What's Happening

September 2017

Opportunities for teacher professional development in Oklahoma rural and nonrural schools

Pia Peltola
Erin Haynes
Lauren Clymer
Alex McMillan
Haidee Williams
American Institutes for Research

In collaboration with the Oklahoma Rural Schools Research Alliance

Key findings

This analysis of responses to a spring 2016 survey on professional development administered to public elementary and secondary school principals in Oklahoma found that:

- A majority of rural schools in Oklahoma offer many types of professional development structures for teachers, such as conferences and workshops. However, the shares of schools offering each structure are generally higher for nonrural schools than rural schools. This is especially true for collaborative learning activities and formal coaching or mentoring.
- Most schools have at least one local team that plans professional development, but such planning teams are less common in rural schools than in nonrural schools.
- In both rural and nonrural schools the biggest barrier to teachers attending any type of professional development is scheduling conflicts with other school or professional activities. That barrier is more prevalent for rural teachers than for nonrural teachers.
- Among schools that offer each type of professional development, rural schools provide substantial support for these offerings, but the nonrural schools offering each type generally provide more peer-based support than their rural counterparts.

ies NATIONAL CENTER FOR EDUCATION EVALUATION AND REGIONAL ASSISTANCE
Institute of Education Sciences
U.S. Department of Education

REL SOUTHWEST
Regional Educational Laboratory
At SEDL

REL 2017–273

The National Center for Education Evaluation and Regional Assistance (NCEE) conducts unbiased large-scale evaluations of education programs and practices supported by federal funds; provides research-based technical assistance to educators and policymakers; and supports the synthesis and the widespread dissemination of the results of research and evaluation throughout the United States.

September 2017

This report was prepared for the Institute of Education Sciences (IES) under Contract ED-IES-12-C-0012 by Regional Educational Laboratory Southwest administered by SEDL. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Peltola, P., Haynes, E., Clymer, L., McMillan, A., & Williams, H. (2017). *Opportunities for teacher professional development in Oklahoma rural and nonrural schools* (REL 2017–273). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs.

This report is available on the Regional Educational Laboratory website at http://ies.ed.gov/ncee/edlabs.

Summary

Oklahoma is facing a severe shortage of teachers (Oklahoma State School Boards Association, 2016). Professional development is one potential channel for attracting new teachers, increasing teacher retention, and improving retained teachers' effectiveness. But a dearth of data about professional development in Oklahoma schools is hindering the state's efforts to plan for and effectively support teacher professional development.

This study was designed to address the lack of data about teacher professional development in Oklahoma. The study team collaborated with members of the Oklahoma Rural Schools Research Alliance to develop a survey that measures opportunities for rural and nonrural teachers in the state to receive school- or district-offered professional development —formalized training with the explicit goal of increasing teachers' content or pedagogy knowledge or improving their instructional practices, with the ultimate goal of improving student learning. The survey asked how professional development is structured and planned and what types of support and barriers teachers encounter in accessing it. A portion of the survey was devoted to peer collaboration and teacher-led professional development because those structures have features (for example, sustainability and local relevance and control) that research has identified as particularly promising for rural schools (Garet, Porter, Desimone, Birman, & Yoon, 2001; Taylor, Anderson, Meyer, Wagner, & West, 2005). The survey was administered in spring 2016 to all public elementary and secondary school principals in Oklahoma; 51 percent of the principals fully completed the survey, and 7 percent partially completed it. All answers were used in the analysis. The survey results were weighted to account for nonresponse.

Major findings for the 2015/16 school year include:

- Several professional development structures are offered in at least 60 percent of rural schools: professional conferences and live or video-based workshops or seminars, collaborative learning activities, and formal coaching or mentoring. However, on average, a lower percentage of rural schools offer different professional development structures than do nonrural schools.
- A majority of rural and nonrural schools offer teacher-led professional development —such as peer-led coaching or mentoring; demonstrations of a lesson, unit, or skill; and workshops or seminars—but a lower percentage of rural schools than of nonrural schools do so.
- Rural and nonrural schools offer a similar mix of onsite and offsite professional development, with collaborative learning and formal coaching or mentoring more likely to be offered onsite, college or university courses more likely to be offered offsite, and professional conferences likely to be offered both onsite and offsite. In general, online learning is uncommon for both types of schools, but it is a frequently reported means of participating in video-based workshops in schools that offer such workshops.
- A majority of rural schools have at least one local professional development planning team, but such teams are more common in nonrural schools.
- Responding principals in both rural and nonrural schools reported that the biggest barrier to teachers attending any type of professional development is scheduling conflicts with other school or professional activities. That barrier is more prevalent for rural teachers than for nonrural teachers.

- Among schools that provide onsite or online collaborative learning activities, a majority provide many types of onsite and online support (for example, meeting space, administrator support for trying new instructional activities or strategies, formal accountability procedures and goals for outcomes, release time for the participants, and formally assigned group leaders), but the shares of schools providing these supports are lower in rural schools than in nonrural schools.
- A lower percentage of rural schools than of nonrural schools support teachers' professional development activities by providing common collaboration time.
- A majority of schools support teacher-led professional development in multiple ways, but a lower percentage of rural schools than of nonrural schools do so.

The findings can inform state and local education administrators and lawmakers as they consider policies and structures to support teacher professional development in Oklahoma. Although every rural community is unique, some of the findings may be applicable to rural communities outside Oklahoma. Rural educators and policymakers may be able to use the findings to inform their research and guide local discussions to identify potential solutions for teacher professional development in their communities. In addition, the survey that was used to collect data for this study may be adapted to other localities outside Oklahoma.

Contents

Map

Tables

Why this study?

Teacher shortages are a major and growing problem facing Oklahoma public schools. More than half the state's districts reported needing emergency measures to fill open teaching positions for the 2016/17 school year (Oklahoma State School Boards Association, 2016).

One of the Oklahoma State Department of Education's strategies to address teacher shortages is to improve teacher retention by providing professional development, because "teachers who feel successful and supported are most likely to remain in the profession" (Oklahoma State Department of Education, 2014, p. 8). But a lack of statewide data on the topic means that little is known about the status of teacher professional development in Oklahoma. Furthermore, members of the Oklahoma Rural Schools Research Alliance[1] have expressed concern that rural schools, which are especially in need of intervention, may have fewer opportunities or less funding for professional development than nonrural schools do.

This study addresses the lack of information about professional development in Oklahoma public schools, particularly in rural settings. The study team collaborated with members of the Oklahoma Rural Schools Research Alliance to develop a survey that measures opportunities for different types of professional development structures and process features (see box 1 for definitions of key terms used in the report).

Box 1. Key terms

Collaborative learning. A professional development structure in which teachers pool their knowledge and resources to learn new content or instructional approaches. Examples include professional learning communities and discussion groups.

Potentially promising professional development structure. Professional development identified in the research literature as having the most promise for rural teachers (collaborative learning, teacher-led professional development, school–university partnerships, and online learning) but without strong empirical research evidence.

Professional development. Professional development in the Oklahoma Teacher Professional Development Survey was defined as school- or district-sponsored formalized training with the explicit, acute goal of increasing teacher content or pedagogy knowledge or improving teacher instructional practices, with the ultimate goal of improving student learning. Principals were asked to keep this definition in mind when answering the survey questions.

Professional development structure. The way in which professional development is formatted for delivery. Examples include professional conferences, workshops, and collaborative learning. Types of structure can be organized differently—for example, onsite in person, offsite in person, or online.

Professional development process feature. Characteristic of how professional development is implemented; potentially promising process features include local planning, job-embedded opportunities for learning, and opportunities for teacher reflection.

Teacher-led professional development. A professional development structure in which professional development is provided by one or more teachers to their peers. It differs from collaborative learning in that in teacher-led professional development teachers act formally as leaders or trainers. Examples include train-the-trainer models and formal coaching or mentoring.

Research on professional development in rural settings is sparse, and none of the studies that the study team reviewed had a design that allowed the researchers to draw causal inferences. However, research has identified teacher collaborative learning and teacher-led professional development as potentially promising professional development structures for rural settings (Eargle, 2013; Garet et al., 2001; Seltzer & Himley, 1995; Taylor et al., 2005).[2] Because these two professional development structures may be particularly effective in rural schools, the Oklahoma Rural Schools Research Alliance wanted to collect information about them. The survey also included questions about features and characteristics of the professional development process, such as local planning (Borko, Elliott, & Uchiyama, 2002).

The findings of the current study provide a baseline snapshot of teacher professional development in Oklahoma and may assist in efforts to plan for and effectively support future teacher professional development.

The findings of the current study provide a snapshot of teacher professional development in Oklahoma that can assist in efforts to plan for and effectively support future teacher professional development

What the study examined

Three research questions guided the study:

1. How is the professional development that is offered to teachers structured in Oklahoma rural and nonrural schools?

2. How is the professional development that is offered to teachers planned in Oklahoma rural and nonrural schools?

3. What support and barriers do teachers encounter when accessing professional development in Oklahoma rural and nonrural schools?

These questions were addressed through an analysis of responses to a survey on professional development that was administered to all public elementary and secondary school principals in the state in spring 2016 (see box 2 for a summary of how the survey was developed and administered and how the study team analyzed the results, and see appendix A for more details). The survey focused on school- or district-sponsored professional development—formalized training with the explicit goal of increasing teachers' content or pedagogy knowledge or improving their instructional practices, with the ultimate goal of improving student learning. The survey did not collect information about informal professional development that teachers might pursue on their own.

The study findings are descriptive and provide insights into the types of professional development offered to rural teachers and nonrural teachers and the types of support and barriers that teachers encounter in accessing it.

Box 2. Survey development and analysis methods

The survey for this study was developed in collaboration with members of the Oklahoma Rural Schools Research Alliance. First, the study team examined the literature on promising professional development in rural settings to develop a list of potential survey topics, which were then presented to a smaller working group within the alliance. The working group reviewed the topics and suggested modifications. The study team then developed survey items for each topic, and the alliance members reviewed the items. The survey was tested in cognitive interviews with Oklahoma principals and was revised based on their feedback. The study team then submitted the survey items for another review by the alliance content experts. The survey items referred to the 2015/16 school year, including summer 2015, and asked about the professional development that schools or districts provide. See appendix B for the complete survey.

The sampling frame for this study was obtained from the website of the Oklahoma State Department of Education, which included 1,829 schools and the names of their principals. After some records were removed (see appendix A for details), 1,609 principals were invited to participate in the survey in spring 2016.

The Oklahoma Office of Educational Quality and Accountability administered the survey in spring 2016. Of the 1,609 principals invited to participate, 825 (51 percent) fully completed the survey, and 115 (7 percent) partially completed it. Both fully and partially completed surveys (940 cases) are included in the analysis. Of the 921 rural and 1,039 nonrural school principals who were invited to participate in the survey, the same number—470—responded in both rural and nonrural schools. The study team conducted a nonresponse bias analysis, which showed few statistically significant differences in the characteristics of the responding and nonresponding principals' schools. For example, rural schools were overrepresented among respondents by 2.3 percentage points. To adjust the results for nonresponse and further mitigate the risk of bias, nonresponse weights were created and applied to all the results (see appendix A).

The weighted descriptive results are reported separately for rural and nonrural schools using the 2013/14 Common Core of Data urban-centric locale classification (Glander, 2015). Rural schools include schools classified as rural (fringe, distant, or remote; see appendix A for more detailed definitions of rural and nonrural). Results are reported as differing for rural and nonrural schools where the difference is at least 5 percentage points and is significant at the $p < .05$ level based on a *t*-test.

What the study found

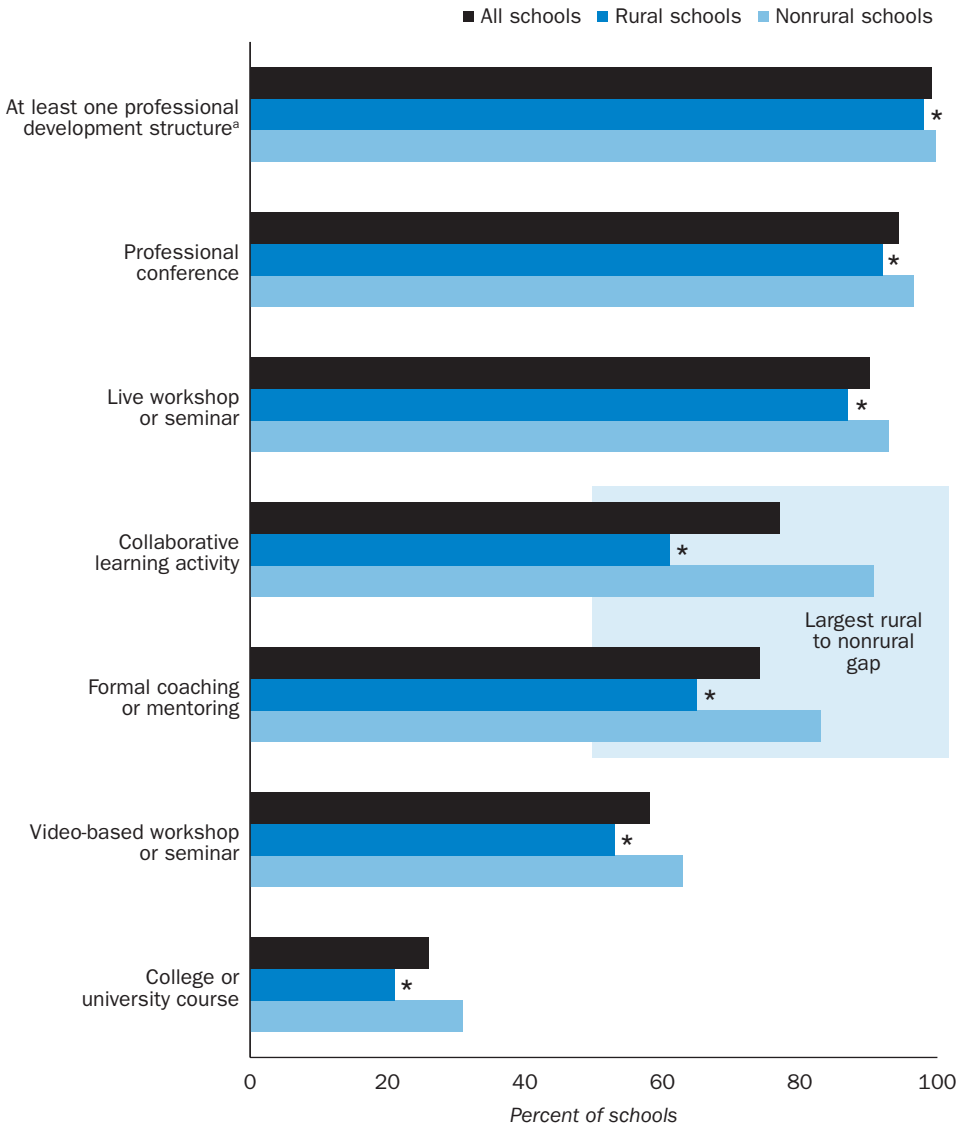
The findings reported here provide a picture of Oklahoma professional development during the 2015/16 school year, as reported by elementary and secondary school principals in spring 2016. This section reports findings for rural and nonrural schools on professional development structures and whether they are offered offsite, onsite, or online; schools' planning for professional development opportunities; and the support and barriers that teachers encounter when accessing professional development.

