number of schools	Percent of students	Number of schools
Schools in population (*n* = 211)	460	210	65	210	72	207
Schools in survey (*n* = 135)	466	134	63	134	72	131

Source: Authors' analysis of School Improvement Grant rural principal survey data and National Center for Education Statistics data (2011/12).

Appendix C. Survey instrument

This survey is part of a study of the implementation of School Improvement Grants (SIG) in rural schools that use the transformation model. The Regional Educational Laboratory (REL) Northwest is conducting this study. REL Northwest is a private, nonprofit research and technical assistance provider based in Portland, Oregon, and is part of the Institute of Education Sciences' Regional Educational Laboratory program (http://ies.ed.gov/ncee/edlabs/).

The purpose of this study is to provide educators and policymakers with information about how rural schools implemented their School Improvement Grants and to inform future efforts to turn around schools in rural areas. Your responses are very important. As the principal of a SIG school, you have first-hand knowledge about your school's implementation efforts. We will combine your answers with those of other SIG principals to help evaluators understand the implementation of the SIG transformation model in rural schools.

The survey takes about 20 minutes to complete. We request that you respond by [date to be determined]. Because your participation is voluntary, there are no repercussions to participating or not participating. By completing this survey, you are consenting to the inclusion of your survey data in the REL study. No one, other than the study team members from REL Northwest and Policy Studies Associates who are working on this project will see your individual responses, and personal information will be removed from the database before analysis. Furthermore, the reports prepared for this study will summarize findings across the sample and will not associate responses with a specific district, school, or individual. Any reported information will always be aggregated across multiple schools. We will not provide information that identifies you or your district to anyone outside the study team.

If you have questions, please contact Dr. Caitlin Scott at caitlin.scott@educationnorthwest.org or 1.800.547.6339, ext. 585.

Thank you for your participation!

Per the policies and procedures required by the Education Sciences Reform Act of 2002, Title I, Part E, Section 183, responses to this data collection will be used only for statistical purposes. The reports prepared for this study will summarize findings across the sample and will not associate responses with a specific district or individual. We will not provide information that identifies you or your district to anyone outside the study team, except as required by law. Any willful disclosure of such information for non-statistical purposes, without the informed consent of the respondent, is a class E felony. The survey is proprietary and approval by the federal Office of Management and Budget (OMB) does not imply endorsement by the Department of Education.

Public Burden Statement: According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. Public reporting burden for this collection of information is estimated to average 20 minutes, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is voluntary. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1850-0905.

Background

1. What month did you assume your current position as principal of your school? Please check ONE response in the box below the appropriate month.

January	February	March	April	May	June	July	August	September	October	November	December
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

2. What year did you assume your current position as principal of your school?
   Year you became principal at your school: _____

3. What position did you hold prior to becoming principal of your current school?
   _____

4. Was this position in the school where you are currently serving as principal?
   - ☐ a. Yes
   - ☐ b. No

5. Are you familiar with the activities your school implemented using SIG funds, the challenges associated with SIG implementation, and the SIG implementation supports your school may have received?
   - ☐ a. Yes (Go to question 6)
   - ☐ b. No

IMPORTANT NOTE: If you are not familiar with implementation of the SIG-funded transformation model at your school, we would appreciate it if you would please provide the name, title, email address, and phone number of someone whom you believe is familiar with SIG implementation at your school, such as:

- A district administrator responsible for school improvement.
- A school-level administrator, such as an assistant principal, who was involved in the implementation of the SIG-funded transformation model at your school.
- A teacher who had responsibilities for assisting in the implementation of the school's SIG-funded transformation model.

Name

_____

Title

_____

Email address

_____

Phone number (including area code)

_____

[If a principal designated a proxy, the survey ended automatically.]

Implementation of the transformation model

6. To what degree has your school implemented each of the following activities related to the SIG transformation model? For each of the following transformation activities, please check the first box if your school was not planning to implement that particular transformation activity; check the second box if your school is planning and preparing to implement that activity but has not yet done so; check the third box if your school has partially implemented the activity; or check the fourth box if your school has fully implemented the activity. Please check only ONE response for each row.

