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Teachers' Use of Intervention Programs: Who Uses Them and How Context Matters

Many teachers across the country grapple with how to effectively educate students who are performing below grade level.[1] One available option is academic intervention programs, which are programs intended to reteach and/or remediate specific skills or concepts for students. However, the prevalence of teachers' use of intervention programs and the factors that shape teachers' use remain unknown. The American Instructional Resources Survey (AIRS), which was fielded to the RAND Corporation's nationally representative American Teacher Panel in spring 2019, provides unique insight into U.S. teachers' use of academic intervention programs in English language arts (ELA) and mathematics.[2] In this report, we explore the prevalence of teachers' use of intervention programs and how teachers' use of such programs may vary by school context, based on AIRS data.

A variety of academic intervention programs have been developed to support students performing below grade level. These intervention programs—which typically are meant to supplement regular instruction—are commonly delivered to students who are not meeting grade-level benchmarks as part of multitiered system of support (MTSS) or response to intervention (RTI) frameworks. According to a 2019 review of state education agency websites, 41 states specifically mention using MTSS or RTI frameworks, which would require the use of academic intervention programs.[3]

Teachers do not necessarily need to use academic intervention programs with standardized protocols in RTI or MTSS frameworks.

[1] Students below grade level could include any of the approximately 6.7 million students identified as requiring special education services, the 4.9 million students identified as English language learners, or other students who are in need of remediation more generally. These statistics come from the National Center for Education Statistics (NCES), 2019.
[2] The survey from which our data are derived used the term intervention materials, but we refer to the materials listed in the survey as intervention programs throughout this report.
[3] Bailey, 2019.

For the spring 2019 administration of AIRS, a sample of 4,402 teachers who indicated that they teach ELA and/or mathematics responded to questions about their use of intervention programs. The survey asked teachers whether they used intervention programs to support students below grade level in their respective content areas, and if so, to select the programs they use from a list of commonly known interventions.[1] We explored the prevalence of teachers' use of academic intervention programs and the extent to which it varies by content area, school level (e.g., elementary, middle, and high school), and school poverty level.

[1] The list of intervention materials was compiled by reviewing the GovSpend database and Bing and Google search engines for terms including "curriculum intervention program(s)," "RTI," "response to intervention," and "tier 2." The intention of this search strategy was to select interventions most likely to be known by teachers, resulting in 14 ELA interventions and 17 mathematics interventions.

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For example, intervention can be delivered through more-individualized problem-solving approaches. However, we focus on teachers' reported use of intervention programs, given that intervention programs with standardized protocols might be easier to implement with consistency and fidelity compared with less formal, individualized approaches that rely more heavily on teacher expertise.[4] Thus, the results of this report provide insight into the extent to which teachers might have the resources they need to provide academic intervention to students below grade level without extensive training and expertise.

Teachers Were More Likely to Report Using an Intervention Program in ELA Than in Mathematics

The prevalence of teachers' use of intervention programs varied by content area and by school level (see Figure 1). When comparing content areas, teachers were significantly more likely to use intervention programs in ELA than in mathematics (62 percent compared with 52 percent).

Teachers also reported a wide variety of intervention programs used. In ELA, the most commonly used interventions included Accelerated Reader (Renaissance) for elementary and middle school teachers and Read 180 (Houghton Mifflin Harcourt) for high school teachers. In mathematics, the most commonly used interventions among those listed in the survey included enVision MATH: Diagnosis and Intervention System (Pearson) for elementary teachers, RTI Everyday Intervention (Nasco) for middle school teachers, and MathXL for School (Pearson) for high school teachers. Approximately 29 percent of teachers reported using an intervention program outside of those listed in the survey ("other") in ELA compared with 27 percent of teachers in mathematics.

[4] Fuchs and Fuchs, 2006.