How the professional development offered to teachers is structured in Oklahoma rural and nonrural schools

Almost all Oklahoma schools offer at least one type of professional development structure, but a lower percentage of rural schools than of nonrural schools offer each type of professional development. Some 99 percent of Oklahoma schools offer at least one type

of professional development structure for teachers (figure 1). More than half of Oklahoma schools offer video-based workshops or seminars. The rates are even higher for formal coaching and mentoring, collaborative learning activities, and live workshops or seminars. Professional conferences are the most commonly offered structure. These findings hold for both rural and nonrural schools. The one professional development structure that is offered in a much lower percentage of schools is college or university courses.

Figure 1. A lower percentage of rural schools than of nonrural schools in Oklahoma offer each professional development structure for teachers, 2015/16



The largest differences between rural and nonrural schools are for collaborative learning activities and formal coaching or mentoring

* The difference between rural and nonrural schools is significant at $p < .05$.

Note: Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,479 to 1,599 for all schools, from 698 to 755 for rural schools, and from 775 to 837 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

a. Indicates that a school or district offered any of the following: professional conference, live workshop or seminar, collaborative learning activity, formal coaching or mentoring, video-based workshop or seminar, or college or university course.

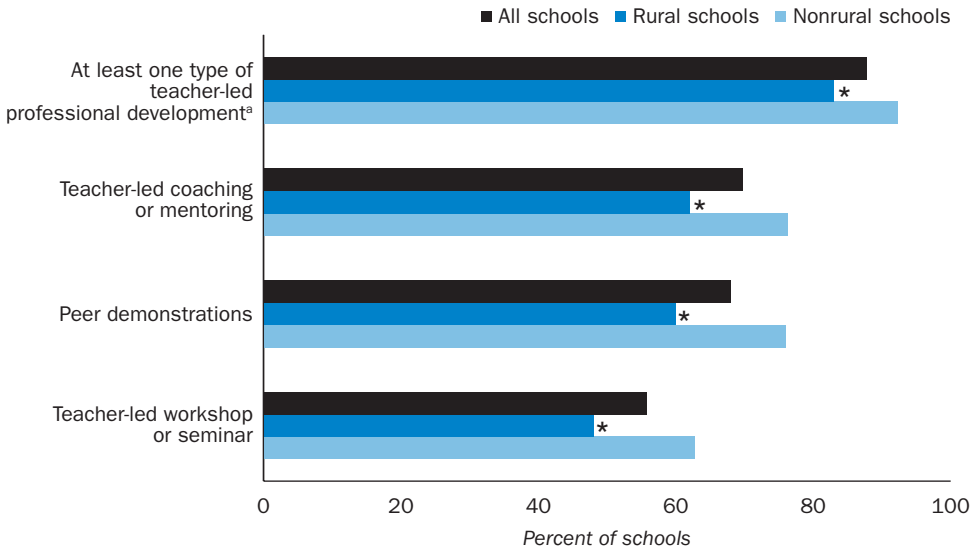
Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

The most commonly offered structures for professional development in rural schools are professional conferences (92 percent) and live workshops or seminars (87 percent; see figure 1). The largest differences between rural and nonrural schools are for collaborative learning activities and formal coaching or mentoring. Teachers have opportunities for collaborative learning activities in 61 percent of rural schools and 91 percent of nonrural schools—a 30 percentage point difference.[3] And teachers have opportunities for formal coaching or mentoring in 65 percent of rural schools and 83 percent of nonrural schools—an 18 percentage point difference. For the remaining professional development structures the difference between rural and nonrural schools is 5–10 percentage points. (See figure C1 in appendix C for the percentage of schools in which teachers review student data; receive feedback from peers, coaches, or administrators about their instructional practices; observe teaching demonstrations; practice using new instructional materials and techniques; and develop curriculum or materials.)

Some 88 percent of schools offer at least one type of teacher-led professional development

A majority of rural and nonrural schools offer teacher-led professional development, but a lower percentage of rural schools than of nonrural schools do. Some 88 percent of schools offer at least one type of teacher-led professional development (figure 2). Rural schools most often offer teacher-led coaching or mentoring (62 percent); peer demonstrations of a lesson, unit, or skill for other teachers (60 percent); and teacher-led workshops or seminars (48 percent). Nonrural schools follow a similar pattern of offerings, but the percentage is 14–16 percentage points higher for each type. (See figure C2 in appendix C for the percentage of schools in which teachers provide professional development and

Figure 2. A lower percentage of rural schools than of nonrural schools in Oklahoma offer teacher-led professional development for teachers, 2015/16



* The difference between rural and nonrural schools is significant at $p < .05$.

Note: Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,379 to 1,412 for all schools, from 651 to 664 for rural schools, and from 722 to 743 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

a. Indicates that a school or district offered any of the following: teacher-led coaching or mentoring, peer demonstration, teacher-led workshop or seminar, or other formal peer training.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

figure C3 in appendix C for the percentage of schools that employ specific reasons when selecting teachers to provide professional development.)

In both rural and nonrural schools most professional development structures are offered onsite. Formal coaching or mentoring and collaborative learning activities are most commonly offered through onsite in-person professional development structures. More than 90 percent of schools offer them onsite (see table C1 in appendix C). Between 73 percent and 83 percent of rural and nonrural schools also offer professional conferences and live workshops or seminars onsite.

A lower percentage of rural schools than of nonrural schools offer professional conferences, live workshops or seminars, and formal coaching or mentoring offsite. The most commonly offered offsite in-person professional development structures are college or university courses (81 percent of rural schools and 83 percent of nonrural schools), professional conferences (78 percent of rural schools and 83 percent of nonrural schools), and live workshops or seminars (66 percent of rural schools and 76 percent of nonrural schools; see table C1 in appendix C).

A minority of schools use an online format for most professional development structures. Less than half of rural and nonrural schools use an online format for most professional development structures (see table C1 in appendix C). The exceptions are video-based workshops or seminars in rural schools (79 percent) and nonrural schools (86 percent) and college or university courses in rural schools (55 percent).

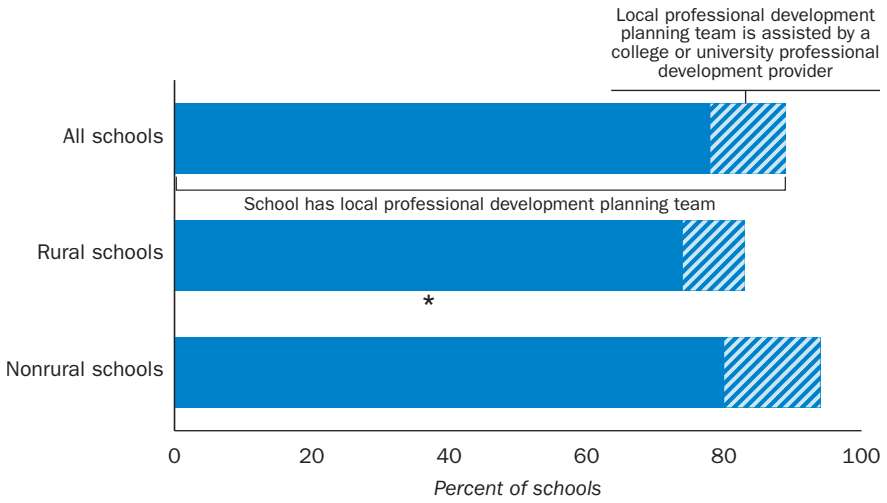
Less than half of rural and nonrural schools use an online format for most professional development structures

How the professional development that is offered to teachers is planned in Oklahoma rural and nonrural schools

Most schools have at least one local team that plans professional development, but local planning teams are less common in rural schools than in nonrural schools. Some 83 percent of rural schools have at least one local team that plans local professional development for teachers, and in 9 percent of rural schools the local team is assisted by a college or university professional development provider (figure 3). Some 94 percent of nonrural schools have a local professional development planning team.

In planning teacher professional development, a lower percentage of rural principals than of nonrural principals typically select professional development that supports their school's or district's improvement goals, supports teachers' use of student data, and addresses teachers' instructional needs. More than half of principals always or almost always select professional development opportunities because they support the school's or district's improvement goals (74 percent), support teachers' use of student data to inform instructional practices (63 percent), or address teachers' instructional needs identified in teacher evaluations (61 percent; figure 4). This pattern holds in both rural and nonrural schools, but a lower percentage of principals in rural schools than of principals in nonrural schools take each goal into consideration when planning professional development opportunities; differences range from 12 percentage points to 15 percentage points.

Figure 3. Local professional development planning teams are less common in rural schools than in nonrural schools in Oklahoma, 2015/16

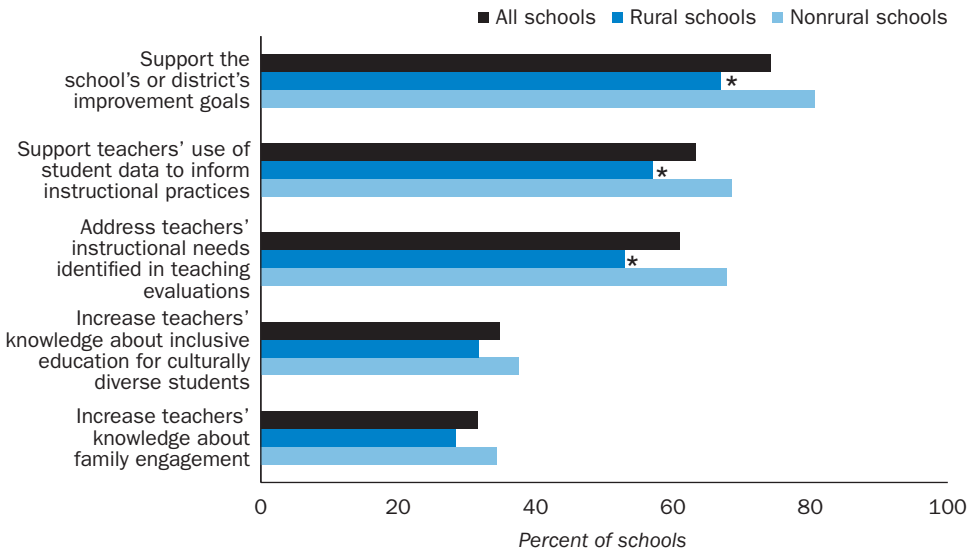


* The differences in the percentage of schools that have a professional development team between rural and nonrural schools is significant at $p < .05$.

