JULIA H. KAUFMAN, KATIE TOSH, TERYN MATTOX

Are U.S. Teachers Using High-Quality Instructional Materials?

In many states, college and career-ready standards for mathematics and English language arts (ELA) are more rigorous than ever before.[1] However, research suggests that teachers do not always have access to high-quality curricula that reflect key elements of states' college and career-ready standards.[2] Influenced by this research, as well as studies finding significant relationships between curricula and student achievement, the Council of Chief State School Officers formed a High-Quality Instructional Materials and Professional Development (IMPD) Network of eight states in 2017 to support the adoption and use of high-quality materials.[3]

The RAND Corporation's American Teacher Panel (ATP) has documented which instructional materials public school teachers are using regularly for classroom instruction in mathematics and ELA.[4] In this data note, we specifically consider the percentage of U.S. teachers reporting that they used high-quality materials for mathematics and ELA instruction during the 2017–2018 school year. We also consider which factors were related to whether teachers reported using high-quality materials. These data also provide some baseline indication of high-quality curriculum use in the IMPD Network states.

We cross-referenced responses with materials that met expectations of college and career-ready standards adopted in most states, according to independent reviews of commonly used curricula conducted by EdReports.org. Teachers were categorized as using high-quality materials if they reported using at

We used data from the ATP to ask a representative sample of math and ELA teachers to select (from a list of commonly used instructional materials) which materials they used regularly in their classrooms for ELA and mathematics (teachers who taught both ELA and mathematics were asked about both subjects). The survey asked a nationally representative sample of teachers the following questions:

- For mathematics teachers: Which of the following mathematics curricula, programs, and/or instructional tools do you use regularly (i.e., once a week or more) in your classroom this school year (2017–2018)?
- For ELA teachers: Which of the following ELA curricula, programs, and/or instructional tools do you use regularly (i.e., once a week or more) in your classroom this school year (2017–2018)?

[1] Porter et al., 2011; Schmidt and Houang, 2012.
[2] Opfer et al., 2018; Kaufman et al., 2018; Polikoff, 2015.
[3] Steiner, 2017, provides a summary of some of the most prominent of those studies.
[4] Opfer, Kaufman, and Thompson, 2016; Kaufman et al., 2018.

least one material that met EdReports.org's expectations for the grade level they taught.[5]

Math Teachers and Middle School Teachers Were More Likely to Use High-Quality Instructional Materials

