

WINTER 2022

2021 DATA SNAPSHOT

# K-12

---

# Mathematics

---

# Instructional

---

# Materials

---



# INTRODUCTION

EdReports [first launched reviews](#) of comprehensive K–8 mathematics instructional materials in 2015. At the time, only one series met expectations for alignment to college and career-ready standards. In the past seven years, EdReports has seen significant improvements in materials after publishing educator-led reviews for more than 95% of the K–12 math comprehensive curriculum market. More than ever before, educators have high-quality materials to select from. This is critical because research shows that students learn primarily through their interactions with teachers and content.

However, despite the increased availability of aligned materials, the majority of students across the country still have limited access to the content necessary to prepare them for college and careers.

This Data Snapshot focuses on:

- The availability of quality K–12 mathematics programs and how regularly these materials are used by teachers.
- The extent to which materials provide culturally relevant content and support a diversity of student needs, including those of multilingual learners.
- Teacher perceptions of their materials, what teachers prioritized in the content they are using, and how they felt their materials measure up to those expectations.
- Important factors that influence the use of high-quality materials, such as ongoing access to curriculum-aligned professional development.

This study includes data from EdReports reviews, copyright dates, and data from the RAND Corporation American Instructional Resources Survey (AIRS) on curriculum use, teacher perception, and school context. In addition, these specific mathematics analyses draw on trends and research from across the curriculum marketplace published in the [State of the Instructional Materials Market 2021: The Availability and Use of Aligned Materials](#).

# Key Findings

## 1. The availability of standards-aligned mathematics instructional materials continues to increase.

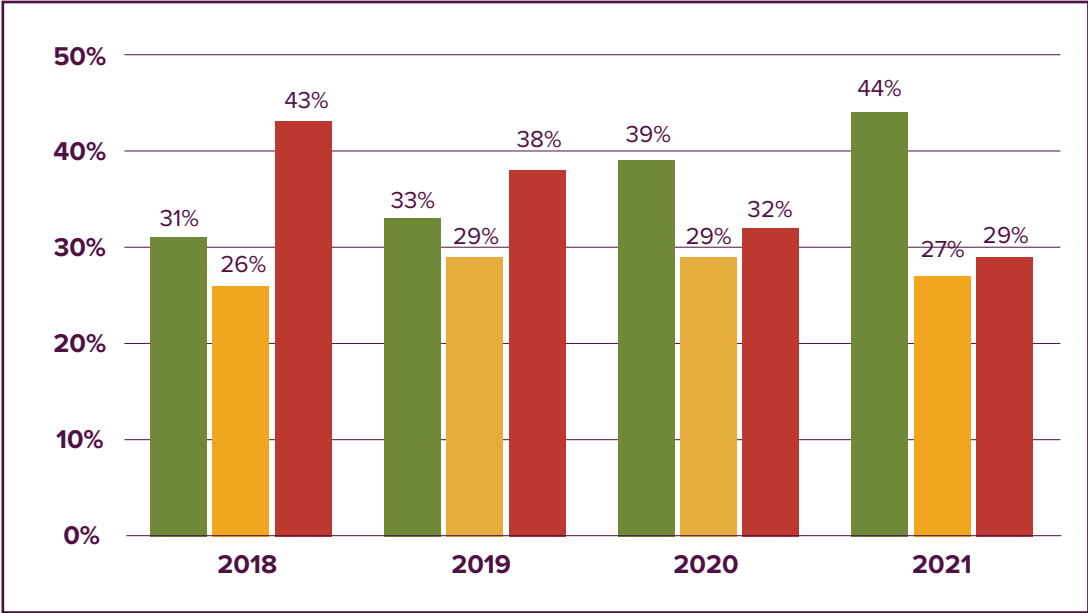
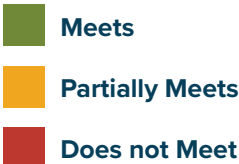
EdReports has reviewed more than **95%** of the known comprehensive K–12 mathematics materials market. Of these materials, **44%** meet expectations for standards alignment, **27%** partially meet expectations for alignment, and **29%** do not meet expectations for alignment.