High School Teachers Were Least Likely to Report Using an Intervention Program

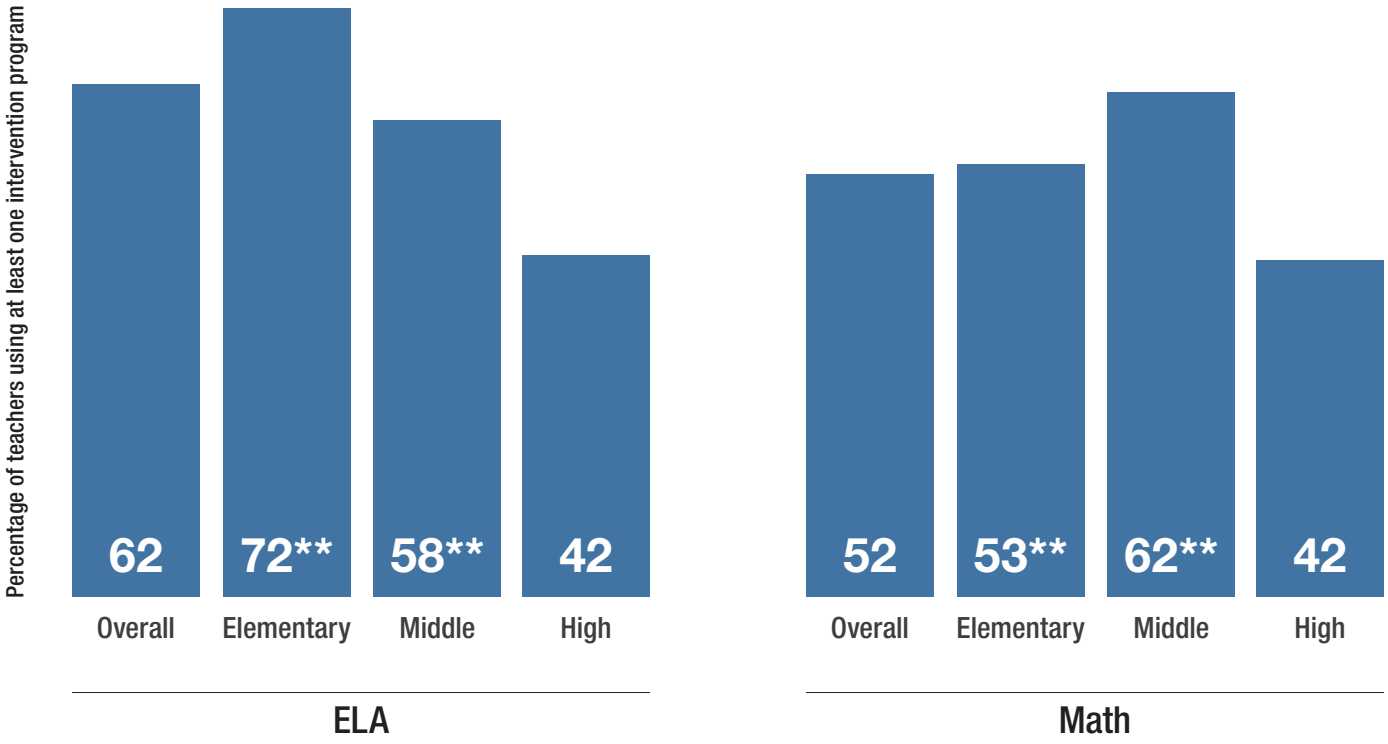
In both ELA and mathematics, teachers were significantly more likely to report using intervention programs in elementary and middle schools than in high schools, where the prevalence of teachers' intervention program usage was the lowest at 42 percent across content areas (Figure 1).

Patterns of teachers' intervention program usage in elementary and middle schools varied significantly by content area. Across all content areas and grade levels, elementary ELA teachers were the most likely to report using intervention programs, and high school teachers in both subjects were the least likely. Interestingly, higher percentages of elementary teachers noted using an ELA intervention program compared with those at other school levels, and higher percentages of middle school teachers noted using a mathematics intervention program.