Activity	Implementation stage			
	N/A (not intending to implement)	Planning/ developing (planning and preparing to implement this activity)	Partially implemented (actively implementing this activity, but some aspects are not yet completely integrated into routines)	Fully implemented (completely implemented this activity, which is now a routine part of our school)
Used teacher evaluation systems that account for student growth	☐	☐	☐	☐
Identified and *rewarded* teachers who have improved student outcomes	☐	☐	☐	☐
Identified and *removed* teachers who have *not* improved student outcomes	☐	☐	☐	☐
Provided staff with ongoing, high-quality, job-embedded professional development	☐	☐	☐	☐
Implemented strategies to *recruit* high-quality staff	☐	☐	☐	☐
Implemented strategies to *retain* high-quality staff	☐	☐	☐	☐
Used data to identify and implement a new instructional program	☐	☐	☐	☐
Promoted the use of student data to inform instruction	☐	☐	☐	☐
Increased learning time for students	☐	☐	☐	☐
Provided mechanisms for *family* engagement	☐	☐	☐	☐
Provided mechanisms for *community* engagement	☐	☐	☐	☐
Used operational flexibility (such as staffing, calendars/ time, and budgeting) to improve student outcomes	☐	☐	☐	☐
Other (Please explain) _____ _____ _____	☐	☐	☐	☐

7. Among the transformation activities that are fully implemented in your school, which of the following, if any, do you believe were essential to your core efforts to improve your school? Check ALL that apply.

Activity	Essential to core school improvement efforts?	
	Yes, this activity was essential to our core school improvement efforts	No, this activity was not essential to our core school improvement efforts
Using teacher evaluation systems that account for student growth	☐	☐
Identifying and *rewarding* teachers who have improved student outcomes	☐	☐
Identifying and *removing* teachers who have *not* improved student outcomes	☐	☐
Providing staff with ongoing, high-quality, job-embedded professional development	☐	☐
Implementing strategies to *recruit* high-quality staff	☐	☐
Implementing strategies to *retain* high-quality staff	☐	☐
Using data to identify and implement a new instructional program	☐	☐
Promoting the use of student data to inform instruction	☐	☐
Increasing learning time for students	☐	☐
Providing mechanisms for *family* engagement	☐	☐
Providing mechanisms for *community* engagement	☐	☐
Using operational flexibility (such as staffing, calendars/ time, and budgeting) to improve student outcomes	☐	☐
Other (Please explain) _____ _____ _____	☐	☐

You are welcome to use the space provided below to elaborate on your responses regarding transformation model activities that are fully implemented in your school and that are essential to your core efforts to improve your school.

_____

_____

_____

8. Did any of the following factors act as barriers to your school's capacity to implement a particular transformation activity? Please indicate whether insufficient funding, staff expertise, staff time, technological capacity/equipment, teacher support, or district support/guidance acted as a barrier to your school's capacity to implement each of the following transformation activities. Check ALL that apply.

Activity	Challenge								
	N/A: No challenge	Insufficient funding to implement the activity	Insufficient staff expertise to implement the activity	Insufficient staff time to implement the activity	Insufficient technological capacity/ equipment to implement the activity	Insufficient teacher support for the activity	Insufficient district support/ guidance for the activity	Don t know/ cannot specify challenge	N/A: Did not implement this activity
Using teacher evaluation systems that account for student growth	☐	☐	☐	☐	☐	☐	☐	☐	☐
Identifying and *rewarding* teachers who have improved student outcomes	☐	☐	☐	☐	☐	☐	☐	☐	☐
Identifying and *removing* teachers who have *not* improved student outcomes	☐	☐	☐	☐	☐	☐	☐	☐	☐
Providing staff ongoing, high-quality, job-embedded professional development	☐	☐	☐	☐	☐	☐	☐	☐	☐
Implementing strategies to *recruit* high-quality staff	☐	☐	☐	☐	☐	☐	☐	☐	☐
Implementing strategies to *retain* high-quality staff	☐	☐	☐	☐	☐	☐	☐	☐	☐
Using data to identify and implement a new instructional program	☐	☐	☐	☐	☐	☐	☐	☐	☐
Promoting the use of student data to inform instruction	☐	☐	☐	☐	☐	☐	☐	☐	☐
Increasing learning time for students	☐	☐	☐	☐	☐	☐	☐	☐	☐
Providing mechanisms for *family* engagement	☐	☐	☐	☐	☐	☐	☐	☐	☐
Providing mechanisms for *community* engagement	☐	☐	☐	☐	☐	☐	☐	☐	☐
Using operational flexibility (such as staffing, calendars/ time, and budgeting) to improve student outcomes	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (Please specify) _____ _____ _____	☐	☐	☐	☐	☐	☐	☐	☐	☐

You are welcome to use the space provided below to elaborate on your responses regarding factors that acted as barriers to your school's capacity to implement transformation model activities.

_____

_____

_____

Technical assistance that supports implementation of transformation activities

9. Please indicate which of the following transformation model activities you received assistance for from your school district. Check ALL that apply.

Activity	District assistance received
a. Using teacher evaluation systems that account for student growth	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐
e. Implementing strategies to *recruit* high-quality staff	☐
f. Implementing strategies to *retain* high-quality staff	☐
g. Using data to identify and implement a new instructional program	☐
h. Promoting the use of student data to inform instruction	☐
i. Increasing learning time for students	☐
j. Providing mechanisms for *family* engagement	☐
k. Providing mechanisms for *community* engagement	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐
m. Other (Please specify) _____ _____ _____	☐

10. Please indicate the extent to which you agree that the technical assistance your school received from your school district on each of the following SIG transformation activities was sufficient. If your school district did not provide technical assistance for a particular transformation activity, please select "not applicable" in the appropriate row. Check only ONE response for each row.