Since 2018, the percentage of available standards-aligned mathematics instructional materials has increased 13 percentage points.

Based on these findings, districts have dozens of high-quality programs to choose from across every grade level. Districts have more choices than ever before as they seek to match their local priorities with available standards-aligned options.

**Figure 1**

Availability of standards-aligned mathematics materials



**Table 1** Availability of standards-aligned mathematics materials for 2021 by grade band

Grade band	Meets (n)	Meets (%)	Partially Meets (n)	Partially Meets (%)	Does Not Meet (n)	Does Not Meet (%)
Elementary grades	93	39.7%	70	29.9%	71	30.3%
Middle grades	71	47.7%	36	24.2%	42	28.2%
High school grades	69	47.6%	34	23.4%	42	29.0%
<b>Total (Elem, Middle, and High)</b>	<b>233</b>	<b>44.1%</b>	<b>140</b>	<b>26.5%</b>	<b>155</b>	<b>29.4%</b>

**Note:** Based on EdReports published reports, 2021 edition or earlier.

## 2. The use of standards-aligned mathematics materials has remained consistent with previous years. However, teachers are still not using aligned materials at high rates.

While high-quality instructional materials are available for every grade level, the use of aligned materials varies greatly depending on whether educators teach elementary and middle grades or high school grades.

High school mathematics teachers have similar access to high-quality curriculum and hours of professional learning as non-high school teachers but use aligned materials at much lower rates. Further, high school teachers are much more likely to use a supplemental set of materials at least once a week than those teaching elementary or middle grades (**Table 1**). Supplementing often involves selecting lessons or activities from unvetted online collections that are not part of a designed scope and sequence. Broadly, supplementing may be a cause for concern as studies have shown that many supplemental materials should “not be used” or are “probably not worth using” and likely do not adequately support students to meet the demands of the standards.

Even as the use of standards-aligned programs does not yet match availability and varies across grade levels, it is still trending in a promising direction. Over the past three years, use of aligned mathematics instructional materials has risen nine percentage points.

**Table 2**

Use of standards-aligned mathematics materials at least once a week

	2019	2020	2021
<b>At least one aligned curriculum</b>	30.2%	42.1%	39.7%
<b>At least one partially aligned curriculum</b>	28.9%	21.1%	19.5%
<b>Nonaligned curricula</b>	17.8%	17.3%	13.0%
<b>Unrated materials</b>	22.2%	19.3%	27.5%
<b>Created by the classroom teacher</b>	0.9%	0.3%	0.3%

**Table 3**

Use of standards-aligned mathematics materials at least once a week, for 2021 with breakdown by type of unrated material

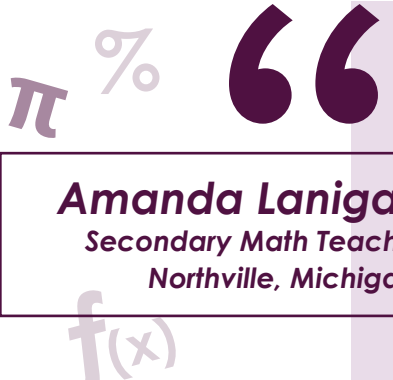
	Elementary grades	Middle grades	High school grades	Total
<b>At least one aligned curriculum</b>	44.9%	45.0%	21.3%	39.7%
<b>At least one partially aligned curriculum</b>	19.4%	25.1%	13.7%	19.5%
<b>Nonaligned curricula</b>	12.7%	6.8%	20.7%	13.0%
<b>Pre-2012 ed. or no longer actively sold by publisher</b>	0.8%	0.0%	0.0%	0.4%
<b>Supplemental program</b>	17.0%	15.1%	35.5%	20.6%
<b>Other curriculum not listed on survey</b>	2.4%	4.3%	7.5%	4.0%
<b>Created by the school or district</b>	2.5%	2.9%	0.5%	2.1%
<b>Created by the classroom teacher</b>	0.3%	0.7%	0.1%	0.3%
<b>No particular curriculum</b>	0.2%	0.3%	0.8%	0.3%

**Note.** Question text: “Among the mathematics curriculum materials in this list, select any materials you use regularly (once a week or more, on average) for your mathematics instruction this school year (2020-21).” Indicate which additional instructional materials – beyond curriculum materials – you use regularly (once a week or more, on average) for your mathematics instruction this school year (2020-21).

