TIFFANY TSAI, KATIE TOSH

Educator Access to and Use of Data Systems

T eachers' use of student data to inform instruction is commonly accepted as sound educational practice, and this data use is only likely to grow as more data, as well as more-complex data, become increasingly available to educators.[1] However, numerous studies reveal inconsistent data use among teachers and an overall lack of the preparation and skills needed to interpret and use student data to inform instructional practice.[2] To effectively use a variety of student data, including—but not limited to—assessment data, teachers must possess both assessment literacy (the ability to design, select, interpret, and use assessment results appropriate for educational decisions) and data literacy (the ability to understand and use data to inform decisions).[3] Research shows that teachers' sense of self-efficacy in interpreting and using data is linked to their actual use of data; professional development supports can help build this self-efficacy and increase data use.[4]

Results from the RAND Corporation's web-based American Educator Panels (AEP) survey provide insight into teachers' access to data and the supports they receive to use those data.

Most Teachers Report Access to Electronic Data Management Systems, but Access to Complex Data Is Limited

Eighty-eight percent of teachers reported having access to student data through an electronic data management system during the 2016–2017 school year, and 98 percent of school leaders reported that teachers at their schools have access to electronic information maintained by the school and/or school district. However, even though most teachers reported having access to student data, the types of data available varied. More than 85 percent of teachers who had access to data reported having access to data that teachers likely record and enter themselves, including student attendance (91 percent) and student grades (85 percent). Many teachers also

> **The AEP asked a nationally representative sample of teachers the following questions about their access and experience with electronic data management systems:**
>
> • What kinds of data and supports did you have access to through the electronic data management system(s)?
>
> • What kinds of support did you receive in using student data to guide decisions about instruction?
>
> • How often did you use an electronic data management system [for each of the following purposes]?

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[1] Mandinach and Gummer, 2013; Reeves, Summers, and Grove, 2016.

[2] Sun, Przybylski, and Johnson, 2016; Jacobs et al., 2009; Dunlap and Piro, 2016; Reeves, Summers, and Grove, 2016.

[3] Jacobs et al., 2009; Mandinach and Gummer, 2016.

[4] Dunlap and Piro, 2016; Mandinach, Friedman, and Gummer, 2015; Reeves and Chiang, 2017; Vanlommel, Vanhoof, and Van Petegem, 2016.

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reported having access to standardized test scores by student (77 percent) and by grade (63 percent). Fewer teachers had access to students' cumulative records, such as disciplinary history data (49 percent) and course enrollment data (43 percent), or to data that required some level of preprocessing and analysis. These more-detailed data can help teachers better understand a student's educational and behavioral background and adapt instruction based on those factors. Teachers were also unlikely to be able to access links between student assessment results and instructional resources tailored to student learning needs (20 percent).

Teachers Most Often Report Receiving Support for Data-Driven Decisionmaking from Within Their Schools

Without understanding how to operationalize and use data, access to data is unlikely to influence teachers' practices or students' learning. This suggests a

need for supports to help teachers use data to inform their instruction. Eighty-three percent of teachers reported having received some type of support with using student data. The three most commonly reported supports are principal encouragement for using data in instructional decisionmaking (64 percent), professional development on data-driven decisionmaking offered at a school (59 percent), and support from school/district data staff or a consultant skilled in data analysis (45 percent). Teachers less frequently mentioned professional development offered outside the school, paid time set aside for examining and using student data to guide decisions about practice, and formal coursework covering data-driven decisionmaking.

Teachers Who Received Support Used Data More Often Than Those Who Did Not

If teachers do not know how to use data, they are unlikely to use it in their teaching. By observing the

How This Analysis Was Conducted

We examined the weighted percentages of those who had access to electronic data management systems that provide student data and the weighted percentages of those who had access to specific data types. We also estimated weighted linear probability models to compare the difference in data access between elementary teachers and secondary teachers. For supports provided, we combined all support types listed into a dichotomous indicator for whether the respondent received support or did not receive support. Then, we estimated weighted linear probability models to compare the responses on data use of elementary teachers and secondary teachers with data support. Finally, we conducted supplemental analyses that included many additional covariates and a vector of state fixed effects to better understand whether the associations found in the primary analysis were potentially confounded by characteristics of the schools or respondents. These weighted, multivariate linear probability models included a series of demographic control variables from the National Center for Education Statistics Common Core of Data.[1] Because of multiple comparisons, we implemented the Benjamini-Hochberg correction to decrease the false discovery rate.