FIGURE 1

Teachers Were More Likely to Use Intervention Programs in ELA Than in Mathematics

Teachers' Use of Intervention Programs, by Content Area and School Level



NOTE: Asterisks denote the significance (** $p < 0.01$) of differences between usage of intervention programs among elementary and middle school teachers relative to same-subject teachers in high school. Additionally, we tested the significance of several additional differences: (1) the difference between ELA and math overall was significant at $p < 0.01$; (2) among ELA teachers, the difference between elementary and middle was significant at $p < 0.01$; and (3) among math teachers, the difference between elementary and middle was significant at $p < 0.05$.

Teachers in High-Poverty Schools Were Significantly More Likely to Report Using Intervention Programs in ELA, But Not in Mathematics

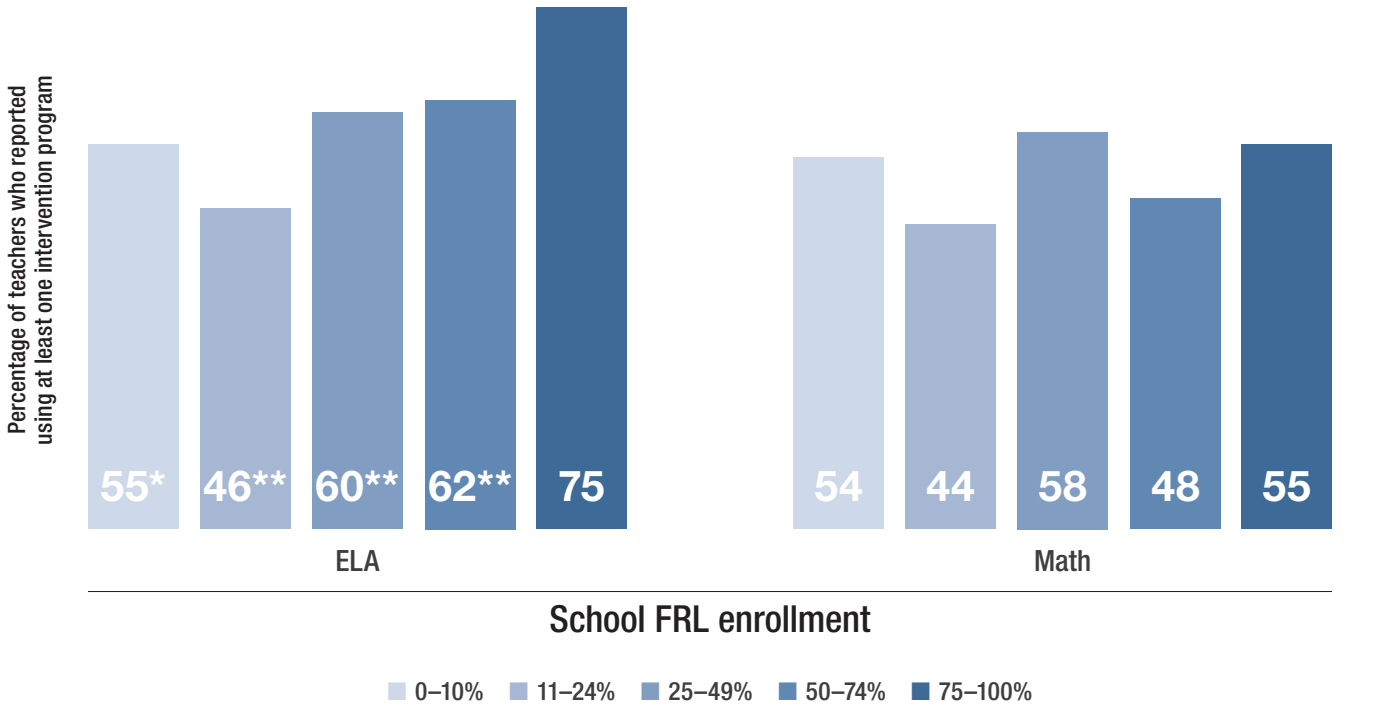
Using school free and reduced-price lunch (FRL) eligibility as a proxy for school poverty, we find that teachers' use of intervention programs varied by school poverty level, although this pattern, as shown in Figure 2, was driven primarily by ELA teachers.[5] Seventy-five percent of ELA teachers in schools with the highest poverty levels (i.e., 75 to 100 percent of students qualifying for FRL) reported using at least one intervention program. This rate is significantly higher than that of teachers in schools of other poverty categories. Similarly, teachers in schools with 25–49 percent and 50–74 percent FRL enrollments reported slightly higher rates of ELA intervention program use than teachers in the bottom two categories of FRL enrollment. Although Figure 2 shows a broad pattern between teachers' ELA intervention program use and school poverty, no such pattern emerges when looking at mathematics intervention program use. That is, use of mathematics intervention programs does not appear to be tied to school poverty levels.