### 3. Research shows that ongoing professional learning is key to implementing high-quality instructional materials, yet few mathematics teachers have access to consistent learning opportunities that prepare them to use their curriculum with integrity.

Nearly a quarter of mathematics teachers receive no curriculum-aligned professional development, with almost two-thirds of teachers only receiving only zero to five hours of learning on how to implement materials (Table 4).

Given how important professional learning is for the successful implementation of high-quality materials, these numbers indicate a definitive need for states and districts to invest in ongoing professional development to support teachers with their curriculum.



**Amanda Lanigan**  
Secondary Math Teacher  
Northville, Michigan<sup>1</sup>

*“In my first teaching job, I came in midyear and had a specific curriculum. When I went to a training on the materials a few weeks in, I realized that I wasn't implementing the materials correctly at all. The training was a really positive experience for me and it improved my instruction significantly. That's the power of professional learning. Unfortunately, though, I know experiences like this aren't happening often enough.”*

Even when mathematics teachers do have access to curriculum-aligned professional development, they often don't feel satisfied with the learning they receive. This is particularly true around the use of instructional materials. Nearly half of teachers do not feel that professional development prepared them to use their district curriculum (Table 5). Access to professional learning in terms of hours provided is only the beginning; the content of learning opportunities is equally as crucial.

**Table 4**

Access to professional learning activities on how to implement main mathematics instructional materials

**Note.** Question text: “Since the end of last school year (2019-20), how many hours did you spend in professional learning activities related to the following topics in mathematics: Learning how to implement my main instructional materials.” Percentages may not sum to 100% due to rounding error and missing data at 3.1% for elementary, 1.8% for middle school, 0.9% for high school grades, and 2.3% for total.

Hours of professional learning	Elementary grades	Middle grades	High school grades	Total
0 hours	23.2%	19.9%	22.6%	22.3%
1–5 hours	40.5%	41.7%	39.6%	40.6%
6–10 hours	16.7%	21.9%	17.4%	18.1%
11–20 hours	7.1%	6.6%	10.7%	7.8%
More than 20 hours	9.3%	8.1%	8.8%	8.9%

<sup>1</sup> The quotes from educators included throughout the text are reflections from EdReports reviewers who were presented with this data and spoke about their own experiences with instructional materials and professional learning supports.

**Table 5** Quality of professional learning activities to use mathematics curriculum materials provided by school or district

**Note.** Question text: “To what extent have professional learning opportunities provided by your school or district this school year (2020–2021) prepared you to use curriculum materials provided by your school or district?” Data are filtered to mathematics. Percentages may not sum to 100% due to rounding error and missing data at 3.1% for elementary, 1.7% for middle school, 0.9% for high school grades, and 2.3% for total.

Extent of preparation	Elementary grades	Middle grades	High school grades	Total
Did not prepare me at all	16.0%	21.1%	26.6%	19.6%
Prepared me to a slight extent	30.2%	26.6%	28.4%	28.9%
Prepared me to a moderate extent	36.9%	37.4%	34.9%	36.6%
Prepared me to a great extent	13.7%	13.2%	9.2%	12.6%

#### 4. Teachers want mathematics materials that are aligned with their state standards, that engage and challenge all students, and include content and approaches that are culturally relevant. But few teachers believe their materials meet these needs.

Nearly 80% of mathematics teachers report that it is extremely important that materials are aligned to state standards. Almost all (95%) indicate that it is either somewhat or extremely important (Table 6). However, less than half of teachers believe their curriculum adequately achieves this (Table 7). This perception is in line with reported materials use in classrooms, with only 40% of math teachers using math programs that meet expectations for alignment.

