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NATIONAL SURVEY OF PUBLIC EDUCATION'S RESPONSE TO COVID-19

RESEARCH BRIEF

Barriers and Supports

Teacher Familiarity With Digital Learning Tools

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The COVID-19 pandemic left schools and districts no choice but to close their doors, pause in-person education, and transition to distance learning in spring 2020. During this transition, schools and districts encountered many challenges in serving their students.

The American Institutes for Research (AIR) launched a nationally representative survey to better understand the challenges that school districts and charter management organizations (CMOs) faced during the pandemic and how they responded. The National Survey of Public Education's Response to COVID-19 was sent to leaders in 2,500 school districts and 260 CMOs in late May 2020.[1]

This brief presents survey responses about teacher familiarity with digital learning tools before and during the initial months of the COVID-19 pandemic; outlines how districts supported their teachers by providing professional development (PD) on distance learning; and examines whether districts' experiences in spring 2020 differed based on their teaching staff's familiarity with digital learning tools.

About This Brief

This brief presents survey results on teacher familiarity with digital learning tools before and during the COVID-19 pandemic and outlines how districts supported their teachers by providing professional development (PD) on distance learning.

- The results are based on responses from 753 school districts.
- Survey responses indicate that one in every five districts (20%) provided teachers with widely available PD on how to deliver instruction online before the pandemic emerged.
- Forty-four percent of districts reported that teaching familiarity with digital learning tools became a barrier to equitable learning after schools closed their buildings in spring 2020. Among districts that provided teachers PD on how to deliver instruction online before the pandemic, 27% reported teacher familiarity with digital learning tools as a barrier, compared with 48% of the districts where PD on how to deliver instruction online was not widely available.
- After school closures, more than 40% of all districts provided PD to their teaching staff, especially on how to use digital platforms for instruction (42%) and how to teach in a distance learning environment (45%).
- These results underline the importance of investment in technological infrastructure and human capital that prepares districts for challenges that lie ahead of our public education system.

Serving Students During the Transition to Distance Learning

The transition to distance learning in spring 2020 posed many challenges for districts. Previous surveys and studies raised concerns about limited preparation for delivering remote instruction and the worsening of unequal access to learning opportunities (Hamilton et al., 2020; Tate, 2020). In a recent report, Dorn et al. (2020) showed that these concerns were not unwarranted. Based on fall 2020 assessment data in 25 states, Dorn et al. found that, on average, students lost the equivalent of 3 months of learning in mathematics and 1.5 months of learning in reading. The learning loss was greater for schools that predominantly serve students of color.

The sudden transition to remote instruction gave schools and districts almost no time to prepare their educators for distance learning. After school buildings closed, schools and districts became aware of the need for PD on distance learning to minimize potential learning losses during the pandemic. Hamilton et al. (2020) found that almost 30% of schools reported a major or very major need for training to support teachers in delivering distance learning. Lachlan et al. (2020) emphasized that "the need for great teachers and leaders is now greater than ever, particularly for the students most affected by the crises at hand" (p. 2). However, not all schools or districts could provide sufficient support to their teaching staffs. Hamilton et al. (2020) reported that a substantial proportion of teachers did not receive the guidance they needed to help the students they serve.

The National Survey of Public Education's Response to COVID-19 adds to this picture by providing information collected directly from district leaders about barriers to equitable learning and PD services for teachers.[2] We focus on two topics for PD services: (a) how to use digital platforms for instruction (e.g., YouTube, Class Dojo, Canvas), and (b) how to teach in a distance learning environment. Because districts face varied challenges (Blagg et al. 2020), we present the results for teacher familiarity with digital learning tools and PD they received in spring 2020 across different community contexts—poverty, geography, size, and household access to technology—as well as districts' provision of PD services to teachers before the pandemic.[3]

Teacher Familiarity With Digital Learning Tools

Overall, 44% of districts reported that teacher familiarity with digital learning tools was a barrier to providing equitable learning during spring 2020. However, some districts (20% in our sample) had already provided teachers with PD on online instruction prior to the COVID-19 pandemic (see Figure 1), and they were less likely to report teacher familiarity with digital learning tools to be a barrier during the early months of the pandemic. Among the districts where PD services were widely available before the pandemic, 27% reported teacher familiarity with digital learning tools as a barrier during the pandemic, compared with 48% of the districts where PD services were not widely available (see Figure 2).