Note: Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,184 to 1,515 for all schools, from 566 to 718 for rural schools, and from 612 to 791 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure 4. In planning teacher professional development, a higher percentage of nonrural than of rural principals in Oklahoma typically select professional development that supports their school's or district's improvement goals, supports teachers' use of student data, and addresses teachers' instructional needs, 2015/16



* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure shows the percentage of schools whose principal aims to meet each objective "always" or "almost always" when planning professional development. Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,488 to 1,494 for all schools, from 701 to 705 for rural schools, and from 780 to 782 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

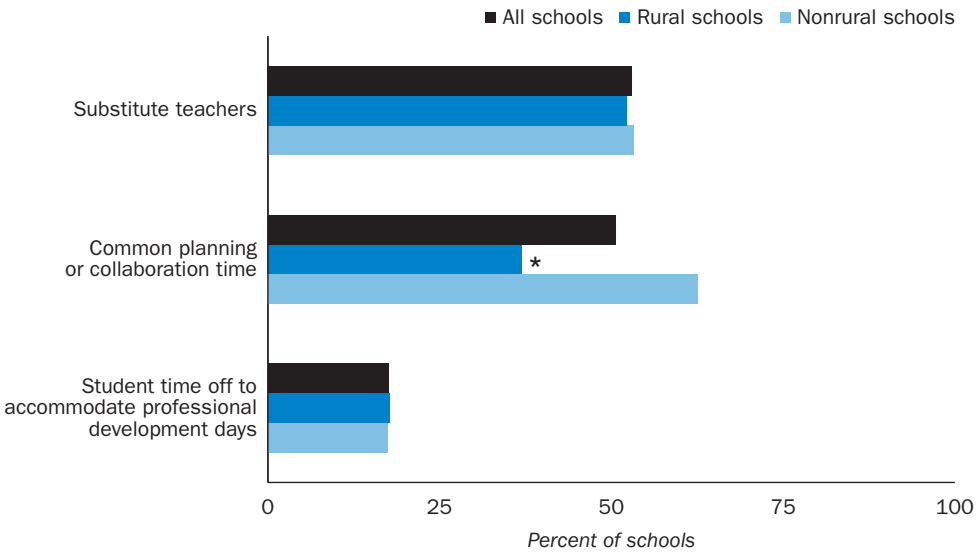
Support and barriers that teachers in Oklahoma rural and nonrural schools encounter when accessing professional development

Common planning or collaboration time is less common in rural schools than in nonrural schools

A lower percentage of rural schools than of nonrural schools support teacher professional development by providing common collaboration time. Common planning or collaboration time is less common in rural schools (37 percent) than in nonrural schools (63 percent; figure 5). A similar percentage of rural and nonrural schools either provide substitute teachers to cover teachers' classes when they attend professional development or give students time off.

The most common reason that teachers miss professional development is scheduling conflicts with other school or professional activities, a barrier that is more prevalent in rural schools than in nonrural schools. In the 90 percent of rural schools and the 93 percent of nonrural schools in which at least some teachers missed at least one professional development opportunity, the three most common reasons are scheduling conflicts with other school or professional activities, professional development offered outside normal working hours, and distance to professional development location (figure 6). Scheduling conflicts and distance are more commonly reported in rural schools than in nonrural schools (62 percent versus 49 percent for scheduling conflicts and 44 percent versus 35 percent for distance). By contrast, professional development offered outside normal working hours is less commonly reported as a barrier in rural schools (40 percent) than in nonrural schools (47 percent). Teachers are also less likely to miss professional development opportunities because substitute teachers are not available in rural schools (18 percent) than in nonrural schools (28 percent).

Figure 5. A lower percentage of rural schools than of nonrural schools in Oklahoma support teacher professional development by providing common collaboration time, 2015/16

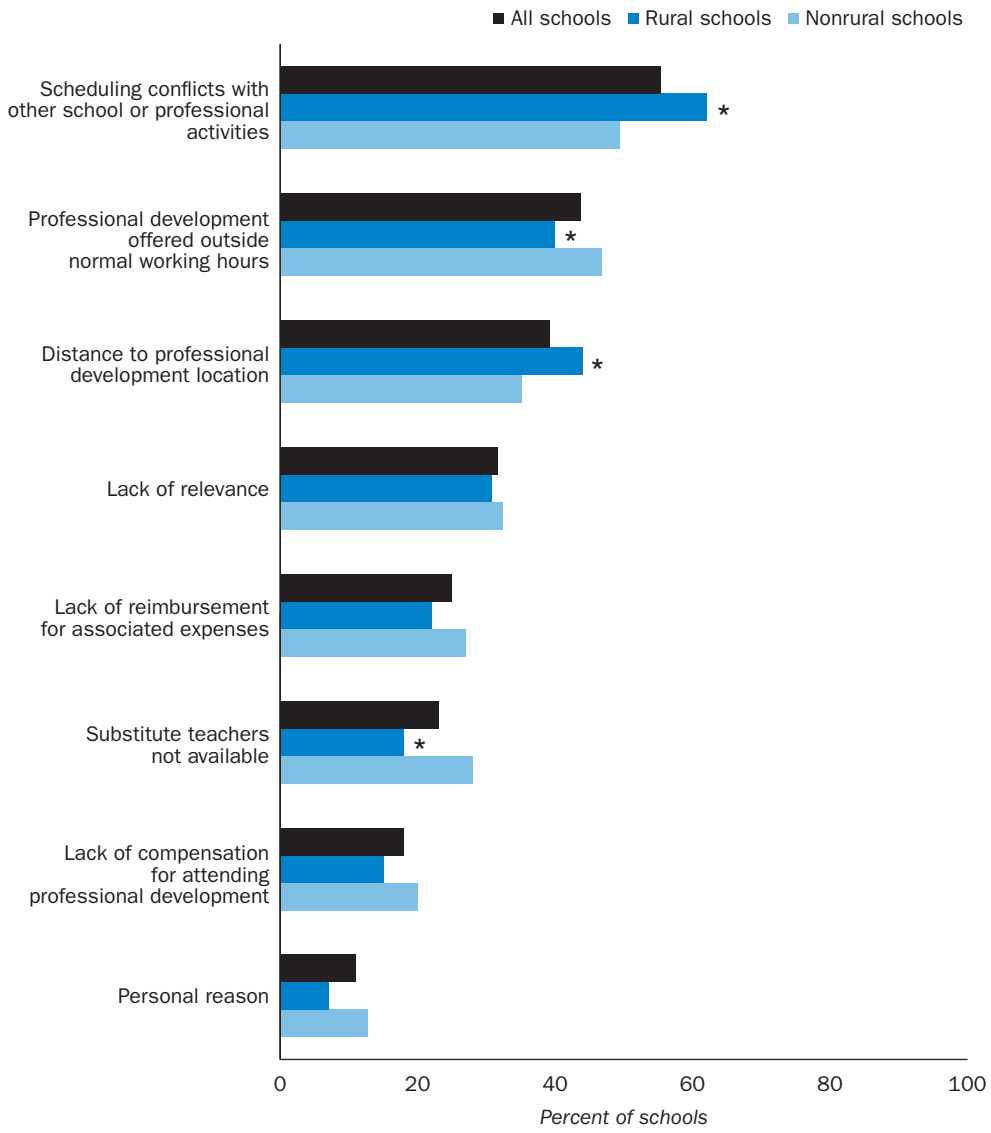


* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure shows the percentage of schools that offer each type of support for professional development "always" or "almost always." Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,484 to 1,495 for all schools, from 696 to 703 for rural schools, and from 779 to 785 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure 6. Among rural and nonrural schools in Oklahoma in which teachers missed at least one professional development opportunity, the most common reasons are scheduling conflicts, professional development offered outside normal working hours, and distance to professional development location, 2015/16



Scheduling conflicts and distance are more commonly reported in rural schools than in nonrural schools as reasons why teachers missed at least one professional development opportunity

* The difference between rural and nonrural schools is significant at $p < .05$.

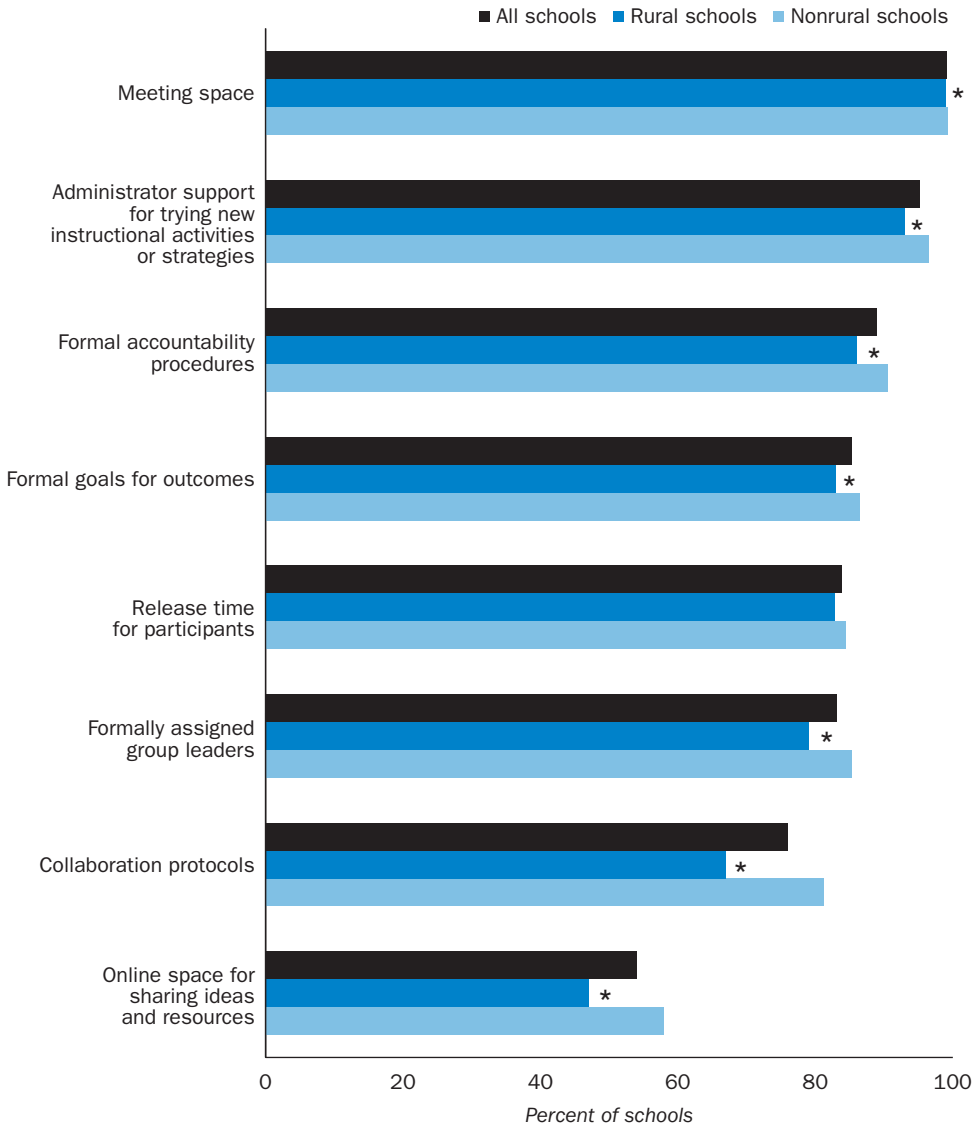
Note: The figure includes only the 90 percent of rural schools and the 93 percent of nonrural schools in which at least some teachers missed at least one professional development opportunity. Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,166 to 1,363 for all schools, from 535 to 730 for rural schools, and from 626 to 695 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Each type of onsite and online support for collaborative learning activities is offered by most schools that offer such activities. Schools can offer different types of support for onsite or online collaborative activities. Among the 54 percent of rural schools and 82 percent of nonrural schools that offer collaborative learning onsite or online, at least 80 percent offer onsite and online support for at least one of the following teacher collaborations: a meeting

space, administrator support for trying new instructional activities or strategies, formal accountability procedures (for example, sign-in sheets), formal goals for outcomes, release time for participants, or formally assigned group leaders (school leaders or other teachers; figure 7). The differences in the percentage of rural and nonrural schools that offer some of these types of support sometimes favor nonrural schools—67 percent of rural schools and

Figure 7. Among rural and nonrural schools in Oklahoma with collaborative learning activities, most provide multiple types of onsite or online support for collaborative learning activities, 2015/16



* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure includes only the 54 percent of rural schools and 82 percent of nonrural schools that offer collaborative learning activities online or onsite. Results have been adjusted to account for nonresponse bias (see appendix A). The denominators used to calculate each percentage ranged from 1,078 to 1,090 for all schools, from 399 to 404 for rural schools, and from 672 to 680 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

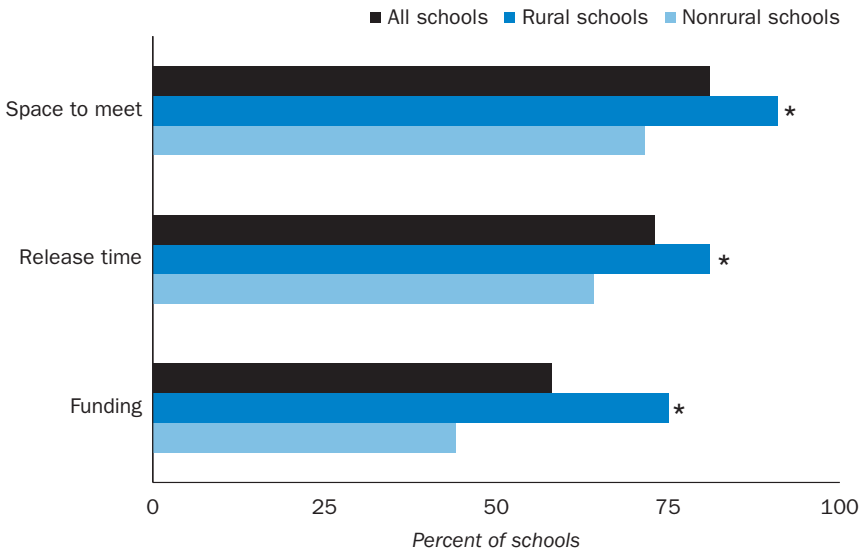
Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

81 percent of nonrural schools offer collaboration protocols (for example, critical friends and the formal identification of essential issues), and 47 percent of rural schools and 58 percent of nonrural schools offer online space (other than email) for sharing ideas and resources.