Teachers also highlight a strong demand for instructional materials that address a broader definition of quality in addition to alignment to college and career-ready standards. Educators are concerned about whether materials can engage all students with content and approaches that are culturally relevant and ensure access to high-level learning and grade-level content. Seventy percent of mathematics

$\pi$

“

**Neven Holland**  
Fourth Grade Teacher  
Memphis, Tennessee

$f(x)$

“Along with being standards-aligned, I’m looking for a curriculum that is truly student-centered, where students can engage in the mathematical practices and be challenged to think critically.

If the materials don’t connect, the kids are not going to pay attention. We deserve materials that offer scaffolds for different learners, that offer guidance for how to support multilingual learners, and that give us ways to bring in a variety of communities while still meeting the standards.”

teachers express a desire for materials to include supports for multilingual learners. Three-quarters of math teachers say that it’s somewhat or very important for their curriculum to offer culturally relevant content. While a strong majority of teachers say they want culturally responsive materials, more than a quarter of math teachers are not prioritizing content that can engage and support all learners.

When it comes to the materials teachers are using, only 15% of teachers describe their curriculum as

adequate in supporting them to provide culturally relevant instruction. Fewer than a quarter believe their materials meet the needs of multilingual learners. The discrepancy between what math teachers report they need most from materials and what they believe their materials actually deliver is a clear signal to school, district, and state leaders who select and implement curriculum to attend to these critical areas. In addition, publishers and product developers can also gain insight into how their programs may need to evolve to ensure all students can learn and grow.

**Table 6** Importance teachers place on various characteristics of mathematics instructional materials

Characteristic	Not important	Slightly important	Somewhat important	Extremely important
Will be engaging or compelling to my students	0.0%	3.0%	22.0%	75.0%
Offer activities at appropriate level of challenge for my students	0.0%	1.0%	17.0%	81.0%
Include content and approaches that are culturally relevant	6.0%	19.0%	41.0%	33.0%
Include supports for English learners	8.0%	22.0%	36.0%	34.0%
Are aligned with my state's mathematics standards	1.0%	4.0%	17.0%	78.0%

**Note.** Question text: "Indicate the importance you place on various characteristics of instructional materials when choosing which materials to use in your mathematics classroom lessons." Percentages may not sum to 100% due to rounding error.

**Table 7** Teachers' perception of mathematics instructional materials adequacy

Curriculum purpose	1	2	3	4	5	6	7	Not sure or N/A
Helping all students master my state's mathematics standards	2.0%	2.0%	3.0%	32.0%	18.0%	23.0%	19.0%	2.0%
Meeting the needs of English learners	5.0%	10.0%	13.0%	28.0%	13.0%	13.0%	9.0%	8.0%
Helping me provide culturally relevant instruction	9.0%	12.0%	18.0%	25.0%	12.0%	10.0%	5.0%	8.0%
Making learning engaging for students	4.0%	6.0%	11.0%	25.0%	21.0%	18.0%	11.0%	2.0%
Reflecting the diversity of identities within my classroom	9.0%	10.0%	17.0%	26.0%	12.0%	10.0%	7.0%	7.0%

**Note.** Question text: "Indicate the extent to which the mathematics curriculum materials provided by your district or school as a recommendation or requirement are adequate for each purpose listed below." Rating scale anchor categories: 1 (completely inadequate), 4 (adequate in some ways and inadequate in others), 7 (completely adequate). Percentages may not sum to 100% due to rounding error and 1% missing data.

# CALLS TO ACTION

## 1. Invest in high-quality, standards-aligned mathematics instructional materials.

Almost all teachers indicate that materials aligned to college and career-ready standards are important to them. These materials are increasingly available, and yet use of these materials is still not happening at a high rate.

In high school, only 21% of teachers are using at least one aligned curriculum weekly versus 45% for elementary and middle school. It's no surprise that high school teachers are then supplementing at twice the rate of elementary and middle school teachers.

As districts make funding decisions, we have the chance to improve systems that the COVID-19 pandemic made clear were not working for all students. Investing in high-quality core curricula is the start of ensuring every child is able to learn and grow.