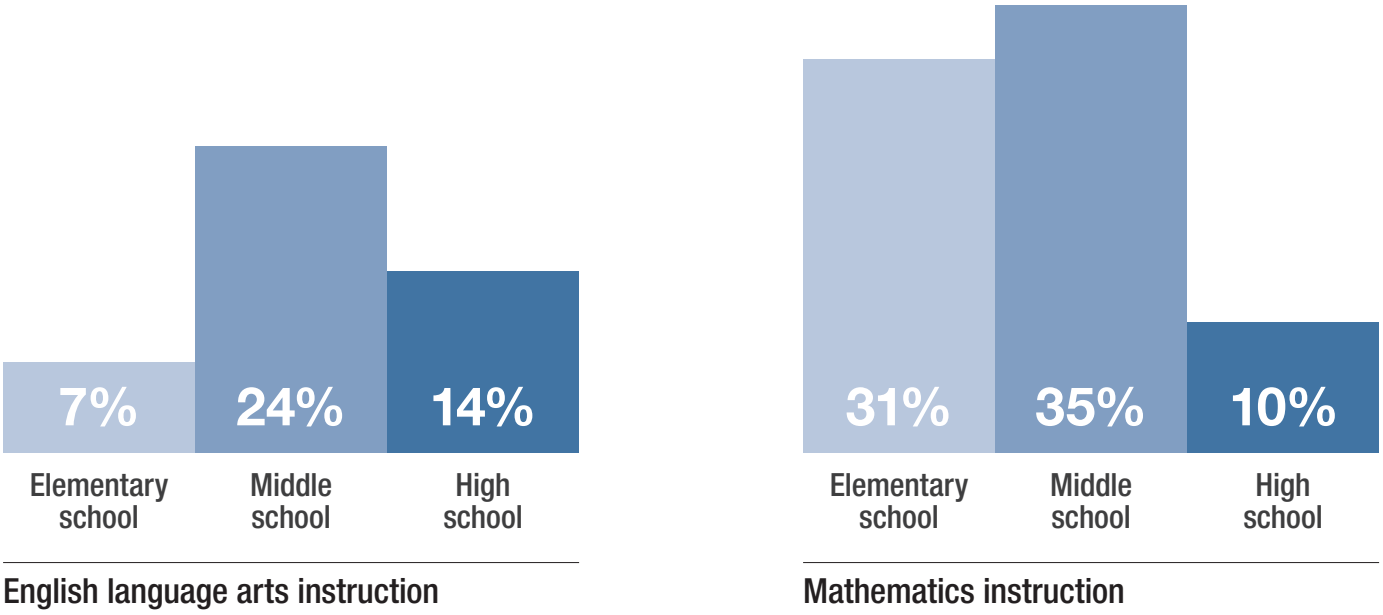
Among ELA teachers, significantly more middle school teachers (24 percent) than elementary (7 percent) or high school (14 percent) teachers reported regularly using at least one high-quality material (see Figure 1). This trend was repeated among math teachers, with more middle school teachers (35 percent) reporting that they used at least one high-quality instructional material than elementary school teachers (31 percent) or high school teachers (10 percent). Overall, more math teachers than ELA teachers reported regularly using high-quality materials. After controlling for school demographics in regression models, we found that middle school ELA teachers were significantly more likely than other teachers to use at least one high-quality curriculum material, and high school mathematics teachers were significantly less likely than other teachers to use at least one high-quality curriculum material.

[5] EdReports.org, 2018. Teachers were provided with a list of the most common materials and could indicate any "other" materials they used that were not included on the list. For both ELA and math, the modal number of curricula reported was 1. The average number of curricula reported for ELA was 1.12, for math 1.56.

FIGURE 1

More Math than ELA Teachers Report Using High-Quality Materials

Percentages of ELA and Mathematics Teachers Using at Least One High-Quality Material Regularly for their Classroom Instruction, by Grade Level



NOTES: All pairwise comparisons among reports of ELA teachers at different school levels were significantly different based on independent *t*-tests ($p < 0.01$). Among math teachers, reports of elementary versus high school teachers and middle versus high school teachers were significantly different ($p < 0.01$); however, the difference between elementary and middle school math teachers was not significant. In regression models, middle school ELA teachers were significantly more likely than other teachers to use at least one high-quality material, whereas high school mathematics teachers were less likely to do so.