Among schools that have online collaborative learning groups, a higher percentage of rural schools than of nonrural schools offer support to encourage teachers who participate in those groups to also meet in person. Among the 16 percent of rural schools and 10 percent of nonrural schools that have online collaborative learning groups (see table C1 in appendix C), 44–91 percent provide support to encourage teachers who participate in those groups to also meet in person (figure 8). Rural schools that have online collaborative learning groups offer more types of support than do nonrural schools, including space to meet (91 percent versus 72 percent), release time (81 percent versus 64 percent), and funding (75 percent versus 44 percent).

A lower percentage of rural schools than of nonrural schools offer 16 or more professional development hours for teachers to participate in onsite or online collaborative learning activities during the school year. Whether teachers receive professional development hours for participating in collaborative learning activities may support or impede their participation in professional development. Some 31 percent of the 54 percent of rural schools that offer collaborative learning activities to their teachers onsite or online and 46 percent of the 82 percent of nonrural schools that do allow teachers in collaborative learning activities to earn 16 or more professional development hours during the school year (figure 9).[4]

Figure 8. Among schools in Oklahoma that have online collaborative learning groups, a higher percentage of rural schools than of nonrural schools offer support to encourage teachers who participate in those groups to also meet in person, 2015/16



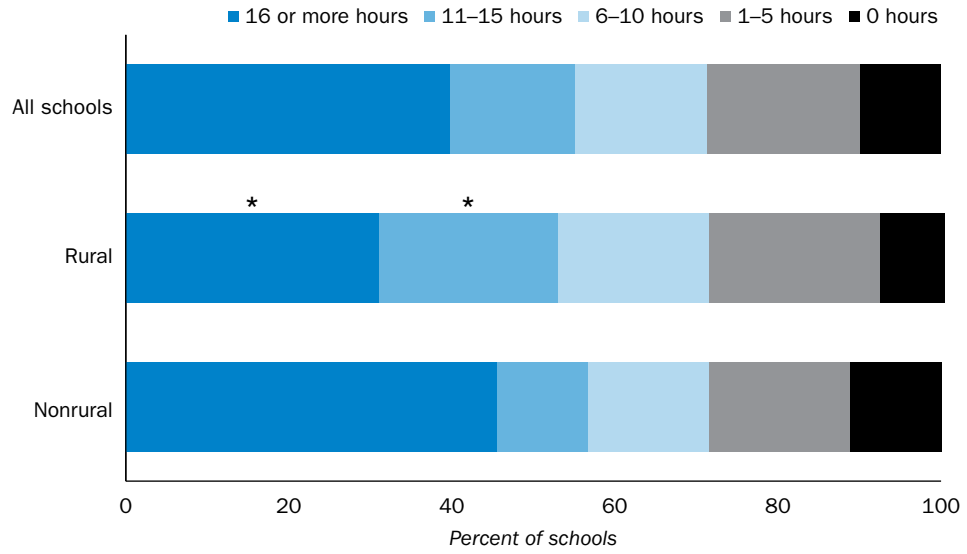
A higher percentage of rural than nonrural schools provide space to meet, release time, and funding to teachers who meet in person with their online collaborative learning group

* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure includes only the 16 percent of rural schools and 10 percent of nonrural schools that offer online collaborative learning activities (see table C1 in appendix C). Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 691 to 693 for all schools, was 246 for rural schools, and ranged from 439 to 441 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure 9. Among schools in Oklahoma that offer collaborative learning activities, a lower percentage of rural schools than of nonrural schools allowed teachers in onsite or online collaborative learning activities to earn 16 or more professional development hours during the school year, 2015/16



Teachers can earn 16 or more professional development hours for participation in onsite or online collaborative learning activities in a lower percentage of rural schools than of nonrural schools

* The difference between rural and nonrural schools is significant at $p < .05$.

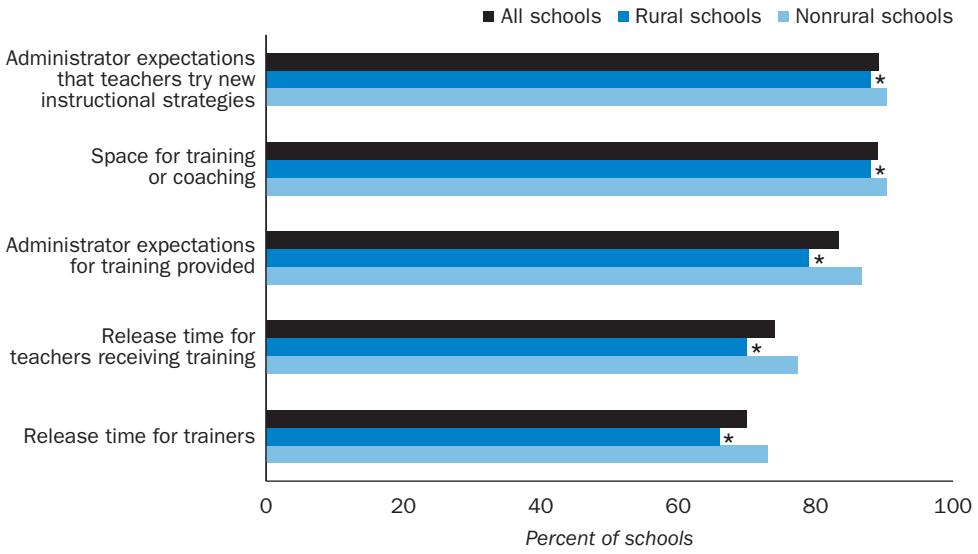
Note: The figure shows the number of professional development hours offered to Oklahoma teachers participating in collaborative learning activities onsite or online. The figure includes only the 54 percent of rural schools and 82 percent of nonrural schools that offer collaborative learning activities onsite or online. Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage was 958 for all schools, 372 for rural schools, and 582 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

In schools that offer teacher-led professional development, a majority of schools support teacher-led professional development in multiple ways, but a lower percentage of rural schools than of nonrural schools do. Among the 83 percent of rural schools and 92 percent of nonrural schools that have formal teacher-led training and coaching practices (see figure 2), the three most common supports are providing space for training or coaching, and administrator expectations about trying new instructional activities and strategies and about delivering professional development to peers (figure 10). However, gaps exist between rural and nonrural schools in the percentage of schools providing these types of support. A lower percentage of rural schools than of nonrural schools support teacher-led training regardless of the type of support.

In schools that offer teacher-led professional development, a higher percentage of rural schools than of nonrural schools reported that having insufficient staff to make teacher-led training worthwhile was a barrier. In the 83 percent of rural schools that offer teacher-led professional development, teachers were not able to provide formal training or coaching to their peers because they lack nearby train-the-trainer sessions, have insufficient staff to make teacher-led training worthwhile, or do not reimburse teachers who deliver or receive training outside contract hours (figure 11). The most common barriers in rural schools that offer formal teacher-led professional development are a lack of nearby train-the-trainer sessions for teacher trainers to attend (34 percent) and insufficient staff to make teacher-led professional development worthwhile (30 percent). Having insufficient

Figure 10. Among rural and nonrural schools in Oklahoma that have formal teacher-led professional development, a majority support it in multiple ways, 2015/16

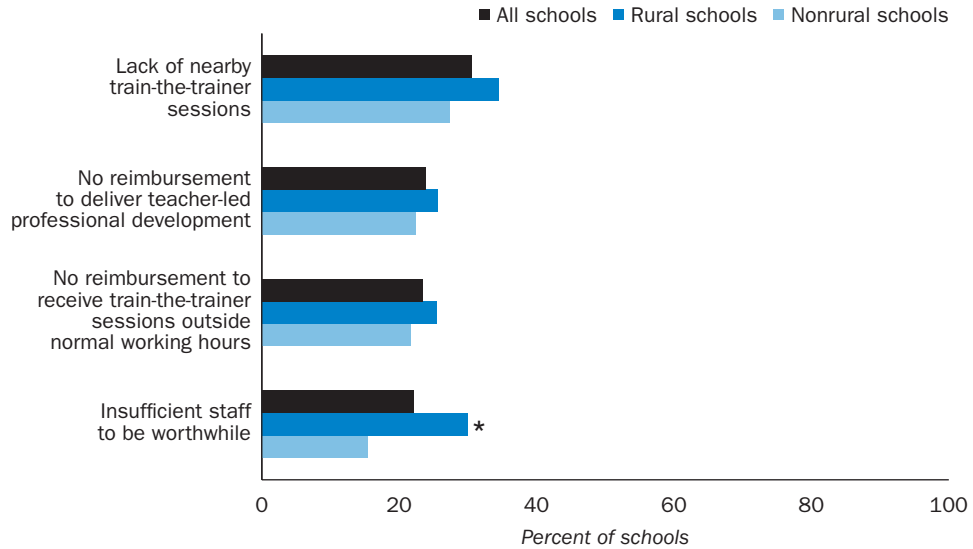


* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure includes only the 83 percent of rural schools and 92 percent of nonrural schools that offer teacher-led professional development (see figure 2). Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,199 to 1,207 for all schools, from 538 to 541 for rural schools, and from 653 to 659 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and non-rural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure 11. Among schools in Oklahoma that offer teacher-led professional development, a higher percentage of rural than of nonrural schools reported that having insufficient staff to make teacher-led training worthwhile was a barrier, 2015/16

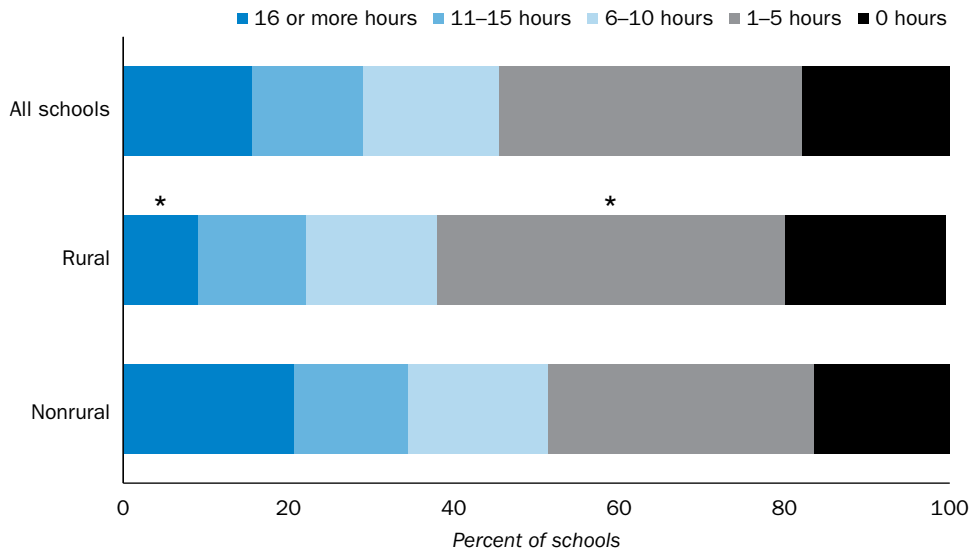


* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure includes only the 83 percent of rural schools and 92 percent of nonrural schools that offer teacher-led professional development (see figure 2). Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,074 to 1,118 for all schools, from 484 to 501 for rural schools, and from 580 to 611 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and non-rural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure 12. Among schools in Oklahoma that offer teacher-led professional development, a lower percentage of rural schools than of nonrural schools offer 16 or more professional development hours for teacher-led training or coaching during the school year, 2015/16



* The difference between rural and nonrural schools is significant at $p < .05$.

Note: Includes only the 83 percent of rural schools and 92 percent of nonrural schools that offer teacher-led professional development (see figure 2). Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage was 1,055 for all schools, 473 for rural schools, and 575 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

A lower percentage of rural schools than nonrural schools offer 16 or more professional development hours for teacher-led professional development

staff to make teacher-led training worthwhile is a barrier in a higher percentage of rural schools than of nonrural schools (15 percent).

In schools that offer teacher-led professional development, a lower percentage of rural schools than of nonrural schools offer 16 or more professional development hours for teacher-led training during the school year. In about 80 percent of the 83 percent of rural schools that offer teacher-led professional development and 84 percent of the 92 percent of nonrural schools that do, teachers can earn one or more professional development hours for teacher-led training or coaching (figure 12). A lower percentage of rural schools (9 percent) than of nonrural schools (21 percent) offer 16 or more professional development hours for teacher-led training or coaching.

Implications of the study findings

Although a majority of rural schools in Oklahoma offer many types of professional development structures for teachers, the shares of schools offering each structure are generally higher for nonrural schools than for rural schools.

A potentially promising professional development process feature, local planning, is common in both rural and nonrural schools but is more common in nonrural schools (94 percent) than in rural schools (83 percent). Local planning is considered important for ensuring that professional development programs align with teachers' goals and experiences, which, in turn, is associated with teacher learning and changes in instructional practices (Borko et al., 2002; Garet et al., 2001). Rural schools, in particular, are expected to benefit from planning that addresses local needs because teacher preservice training is rarely designed to prepare teachers for rural settings (Barker & Beckner, 1987; Barley & Brigham, 2008; Hudson & Hudson, 2008; White & Kline, 2012).

The findings of the current study show that rural schools provide substantial support for teacher professional development, but that support is less likely than in nonrural schools to be provided by peers (for example, common planning and collaboration time, teacher-led coaching and mentoring, and collaborative learning). This aligns with previous studies that suggest that teachers in rural schools are less likely than teachers in nonrural schools to rely on each other for professional development, at least partly because rural schools tend to be small, which limits the number of teachers who share similar professional needs and interests or who can provide particular expertise. Small school size coupled with geographic distance from other teacher networks and specialized professional development opportunities foster what previous studies have labeled "professional isolation" among rural teachers, making it difficult for rural districts to attract and retain teachers (Blitz, 2013; Eargle, 2013; Hammer, Hughes, McClure, Reeves, & Salgado, 2005; Howley & Howley, 2005; O'Hair & Reitzug, 2006; Seltzer & Himley, 1995; Taylor et al., 2005).

