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GATES *foundation*

Teachers Know Best

What Educators Want from
Digital Instructional Tools



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SUMMARY OF KEY FINDINGS

No one knows teaching like teachers, so we asked more than 3,100 educators what kinds of digital instructional tools are essential to help their students be prepared for college and careers in the 21st century.

In surveys and interviews, teachers told us that they are looking for resources that can help their students meet new, more rigorous standards, including the Common Core State Standards (CCSS) and Next Generation Science Standards. They also are optimistic that digital instructional tools can be useful. But even as the instructional market is going increasingly digital and a huge array of products exists, gaps remain: Certain types of products that teachers said they need for specific instructional purposes are simply not available; in other cases, there are products available, but teachers aren't using them or don't perceive them to be effective. These market gaps present opportunities for product developers to create new digital instructional tools or improve existing ones to better meet the needs of teachers and students.

This study explores four questions:

- What do teachers want and need from digital instructional tools?
- How can product developers use this information to more effectively serve students, teachers, and schools?
- What do we know about how teachers and districts select and purchase digital instructional tools?
- What do we know about the overall market for digital instructional tools?

What do teachers want and need from digital instructional tools?

- Both teachers and students see technology as useful in instruction.
- Teachers identified six instructional purposes for which digital tools are useful:
 - Delivering instruction directly to students
 - Diagnosing student learning needs
 - Varying the delivery method of instruction
 - Tailoring the learning experience to meet individual student needs
 - Supporting student collaboration and providing interactive experiences
 - Fostering independent practice of specific skills
- Alignment with college- and career-ready standards, including the CCSS and the Next Generation Science Standards, and/or teachers' lesson plans, was the most-cited benefit sought by teachers when choosing instructional resources, both digital and non-digital.
- Teachers have a nuanced understanding of college- and career-ready standards and can identify specific standards for which they have instructional resources and those for which they do not.
- *Standards gaps* exist where the resources to help educators teach college- and career-ready standards are not available or sufficient and don't exist in digital form. Most teachers do not find instructional resources (both digital and non-digital) sufficient in helping them teach new college- and career-ready standards, and less than half of teachers reported that resources available to teach the standards are both sufficient and in digital form. The four areas with the greatest deficit of instructional resources that are available, sufficient to teach the standards, and in digital form are the following:
 - Elementary school English language arts (grades K–5)
 - High school math (grades 9–12)
 - Middle school social studies (grades 6–8)
 - All grade levels in science (grades K–12)
- In math, as grade levels increased, teachers were less likely to report having available, sufficient, and digital resources, with high school math teachers reporting the biggest gaps. The opposite trend is seen in English language arts (ELA), with elementary school teachers reporting the biggest gaps.

How can product developers use this information to more effectively serve students, teachers, and schools?

- The research captured 964 student-facing digital products—those used directly by students for learning. About 40 percent of currently available digital products focus on an individual academic subject, with most focused on either math or ELA. There are three kinds of *product gaps*:
 - ▶ *Availability gaps* indicate that teachers report an absence of digital instructional tools.
 - ▶ *Usage gaps* represent a situation in which teachers do not direct their students to use the available digital products frequently.
 - ▶ *Perceived effectiveness gaps* occur when teachers do not feel that the digital instructional products that they direct their students to use frequently are actually effective.
- These product gaps exist in the following areas:
- ▶ High school math and ELA (perceived effectiveness gap)
 - ▶ Content-agnostic platforms that host or aggregate content (usage and perceived effectiveness gaps)
 - ▶ Grades 3–8 products that cover two or three subjects (usage and perceived effectiveness gaps)
- ▶ Grades 3–8 science (availability, usage, and perceived effectiveness gaps)
 - When asked to list the top five products they direct their students to use frequently, teachers named only 53 percent of the 964 products captured in the survey. And even the products that are used frequently are not widely perceived to be effective: Only 54 percent of teachers perceive the digital products their students use frequently to be effective.
 - ▶ Despite the existence of many math-only and ELA-only products at the high school level, teacher and student surveys both reveal low levels of perceived effectiveness in regard to these products.
 - ▶ Relative to math-only and ELA-only products, there are not many science-only products available. But of the ones that are available, teachers didn't name many on their top-five lists of products they direct their students to use frequently. And less than half of teachers perceive the science products their students use to be effective.
 - ▶ In contrast, although there are not many social studies-only products, most teachers perceive these products to be effective.