	The technical assistance provided by my *school district* on this topic was sufficient				
Activity	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable
a. Using teacher evaluation systems that account for student growth	☐	☐	☐	☐	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐	☐	☐	☐	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐	☐	☐	☐	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐	☐	☐	☐	☐
e. Implementing strategies to *recruit* high-quality staff	☐	☐	☐	☐	☐
f. Implementing strategies to *retain* high-quality staff	☐	☐	☐	☐	☐
g. Using data to identify and implement a new instructional program	☐	☐	☐	☐	☐
h. Promoting the use of student data to inform instruction	☐	☐	☐	☐	☐
i. Increasing learning time for students	☐	☐	☐	☐	☐
j. Providing mechanisms for *family* engagement	☐	☐	☐	☐	☐
k. Providing mechanisms for *community* engagement	☐	☐	☐	☐	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐	☐	☐	☐	☐
m. Other (Please specify) _____ _____ _____	☐	☐	☐	☐	☐

You are welcome to use the space provided below to elaborate on your responses regarding the sufficiency of the technical assistance your school received from *your school district* on SIG transformation activities.

_____

_____

_____

11. Please indicate which of the following transformation model activities you received assistance for from your state. Check ALL that apply.

Activity	State assistance received
a. Using teacher evaluation systems that account for student growth	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐
e. Implementing strategies to *recruit* high-quality staff	☐
f. Implementing strategies to *retain* high-quality staff	☐
g. Using data to identify and implement a new instructional program	☐
h. Promoting the use of student data to inform instruction	☐
i. Increasing learning time for students	☐
j. Providing mechanisms for *family* engagement	☐
k. Providing mechanisms for *community* engagement	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐
m. Other (Please specify) _____ _____ _____	☐

12. Please indicate the extent to which you agree that the technical assistance your school received from your state on each of the following SIG transformation activities was sufficient. If your state did not provide technical assistance for a particular transformation activity, please select "not applicable" in the appropriate row. Please check only ONE response for each row.

Activity	The technical assistance provided by my *state* was sufficient				
	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable
a. Using teacher evaluation systems that account for student growth	☐	☐	☐	☐	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐	☐	☐	☐	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐	☐	☐	☐	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐	☐	☐	☐	☐
e. Implementing strategies to *recruit* high-quality staff	☐	☐	☐	☐	☐
f. Implementing strategies to *retain* high-quality staff	☐	☐	☐	☐	☐
g. Using data to identify and implement a new instructional program	☐	☐	☐	☐	☐
h. Promoting the use of student data to inform instruction	☐	☐	☐	☐	☐
i. Increasing learning time for students	☐	☐	☐	☐	☐
j. Providing mechanisms for *family* engagement	☐	☐	☐	☐	☐
k. Providing mechanisms for *community* engagement	☐	☐	☐	☐	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐	☐	☐	☐	☐
m. Other (Please specify) _____ _____ _____	☐	☐	☐	☐	☐

You are welcome to use the space provided below to elaborate on your responses regarding the sufficiency of the technical assistance your school received from *your state* on SIG transformation activities.

_____

_____

_____

13. Please indicate which of the following transformation model activities you received assistance for from a university. Check ALL that apply.

Activity	University assistance received
a. Using teacher evaluation systems that account for student growth	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐
e. Implementing strategies to *recruit* high-quality staff	☐
f. Implementing strategies to *retain* high-quality staff	☐
g. Using data to identify and implement a new instructional program	☐
h. Promoting the use of student data to inform instruction	☐
i. Increasing learning time for students	☐
j. Providing mechanisms for *family* engagement	☐
k. Providing mechanisms for *community* engagement	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐
m. Other (Please specify) _____ _____ _____	☐

14. Please indicate the extent to which you agree that the technical assistance your school received from a university on each of the following SIG transformation activities was sufficient. If a university did not provide technical assistance for a particular transformation activity, please select "not applicable" in the appropriate row. Please check only ONE response for each row.

Activity	The technical assistance provided by a *university* was sufficient				
	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable
a. Using teacher evaluation systems that account for student growth	☐	☐	☐	☐	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐	☐	☐	☐	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐	☐	☐	☐	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐	☐	☐	☐	☐
e. Implementing strategies to *recruit* high-quality staff	☐	☐	☐	☐	☐
f. Implementing strategies to *retain* high-quality staff	☐	☐	☐	☐	☐
g. Using data to identify and implement a new instructional program	☐	☐	☐	☐	☐
h. Promoting the use of student data to inform instruction	☐	☐	☐	☐	☐
i. Increasing learning time for students	☐	☐	☐	☐	☐
j. Providing mechanisms for *family* engagement	☐	☐	☐	☐	☐
k. Providing mechanisms for *community* engagement	☐	☐	☐	☐	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐	☐	☐	☐	☐
m. Other (Please specify) _____ _____ _____	☐	☐	☐	☐	☐

You are welcome to use the space provided below to elaborate on your responses regarding the sufficiency of the technical assistance your school received from *a university* on SIG transformation activities.