[5] We created a measure of school poverty using 2016–2017 NCES Common Core of Data (CCD) school-level FRL eligibility data, defining five categories of school poverty at (1) 0–10 percent FRL-eligible enrollment, (2) 11–24 percent, (3) 25–49 percent, (4) 50–74 percent, and (5) 75–100 percent.

FIGURE 2

Teachers' Use of Intervention Programs Varied by School Poverty Level

Patterns of Intervention Program Use and School FRL Enrollment, by School Level and Subject



NOTE: Asterisks denote the significance (* $p < 0.05$, ** $p < 0.01$) of differences between usage of intervention programs relative to same-subject teachers in schools with 75- to 100-percent school FRL enrollment. Usage rates across FRL categories for math teachers did not significantly differ from usage rates among teachers in 75- to 100-percent FRL-enrollment schools.

Discussion

Our findings highlight several potential concerns and their implications for federal, state, and local policymakers. The lower rates of intervention program use in mathematics and in high schools should be more closely examined to understand teachers' reasons for not using such programs. Research also should be conducted to determine what materials or programs teachers are using instead to support students below grade level. There might be various reasons for these trends. These trends might be partially explained by the historical emphasis on reading intervention in the early grades.[6] Furthermore, mathematics and high school teachers might be unaware of where to find high-quality programs, or there might be fewer programs available. Our data suggest that the latter explanation could be the case, particularly for high school teachers. Across both ELA and mathematics, high school teachers were significantly more likely than teachers at other school levels to respond that they did not use intervention programs and were less likely to indicate that they used an intervention program listed in the survey or an intervention program that was not listed ("other"). Researchers have noted a lack of empirically validated academic intervention programs in both ELA and mathematics for students beyond third grade.[7] This might indicate a need for the development and/or dissemination of relevant intervention programs for high school students.

Another possibility is that mathematics and high school teachers perceive less need for intervention programs than other teachers, or schools do not designate math and high school students to receive interventions as often as they do for ELA and at the elementary and middle school levels. Intervention and remediation might be qualitatively different at the high school level. As students' coursework becomes more personalized to their interests and performance levels, it is more likely that students would take remedial courses, which could diminish the feasibility of and need for intervention programs, such as those captured in the AIRS. Each of these potential reasons for the variance we observed requires a different policy solution. State and local policymakers should consider the extent to which mathematics and high school teachers' use of intervention programs align to their expectations for the contexts in which RTI/MTSS frameworks are delivered.

School performance level also could be a driving factor of teachers' use of intervention programs. Specifically, we detected differences in teachers' use of ELA intervention programs by school poverty level, a factor that is historically negatively correlated with school performance level.[8] Therefore, school poverty level might be acting as a proxy for school performance level. Lower-performing schools have more students performing below grade level, which might explain teachers' more prevalent reported use of ELA intervention programs. It could be that lower-performing schools face increased pressure to implement tiered systems of support that call for the use of academic interventions.