What do we know about how teachers and districts select and purchase digital instructional tools?

- Teachers don't use their own money to purchase the majority of the instructional technology they use with their students. Teachers in this survey said that only 4 percent of the digital products they use are purchased with their own money.
- Teachers are just as likely to find effective the free products they use as they are those purchased for them by their school or district.
- Teachers don't get to choose many of the products their students use, but when they are given the opportunity to select them, they are more likely to report that products were effective.
- Teachers said they find out about products primarily by word of mouth from other teachers and administrators, at professional meetings, and online via search engines and social media.
- Districts spend much more on ELA-only products than is suggested by the extent to which teachers direct their students to use these products frequently or rate them as effective.

Teachers in this survey said that only 4 percent of the digital products they use are purchased with their own money.

What do we know about the overall market for digital instructional tools?

- Investors are funding more and more student-facing digital products—those used directly by students for learning.
- The average investment size has decreased from \$11 million in 2010 to \$2.3 million in 2013 as seed stage capital has grown.
- While seed stage capital has grown significantly over the last three years, Series A capital has remained relatively flat for companies that target K–12 schools in the United States as their primary customers (as opposed to international, direct-to-consumer, and higher education models).
- There are a number of indicators that the market may grow in the next three years: Districts are piloting many digital products, as well as building up their hardware and networking capacities. Districts also are expected to increase their spending on instructional materials after several years of postponing purchases due to economic conditions and the wait for the emergence of materials better aligned with the CCSS and the Next Generation Science Standards.

ABOUT THIS STUDY

In our work with schools over the last few years, we have heard a common theme: Teachers are trying hard to challenge and engage their students, but they don't have sufficient choices for effective digital instructional tools that truly meet their needs.

At the same time, many instructional product developers have told us they don't have a good way to receive ongoing feedback about what teachers need and want from their products. This absence of useful market information has led to a mismatch between the kinds of digital instructional tools that teachers say they actually need and the kinds of products companies are creating and school districts are buying. This study is part of the Bill & Melinda Gates Foundation's efforts to contribute to better connections between teachers, those who procure resources for them, and product

developers. By identifying clear and actionable information about market gaps in digital instructional tools, the foundation hopes to broadly share this knowledge with the field.

Aggregating and amplifying the voices of teachers and students can help strengthen digital content and tools. One goal in sharing this information is to enable product developers to better understand the emerging needs of teachers and students so they can create instructional tools that are more useful.

How does this fit with the Bill & Melinda Gates Foundation's mission?

This project is part of the Bill & Melinda Gates Foundation's broader efforts to improve educational opportunities for all students. The foundation's K–12 strategy seeks to ensure that students graduate from high school ready to succeed in a college program that will prepare them to support themselves, engage in their communities, and achieve their dreams. One key component of the foundation's strategy is to encourage innovation in K–12 education, including supporting schools that are designed to personalize learning. Personalized learning ensures that students' learning experiences—what they learn, and how, when, and where they learn it—are tailored to their individual needs, skills, and interests and enable them to take ownership of their learning. These learning environments also help students develop deep personal connections with their fellow students, their teachers, and other adults.

Blended instruction—combining the best of teacher-led and digital instruction—is a key feature of most schools that are designed for personalized learning. Blended instruction helps teachers more effectively meet their students where they are, so they are neither bored with assignments that are too easy nor overwhelmed by work that is too hard; instead, the goal is for students to identify the level and pace of learning that are just right for them.

The number of schools that have been fundamentally redesigned for personalized learning is modest but growing. In the meantime, the number of teachers who view digital instructional tools as an important classroom resource is large and growing.

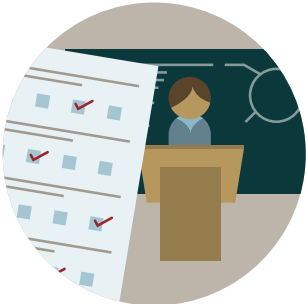
Until now, access to detailed information about how K–12 teachers and students view digital instructional tools has been limited. Answers to most questions about whether product developers are creating the digital resources that teachers want and need most have been mainly anecdotal. Commissioning this research from a leading consulting firm with expertise in consumer analytics and insights, the foundation aimed to learn more about which needs of teachers and students remain unmet and to draw attention to areas in which focused product development could more effectively support teachers and students.

Aggregating and amplifying the voices of teachers and students can help strengthen digital content and tools.