Schools' ability to provide teachers with collaborative learning and other localized professional development opportunities is important because these forms of professional development may be more successful than one-time offsite professional development. For example, collaborative learning, which occurs among peers who share an understanding of their particular teaching context, allows connecting professional development more closely to teachers' goals and classroom teaching. Ongoing and job-embedded professional development activities may have a greater likelihood of facilitating instructional change than do more traditional one-time workshops, college courses, or conferences (Garet et al., 2001). Collaborative learning may also be easier to sustain over the long term, taking into account logistical and financial factors (Taylor et al., 2005). The inability to use teachers as resources for other teachers limits the ongoing professional development that rural schools can offer.

Online professional development has the potential to supplement local, in-person professional development in rural schools, but the study found that, overall, rural schools do not use online resources extensively. In the 2015/16 school year 16 percent of rural schools in Oklahoma offered online collaborative learning opportunities. However, rural schools that offered online collaborative learning provided extensive support for their learning groups to also meet in person, which is an important factor in the success of online collaboration (Blitz, 2013).

The findings of this study provide Oklahoma policymakers and education leaders, for the first time, with information about teachers' opportunities for professional development in the state. The findings can inform the development and implementation of policy documents, such as state equity plans. If the data collection is repeated, the findings can be used in monitoring teacher professional development in Oklahoma over the long term.

Limitations of the study

This study has three main limitations.

First, the study likely underestimates the extent of teacher professional development because the focus was on formal school- or district-sponsored professional development, and the respondents were principals rather than teachers. Informal practices, such as reading about effective classroom practices on teachers' own time, were not captured in this study, as principals were not expected to be aware of the extent of teachers' informal professional development. Relatedly, support for and barriers to professional development could not be captured in full without input from teacher respondents.

Second, 58 percent of eligible principals responded to the survey (51 percent fully and 7 percent partially). A nonresponse bias analysis was conducted, and because minor differences between responding and nonresponding principals were discovered, the results of the analysis of the survey data were adjusted with nonresponse weights (see appendix A).

Third, only a subset of the results were included in this report. The survey offers rich data that can be used to deepen understanding of the topics addressed here. For example, the data allow researchers to go beyond what is presented here about teacher-led professional development and examine nuances, such as the proportion of teachers who provide different types of training to their peers and the frequency at which they do so.

Appendix A. Survey development and study methodology

This appendix describes the development of the survey used for this study, the study population and data, and the methodology used for the analysis.

Survey development

The survey focused on formal school- or district-sponsored professional development that took place during the 2015/16 school year, including summer 2015. The study team developed items for the survey in consultation with an Oklahoma Rural Schools Research Alliance working group by first reviewing the literature of promising professional development structures. Because the literature identified teacher collaboration and teacher-led professional development as potentially promising structures for rural schools, the survey included separate sections pertaining to those two topics, in addition to measuring opportunities for other common professional development structures and activities. The study team also developed items to measure process features (such as the characteristics of professional development implementation), including local planning, job-embedded opportunities for learning, and opportunities for teacher reflection, because process features were identified in the literature as promising, irrespective of the type of professional development offered. And to understand what factors facilitated or hindered schools' and districts' ability to provide and teachers' ability to receive and offer professional development, the study team developed items to measure the support and barriers that teachers encountered when accessing professional development. Although the study team drafted the items, the survey development process was collaborative. The alliance working group members reviewed the items four times, providing valuable feedback and advice.

After the iterative survey development process the study team tested the items in cognitive interviews with Oklahoma school principals, who were the survey respondents. Oklahoma Rural Schools Research Alliance members recruited principals from schools with diverse characteristics (including school size, location, level of urbanicity, and grade level). The five principals who participated in the cognitive interviews included principals from rural and suburban schools (but not urban schools) and from schools with grades PK–5, K–12, and 9–12. One outcome from the cognitive interviews was that the survey was shortened because of concerns that it was too long. Also, three of the five principals conflated formal peer coaching with professional learning communities. As a result, the study team changed the order of items in the survey and provided examples of formal peer coaching to help respondents orient their thinking.

The items were revised based on feedback from the cognitive interviews and submitted for another review by Oklahoma education experts. The final online survey instrument can be found in appendix B.

Study population

The sampling frame was obtained from the website of the Oklahoma State Department of Education, which publishes a contact list of Oklahoma State Department of Education–accredited public schools in Oklahoma. The directory included 1,829 schools, each with district names and codes; school names, addresses, and site codes; names and email addresses of the principals; and the number of students, grade levels, and certified teachers. On

the advice of Oklahoma education experts, if a principal appeared in the directory more than once (for example, he or she was listed as a principal of an elementary and a secondary school with the same name, address, and district), the duplicate record (the lowest school level) was removed to avoid asking a principal to complete more than one survey. Also, schools that house multiple school levels (for example, elementary and middle) in one building or campus are likely to coordinate professional development activities for their teachers at different school levels. The number of eligible principals was also reduced because some schools had not opened yet and because in a few cases attempts to find a working email address for emails that bounced back were unsuccessful. The final number of eligible principals who were invited to participate in the survey was 1,609.

Data collection and unit response rate

Prior to data collection the Oklahoma Office of Educational Quality and Accountability sent an email to Oklahoma superintendents informing them of the survey and asking them to encourage their principals to complete the survey. The office sent a second email to all Oklahoma principals on March 2, 2016. The survey invitation with a unique survey link was emailed to all public school principals in Oklahoma on March 7, 2016. During the data collection period, nonrespondents received one email reminder each week and an additional reminder email two days before the survey closed. The original end date of the field period was extended from April 8 to April 30 because of a low response rate. The Office of Educational Quality and Accountability also emailed superintendents in nonresponding districts again at the beginning of April asking them to encourage principals to respond to the survey. Of the 1,609 principals to whom the survey was emailed, 825 principals (51 percent) fully completed it (which corresponds with response rate formula 1 of American Association for Public Opinion Research [2015]), and 115 respondents partially completed it.[5] Both fully and partially completed surveys (940 cases) are included in the analysis.

Additional data sources and data file processing

After the data collection period the study team reviewed and edited the survey data. Frequencies and cross-tabulations were examined to verify that the data file contained only values specified in the online instrument, that the total number of cases in the frequency distributions was correct, that skip patterns were followed correctly, and that the results matched plausible expectations (for example, values in a percentage distribution are lower for the categories that indicate that all or almost all teachers provided formal training for their peers than for categories that indicate that fewer teachers provided formal training). Because the online survey instrument sets missing values to follow the same skip patterns as "yes" answers, some answers (or lack of answers) had to be edited. For example, a missing value in an "other" variable was coded "yes" when a respondent had answered the open-ended "other-specify" item. Two members of the study team upcoded the open-ended responses when the written answer clearly matched one of the closed-ended responses.

In addition to the survey data, the final data file also included information from three other sources. First, total enrollment, grade span, school name, and Title I status from the Oklahoma State Department of Education website were added to the data file from a list of all Oklahoma schools that the Oklahoma State Department of Education published on its website by merging them with each respondent's record before data collection.

Second, school locale was merged from the 2013/14 Common Core of Data and recoded into rural or nonrural. Having these characteristics for each school made it possible to monitor response rates by subcategories and potential nonresponse bias during the field period. Third, after data collection the Office of Educational Quality and Accountability provided a data file that included an Oklahoma region for each district; the data were merged with the survey and Oklahoma State Department of Education data, and each school was assigned the region of its district (map A1).

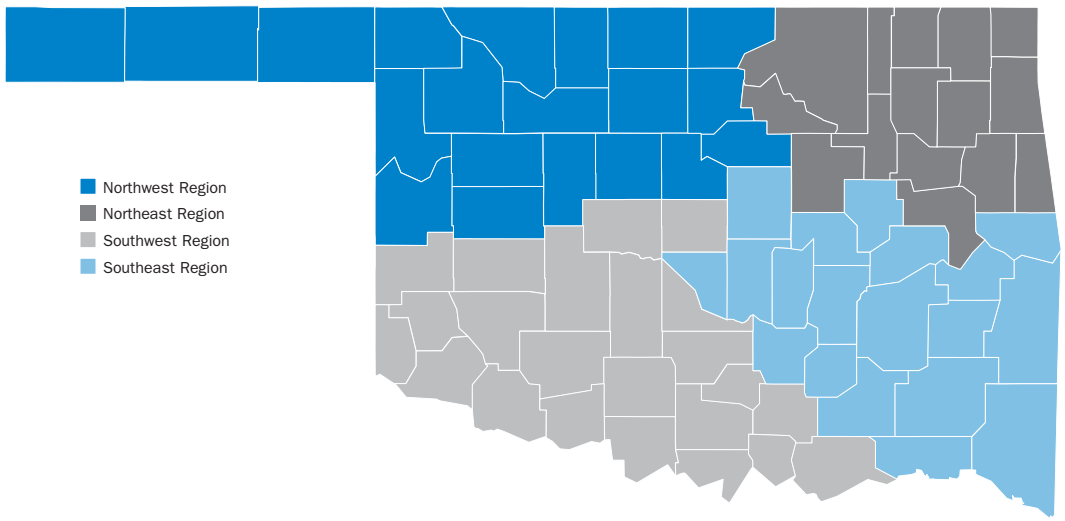
Rural versus nonrural school designation

The designation of schools as rural or nonrural is based on the urban-centric locale variable in the 2013/14 Common Core of Data (Glander, 2015). The urban-centric locale code, which indicates a school's location relative to a populous area, was merged with the survey data. The locales assigned to districts are based on the locale code of each school, weighted by the size of that school's membership. Definitions for the geographic terms, such as "urbanized area" and "urban cluster," can be found at http://www.census.gov/geo/reference/terms.html.

The Common Core of Data locale code categories are defined as follows:

- City, large: Territory inside an urbanized area and inside a principal city with a population of 250,000 or more.
- City, midsize: Territory inside an urbanized area and inside a principal city with a population less than 250,000 but greater than or equal to 100,000.
- City, small: Territory inside an urbanized area and inside a principal city with a population less than 100,000.
- Suburb, large: Territory outside a principal city and inside an urbanized area with a population of 250,000 or more.

Map A1. Oklahoma regions by county, 2016



Source: Based on data from the Oklahoma Office of Educational Quality and Accountability.

- Suburb, midsize: Territory outside a principal city and inside an urbanized area with a population less than 250,000 but greater than or equal to 100,000.
- Suburb, small: Territory outside a principal city and inside an urbanized area with a population less than 100,000.
- Town, fringe: Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area.
- 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.
- Town, remote: Territory inside an urban cluster that is more than 35 miles from an urbanized area.
- Rural, fringe: Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as a rural territory that is less than or equal to 2.5 miles from an urban cluster.
- 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 a rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster.
- Rural, remote: Census-defined rural territory that is more than 25 miles from an urbanized area and more than 10 miles from an urban cluster.

For the current study rural fringe, rural distant, and rural remote were coded as rural, and the remaining categories were coded as nonrural. Because virtual schools do not fit into a rural or nonrural category, the five virtual schools in the analysis file were omitted from the rural versus nonrural comparisons but were included in the "all schools" category.[6]

Nonresponse bias analysis

Because of the low response rate, the study team conducted an analysis of unit nonresponse bias to estimate whether the characteristics of the schools whose principals responded differed from those of the schools whose principals did not respond to the survey. Bias was analyzed by comparing the distribution of available school characteristics over the full universe to the distribution of the same characteristics over the 940 respondents only (table A1). The school characteristics used for the bias analysis were obtained from the Office of Educational Quality and Accountability, the Oklahoma State Department of Education, and the 2013/14 Common Core of Data (Glander, 2015). For each characteristic the estimated bias (the respondents-only proportion minus the universe proportion) and the percent relative bias (the estimated bias divided by the universe proportion) were calculated. A positive value for either bias indicator means that the type of school (for example, rural) was overrepresented among respondents, and a negative value means that the type of school was underrepresented. The *t*-test results for unweighted estimates show few significant differences in the characteristics of the responding and nonresponding principals' schools. For example, rural schools are overrepresented among respondents by 2.3 percentage points, and schools with a low percentage of racial/ethnic minority students (0–32.2 percent) are overrepresented by 3.4 percentage points. Despite these minor differences, the results suggest that the schools whose principals responded are largely representative of the eligible universe with respect to observed school characteristics.