_____

_____

_____

15. Please indicate which of the following transformation model activities you received assistance for from another provider. Check ALL that apply.

Activity	Assistance received from another provider
a. Using teacher evaluation systems that account for student growth	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐
e. Implementing strategies to *recruit* high-quality staff	☐
f. Implementing strategies to *retain* high-quality staff	☐
g. Using data to identify and implement a new instructional program	☐
h. Promoting the use of student data to inform instruction	☐
i. Increasing learning time for students	☐
j. Providing mechanisms for *family* engagement	☐
k. Providing mechanisms for *community* engagement	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐
m. Other (Please specify) _____ _____ _____	☐

16. Please indicate the extent to which you agree that the technical assistance your school received from another provider on each of the following SIG transformation activities was sufficient. If another provider did not provide technical assistance for a particular transformation activity, please select "not applicable" in the appropriate row. Please check only ONE response for each row.

Activity	The technical assistance provided by *another provider* was sufficient				
	Strongly disagree	Disagree	Agree	Strongly agree	Not applicable
a. Using teacher evaluation systems that account for student growth	☐	☐	☐	☐	☐
b. Identifying and *rewarding* teachers who have improved student outcomes	☐	☐	☐	☐	☐
c. Identifying and *removing* teachers who have *not* improved student outcomes	☐	☐	☐	☐	☐
d. Providing staff with ongoing, high-quality, job-embedded professional development	☐	☐	☐	☐	☐
e. Implementing strategies to *recruit* high-quality staff	☐	☐	☐	☐	☐
f. Implementing strategies to *retain* high-quality staff	☐	☐	☐	☐	☐
g. Using data to identify and implement a new instructional program	☐	☐	☐	☐	☐
h. Promoting the use of student data to inform instruction	☐	☐	☐	☐	☐
i. Increasing learning time for students	☐	☐	☐	☐	☐
j. Providing mechanisms for *family* engagement	☐	☐	☐	☐	☐
k. Providing mechanisms for *community* engagement	☐	☐	☐	☐	☐
l. Using operational flexibility (such as staffing, calendars/time, and budgeting) to improve student outcomes	☐	☐	☐	☐	☐
m. Other (Please specify) _____ _____ _____	☐	☐	☐	☐	☐

You are welcome to use the space provided below to elaborate on your responses regarding the sufficiency of the technical assistance your school received from *another provider* on SIG transformation activities.

_____

_____

_____

Thank you for taking our survey. Your response is very important to us.

Appendix D. Analysis methods and additional results for the School Improvement Grant rural schools

This appendix provides detailed information about the data analysis methods for each research question, followed by additional results from the analyses for each question. This information adds detail to the key results, which are presented in the main report.

How did principals of rural SIG transformation schools rate their school's implementation of the requirements of the transformation model?

Analysis methods for research question 1. First, the study team used descriptive statistics from the 12 items in the survey about implementation of the School Improvement Grant (SIG) transformation model. This included frequencies for each item's four response categories.

Then, the study team recoded responses to these items to create two new series of variables:

- One in which "1" indicated full implementation and "0" indicated less than full implementation, (no implementation, planning, or partial implementation)
- One in which "1" indicated partial or full implementation and "0" indicated less than partial or full implementation, (no implementation or planning)

Next, the study team summed the resulting variables for full implementation across all 12 strategies to create a single variable representing the number of strategies (0–12) that each school implemented fully. Similarly, the study team summed the variables for partial or full implementation to create a single variable representing the number of strategies (0–12) that each school implemented at least partially. Descriptive statistics related to these variables are included in the results section in the main report.

The study team also analyzed data related to the series of 12 items asking participants whether a fully implemented transformation strategy was sufficient for their school improvement efforts. Data were cleaned to ensure that only principals reporting full implementation also reported sufficiency.

Additional results for research question 1

All 12 survey items representing implementation. Five percent of schools fully implemented strategies, and 37 percent at least partially implemented them. Other principals reported that their school was in the planning stages or was not intending to implement. On average, principals said that their school had fully implemented at least 6 of the 12 strategies and partially implemented at least 10.

Two percent of principals reported that their school had not even partially implemented any of the transformation strategies that the survey examined. These schools may not have completed their grants or simply were not able to implement any strategies even partially. It is unknown whether any of these schools lost their grants during the grant period.