The study surveyed a sample of more than 3,100 U.S. public school teachers that was nationally representative in terms of teachers' age, level of experience, and whether they taught in urban, rural, or suburban communities, as well as the proportion of students in their schools who receive free or reduced-price lunch. (See the graphics on pp. 7–8 for more details.) The study also surveyed a sample of more than 1,250 public school students in grades 3 through 12.

OUR RESEARCH IS BASED ON A COMPREHENSIVE STUDY OF TEACHERS, STUDENTS, AND SCHOOL DISTRICTS

3,100+



Teachers Surveyed

1,250+



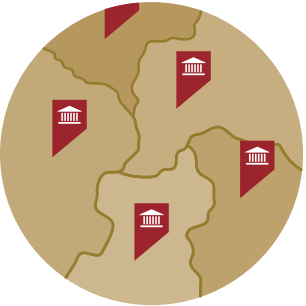
Students Surveyed

70+



Students and Teachers Interviewed

16



Districts Analyzed

In addition, the study team interviewed administrators from 16 school districts of varying sizes in urban, rural, and suburban regions across the country and with varied levels of technology usage. The team also studied the 16 districts' purchasing patterns of instructional materials over the last three years.

This research did not examine the entire K–12 educational technology market; it focused only on student-facing digital instructional tools. Digital instructional tools are defined in this study as those applications that students use for learning. (In

other words, this study does not include products such as digital gradebooks, professional development tools, or instructional improvement systems.) While teachers, principals, and parents may have access to student-facing digital instructional tools, these tools are fundamentally designed for and used by students. For example, students might use digital instructional tools to learn about geometric proofs, conduct virtual science experiments, or practice using more persuasive language in their writing.

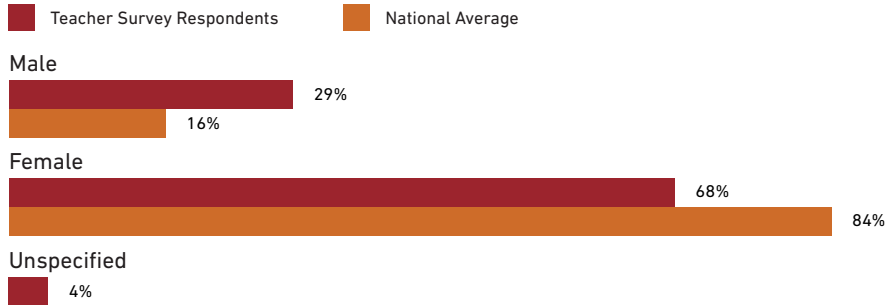


COMPARING OUR TEACHER SURVEY SAMPLE WITH THE GENERAL TEACHER POPULATION

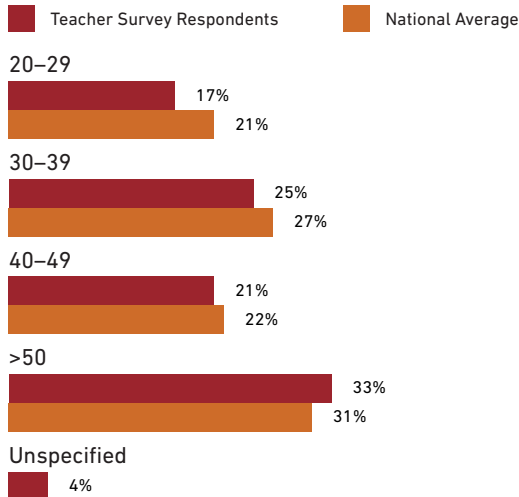
Our teacher survey sample reflects the U.S. K–12 public school teacher population.



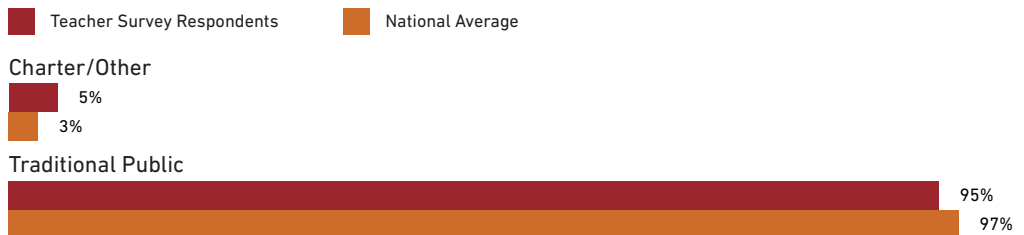
Are you...?