Table A1. Distribution of Oklahoma Teacher Professional Development Survey universe schools and respondent schools (unweighted estimates), standard error, estimated bias, and percent relative bias, by characteristic, 2015/16

Characteristic	Estimate (percent)		Standard error	Estimated bias (percentage points)	Percent relative bias
	Universe (n = 1,960)	Respondents (unweighted) (n = 940)			
Locale[a,b]					
Rural	47.30	49.57	1.04	2.27*	4.8
Nonrural	52.70	50.43	1.02	–2.27*	–4.3
School level					
Elementary	59.11	58.94	0.71	–0.17	–0.3
Middle	17.71	17.45	1.20	–0.26	–1.5
High	22.81	23.19	1.21	0.38	1.7
Combined	0.37	0.43	0.99	0.06	15.3
Enrollment					
Fewer than 100	9.70	8.72	0.92	–0.98	–10.1
100–199	17.03	16.91	1.00	–0.12	–0.7
200–499	46.36	48.83	0.74	2.47**	5.3
500–749	18.46	18.09	1.01	–0.37	–2.0
750–999	4.72	4.57	0.83	–0.15	–3.2
1,000 or more	3.73	2.87	0.81	–0.86	–23.0
Title I status[a]					
Title I school	84.53	85.11	0.31	0.59	0.7
Not a Title I school or Title I status unknown	15.48	14.89	1.75	–0.59	–3.8
Region					
Northeast	33.50	33.51	0.87	0.01	0.0
Northwest	16.59	18.83	0.86	2.24*	13.5
Southeast	23.68	23.83	0.91	0.15	0.6
Southwest	25.61	23.30	0.95	–2.31*	–9.0
Virtual	0.62	0.53	0.57	–0.09	–14.7
Students eligible for free or reduced-price lunch[a,c]					
0–51.3 percent	24.11	25.53	0.86	1.42	5.9
51.4–66.9 percent	23.99	24.57	0.87	0.58	2.4
67.0–80.3 percent	24.55	24.47	0.88	–0.08	–0.3
80.4–100 percent	24.36	23.40	0.91	–0.96	–4.0
Unknown[d]	2.98	2.02	0.59	–0.96	–32.3
Students who are racial/ethnic minority students[a,c]					
0–32.2 percent	23.68	27.13	0.83	3.45***	14.6
32.3–44.1 percent	24.80	25.32	0.89	0.52	2.1
44.2–59.1 percent	24.11	22.02	0.91	–2.09*	–8.7
59.2–100 percent	24.43	23.51	0.90	–0.92	–3.7
Unknown[d]	2.98	2.02	0.59	–0.96	–32.3
Student-to-teacher ratio[a,c]					
4.4–13.67	21.63	21.81	0.88	0.18	14.6
13.68–15.66	24.80	24.47	0.88	–0.33	2.1
15.67–17.38	25.11	25.85	0.88	0.74	–8.7
17.39–58.26	25.42	25.74	0.88	0.32	–3.7
Unknown[d]	3.05	2.13	0.60	–0.92	–32.3

* Significant at $p < .05$; ** significant at $p < .01$; *** significant at $p < .001$.

Note: Excludes duplicate schools and schools for which the principal could not be contacted.

a. Data are for 2013/14.

b. Excludes virtual schools.

c. Divisions are based on quartiles.

d. Includes only schools whose state identification numbers could not be matched to the Common Core of Data and schools for which the variable was missing in the Common Core of Data file.

Sources: Authors' analysis of 2013/14 data from the Common Core of Data and responses to the 2016 Oklahoma Teacher Professional Development Survey.

Table A2. Distribution of Oklahoma Teacher Professional Development Survey universe schools and respondent schools (weighted estimates), standard error, estimated bias, and percent relative bias, by characteristic, 2015/16

Characteristic	Estimate (percent)		Standard error	Estimated bias (percentage points)	Percent relative bias
	Universe	Respondents (weighted)			
Locale[a,b]					
Rural	47.30	47.40	1.16	0.10	0.2
Nonrural	52.70	52.60	1.04	–0.10	–0.2
School level					
Elementary	59.11	59.41	0.75	0.31	0.5
Middle	17.71	17.42	1.28	–0.30	–1.7
High	22.81	22.78	1.30	–0.03	–0.2
Combined	0.37	0.39	1.06	0.02	5.5
Enrollment					
Fewer than 100	9.70	9.78	0.97	0.09	0.9
100–199	17.03	17.44	1.01	0.41	2.4
200–499	46.36	45.80	0.77	–0.57	–1.2
500–749	18.46	18.44	1.01	–0.02	–0.1
750–999	4.72	4.84	0.83	0.12	2.5
1,000 or more	3.73	3.71	0.87	–0.02	–0.6
Title I status[a]					
Title I school	84.53	84.95	0.33	0.43	0.5
Not a Title I school or Title I status unknown	15.48	15.05	1.87	–0.43	–2.8
Region					
Northeast	33.50	33.03	0.93	–0.47	–1.4
Northwest	16.59	17.10	0.87	0.50	3.0
Southeast	23.68	23.61	0.96	–0.07	–0.3
Southwest	25.61	25.71	1.05	0.11	0.4
Virtual	0.62	0.55	0.61	–0.07	–11.0
Students eligible for free or reduced-price lunch[a,c]					
0–51.3 percent	24.11	24.36	0.90	0.25	1.0
51.4–66.9 percent	23.99	23.75	0.90	–0.24	–1.0
67.0–80.3 percent	24.55	24.41	0.93	–0.14	–0.6
80.4–100 percent	24.36	25.03	0.99	0.66	2.7
Unknown[d]	2.98	2.45	0.68	–0.53	–17.8
Students who are racial/ethnic minority students[a,c]					
0–32.2 percent	23.68	23.91	0.83	0.24	1.0
32.3–44.1 percent	24.80	25.45	0.93	0.66	2.6
44.2–59.1 percent	24.11	23.36	0.97	–0.76	–3.1
59.2–100 percent	24.43	24.82	0.99	0.40	1.6
Unknown[d]	2.98	2.45	0.68	–0.53	–17.8
Student-to-teacher ratio[a,c]					
4.4–13.67	21.63	21.61	0.93	–0.02	–0.1
13.68–15.66	24.80	24.35	0.94	–0.45	–1.8
15.67–17.38	25.11	25.71	0.93	0.60	2.4
17.39–58.26	25.42	25.64	0.92	0.22	0.9
Unknown[d]	3.05	2.69	0.71	–0.35	–11.6

a. Data are for 2013/14.

b. Excludes virtual schools.

c. Divisions are based on quartiles.

d. Includes only schools whose state identification numbers could not be matched to the Common Core of Data and schools for which the variable was missing in the Common Core of Data file.

Sources: Authors' analysis of 2013/14 data from the Common Core of Data and responses to the 2016 Oklahoma Teacher Professional Development Survey.

To adjust the results for nonresponse and further mitigate the risk of bias, nonresponse weights were created using a logistic regression model. The use of nonresponse weights eliminates statistically significant differences between the responding and nonresponding principals' characteristics (table A2). All the results in the report are adjusted for nonresponse by using the nonresponse weight.

Analysis of survey data

The analyses presented in this report are descriptive and do not indicate causal relationships. All the results are weighted to account for nonresponse. Differences between rural and nonrural schools that are statistically significant at the $p < .05$ level and that are more than 5 percentage points are reported in rural–nonrural comparisons.

Appendix B. Oklahoma Teacher Professional Development Survey

Welcome to the 2016 Oklahoma Teacher Professional Development Survey!

Purpose. The purpose of this survey is to find out about professional development of teachers in your school. The survey is sponsored by the Oklahoma Office of Educational Quality and Accountability (OEQA) and the OK Department of Education (OSDE) and administered by OEQA.

Confidentiality. We plan to publish a report that will only contain summary information, and your responses will never be presented in any way that would permit readers to identify you or your school.

Voluntary Participation. Your participation in this survey is voluntary, and you can discontinue at any time or skip any questions you do not want to answer.

Benefits. The results of this survey will provide for the first time state-wide information about teacher professional development practices in Oklahoma. Your responses will inform state policy about teachers' access to professional development.

Risks. There are no foreseeable risks associated with your participation in this study.

Questions. If you have any questions about this survey, feel free to contact Kathren Stehno, the Senior Coordinator/Project Manager of Accountability at the Office of Educational Quality & Accountability by e-mail at Kathren.stehno@oeqa.ok.gov or by phone at 405-522-5399.

Consent A * Informed Consent. Please select "Yes" and click "Next" to continue on to the survey. By doing so you give us your permission to use your responses in our study.

- ☐ Yes
- ☐ No

Consent B * Are you sure you do **not** want to continue?

- ☐ Yes
- ☐ No. Take me back to the previous page.

The questions in this survey are about your teachers' access to professional development. When answering questions in this survey:

- Include only full- or part-time certified teachers who provide classroom instruction as at least part of their job duties.
- Include only professional development that is formalized training with the explicit goal of increasing participant content or pedagogy knowledge or improving teacher instructional practices, with the ultimate goal of improving student learning.
- If you are **currently** the principal at more than one school, answer each question for all of your schools collectively.

Section 1: Teacher Participation in Professional Development

Schools and districts offer or facilitate different types and amounts of teacher professional development. The first questions in the survey ask about **teacher professional development in your school during the 2015–16 school year, including summer 2015.**

If you are **currently** a principal at more than one school, the questions pertain to all of your schools collectively.

Q1. Please think about the 2015–16 school year, including summer 2015. Did your school or district make professional conferences available for any of your teachers?

- ☐ Yes
- ☐ No

Q2. What was the format of the professional conference that your school or district made available in school year 2015–16, including summer 2015? *Select all that apply.*

- ☐ Offsite in person
- ☐ Onsite in person
- ☐ Online

Q3. Please think about the 2015–16 school year, including summer 2015. Did your school or district make video-based workshops or seminars, such as PD 360, available for any of your teachers?

- ☐ Yes
- ☐ No

Q4. What was the format of the video-based workshops or seminars that your school or district made available in school year 2015–16, including summer 2015? *Select all that apply.*

- ☐ Offsite in person
- ☐ Onsite in person
- ☐ Online

Q5. Please think about the 2015–16 school year, including summer 2015. Did your school or district make live workshops or seminars available for any of your teachers?

- ☐ Yes
- ☐ No

Q6. What was the format of the live workshops or seminars that your school or district made available in school year 2015–16, including summer 2015? *Select all that apply.*

- ☐ Offsite in person
- ☐ Onsite in person
- ☐ Online

Q7. Please think about the 2015–16 school year, including summer 2015. Did your school or district make courses offered by a college or university available for any of your teachers?

- ☐ Yes
- ☐ No

Q8. What was the format of the courses offered by a college or university that your school or district made available in school year 2015–16, including summer 2015? *Select all that apply.*

- ☐ Offsite in person
- ☐ Onsite in person
- ☐ Online

Q9. Please think about the 2015–16 school year, including summer 2015. Did your school or district make formal coaching or mentoring available for any of your teachers?

- ☐ Yes
- ☐ No

Q10. What was the format of the formal coaching or mentoring that your school or district made available in school year 2015–16, including summer 2015? *Select all that apply.*

- ☐ Off-site in person
- ☐ On-site in person
- ☐ Online

Q11. Approximately how many years does it take to complete 75 Professional Development points **for the majority** of the teachers who do so? *Please select one answer.*

- ☐ 5 years or more
- ☐ 4 years to less than 5 years
- ☐ 1 year to less than 4 years
- ☐ Less than 1 year

Q12. Please think about the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. Did any of your teachers do the following activities? *Please select an answer in each row.*

	Yes	No	I Do Not Know
Observed a demonstration of teaching (videos or modeled by presenters)	☐	☐	☐
Received feedback from a peer about instructional practices	☐	☐	☐
Received feedback from a coach or an administrator about instructional practices	☐	☐	☐
Practiced using new instructional materials or techniques	☐	☐	☐
Developed curricula or instructional materials	☐	☐	☐
Reviewed student data	☐	☐	☐
Other	☐	☐	☐

Please describe other:

The next few questions are about online professional development your school or district made available during the 2015–16 school year, including summer 2015.

Q13. Did your school or district provide most or all of your teachers access to high-quality online professional development opportunities during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q14. Did your school or district use online resources to enhance onsite professional development during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q15. Did any of the following reasons keep your teachers from participating in online professional development during the 2015–16 school year, including summer 2015? *Please select an answer in each row.*

	Yes	No	I Do Not Know
Lack of access to relevant Internet sites because of school or district blocks	☐	☐	☐
Unreliable or no Internet access	☐	☐	☐
Lack of necessary equipment (for example, computer, laptop, printer)	☐	☐	☐
Lack of technical support staff (for example, IT personnel)	☐	☐	☐
Lack of interest in using an online format	☐	☐	☐
Other	☐	☐	☐

Please describe other:

Section 2: Teacher Professional Development Goals and Planning

This section includes questions about your school's planning and goals for all types of teacher professional development during the 2015–16 school year, including summer 2015.

If you are currently a principal at more than one school, the questions pertain to all of your schools collectively.

Q16. Did your school or district have at least one professional development planning team during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No

Q17. Did any **college or university** professional development providers participate on your school's professional development planning team(s) during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q18. Please think about **planning** the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. How often did you select professional development to meet the following objectives? *Please select an answer in each row.*

	Always	Almost Always	Often	Sometimes	Rarely	Never
To support the school's or district's improvement goals	☐	☐	☐	☐	☐	☐
To address teacher instructional needs that were identified as part of evaluations of teaching	☐	☐	☐	☐	☐	☐
To support teachers' use of student data to inform instructional practice	☐	☐	☐	☐	☐	☐
To increase teachers' knowledge about family or community engagement	☐	☐	☐	☐	☐	☐
To increase teachers' knowledge about inclusive education for culturally diverse students	☐	☐	☐	☐	☐	☐

Section 3: Teacher Professional Development Supports and Barriers

This section includes questions about supports and barriers to professional development, specifically to the professional development opportunities that your school or district made available to your teachers during the 2015–16 school year, including summer 2015.

If you are currently a principal at more than one school, the questions pertain to all of your schools collectively.