Limitations

Although this report provides insight into the prevalence of teachers' use of intervention programs and the factors that may influence that use, there are several limitations to keep in mind. First, future research is needed to more fully understand why teachers do not use intervention programs as often in mathematics, in high schools, and (for ELA) in schools serving students at lower poverty levels. Second, this analysis explores the *prevalence* of teachers' reporting about using intervention programs but not the *quality* of their intervention programs. To achieve positive outcomes for students, interventions should be empirically validated and delivered systematically.[9] Future research should consider the extent to which teachers use intervention programs with a strong evidence base, which was beyond the scope of this study. Third, the data from this survey are limited to teachers' self reports of using intervention programs but cannot provide insight into how teachers actually use intervention programs.

[6] Fuchs and Fuchs, 2006.

[7] Denton, 2012; Fuchs, Fuchs, and Compton, 2012; Vaughn and Fletcher, 2012; Wanzek and Vaughn, 2007.

[8] Reardon, 2011.

[9] Fuchs and Vaughn, 2012; Fuchs, Fuchs, and Compton, 2012.

How teachers use intervention programs determines their potential for effectiveness. Empirical studies of intervention programs generally are conducted with respect to specific populations of students in order to remediate specific skill deficits.[10] Interventions should be delivered with fidelity to the developer's specifications to achieve the best outcomes for most students. Thus, future research exploring the extent to which teachers use evidence-based interventions with fidelity and the barriers to their doing so could inform targeted school-level supports.

[10]National Center on Intensive Intervention, 2019; Evidence Based Intervention Network, undated.

How This Analysis Was Conducted

Respondents who indicated that they taught ELA and/or mathematics on the 2019 AIRS were asked "Which of the following English language arts/mathematics intervention materials do you use to support students below grade level?" Respondents were provided with a prepopulated list of programs, which included an "other" category, and were prompted to select all choices that applied, including a choice for not using intervention materials. Respondents who taught science were not asked to note their intervention programs and thus were not included in this analysis.

We coded respondents as using any intervention program, the primary indicator of interest in this Data Note, if they indicated using at least one of the listed programs or selected "other." To compare responses for teachers in schools with different demographic profiles, we used data from the 2016–2017 NCES CCD to create five school categories based on students eligible for FRL.

Throughout this Data Note, we report samplewide and subgroup-specific means and proportions of variables of interest, which are weighted using a set of nationally representative weights that we describe in further detail in the Survey Technical Documentation for the AIRS.[1] Statistical significance of group differences for intervention program use was determined by estimating weighted ordinary least squares models that regressed an indicator of intervention program use on categorical variables denoting the subgroup of interest (e.g., subject, school FRL). We conducted a series of supplemental regression analyses to assess whether grade-level and subject differences persisted when including statistical controls for select teacher characteristics (e.g., race/ethnicity, total years of experience), school characteristics (e.g., NCES-defined urbanicity, percent nonwhite student enrollment, percent FRL-eligible student enrollment, total enrollment) and state fixed effects. Results across these specifications were substantively similar to trends present within descriptive subgroup comparisons; thus, we present only the simple weighted means and percentages in this Data Note. Comparisons within subject and across grade level (Figure 1) and school FRL enrollment (Figure 2) are adjusted for multiple comparisons using Benjamini-Hochberg procedures.

[1] Prado Tuma et al., 2020.

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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 Survey Technical Documentation for the American Instructional Resources Survey (AIRS) (RR-4402-BMGF/SFF/OFF, www.rand.org/t/RR4402) 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 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.

We are extremely grateful to the U.S. public school teachers and leaders who have agreed to participate in the panels. Their time and willingness to share their experiences are invaluable for this effort and for helping us understand more about how to better support their hard work in schools. We also thank our reviewers, Anamarie Whitaker, Allison Gandhi, and Susan Strauss, for helpful feedback that improved this report.

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