How old are you?

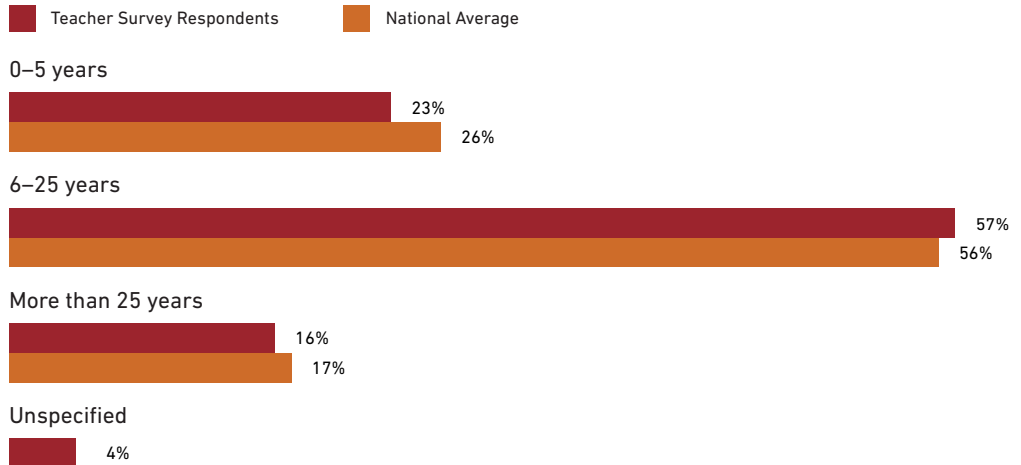


Is your employer...?

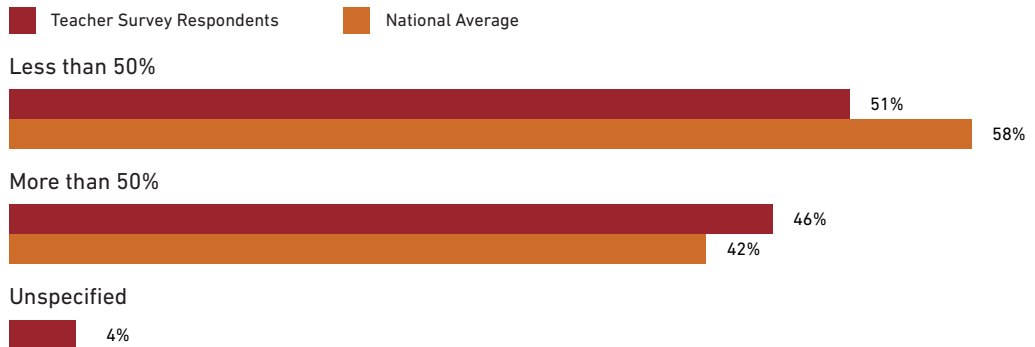


Source: U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics 2012; National Center for Education Information 2011

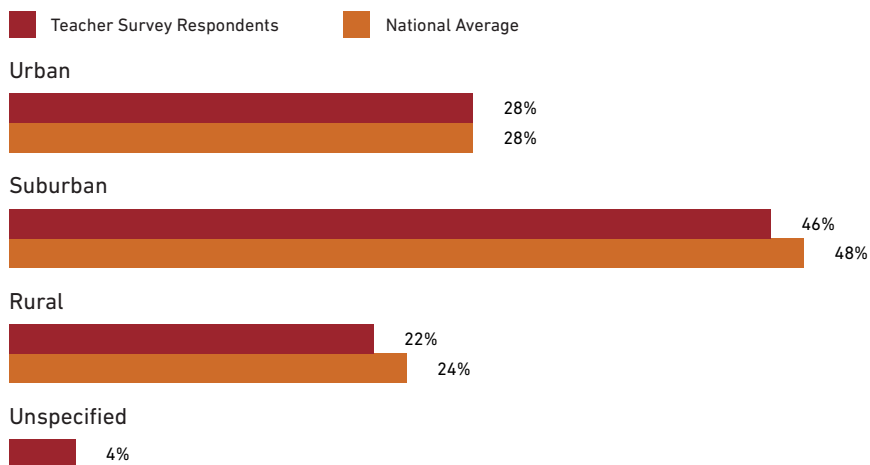
How long have you been teaching?