Individual survey items. Respondents' ratings of implementation of individual strategies varied (see table D1 and figure 2 in the main report).

Table D1. Percentage of schools reporting no implementation, planning implementation, partial implementation, or full implementation of transformation strategies, 2014

Transformation strategy	Not intending to implement	Planning/ developing	Partially implemented	Fully implemented
Improving instruction				
Data for instruction (*n* = 133)	2	1	20	77
Professional development (*n* = 134)	2	1	23	75
Research-based curricula (*n* = 134)	2	4	21	74
Expanded learning time (*n* = 134)	5	3	19	73
Operational flexibility (*n* = 132)	3	2	29	67
Ensuring high-quality staff				
Staff evaluation (*n* = 134)	5	8	35	52
Staff retention (*n* = 132)	8	11	41	40
Staff rewards (*n* = 132)	17	12	32	39
Staff recruitment (*n* = 134)	8	16	37	39
Staff removal (*n* = 134)	16	19	34	31
Engaging family and community				
Family engagement (*n* = 134)	4	7	50	40
Community engagement (*n* = 134)	5	10	50	35

Note: Rows are ordered within category by percentages of schools reporting full implementation. Percentages may not sum to 100 because of rounding.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

When principals who reported fully implementing a strategy were asked if that strategy was essential to their school's improvement efforts, 75–98 percent reported that the strategies were essential (table D2). This survey did not examine whether lack of implementation was related to or was caused by principals' believing some strategies were not essential.

Table D2. Percentage of schools reporting that fully implemented transformation strategies were essential, 2014

Transformation strategy	Strategy was essential to school improvement efforts
Improving instruction	
Data for instruction (*n* = 101)	98
Professional development (*n* = 97)	98
Operational flexibility (*n* = 85)	98
Data-based curricula (*n* = 96)	94
Expanded learning time (*n* = 95)	84
Ensuring high-quality staff	
Staff removal (*n* = 39)	97
Staff retention (*n* = 49)	96
Staff recruitment (*n* = 49)	94
Staff evaluation (*n* = 66)	92
Staff rewards (*n* = 48)	75
Engaging family and community	
Family engagement (*n* = 48)	83
Community engagement (*n* = 42)	76

Note: Rows are ordered within category by percentages reporting the strategy was essential.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

To what extent did principals report challenges to implementation of the transformation model?

Analysis methods for research question 2. Descriptive statistics from the survey questions about challenges to implementing the transformation model were used to answer research question 2. This included frequencies for the six reported potential challenges to each of the SIG transformation strategies that the survey examined. Results are shown by type of challenge in table D3.

The percentage of strategies for which principals reported at least one challenge was calculated by creating a series of new variables (one variable per transformation strategy) in which 1 represented one or more challenges to implementation and 0 represented no challenge to implementation.

To code an element 0, a new variable was calculated to more clearly represent "no challenge," rather than using the survey response "N/A, no challenge." This was done for two reasons. First, a few respondents marked both "N/A, no challenge" and "N/A, did not implement this activity." These responses were removed since respondents in schools that did not try to implement would not be able to say whether the activity was challenging. Second, a few respondents marked both "N/A, no challenge" and one of the other challenges. When this happened, the challenge was counted. Responses from principals who responded "don't know" were removed from the sample. Percentages are shown in figure 3 in the main report and discussed in more detail in this appendix.

Additional results for research question 2. Descriptive statistics in the main report show the percentages of respondents reporting one or more challenges for each of the

Table D3. Percentage of principals reporting challenges among schools with one or more challenges, by type of challenge, 2014

Transformation strategy	Staff time	Funding	District support	Staff expertise	Teacher support	Technology
Improving instruction						
Data for instruction (*n* = 30)	63	10	10	37	20	13
Professional development (*n* = 29)	62	35	7	21	7	14
Data-based curricula (*n* = 25)	60	4	12	44	24	16
Expanded learning time (*n* = 31)	32	45	13	19	10	0
Operational flexibility (*n* = 26)	31	46	46	19	8	4
Ensuring high-quality staff						
Staff evaluation (*n* = 37)	38	19	30	24	22	14
Staff removal (*n* = 39)	13	8	56	5	21	0
Staff retention (*n* = 42)	12	60	31	12	2	0
Staff rewards (*n* = 52)	6	56	35	6	12	2
Staff recruitment (*n* = 46)	4	52	28	13	4	2
Engaging family and community						
Community engagement (*n* = 31)	39	32	16	23	0	3
Family engagement (*n* = 31)	36	32	13	32	0	3

Note: Rows are ordered within category by the percentages reporting staff time was a challenge. The highlighted cells represent the largest percentage of respondents who reported this challenge.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

transformation strategies (see figure 3). The types of challenges principals reported for each of the transformation strategies in the survey are shown in table D3.