The size of the district was the only characteristic associated with teacher familiarity with digital learning tools being a barrier during spring 2020. Large districts were more likely to report a barrier compared with small districts (51% versus 37%; see Figure 3).

Professional Development on Distance Learning

Districts used PD services to increase teacher familiarity with distance learning during the pandemic. In our survey, we asked about two types of PD that could support distance learning: (1) how to use digital platforms for instruction and (2) how to teach in a distance learning environment. In spring 2020, 42% of districts provided PD on how to use digital platforms for instruction, and 45% provided PD to all their teachers on how to teach in a distance learning environment.

Districts with widely available PD on how to deliver instruction online before the pandemic were more likely to provide PD services on distance learning during the pandemic, possibly because they already possessed the necessary experience and technology to do so.[4] Specifically, 57% of the districts where PD on how to deliver instruction online was widely available before the pandemic provided PD on how to use digital platforms for instruction during the pandemic, whereas 38% of districts where PD on how to deliver instruction online was not available before the pandemic provided PD on this topic (see Figure 4). Similarly, 66% of districts where PD on how to deliver instruction online was widely available before the pandemic provided PD on how to teach in a distance learning environment during the pandemic. In contrast, 39% of districts where PD was not available before the pandemic provided PD on this topic (see Figure 4).

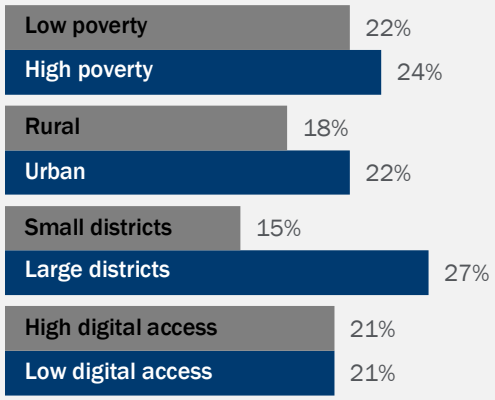
Large districts were more likely to provide PD to their teachers compared with small districts. Among large districts, 59% provided PD on how to use digital platforms for instruction, whereas 35% of small districts provided PD on this topic. Large districts also were more likely to provide PD on how to teach in a distance learning environment compared with small districts (59% versus 41%; see Figure 5).

Conclusion

This brief presents survey responses about teacher familiarity with digital learning tools before and during the initial months of the COVID-19 pandemic and outlines how districts supported their teachers by providing PD on distance learning. Survey responses highlight that districts where PD on how to deliver instruction online was widely available before the pandemic were less likely to report barriers to equitable learning during spring 2020 due to a lack of teacher familiarity with digital learning tools than were districts that did not already provide PD for online instruction. In addition, districts with preexisting PD were more likely to reinforce their support to teachers by providing PD services in the early months of the pandemic. These results underline the importance of investment in technological infrastructure and human capital that prepares districts for challenges that lie ahead for the public education system.

Figure 1. Professional development before COVID-19

Percentage of districts with widely available PD on how to deliver instruction online before the COVID-19 pandemic emerged



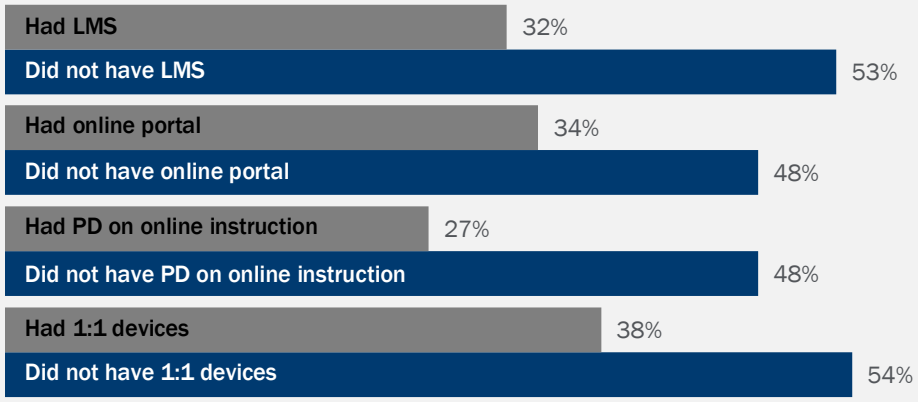
Note. Sample sizes: 273 high poverty districts, 182 low poverty districts, 248 rural districts, 505 urban districts, 162 small districts, 189 large districts, 251 low digital access districts, and 473 high digital access districts.