More Teachers in IMPD Network States Used High-Quality Instructional Materials

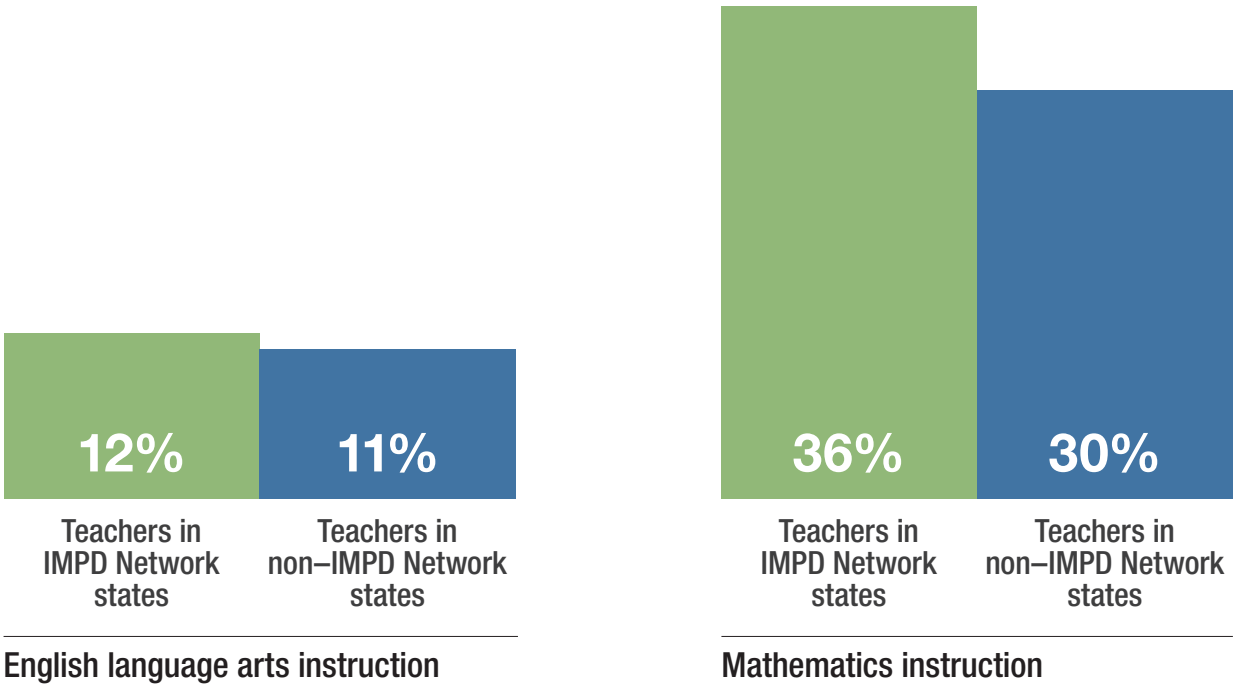
Some of the states involved in the IMPD Network are working closely with school systems and teachers to provide clear signals regarding the quality of instructional materials and to ensure that professional development is grounded in the use of high-quality instructional materials.[6] Although overall use of high-quality instructional materials was low nationally (11 percent of ELA teachers and 30 percent of math teachers), we found that both ELA and mathematics teachers in IMPD Network states reported using high-quality materials somewhat more than teachers in the rest of the nation (Figure 2). These differences were more pronounced among math teachers: 36 percent of mathematics teachers in IMPD Network states indicated that they used at least one high-quality material regularly, compared with 30 percent of teachers in the rest of the nation. Furthermore, somewhat higher percentages of teachers in IMPD Network states reported using at least one high-quality material at the elementary, middle,

[6] See, for example, Nebraska Instructional Materials Collaborative, undated, and Mississippi Department of Education, 2018.

FIGURE 2

Teachers in IMPD Network States Were More Likely to Use High-Quality Materials

Percentages of ELA and Mathematics Teachers in IMPD Network and Other States Using at Least One High-Quality Material Regularly for Classroom Instruction



NOTES: The difference in use of at least one high-quality material among mathematics teachers in IMPD versus non–IMPD Network states was statistically significant according to an independent *t*-test ($p < 0.01$). The difference for ELA teachers in IMPD versus non-IMPD Network states was not statistically significant. However, in regression models controlling for school demographic factors, ELA and mathematics teachers in an IMPD state were significantly more likely to report using a high-quality material.

and high school levels. In ELA, higher percentages of teachers in IMPD Network states reported use of at least one high-quality material only at the elementary level relative to teachers in non–IMPD Network states.

After controlling for school demographics in regression models, including teachers' grade level, the differences between IMPD and non–IMPD Network states deepened. Specifically, mathematics teachers in IMPD Network states were 1.8 times more likely to report the use of at least one high-quality material than teachers in non–IMPD Network states; ELA teachers in IMPD Network states were 1.5 times more likely to report using at least one high-quality material. Although we cannot draw conclusions about the causes of these differences, policies and programs within IMPD Network states could be encouraging districts to adopt more high-quality instructional materials and teachers to use those materials. Given that the IMPD Network was only formed in 2017, it is likely not responsible for the differences in teachers' reported use of materials during the 2017–2018 school year.