To what extent did principals report that their school received technical assistance to support implementation of the transformation model?

Analysis methods for research question 3. Descriptive statistics from the section of the survey that asked about technical assistance were used to answer research question 3. The analyses included frequencies for each item that addressed assistance with the implementation of the SIG transformation model. The study team also calculated the percentage of strategies for which principals reported receiving assistance from at least one provider. To do this, the study team created a series of new variables (one variable per transformation strategy) in which 1 meant that at least one provider supported implementation and 0 meant that the school received no technical assistance for that strategy.

Next, the study team calculated the percentage of schools that received at least some technical assistance for at least one of the transformation strategies for each type of provider—district, state, university, or other entity. Percentages are reported in figure 4 in the main report.

To further describe the type of technical assistance provider, the study team examined the response to open-ended questions that asked the name of any technical assistance providers, designated as "other technical assistance providers" for any of the strategies.

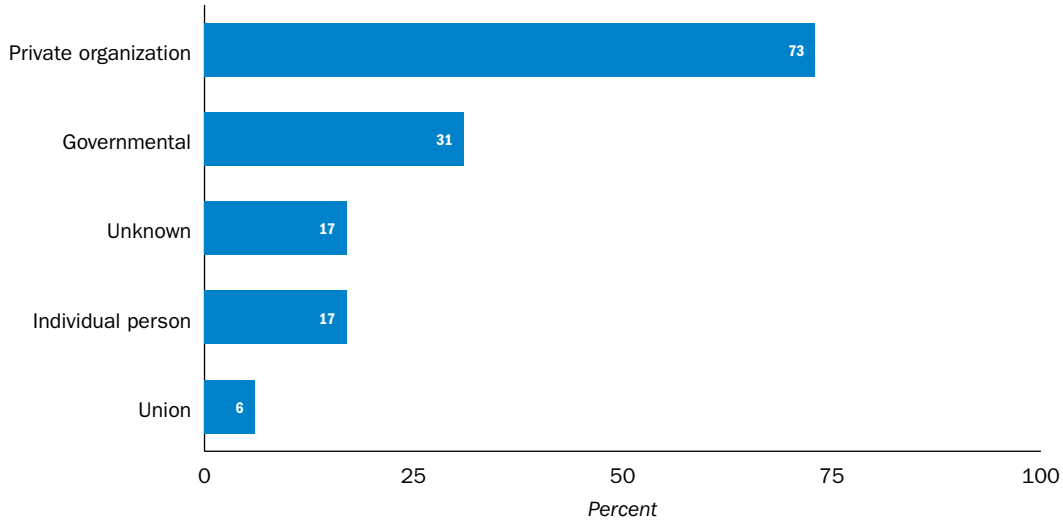
To conduct an exploratory analysis of this qualitative data, the two study team members developed codes inductively (Mayring, 2000), meaning that they reviewed all the data independently and then agreed on codes. Next, they both coded the data. If they could not determine a code for the provider, they searched the Internet to locate information about the unknown technical assistance provider. If the provider could not be identified, the study team members sought assistance from four REL Northwest staff working on school improvement issues.

Finally, the study team analyzed the data related to the survey items that asked participants to rate the degree to which they believed that the technical assistance from the providers was sufficient. Data were cleaned to ensure that only principals reporting that their school received technical assistance from a provider also reported on the sufficiency of the assistance.

Additional results for research question 3. The main report describes the technical assistance providers by type—district, state, university, and other (see figure 4). After district and state technical assistance, the most frequent type of provider reported was "other."

Respondents who selected "other" were asked to write in the name of the provider. To analyze the data from the 48 respondents who wrote provider names, the study team categorized the providers as private organization, such as a nonprofit; government organization, such as an educational service district or county office; individual; teachers union; or unknown, in the few instances that they did not recognize the name of the provider. Most of the "other" providers were private organizations (figure D1).

Figure D1. Schools used a variety of "other" technical assistance providers, 2014



Note: *n* = 48. Percentages total more than 100 percent because some schools used more than one type of provider.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

The percentage of principals reporting that their school received technical assistance is shown in table D4 for each transformation strategy examined in the survey. The percentages reporting this information by the type of provider—district, state, university, and other—are also shown.