What percentage of the students in your school receive free or reduced-price lunch?



Is your school...?



Source: U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics 2012; National Center for Education Information 2011

WHAT DO TEACHERS WANT AND NEED FROM DIGITAL INSTRUCTIONAL TOOLS?

Teachers want resources to help their students meet new college- and career-ready standards, and they have a very detailed understanding of which standards they have resources for and which they do not. When teachers reach for digital tools, they are focused on six primary instructional purposes. The relative importance of these instructional purposes to teachers varies by grade and subject.

Key Findings

- Both teachers and students see technology as useful in instruction.
- Teachers identified six instructional purposes for which digital instructional tools are beneficial:
 - ▶ Delivering instruction directly to students
 - ▶ Diagnosing student learning needs
 - ▶ Varying the delivery method of instruction
 - ▶ Tailoring the learning experience to meet individual student needs
 - ▶ Supporting student collaboration and providing interactive experiences
 - ▶ Fostering independent practice of specific skills
- Alignment with college- and career-ready standards and/or teachers' lessons plans was the most-cited benefit sought by teachers when choosing instructional resources, both digital and non-digital.
- Teachers have a nuanced understanding of college- and career-ready standards, as evidenced by the fact that they can identify specific standards for which they have instructional resources as well as those for which they lack resources.
- Most teachers do not find instructional resources (both digital and non-digital) sufficient in helping them teach new college- and career-ready standards, and less than half of teachers reported that resources available to teach the standards are both sufficient and in digital form.
- In math, as grade levels increase, teachers were less likely to report having available, sufficient, and digital resources, with high school math teachers reporting the biggest gaps. The opposite trend is seen in English language arts (ELA), with elementary school teachers reporting the biggest gaps.

The surveys, interviews, and additional research revealed informative insights about how teachers want to use instructional technology in their classrooms. They confirmed that teachers view digital tools as critical to their students' ability to meet college- and career-ready standards, such as the Common Core State Standards (CCSS) and the Next Generation Science Standards.

One survey participant described teachers' primary technology needs this way: "Number one, find inexpensive technologies that are aligned with Common Core standards. Number two, the technology must be engaging for the students, and number three, the technology needs to be simple so that more teachers will use it. So few teachers use the free technology that is offered, because what we have is complicated for them." Another observed, "I think

the biggest improvement would be for the content to be broken down by [Common] Core standard. That way, teachers can easily see which activities can correspond to which lesson while they are in the planning stages."

Teachers provided very specific information about the ways in which they like to use digital resources to enhance learning. The data suggest that both teachers and students view digital instructional resources as useful for the six primary instructional purposes outlined above. Some of these purposes primarily support more teacher-driven activities, and others support more student-driven activities, as seen in the graphic on p. 11.

The purposes that primarily support more teacher-driven activities include:

- **Delivering instruction directly to students.** Digital instructional tools that are aligned with college- and career-ready standards and lesson plans help teachers facilitate delivery of content. Students also value the use of such tools as part of classroom instruction. “I want more one-to-one human interaction, facilitated through tech—that would help me be the most successful,” one student said.
- **Diagnosing student learning needs.** Using technology to evaluate the progress of every student allows teachers to identify gaps in student understanding. Students also want to be able to view the status of their progress, whether through tracking their overall grade or looking at what they got right and wrong on quizzes.
- **Varying the delivery method of instruction.** Teachers reported that digital resources that help deliver content in different ways can increase class-wide engagement and make it easier for students to understand the material being taught. Students also stressed the usefulness of varying approaches to learning. “I want materials that explain things to me in a different way when I don’t get it the first time,” one student said.

The purposes that primarily support more student-driven activities include:

- **Tailoring the learning experience to meet individual student needs.** Having identified gaps in students’ understanding, teachers can use digital tools to adapt the pace, content, and/or style of instruction to meet students’ personalized learning needs. “I like asking questions when I don’t understand, but I don’t want to ask too many and be judged,” one student said. “If there was something that could let me go at my own pace, it’d be very helpful.”
- **Supporting student collaboration and providing interactive experiences.** Teachers reported that interactive tools can encourage and provide an avenue for students to work with their peers.
- **Fostering independent practice of specific skills.** By allowing students to practice material on their own in a variety of different ways, digital resources can empower them to take charge of their own learning. “I like being independent to find things by myself,” said one student.