Discussion

These results suggest a dearth of commonly used high-quality materials for high school ELA and mathematics, as well as for elementary ELA. Publishers and those advocating for the use of high-quality materials could find ways to provide teachers with more of those materials; open-access online materials might get more high-quality materials into the hands of teachers. The high use of open-access, online EngageNY curricular materials in many states suggests that teachers are seeking more high-quality, standards-aligned instructional materials and would use other high-quality, open, online materials if they were available.[7]

In addition, our findings for the IMPD Network states suggest that states may be able to make a difference in the materials that teachers use, although this study does not allow us to draw causal links between state policies and teachers' use of instructional materials. The possibility that states can make a difference

[7] Kaufman et al., 2017. EngageNY materials were originally developed through a partnership between publishers and the New York State Education Department.

How This Analysis Was Conducted

For each material asked about in the May 2018 ATP, we noted the grade levels for which that material "met expectations," according to the EdReports.org review. For each instructional material that teachers reported using regularly, we assigned a high-quality rating if that material met EdReports.org expectations for the reported taught grade levels. We then looked across all materials regularly used by teachers within a given subject and recorded teachers as using at least one high-quality material if one or more of the materials used regularly were classified as high-quality. This analysis was run separately for ELA and math materials. A material could have been reviewed as meeting expectations for some grade levels but not others; in addition, EdReports.org does not provide grade-by-grade ratings for high school mathematics texts.

The primary analyses were conducted using weighted linear probability models to compare the responses of teachers across the categories indicated in this data note. We also conducted supplemental multivariate analyses that included school-level and teacher-level covariates. 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]

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

in the materials teachers use in their classrooms is echoed in some of our recent work documenting increased use of some high-quality materials in Louisiana, a state that has published rigorous reviews of instructional materials and provided incentives to encourage use of high-quality materials.[8]

Readers should keep in mind that these findings are likely influenced both by the availability of high-quality materials for particular subjects and grade levels, as well as whether EdReports.org reviewed those materials.[9] Specifically, EdReports.org has reviewed fewer curriculum titles for ELA than for mathematics and fewer titles for the high school level than for the elementary and middle school levels. Furthermore, EdReports.org has given a high-quality rating to a higher proportion of the middle school curricula we asked about in our survey compared with those we asked about at the elementary level. Our ATP survey also found that higher percentages of teachers indicated using no curriculum in ELA (14 percent) versus math (7 percent), and that 36 percent of ELA teachers were only using materials not rated by EdReports.org, compared with 12 percent of math teachers. All these issues could influence our findings on the percentages of teachers using high-quality materials. In addition, our findings on the use of high-quality materials could be related to state timelines for adopting new standards and assessments for particular grade spans.

Over the next several years, we will continue to capture information through the ATP about the adoption of high-quality materials, and we also will attempt to gather more data on what specific states may be doing to encourage the use of high-quality materials. Taken together, these data may help us better understand both how states can encourage the use of high-quality materials and what other factors might drive use of those materials.

[8] Kaufman, Thompson, and Opfer, 2016.

[9] We based the list of curricula we asked about in our survey on teachers' prior responses to the ATP regarding their commonly used curricula, and we also strove to include curricula that have been reviewed by EdReports.org. Altogether, our survey asked about 44 different commonly used ELA curricula (17 elementary, 20 middle school, and seven high school curricula) and 76 different commonly used mathematics curricula (21 elementary, 27 middle school, and 28 high school curricula). Teachers could also write in a curriculum that did not appear on the list. EdReports.org had not reviewed eight of the ELA curricula we asked about, specifically six elementary and two middle school curricula, and it had not reviewed 13 of the mathematics curricula we asked about, specifically, four elementary curricula, four middle school curricula, and five high school curricula.