Table D4. Percentage of schools reporting receiving technical assistance, by type of provider, 2014

Transformation strategy	Any technical assistance	Type of technical assistance provider			
		District	State	University	Other[a]
Improving instruction					
Professional development	83	69	45	16	31
Data for instruction	80	67	47	5	26
Research-based curricula	76	63	40	7	24
Operational flexibility	57	50	20	2	10
Expanded learning time	57	48	27	3	7
Ensuring high-quality staff					
Staff evaluation	81	68	51	5	18
Staff rewards	50	39	21	2	7
Staff recruitment	50	45	11	5	6
Staff removal	40	37	7	2	7
Staff retention	39	39	0	0	0
Engaging family and community					
Community engagement	43	35	15	3	8
Family engagement	42	36	17	2	10

Note: Rows are ordered within the three categories by the percentage of principals reporting receiving any technical assistance. *n* = 135 for all 12 strategies.

a. Includes private organizations, government organizations, individuals, teachers unions, or unknown.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

Participants also rated the sufficiency of the technical assistance they received from the technical assistance provider, by type: state, district, university, and other. The percentages agreeing or strongly agreeing that the assistance was sufficient are shown in table D5 by the type of assistance provider.

To what extent were principals' reports of challenges and technical assistance related to implementation?

Analysis methods for research question 4

Challenges and implementation. The relationship between reported challenges and full implementation are reported in two ways. First, the variables representing at least one challenge were summed to create a new variable representing the number of strategies (0–12) for which schools experienced at least one challenge. This variable and the variable representing the number of strategies fully implemented (0–12) were used to explore the relationship between implementation and challenges, using Spearman's rank-order correlation. This nonparametric test, introduced by Spearman in 1904, is similar to the Pearson product-moment correlation but can be used on rank-order data or other interval data that do not have a normal distribution (Dodge, 2008). Because the two variables of interest in this study did not have a normal distribution, a Spearman's rank-order correlation was used to examine the relationship between the two. This examination provided descriptive information about the relationship between the variables and did not test a hypothesis about that relationship. The resulting descriptive statistics are shown in figure 5 of the main report.

Table D5. Percentage agreeing or strongly agreeing that technical assistance was sufficient and number of respondents, by type of provider, 2014

	District		State		University		Other	
Transformation strategy	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Improving instruction								
Data for Instruction	90	89	92	62	97	34	100	6
Expanded learning time	89	64	81	36	100	10	100	3
Professional development	89	92	83	60	93	42	95	21
Operational flexibility	88	66	84	25	85	13	100	2
Data-based curricula	87	83	92	53	88	33	100	9
Ensuring high-quality staff								
Staff recruitment	85	59	86	14	88	8	83	6
Staff evaluation	82	91	91	67	92	24	100	6
Staff retention	77	51	0	0	0	0	0	0
Staff removal	72	49	88	8	89	9	100	1
Staff rewards	69	52	81	27	80	10	100	1
Engaging family and community								
Community engagement	83	46	84	19	82	11	100	3
Family engagement	81	47	82	22	77	13	100	2

Note: Rows are ordered within category by the percentage agreeing or strongly agreeing district support was sufficient.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

Second, the study team examined the relationships between challenges and implementation, using chi square tests of independence. First introduced by Pearson in the 1900s, the chi square test of independence uses a single dependent sample and determines whether a statistically significant association exists between variables (Frankie, Ho, & Christie, 2012). Chi square tests were used descriptively rather than to test a hypothesis about a causal relationship between variables.

For the 12 chi square tests used to examine the relationship between challenges and implementation, challenges were represented by the series of dichotomous variables in which 0 indicated that the respondent had not reported any challenges to implementing the transformation strategy and 1 indicated that the respondent had reported at least one challenge. Full implementation was represented by the series of dichotomous variables in which 0 indicated that the respondent reported less than full implementation (no implementation, planning, or partial implementation) and 1 indicated that the respondent reported full implementation. To determine statistical significance, the study team used the Benjamini-Hochberg correction to adjust for multiple comparisons (Benjamini & Hochberg, 1995).

Technical assistance and implementation. Similarly, the study team analyzed the relationship between technical assistance and implementation in two ways. First, the study team summed these variables representing the presence of at least one assistance provider to create a new variable representing the number strategies (0–12) for which schools received technical assistance. In an analysis similar to the one performed for challenges to implementation, the study team used Spearman's rank-order correlation to explore the relationship between the number of strategies (0–12) fully implemented and the number of strategies (0–12) supported by technical assistance. As in the previously described analysis, the purpose of the analysis was to describe the relationship between the variables rather than to test a particular hypothesis. Figure 6 in the main report shows descriptive statistics related to the results for this analysis.

Second, the study team used chi square tests of independence (Frankie, Ho, & Christie, 2012). Similar to the approach for analyzing the relationships between implementation and challenges, a series of chi squares were used to examine the relationship for each of the transformation strategies. Technical assistance was represented by series of dichotomous variables in which 0 indicated that the respondent had not reported receiving any technical assistance related to the strategy and 1 indicated that the respondent had reported at least one technical assistance provider supported the strategy.

As in the previous analyses, full implementation was represented by a series of dichotomous variables in which 0 indicated the respondent reported less than full implementation, (that is, no implementation, planning, or initial implementation) and 1 indicated the respondent reported full implementation. To adjust for multiple comparisons, the study team used the Benjamini-Hochberg correction to determine statistical significance (Benjamini & Hochberg, 1995).