We found that when teachers turn to digital tools, more than 60 percent of the time they are looking for help with the three more student-driven instructional purposes: tailoring the learning experience, supporting student collaboration and providing

interactive experiences, and fostering independent practice. Combined with teachers’ stated desire for products that help their students meet college- and career-ready standards, these findings can be used by developers to pinpoint market gaps and product development cues.

“I want more one-to-one human interaction, facilitated through tech—that would help me be the most successful.” —STUDENT

Teachers’ opinions of the relative importance of the six activities can vary across the grades and subjects that they teach, as seen in the graphic on p. 12.

- In the elementary grades, teachers most often use student-facing digital tools to deliver instruction and tailor the learning experience; teachers in middle and high school are more likely to use technology to foster independent practice and support student collaboration. Teachers at all levels echoed the importance of using technology to vary delivery methods.
- When they teach science, K–2 teachers look for digital tools focused on delivering instruction and want these products to be aligned to their lesson plans or standards such as the CCSS.
- K–2 teachers focus on ELA resources that diagnose student learning, as well as tools that can tailor students’ learning experiences based on the results.
- Math teachers in grades 6–8 tend to gravitate toward free digital tools and most often use these products to foster independent practice by individual students.
- Social studies teachers in grades 6–8 focus on technology that supports student collaboration, including tools that can help students learn something for the first time.
- High school math teachers prefer digital tools that allow students to collaborate in teams or in whole-class activities. They also look for tools that can identify gaps in student learning.

We asked teachers whether the instructional resources, both digital and non-digital, to which they had access were sufficient to help their students meet new college- and career-ready standards. Based on their responses, teachers seemed to define sufficiency primarily as the degree to which resources were affordable, accessible, and fully supported student mastery.

TEACHERS EXPECT DIGITAL TOOLS TO HELP THEM WITH SIX INSTRUCTIONAL PURPOSES





● Primary benefit sought ● Secondary benefit sought

	Instructional Purpose	Description	Benefits Sought from Digital Tools
Teacher-Driven	Deliver Instruction	Facilitate delivery of the lesson plan and content	<ul style="list-style-type: none"> ● Aligns with lesson plan and/or Common Core State Standards ● Enables high degree of teacher control
	Diagnose Student Learning	Evaluate class learning progress and adjust lessons	<ul style="list-style-type: none"> ● Demonstrates and/or surfaces gaps in student understanding ● Enables high degree of teacher control
	Vary Delivery Method	Increase class-wide engagement through multimodal instruction	<ul style="list-style-type: none"> ● Makes it easy for students to understand the content ● Captures greater student attention/engagement
	Tailor Learning Experience	Adapt lessons to the needs of individual students	<ul style="list-style-type: none"> ● Adapts pace, content, and/or style to students' personalized needs ● Allows students to practice independently
Student-Driven	Support Student Collaboration and Interactivity	Empower students to collaborate and to take charge of their own learning	<ul style="list-style-type: none"> ● Enables collaboration with student peers ● Provides high degree of interactivity
	Foster Independent Practice	Enable independent practice and student ownership	<ul style="list-style-type: none"> ● Allows students to practice independently ● Provides additional mode of learning for students

Source: Survey of 3,131 public school K–12 teachers across the United States

WHAT TYPES OF SUPPORT ARE TEACHERS LOOKING FOR FROM DIGITAL INSTRUCTIONAL TOOLS?

Teachers’ opinions of the relative importance of the six instructional purposes that digital instructional tools can help support vary across the grades and subjects that they teach.

	Grades K–2	Grades 3–5	Grades 6–8	Grades 9–12
 <p>Math</p>	<ul style="list-style-type: none"> • Vary delivery method • Deliver instruction 	<ul style="list-style-type: none"> • Deliver instruction • Tailor learning experience 	<ul style="list-style-type: none"> • Foster independent practice • Vary delivery method 	<ul style="list-style-type: none"> • Support student collaboration • Diagnose student learning
 <p>Science</p>	<ul style="list-style-type: none"> • Deliver instruction • Vary delivery method 	<ul style="list-style-type: none"> • Support student collaboration • Foster independent practice 	<ul style="list-style-type: none"> • Vary delivery method • Diagnose student learning 	<ul style="list-style-type: none"> • Support student collaboration • Tailor learning experience
 <p>ELA</p>	<ul style="list-style-type: none"> • Tailor learning experience • Diagnose student learning 	<ul style="list-style-type: none"> • Diagnose student learning • Vary delivery method 	<ul style="list-style-type: none"> • Deliver instruction • Support student collaboration 	<ul style="list-style-type: none"> • Support student collaboration • Vary delivery method
 <p>Social Studies</p>	<ul style="list-style-type: none"> • Deliver instruction • Vary delivery method 	<ul style="list-style-type: none"> • Tailor learning experience • Deliver instruction 	<ul style="list-style-type: none"> • Support student collaboration • Foster independent practice 	<ul style="list-style-type: none"> • Vary delivery method • Diagnose student learning