References

EdReports.org, "Rubrics and Evidence Guides," webpage, 2018. As of March 11, 2019: https://www.edreports.org/reports/rubrics-evidence

Kaufman, Julia H., John S. Davis II, Elaine Lin Wang, Lindsey E. Thompson, Joseph D. Pane, Katherine Pfrommer, and Mark Harris, *Use of Open Educational Resources in an Era of Common Standards: A Case Study on the Use of EngageNY*, Santa Monica, Calif.: RAND Corporation, RR-1773-BMGF 2017. As of March 11, 2019: https://www.rand.org/pubs/research_reports/RR1773.html

Kaufman, Julia H., V. Darleen Opfer, Michelle Bongard, and Joseph D. Pane, *Changes in What Teachers Know and Do in the Common Core Era: American Teacher Panel Findings from 2015 to 2017*, Santa Monica, Calif.: RAND Corporation, RR-2658-HCT, 2018. As of January 25, 2019: https://www.rand.org/pubs/research_reports/RR2658.html

Kaufman, Julia H., Lindsey E. Thompson, and V. Darleen Opfer, *Creating a Coherent System to Support Instruction Aligned with State Standards: Promising Practices of the Louisiana Department of Education*, Santa Monica, Calif.: RAND Corporation, RR-1613-HCT 2016. As of March 11, 2019: http://www.rand.org/pubs/research_reports/RR1613.html

Mississippi Department of Education, "High-Quality Instructional Materials and Professional Learning Pilot," briefing slides, 2018. As of February 18, 2019: https://www.mdek12.org/sites/default/files/Offices/MDE/OA/OTL/2018%20Elevate%20Teachers%20Conference%20Information/session-1--introduction-to-high-quaility-instructional-materials.pdf

Nebraska Instructional Materials Collaborative, "About," webpage, undated. As of February 18, 2019: https://nematerialsmatter.org/about/

Opfer, V. Darleen, Julia H. Kaufman, Joseph D. Pane, and Lindsey E. Thompson, *Aligned Curricula and Implementation of Common Core State Mathematics Standards: Findings from the American Teacher Panel*, Santa Monica, Calif.: RAND Corporation, RR-2487-HCT, 2018. As of August 23, 2018: https://www.rand.org/pubs/research_reports/RR2487.html

Opfer, V. Darleen, Julia H. Kaufman, and Lindsey E. Thompson, *Implementation of K–12 State Standards for Mathematics and English Language Arts and Literacy: Findings from the American Teacher Panel*, Santa Monica, Calif.: RAND Corporation, RR-1529-1-HCT 2016. As of April 12, 2019: https://www.rand.org/pubs/research_reports/RR1529-1.html

Polikoff, Morgan S., "How Well Aligned Are Textbooks to the Common Core Standards in Mathematics?" *American Educational Research Journal*, Vol. 52, No. 6, 2015, pp. 1185–1211.

Porter, Andrew, Jennifer McMaken, Jun Hwang, and Rui Yang, "Common Core Standards: The New U.S. Intended Curriculum," *Educational Researcher*, Vol. 40, No. 3, 2011, pp. 103–116.

Schmidt, William H., and Richard T. Houang, "Curricular Coherence and the Common Core State Standards for Mathematics," *Educational Researcher*, Vol. 41, No. 8, 2012, pp. 294–308.

Steiner, D., Curriculum Research: *What We Know and Where We Need to Go*, StandardsWork, March 2017. As of April 12, 2019: https://standardswork.org/wp-content/uploads/2017/03/sw-curriculum-research-report-fnl.pdf

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-2575/10-BMGF, www.rand.org/t/RR2575z10) for more information on survey recruitment, administration, and sample weighting. If you are interested in using AEP data for your own analysis or in reading other AEP-related publications, please email aep@rand.org or visit www.rand.org/aep.

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 & 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.

More information about RAND can be found at www.rand.org. Questions about this report should be directed to jkaufman@rand.org, and questions about RAND Education and Labor should be directed to educationandlabor@rand.org.

www.rand.org