On the survey, districts were asked whether they provided PD to teachers about how to deliver instruction online before the COVID-19 pandemic emerged. The percentages reflect the proportion of districts where PD on how to deliver instruction online was widely available before the pandemic. We defined districts serving a community with low digital access as those in which more than 10% of children live in a household without a computer or more than 15% of children live in a household without broadband internet access, which roughly represent the national averages for each indicator.

Differences by district size were statistically significant.

Figure 2. Teacher familiarity with digital learning tools by preexisting technology infrastructure

Percentage of districts that reported teacher familiarity with digital learning tools was a barrier to providing equitable learning opportunities



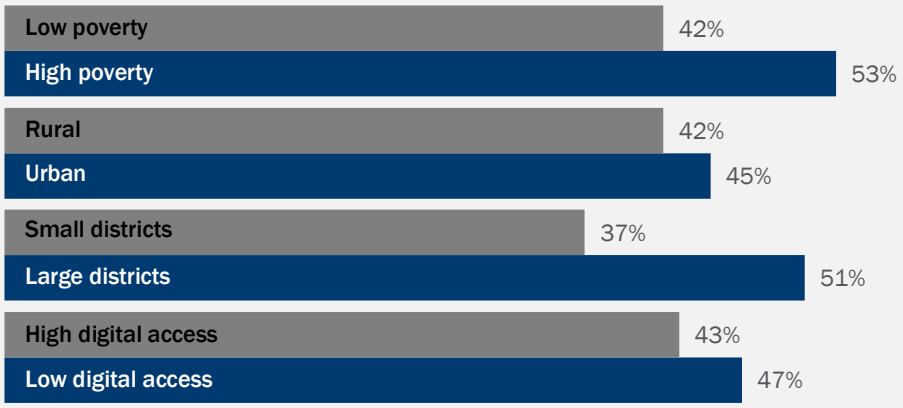
Note. LMS = learning management system. Sample sizes: 250 districts had LMS, 287 districts did not have LMS, 232 districts had online portal, 305 districts did not have online portal, 122 districts had PD on online instruction, 415 districts did not have PD on online instruction, 326 districts had 1:1 devices at school, and 210 districts did not have 1:1 devices at school.

The percentages reflect the proportion of districts in which teacher familiarity with digital learning tools was a barrier for some, most, or all teachers or schools to providing equitable learning opportunities to students. The classification of district technology infrastructure is based on survey questions about what the district had widely available before the COVID-19 pandemic emerged.

Differences by preexisting technology infrastructure were all statistically significant.

Figure 3. Teacher familiarity with digital learning tools by district characteristics

Percentage of districts that reported teacher familiarity with digital learning tools was a barrier to providing equitable learning opportunities



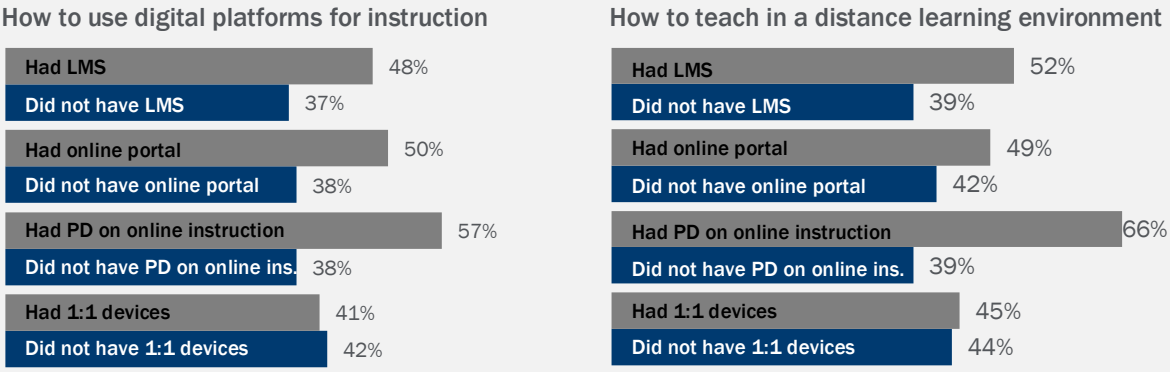
Note. Sample sizes: 194 high poverty districts, 132 low poverty districts, 189 rural districts, 348 urban districts, 122 small districts, 140 large districts, 177 low digital access districts, and 343 high digital access districts.