Q19. Did you spend all the professional development funds provided to your school during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q20. Please think about the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. How often were you able to provide substitute teachers to cover teachers' classes when they attended professional development? *Please select one answer.*

- ☐ Always
- ☐ Almost always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never
- ☐ Not applicable

Q21. Please think about the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. How often were you able to provide common planning or collaboration time for teachers to engage in professional development activities? *Please select one answer.*

- ☐ Always
- ☐ Almost always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

Q22. Please think about the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. How often were you able to give time off for students to accommodate teacher professional development? *Please select one answer.*

- ☐ Always
- ☐ Almost always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never
- ☐ Not applicable

Q23. Please think about the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. Approximately how many teachers in your school missed **at least one** of these professional development opportunities? *Please select one answer.*

- ☐ All
- ☐ Almost all
- ☐ More than half
- ☐ About half
- ☐ Less than half
- ☐ Very few
- ☐ None
- ☐ I do not know

Q24. In general, what were some reasons that teachers in your school missed professional development opportunities? *Please select an answer in each row.*

	Yes	No	I Do Not Know
Professional development occurred outside of normal working hours	☐	☐	☐
Professional development schedule conflicted with other school/professional activities	☐	☐	☐
Substitute teachers were not available	☐	☐	☐
School or district would not reimburse teachers for expenses they had for attending professional development activities	☐	☐	☐
School or district would not pay teachers to attend professional development activities	☐	☐	☐
Professional development opportunities were too far away	☐	☐	☐
Teachers did not think that the professional development would meet their needs	☐	☐	☐
Other	☐	☐	☐
Please describe other:			

Section 4: Collaborative Learning Opportunities

This section includes questions about any collaborative learning opportunities (for example, professional learning communities, discussion groups) that your school or district made available to your teachers during the 2015–16 school year, including summer 2015.

If you are currently a principal at more than one school, the questions pertain to all of your schools collectively.

Q25. Did your school or district make any collaborative learning activities, such as study groups or professional learning communities, available for any of your teachers during the 2015–16 school year, including summer 2015?

- ☐ Yes
- ☐ No

Q26. What was the format of the collaborative learning activities? *Select all that apply.*

- ☐ Online
- ☐ Onsite in person
- ☐ Offsite in person

Q27. Please think about the **onsite and online collaborative learning opportunities** that your school or district made available in the 2015–16 school year, including summer 2015. Did your school make available the following structures **to support collaboration?** *Please select an answer in each row.*

	Yes	No
Meeting space	☐	☐
Release time for participants	☐	☐
Formal goals for outcomes	☐	☐
Formally assigned group leaders (for example, school leaders or other teachers)	☐	☐
Formal accountability procedures for professional collaboration (for example, sign-in sheets)	☐	☐
Protocols for professional collaboration (for example, critical friends, formal identification of essential issues)	☐	☐
Administrator expectation or support for trying new instructional activities or strategies	☐	☐
Online space to share ideas and resources, other than email (for example, through blogs, wikis, or social networking)	☐	☐
Other	☐	☐
Please describe other:		

Q28. How many professional development hours could your teachers earn by participating in onsite or **online collaborative learning activity** offered by your school or district during the 2015–2016 school year, including summer 2015? *Please select one answer.*

- ☐ No professional development hours were offered for collaborative learning activities
- ☐ 1–5 hours
- ☐ 6–10 hours
- ☐ 11–15 hours
- ☐ 16 or more hours
- ☐ I do not know

Q29. Please think about the professional development opportunities your school or district made available in the 2015–16 school year, including summer 2015. Approximately how many of your teachers participated in collaborative learning activities with other teachers **onsite at your school?** *Please select one answer.*

- ☐ All
- ☐ Almost all
- ☐ More than half
- ☐ About half
- ☐ Less than half
- ☐ Very few
- ☐ None

Q30. In some schools, teachers participate in collaborative learning activities **online** with teachers from other schools or districts. Approximately how many of your teachers participated in **online** collaborative learning activities during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ All
- ☐ Almost all
- ☐ More than half
- ☐ About half
- ☐ Less than half
- ☐ Very few
- ☐ None
- ☐ I do not know

Q31. Teachers who participate in **online** collaborative learning with teachers from other schools and districts might meet in person sometimes. Of your teachers who participated in an **online or Internet collaborative learning group,** approximately how many met their group also **in person** during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ All
- ☐ Almost all
- ☐ More than half
- ☐ About half
- ☐ Less than half
- ☐ Very few
- ☐ None
- ☐ I do not know

Q32. Please think about the **online collaborative learning opportunities** your school or district made available in the 2015–16 school year, including summer 2015. Did your school or district support the professional development by providing any of the following structures for teachers? *Please select an answer in each row.*

	Yes	No
Space to meet their online/Internet collaborative learning group in person	☐	☐
Release time to meet their online/Internet collaborative learning group in person	☐	☐
Funding to meet their online/Internet collaborative learning group in person	☐	☐

Section 5: Teacher-Provided Professional Development and Coaching

Teachers learn from each other in different ways. This section is about formal, teacher-provided professional development. Examples might include train-the-trainers (TTTs) or formal coaching or mentoring.

If you are currently a principal at more than one school, the questions pertain to all of your schools collectively.

Q33. Did your teachers provide demonstrations of a lesson, unit, or skill for other teachers during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q34. In general, how often did your teachers provide demonstrations of a lesson, unit, or skill for other teachers during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Once per year
- ☐ A few times per year
- ☐ Several times per year
- ☐ Monthly
- ☐ At least weekly
- ☐ I do not know

Q35. Did your teachers provide onsite workshops or seminars for other teachers in this school during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q36. In general, how often did your teachers provide onsite workshops or seminars for other teachers during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Once per year
- ☐ A few times per year
- ☐ Several times per year
- ☐ Monthly
- ☐ At least weekly
- ☐ I do not know

Q37. Did your teachers provide formal peer coaching or mentoring for other teachers in this school during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q38. In general, how often did your teachers provide formal peer coaching or mentoring for other teachers in this school during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Once per year
- ☐ A few times per year
- ☐ Several times per year
- ☐ Monthly
- ☐ At least weekly
- ☐ I do not know

Q39. Did your teachers provide any other formal training or coaching activities for other teachers in this school during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Yes
- ☐ No
- ☐ I do not know

Q39. Please describe this other formal training or coaching activity:

_____

_____

_____

Q40. In general, how often did your teachers provide this other formal training or coaching activity for other teachers during the 2015–16 school year, including summer 2015? *Please select one answer.*

- ☐ Once per year
- ☐ A few times per year
- ☐ Several times per year
- ☐ Monthly
- ☐ At least weekly
- ☐ I do not know

Q41. Please think about the 2015–16 school year, including summer 2015. Approximately how many of your teachers provided **formal training or coaching** to other teachers in your school or district? *Please select one answer.*

- ☐ All
- ☐ Almost all
- ☐ More than half
- ☐ About half
- ☐ Less than half
- ☐ Very few
- ☐ I do not know

Q42. Please think about the 2015–16 school year, including summer 2015. How were teachers at your school **selected** to provide **formal training or coaching** to other teachers? *Please select an answer in each row.*

	Yes	No	I Do Not Know
By experience offering professional development	☐	☐	☐
By their education or credentials, such as special certification	☐	☐	☐
By their effectiveness as a teacher	☐	☐	☐
By grade level or subject area	☐	☐	☐
By availability to train others	☐	☐	☐
By years of teaching experience	☐	☐	☐
Other	☐	☐	☐
Please describe other:			

Q43. Please think about the 2015–16 school year, including summer 2015. In general, did any of the following reasons prevent teachers in your school from providing **formal training or coaching to their peers?** *Please select an answer in each row.*

	Yes	No	I Do Not Know
Lack of nearby opportunities to attend train-the-trainer sessions	☐	☐	☐
Insufficient numbers of local staff to make peer training or coaching worthwhile	☐	☐	☐
School or district did not reimburse teachers to receive training outside of contract hours to be a trainer or coach	☐	☐	☐
School or district did not reimburse teachers to deliver training or coaching outside of contract hours	☐	☐	☐

Q44. Please think about the 2015–16 school year, including summer 2015. Were the following resources available for teachers to provide **formal training or coaching to other teachers?** *Please select an answer in each row.*

	Yes	No
Space for a training or coaching	☐	☐
Release time for teacher trainers or coaches	☐	☐
Release time for teachers to receive professional development from a peer	☐	☐
Administrator expectations about delivering training or coaching to peers	☐	☐
Administrator expectations or support for teachers to try new instructional activities and strategies	☐	☐

Q45. Please think about the 2015–16 school year, including summer 2015. Excluding informal discussion groups or professional learning communities, how many professional development hours could teachers earn by **participating in** formal training or coaching offered by other teachers in the school or district? *Please select one answer.*

- ☐ No professional development hours were offered for participation in teacher-provided professional development activities
- ☐ 1–5 hours
- ☐ 6–10 hours
- ☐ 11–15 hours
- ☐ 16 or more hours
- ☐ I do not know

Thank you for the information you have provided about professional development. You have arrived at the final question of the survey.

Q46. What is the title of the person who completed most or all of the questions in this survey? *Please select one answer.*

- ☐ Principal
- ☐ Vice-principal
- ☐ Professional Development Coordinator
- ☐ Other (please specify):

Thank you for your time!

Please click "Done" to submit your answers.

Appendix C. Additional data and figures

This appendix includes additional results related to the location of professional development structures (table C1), professional development activities that schools offer teachers (figure C1), and teacher-led training (figures C2 and C3).

Table C1. Percentage and frequency of Oklahoma schools that offer professional development structures offsite, onsite, or online, by locale, 2015/16

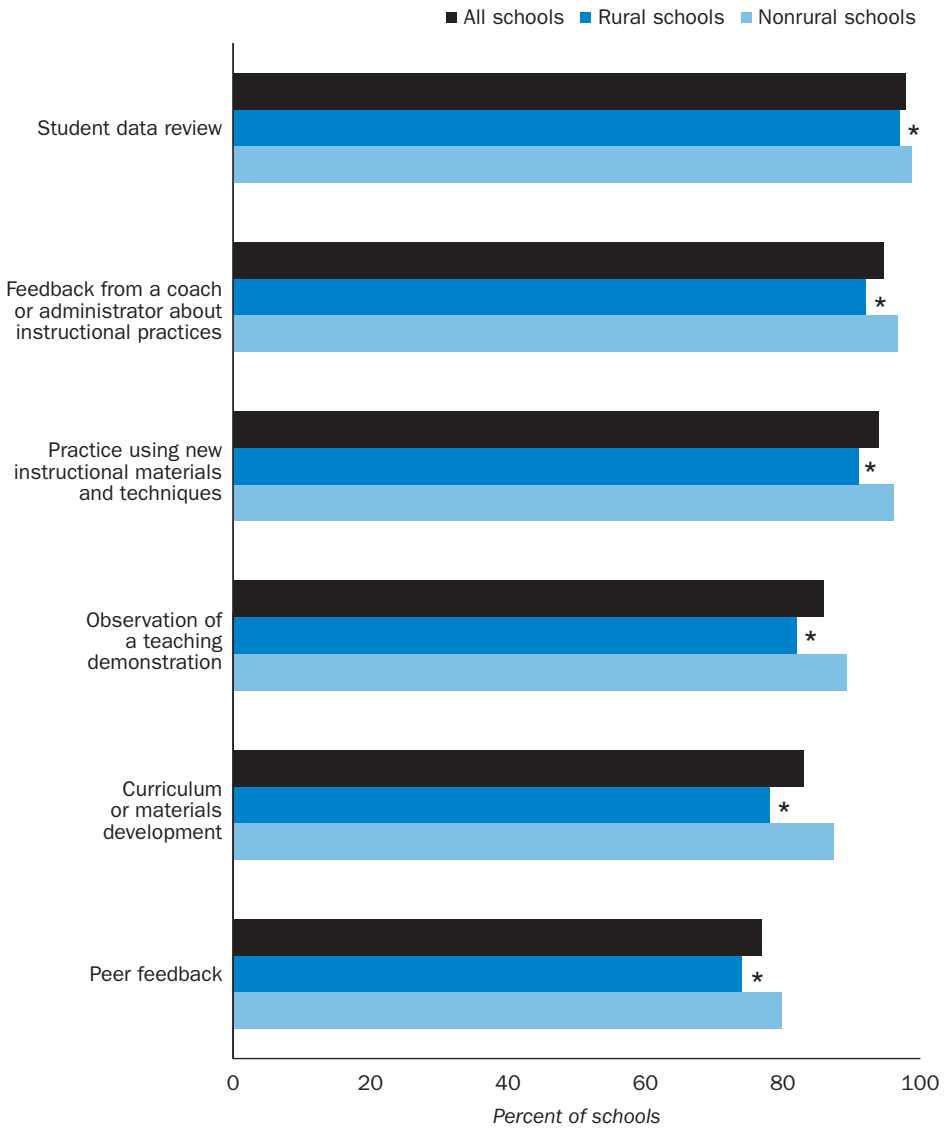
	All schools				Rural schools				Nonrural schools			
Professional development structure	Number	Offsite (percent)	Onsite (percent)	Online (percent)	Number	Offsite (percent)	Onsite (percent)	Online (percent)	Number	Offsite (percent)	Onsite (percent)	Online (percent)
Professional conference	1,509	80.4	78.4	47.8	693	77.8*	72.7*	45.4	809	82.6*	83.3*	49.5
Live workshop or seminar	1,424	71.5	79.4	32.3	652	66.4*	76.0*	33.1	765	76.0*	82.4*	31.0
Collaborative learning activity	1,132	21.5	94.5	13.1	422	16.9	93.8*	16.4	703	24.3	95.4*	10.3
Formal coaching or mentoring	1,162	21.3	95.5	11.4	480	15.7*	94.7*	11.5	675	25.1*	96.6*	10.7
Video-based workshop or seminar	925	28.4	48.6	83.6	397	24.7	50.1	79.1*	523	31.2	47.6	86.4*
College or university course	409	82.1	26.4	45.4	153	81.0	23.3	54.9*	251	83.1	28.7	39.1*

* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The table includes only schools that offer the particular professional development structure (for example, professional conference). Results have been adjusted to account for nonresponse bias (see appendix A). Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure C1. Share of Oklahoma schools that offer various types of professional development activities for teachers, by locale, 2015/16

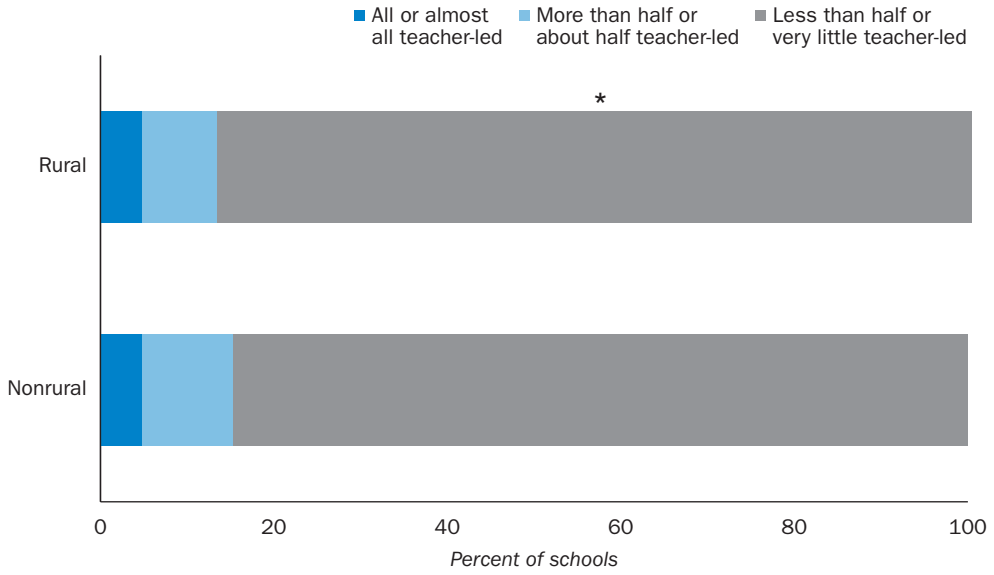


* The difference between rural and nonrural schools is significant at $p < .05$.

Note: Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,393 to 1,523 for all schools, from 644 to 715 for rural schools, and from 743 to 801 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure C2. Among Oklahoma schools that offer any teacher-led professional development, the shares led by teachers and locale, 2015/16

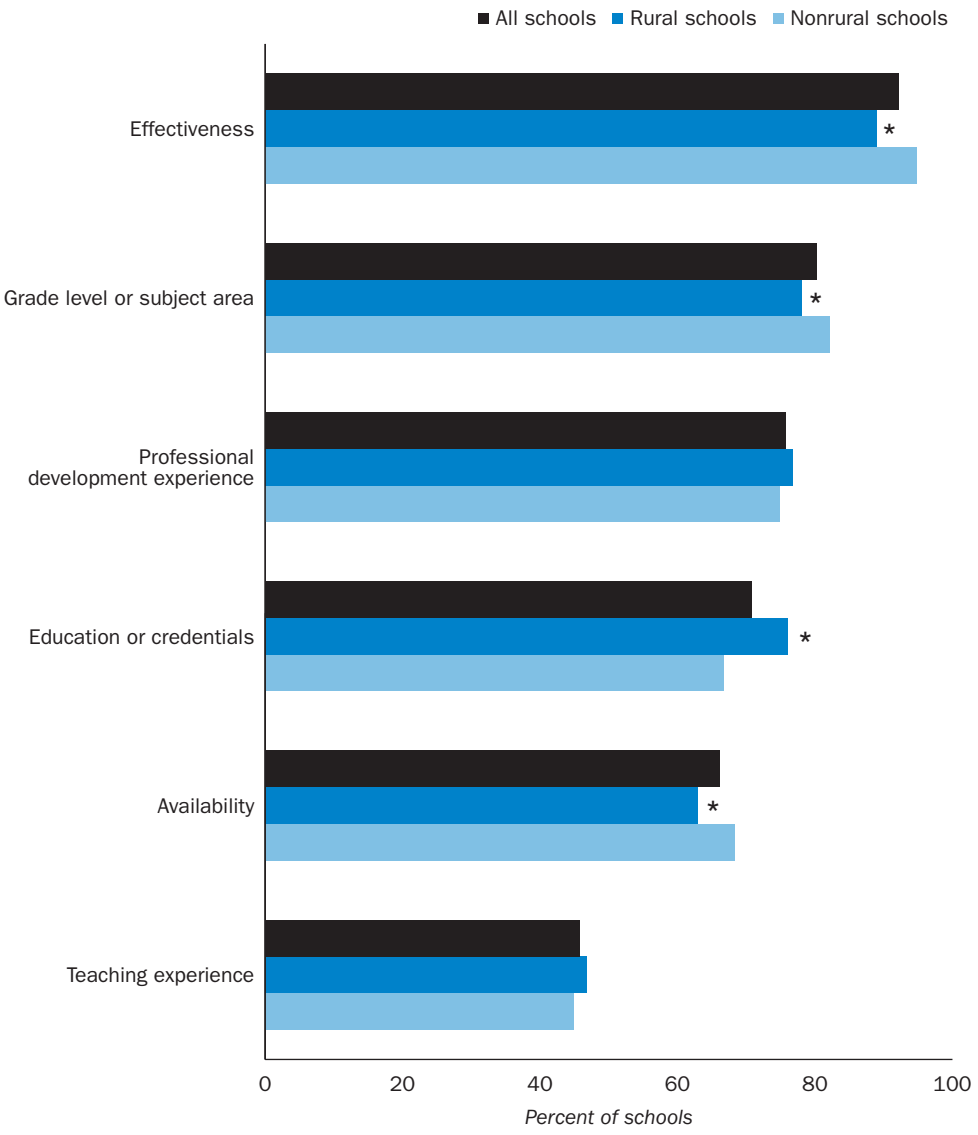


* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure includes only the 83 percent of rural schools and 92 percent of nonrural schools that offer teacher-led professional development (see figure 2 in the main text). Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage was 505 for rural schools and 622 for nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Figure C3. Among Oklahoma schools that offer any teacher-led professional development, the share of schools that select teacher trainers and coaches for various reasons, by locale, 2015/16



* The difference between rural and nonrural schools is significant at $p < .05$.

Note: The figure includes only the 83 percent of rural schools and 92 percent of nonrural schools that offer teacher-led professional development (see figure 2 in the main text). Results have been adjusted to account for nonresponse bias (see appendix A). The denominator used to calculate each percentage ranged from 1,127 to 1,179 for all schools, from 492 to 524 for rural schools, and from 628 to 648 for nonrural schools. Values for all schools may include responses from principals of virtual schools and thus may not sum to the total for rural and nonrural schools. See appendix B for the survey questions.

Source: Authors' analysis of responses to the 2016 Oklahoma Teacher Professional Development Survey.

Notes

1. The member organizations of the alliance are the Oklahoma Office of Educational Quality and Accountability; the Oklahoma State Department of Education, Office of Educator Effectiveness; the Oklahoma State Department of Education, Office of American Indian Education; the University of Oklahoma, K20 Center; the University of Oklahoma, American Indian Institute; the University of Oklahoma, South Central Comprehensive Center; the Southwestern Oklahoma State University, K–8 Scholars Appreciating Mathematics; the Oklahoma Corporation Commission–Public Utilities Division; the Aurora Learning Community Association; Academic Transitions; the Oklahoma Technical Assistance Center; Shawnee Tribe of Oklahoma; Iowa Tribe of Oklahoma; Oklahoma City Public Schools; Frederick Public Schools; Byng Public Schools; and Seminole Public Schools.
2. The literature review also identified school–university partnerships (Libler, 2010) and online learning (Blitz, 2013) as potentially promising professional development structures, but the survey questions focus only on collaborative learning and teacher-led training.
3. Because of rounding, actual differences may differ slightly from those presented in the text.
4. Oklahoma teachers are required to complete 75 hours of professional development every five years, or an average of 15 hours per year. Professional development offered in excess of 15 hours per year suggests a commitment to professional development beyond the expected minimum.
5. A survey was considered fully completed if a respondent answered at least up to the second-to-last item in the survey. (The last item asked who filled out the survey.) Response rates were likely affected by two factors. First, the Oklahoma State Department of Education administered a survey concurrently, and some principals indicated confusion about the two surveys. Second, Oklahoma had enacted deep budget cuts in public school education at about the same time as the survey, which might have affected principals' willingness to participate in surveys administered by a state agency.
6. Virtual schools are included in the "all schools" category because the professional development they offer is similar to the professional development that brick and mortar schools offer (Kathren Stehno, Oklahoma Office of Educational Quality and Accountability, personal communication, July 2016). Of the nine virtual school principals who were invited to participate in the survey, five responded (four fully and one partially).

References

American Association for Public Opinion Research. (2015). *Standard definitions: Final dispositions of case codes and outcome rates for surveys*. Retrieved July 19, 2016, from https://www.aapor.org/AAPOR_Main/media/MainSiteFiles/Standard-Definitions2015_8thEd.pdf.

Barker, B. O., & Beckner, W. E. (1987). Preservice training for rural teachers: A survey. *Rural Educator, 8*(3), 1–4. http://eric.ed.gov/?id=EJ366535

Barley, Z. A., & Brigham, N. (2008). *Preparing teachers to teach in rural schools* (REL 2008–045). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. http://eric.ed.gov/?id=ED502145

Blitz, C. L. (2013). *Can online learning communities achieve the goals of traditional professional learning communities? What the literature says* (REL 2013–003). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Mid-Atlantic. http://eric.ed.gov/?id=ED544210

Borko, H., Elliott, R., & Uchiyama, K. (2002). Professional development: A key to Kentucky's educational reform effort. *Teaching and Teacher Education*, *18*(8), 969–987.

Eargle, J. C. (2013). "I'm not a bystander": Developing teacher leadership in a rural school-university collaboration. *Rural Educator, 35*(1), 23–33. http://eric.ed.gov/?id=EJ1022601

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal, 38*(4), 915–945. http://eric.ed.gov/?id=EJ648260

Glander, M. (2015). *Selected statistics from the public elementary and secondary education universe: School year 2013–14* (NCES No. 2015–151). Washington, DC: U.S. Department of Education. http://eric.ed.gov/?id=ED559991

Hammer, P. C., Hughes, G., McClure, C., Reeves, C., & Salgado, D. (2005). *Rural teacher recruitment and retention practices: A review of the research literature, national survey of rural superintendents, and case studies of programs in Virginia*. Charleston, WV: Appalachia Educational Laboratory at Edvantia. http://eric.ed.gov/?id=ED489143

Howley, A., & Howley, C. B. (2005). High-quality teaching: Providing for rural teachers' professional development. *Rural Educator, 26*(2), 1–5. http://eric.ed.gov/?id=EJ783825

Hudson, P., & Hudson, S. (2008). Changing preservice teachers' attitudes for teaching in rural schools. *Australian Journal of Teacher Education, 33*(4), 67–77. http://eric.ed.gov/?id=EJ1069613

Libler, R. (2010). Indiana State University professional development school partnership: Systemic, symbiotic, and solution-oriented. *School-University Partnerships, 4*(2), 20–30. http://eric.ed.gov/?id=EJ969835

O'Hair, M. J., & Reitzug, U. C. (2006). Working for social justice in rural schools: A model for science education. *International Electronic Journal for Leadership in Learning, 10*(28), 1–11. http://eric.ed.gov/?id=EJ987928

Oklahoma State Department of Education. (2014). *Oklahoma educator workforce shortage task force initial report*. Oklahoma City, OK: Author. Retrieved July 19, 2016, from http://sde.ok.gov/sde/sites/ok.gov.sde/files/documents/files/OK_Educator_Workforce_Shortage_Task_Force_Initial_Report.pdf.

Oklahoma State School Boards Association. (2016). *Oklahoma schools struggle with teacher shortage despite cutbacks*. Oklahoma City, OK: Author. Retrieved August 24, 2016, from https://www.ossba.org/2016/08/22/oklahoma-schools-struggle-with-teacher-shortage-despite-cutbacks/.

Seltzer, D. A., & Himley, O. T. (1995). A model for professional development and school improvement in rural schools. *Journal of Research in Rural Education, 11*(1), 36–44. http://eric.ed.gov/?id=EJ510714

Taylor, A. R., Anderson, S., Meyer, K., Wagner, M. K., & West, C. (2005). Lesson study: A professional development model for mathematics reform. *Rural Educator, 26*(2), 17–22. http://eric.ed.gov/?id=EJ783835

White, S., & Kline, J. (2012). Developing a rural teacher education curriculum package. *Rural Educator, 33*(2), 36–43. http://eric.ed.gov/?id=EJ987619

The Regional Educational Laboratory Program produces 7 types of reports

Making Connections
Studies of correlational relationships

Making an Impact
Studies of cause and effect

What's Happening
Descriptions of policies, programs, implementation status, or data trends

What's Known
Summaries of previous research

Stated Briefly
Summaries of research findings for specific audiences

Applied Research Methods
Research methods for educational settings

Tools
Help for planning, gathering, analyzing, or reporting data or research