Additional results for research question 4

Challenges. The Spearman correlation showed a statistically significant negative relationship between challenges and implementation ($r_s^2 = -.32$, $p < .001$). Results of the analysis

are described in the main report, and descriptive statistics related to these results are provided in figure 5.

The study team also examined the relationship between challenges and implementation for each of the 12 transformation strategies in the survey. Information about the relationship between challenges to individual elements of transformation and implementation is provided in table D6. The association was statistically significant for all 12 strategies examined in the survey.

Technical assistance. The Spearman correlation revealed a statistically significant positive relationship between technical assistance and full implementation of strategies (r_s^2 = .33, p < .001). The association between full implementation and receiving support from one or more technical assistance providers is described in the text, and descriptive statistics are in figure 6.

The study team also examined the relationship between technical assistance and implementation for each transformation strategy in the survey. Information about this series of 12 chi square analyses is provided in table D7. The association was statistically significant for 7 of the 12 transformation strategies in the survey.

Table D6. Chi square results for full implementation with at least one challenge, 2014

	Full implementation with at least one challenge			
Transformation strategy	Actual count[a]	Expected count[b]	Number	Chi square
Improving instruction				
Expanded learning time	13	24.4	117	33.80*
Professional development	13	21.2	124	17.02*
Operational flexibility	11	17.8	108	12.82*
Data for instruction	18	22.9	123	6.42*
Research-based curricula	14	18.5	118	6.03*
Ensuring high-quality staff				
Staff rewards	8	22.1	108	30.36*
Staff evaluation	7	20.2	117	27.96*
Staff retention	9	19.5	99	18.28*
Staff recruitment	10	20.2	105	16.20*
Staff removal	7	13.3	100	7.34*
Engaging family and community				
Family engagement	6	14.5	92	14.08*
Community engagement	8	13.6	91	6.29*

* Statistically significant after the Benjamini-Hochberg correction.

Note: Rows are ordered within categories from largest to smallest chi square statistic. Each of the 12 analyses had 1 degree of freedom. No cells had expected values of less than five.

a. Number of schools that faced challenges yet fully implemented the strategy.

b. Number of schools that would have been expected to fully implement this strategy if challenges were not associated with implementation.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

Table D7. Chi square results for full implementation, by technical assistance, 2014

Transformation strategy	Full implementation with at least one technical assistance provider		Number of schools	Chi square
	Actual count[a]	Expected count[b]		
Improving instruction				
Operational flexibility	57	49.3	132	8.14*
Research-based curricula	80	74.6	134	6.03*
Expanded learning time	61	55.6	134	4.54
Data for instruction	85	82.1	133	2.25
Professional development	84	82.8	134	0.38
Ensuring high-quality staff				
Staff removal	27	16.2	134	17.09*
Staff evaluation	65	56.4	134	14.09*
Staff recruitment	35	25.6	134	11.08*
Staff rewards	34	25.1	132	10.10*
Staff retention	25	20.9	132	2.24
Engaging family and community				
Community engagement	27	20.0	134	6.58*
Family engagement	26	22.1	134	1.90

* Statistically significant after the Benjamini-Hochberg correction.

Note: Rows are ordered within categories from largest to smallest chi square statistic. Each of the 12 analyses had one degree of freedom. No cells had expected values of less than five.

a. Number of schools that had a technical assistance provider and fully implemented the strategy.

b. Number of schools that would have been expected to fully implement this strategy if technical assistance were not associated with implementation.

Source: Authors' analysis of School Improvement Grant rural principal survey data.

Notes

1. In this study, rural schools are defined as town: fringe, distant, and remote; and rural: fringe, distant, and remote (National Center for Education Statistics locale codes 31, 32, 33, 41, 42, and 43; see table B1 in appendix B).
2. The SIG baseline database for cohort 1 contains 211 rural schools that chose the transformation model and 12 that chose other models. Of the 12 that chose other models, 8 chose the turnaround model and 4 chose the restart model.
3. A series of chi square tests were used to analyze the relationship between technical assistance and full implementation. This result was true even after applying the Benjamini-Hochberg correction for multiple comparisons. Chi square values ranged from 6.03 to 17.09. (See table D7 in appendix D.)
4. To ensure that each survey item represented only one activity, the study team split several activities into multiple survey items. They also eliminated the activity, "Ensure that the school receives ongoing, intensive technical assistance and related support from the LEA [local education agency], the SEA [state education agency], or an external organization" because this was addressed in a separate section. The SIG requirement to replace the principal was also eliminated because this would have occurred before the current principal took that position.
5. One school had two coprincipals, so the survey was sent to both. Both responded, but responses were nearly identical, so the second responding coprincipal's data were eliminated.

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