The percentages reflect the proportion of districts in which teacher familiarity with digital learning tools was a barrier for some, most, or all teachers or schools to providing equitable learning opportunities to students. We defined districts serving a community with low digital access as those in which more than 10% of children live in a household without a computer or more than 15% of children live in a household without broadband internet access, which roughly represent the national averages for each indicator.

Differences by district size were statistically significant.

Figure 4. Professional development during the COVID-19 pandemic by preexisting technology infrastructure

Percentage of districts that provided teachers with PD



Note. LMS =- learning management system. Sample sizes: 250 districts had LMS, 287 districts did not have LMS, 231 districts had online portal, 306 districts did not have online portal, 121 districts had PD on online instruction, 416 districts did not have PD on online instruction, 326 districts had 1:1 devices at school, and 210 districts did not have 1:1 devices at school.

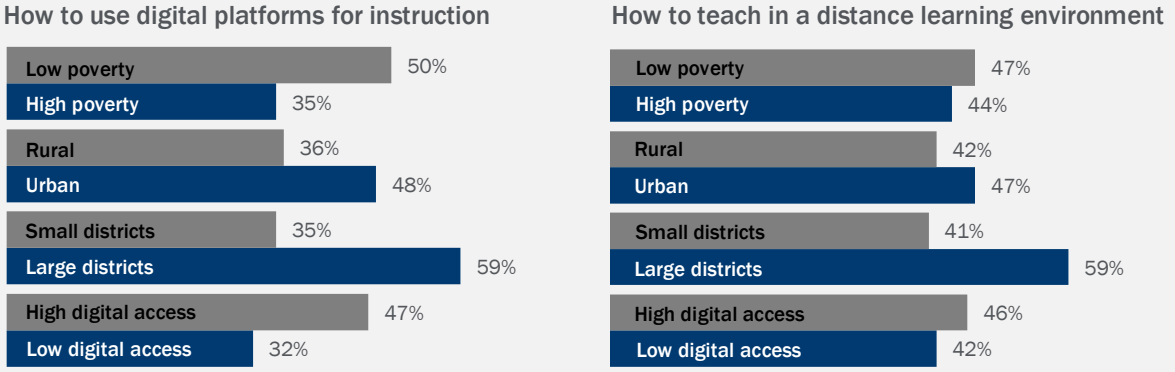
On the survey, districts were asked to what extent they provided teachers with PD on various topics to facilitate distance learning since schools closed. The percentages reflect the proportion of districts that provided PD to all teachers. The classification of district technology infrastructure is based on survey questions about what the district had widely available before the COVID-19 pandemic emerged.

The differences in the provision of PD services on how to use digital platforms for instruction by availability of LMS, online portal, and PD on online instruction before COVID-19 were statistically significant.

The differences in the provision of PD services on how to teach in a distance learning environment by availability of LMS and PD on online instruction before COVID-19 were statistically significant.

Figure 5. Professional development during the COVID-19 pandemic by district characteristics

Percentage of districts that provided teachers with PD



Note. Sample sizes: 195 high poverty districts, 132 low poverty districts, 190 rural districts, 347 urban districts, 123 small districts, 140 large districts, 178 low digital access districts, and 342 high digital access districts.

On the survey, districts were asked to what extent they provided teachers with PD on various topics to facilitate distance learning since schools closed. The percentages reflect the proportion of districts that provided PD to all teachers. We defined districts serving a community with low digital access as those in which more than 10% of children live in a household without a computer or more than 15% of children live in a household without broadband internet access, which roughly represent the national averages for each indicator.