[1] These included school-level variables, such as urbanicity; percentage free and reduced-priced lunch; percentage white, black, and Hispanic; school size; an indicator for elementary school; district-level variables, such as percentage English language-learner students and special education students; and state-level fixed effects.

correlation between data use and support, we can begin to understand the extent to which variation in data use is related to supports. We compared the frequency of data use between teachers who received support (83 percent) with those who did not (17 percent). These comparisons are illustrated in Figure 1, which shows that teachers who received supports for data use reported using data more often and for more purposes than those who did not. For example, 57 percent of teachers who received support reported at least monthly use of data to inform parents on student progress, compared with only 38 percent of teachers who did not receive support. This pattern of association was consistent and statistically significant across all purposes of data usage.
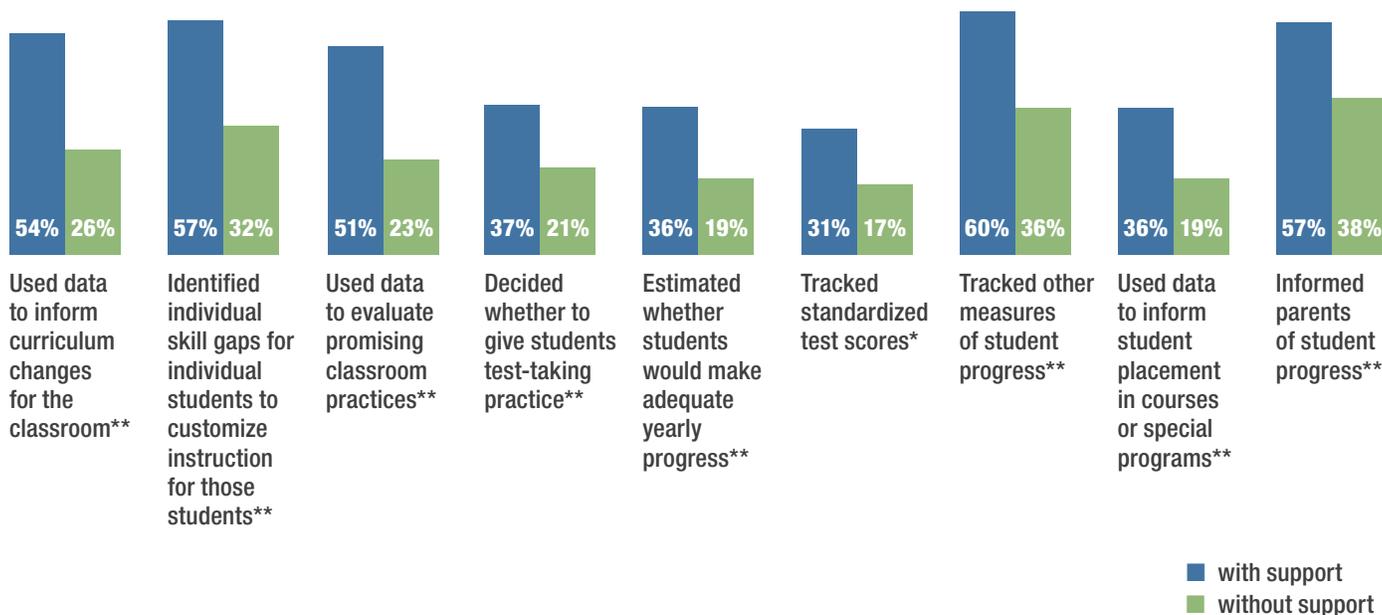
Discussion

The vast majority of teachers reported having access to an electronic data management system, and more than half of teachers had access to student grades and attendance data. Teachers less commonly reported having access to more-complex data or to historical student data. The majority of teachers reported receiving supports on using data, with the most frequently reported types of supports coming from within their schools rather than from external sources. Teachers who received supports for data use reported using data with greater frequency than those who did not receive such supports, reflecting findings in professional development literature. Together, these findings suggest that investing in teacher data-use support could lead to increased data use in instructional practice.

FIGURE 1

All Types of Data Use Increase with Support

Teacher-Reported Percentages of Data Use by Receipt of Support

54% 26%	57% 32%	51% 23%	37% 21%	36% 19%	31% 17%	60% 36%	36% 19%	57% 38%
Used data to inform curriculum changes for the classroom**	Identified individual skill gaps for individual students to customize instruction for those students**	Used data to evaluate promising classroom practices**	Decided whether to give students test-taking practice**	Estimated whether students would make adequate yearly progress**	Tracked standardized test scores*	Tracked other measures of student progress**	Used data to inform student placement in courses or special programs**	Informed parents of student progress**

■ with support
■ without support

NOTE: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

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About the AEP Data Note Series

The AEP Data Note series is intended to provide brief analyses of teacher and school leader survey results of immediate interest to policymakers, practitioners, and researchers. If you would like to know more about the dataset, please see the Technical Appendix, (RR-2575/1-BMGF, www.rand.org/t/RR2575z1) for more information on survey recruitment, administration, and sample weighting. If you are interested in using AEP data for your own analysis or reading other AEP-related publications, please email aep@rand.org.

About This Report

The American Educator Panels (AEP) are nationally representative samples of teachers and school leaders across the country.

This study was undertaken by RAND Education and Labor, a division of the RAND Corporation that conducts research on early childhood through postsecondary education programs, workforce development, and programs and policies affecting workers, entrepreneurship, financial literacy, and decisionmaking. This study was sponsored by The Bill and Melinda Gates Foundation, which focuses on ensuring that all students graduate from high school prepared for college and have an opportunity to earn a postsecondary degree with labor-market value. For more information, please visit www.gatesfoundation.org.

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