## 2. Meaningfully involve teachers in the selection of new mathematics instructional materials, including professional learning about why materials matter and what makes materials high quality.

Teachers have a clear vision of how mathematics materials should help meet students' needs. In large numbers, mathematics educators cite alignment to college and career-ready standards, support for students learning English, and culturally relevant approaches and content as important.

Teachers are using math instructional materials in the classroom every day, yet many districts do not meaningfully engage teachers when selecting new curricula or providing training about why materials matter and what makes materials high quality. For example, about a quarter of mathematics teachers do not see curriculum support for multilingual learners or culturally relevant content as a priority.

Key to increasing the use of high-quality math programs is ensuring teachers have a real voice in the materials that are selected but also that they are prepared and trained to effectively contribute to the process. States and districts must invest in professional development that helps teachers understand what high-quality materials look like and why they matter, and offer meaningful opportunities for teachers to be involved in selection.

## 3. Ensure regular, high-quality, curriculum-aligned professional development during implementation and afterward.

Curriculum-aligned professional learning is critical for ensuring that materials are used well in classrooms and can help close the gap between what's selected and what's in use. Yet, nearly a quarter of mathematics teachers receive no curriculum-aligned professional development, with almost two-thirds of teachers only receiving only zero to five hours of learning on how to implement materials (**Table 4**). Ongoing support and learning opportunities for teachers could lead to important gains for students and ensure crucial learning activities are regularly happening.



# END NOTES

1. EdReports. (2022). *State of the instructional materials market 2021: The availability and use of aligned materials*. <https://www.edreports.org/resources/article/state-of-the-instructional-materials-market-2021-the-availability-and-use-of-aligned-materials>
2. Polikoff, M. with Dean, J. (2019, December). *The supplemental curriculum bazaar: Is what's online any good?* Thomas B. Fordham Institute. <https://fordhaminstitute.org/national/research/supplemental-curriculum-bazaar>
3. Short, J & Hirsh, S. (2020, November). *The elements: Transforming teaching through curriculum-based Professional Learning*. Carnegie Corporation of New York. <https://www.carnegie.org/our-work/article/elements-transforming-teaching-through-curriculum-based-professional-learning/>
4. EdReports. (2021). *Evaluating materials for culturally responsive practices: A landscape analysis*. <https://www.edreports.org/resources/article/evaluating-materials-for-culturally-responsive-practices-a-landscape-analysis>
5. TNTP. (2018). *The opportunity myth: What students can show us about how school is letting them down -- and how to fix it*. [https://tntp.org/assets/documents/TNTP\\_The-Opportunity-Myth\\_Web.pdf](https://tntp.org/assets/documents/TNTP_The-Opportunity-Myth_Web.pdf)
6. Kaufman, J. H., Opfer, V., Bongard, M. & Pane, J. (2022). *Changes in what teachers know and do in the Common Core era: American Teacher Panel findings from 2015 to 2017* (Research Report RR-2658-HCT). RAND Corporation. [https://www.rand.org/pubs/research\\_reports/RR2658.html](https://www.rand.org/pubs/research_reports/RR2658.html)

# ABOUT EDREPORTS

## VISION

All students and teachers will have access to the highest quality instructional materials that will help improve student learning outcomes.

## MISSION

EdReports is an independent nonprofit designed to improve K–12 education. EdReports increases the capacity of teachers, administrators, and leaders to seek, identify, and demand the highest-quality instructional materials. Drawing upon expert educators, our reviews of instructional materials and support of smart adoption processes equip teachers with excellent materials nationwide.

## LIMITED PRINT AND ELECTRONIC DISTRIBUTION RIGHTS

This work is licensed under a Creative Commons Attribution. Licensees may copy, distribute, display, and perform only verbatim copies of reports, not derivative works and remixes based on it, and must attribute and link back to EdReports.org. For more information on this publication, visit [www.edreports.org](http://www.edreports.org).

EdReports and associated marks and logos are the trademark property of EdReports.org, Inc.

© Copyright 2022 EdReports.org, Inc.