The differences in the provision of PD services on how to use digital platforms for instruction by district characteristics were all statistically significant.

The differences in the provision of PD services on how to teach in a distance learning environment by district size were statistically significant.

References

Blagg, K., Blom, E., Gallagher, M., & Rainer, M. (2020). *Mapping student needs during COVID-19: An assessment of remote learning environments*. Urban Institute. https://www.urban.org/research/publication/mapping-student-needs-during-covid-19

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2020). *COVID-19 and learning loss—disparities grow and students need help*. McKinsey & Company. https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-learning-loss-disparities-grow-and-students-need-help

Geverdt, D. (2015). *Education Demographic and Geographic Estimates Program (EDGE): Locale boundaries user's manual* (NCES 2016-012). U.S. Department of Education, National Center for Education Statistics. https://nces.ed.gov/programs/edge/docs/NCES_LOCALE_USERSMANUAL_2016012.pdf

Hamilton, L. S., Kaufman, J. H., & Diliberti, M. (2020*). Teaching and leading through a pandemic: Key findings from the American Educator Panels Spring 2020 COVID-19 Surveys*. RAND Corporation. https://www.rand.org/pubs/research_reports/RRA168-2.html

Lachlan, L., Kimmel, L., Mizrav, E., & Holdheide, L. (2020). *Advancing quality teaching for all schools: Examining the impact of COVID-19 on the teaching workforce*. Center on Great Teachers and Leaders. https://gtlcenter.org/sites/default/files/Examining_Impact_COVID19_Workforce.pdf

Tate, V. (2020). *Three strategies to help states elevate educational equity*. American Institutes for Research. https://www.air.org/resource/three-strategies-help-states-elevate-educational-equity

Endnotes

[1] AIR funded and led the survey development, which was administered by our partner NORC at the University of Chicago. We sent the survey to school districts in every U.S. state and Washington, D.C., as well as CMOs across the country. The sample contained 2,536 districts, stratified by state (for districts in 12 focal states) or region (for districts in the remaining states) and locale (urban, suburban, town, and rural). Within these strata, districts were drawn with probability proportional to the square root of enrollment. Large districts were drawn with certainty. The survey was open between May 20 and September 1, 2020, with 753 public school districts and 91 CMOs responding. The results reported in this brief use design weights adjusted for nonresponse in the 64 state- or region-by-locale strata. More information about the survey methodology is available in a technical supplement.

[2] We sent the survey to district superintendents and suggested that they ask other administrators to respond. Administrators were encouraged to ask colleagues for information if they could not respond to a question. Survey responses reflect the beliefs and expectations of district administrators, which may differ from the experiences of school personnel, teachers, parents, and students.

[3] We used U.S. Census data and the U.S. Department of Education's Common Core of Data to characterize the community context of each district. We defined low-poverty districts as those with less than 10% of school-age children living in poverty and high-poverty districts as those with at least 20% of school-age children in poverty. We defined rural and urban based on locale classifications provided by the National Center for Education Statistics (Geverdt, 2015), where rural districts are within a census-defined rural territory, and urban districts are within a census-defined urbanized area or cluster (encompassing cities, suburbs, and towns). We defined small districts as those with total student enrollment less than 1,000 students and large districts as those with 10,000 or more students. We defined districts serving a community with low digital access as those in which more than 10% of children live in a household without a computer or more than 15% of children live in a household without broadband internet access, which roughly represent the national averages for each indicator. We characterized each district's preexisting technology infrastructure based on responses to questions on the National Survey of Public Education's Response to COVID-19 that asked districts about what kind of technology they had in place before the pandemic emerged. We classified districts as having a learning management system if they reported that it was widely used in the district, and we classified districts as having one device per student for use at school (e.g., laptops, tablets) if they reported that devices were widely provided for elementary grade students.

[4] A quote from AIR's National Survey of Public Education's Response to COVID-19 follows: "Prior to school closures, the district trained teachers from every school on Google. These Google ambassadors received Google certification and provided training to their peers prior to school closures. When schools closed, we were able to tap into our Google ambassadors to provide distance learning training to their peers. We did not have to wait to approve contracts with outside vendors. Because of this, we were able to start distance learning on the third day of school closures."

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