Source: Survey of 3,131 public school K–12 teachers across the United States

Other findings from the teacher surveys

Today’s teachers believe in the power and potential of digital instructional tools and overwhelmingly see technology as useful in instruction. Only a tiny number said they did not use technology more because they did not value it: When teachers were asked to name the top three barriers preventing them from using digital instructional tools more, less than 2 percent chose the response “I do not see the value of using technology for student learning.” According to one survey respondent, “My students are going to be using this technology in their jobs, at home, and in everyday life. ... We need, as educators, to embrace the technology to ‘speak’ the language our students understand.” Another observed, “Digital resources are a great opportunity to individualize learning for my students.”

Indeed, other research shows that today’s teachers are broadly embracing the use of technology in instruction in overwhelming numbers. In *Primary Sources*, a survey of more than 20,000 teachers released in February 2014, 83 percent of teachers said it is “extremely” or “very” important for great teachers to incorporate technology to help students learn. That study also found that a large majority of teachers use technology to find or share lesson plans (91 percent of teacher respondents), to seek out professional advice (65 percent), and to collaborate with teachers with whom they wouldn’t otherwise have the opportunity (57 percent).¹

Not surprisingly, students also believe in the power of digital tools for learning. Fifty-eight percent of students in our survey agreed with the statement that using technology both inside and outside of class helps them learn. The data also suggest that when they choose educational products on their own, students are more likely to choose digital products over non-digital products (which are more often assigned to students by teachers or other adults).

Overwhelmingly, teachers want instructional resources (both digital and non-digital) to be aligned with new college- and career-ready standards and with their lesson plans. When asked to choose up to five primary benefits they seek when selecting digital and non-digital tools, more than 60 percent of K–8 teachers chose “aligns with lesson plan and/or Common Core standards,” making it the top benefit sought. At the high school level, the top benefit selected was “makes it easy to understand the content” (chosen by 47 percent of respondents), but only by a tiny margin over standards alignment (chosen by 46 percent of respondents).

“There needs to be better content aligned to the Common Core—the options right now are minimal,” reported one teacher. In the words of another, “I have looked at ... producing several digital resources (podcasts, websites, etc.), and it would be nice to start with some specific standards, put in some lesson plans, and then

include the digital resources. Basically start with what the teacher sees, and work up to the resources, instead of saying, ‘Look, I have created a great resource’ that doesn’t fit with what a teacher is working on.”

Students prioritize tools that help them learn over tools that are fun when selecting educational technologies on their own. When asked what matters most when they choose digital products on their own to learn, 61 percent of students selected the response “It’s effective at helping me learn,” while only 37 percent said they choose tools or products primarily because they are “fun.” However, they still find it important that instructional technology is engaging; as one student survey respondent observed: “I want resources that allow me to be hands-on and interactive, and that let me learn from my other classmates as well as the teachers—it’s boring when it’s just lectures.”

“My students are going to be using this technology in their jobs, at home, and in everyday life. ... We need, as educators, to embrace the technology to ‘speak’ the language our students understand.” —TEACHER

Teachers have a nuanced knowledge and understanding of college- and career-ready standards—including the precise details of individual standards clusters—and the availability and sufficiency of resources for instruction. Teachers are aware of resource coverage at a very detailed level and reported high variance of coverage across specific content and skills, even within individual grades and subjects. When asked about the instructional resources designed to help students master skills in specific standards clusters (which represent groups of related standards), teachers reported large differences in availability and sufficiency of resources across different clusters.

For example, when asked about the 39 standards clusters covering ELA in grades K–2, 86 percent of teachers in those three grade levels reported having available and sufficient resources to help them teach students how to “determine meaning of unknown words, explore word relationships and word meaning, and use acquired words and phrases.” But only 28 percent of the K–2 teachers reported having available and sufficient resources to help them teach students how to “demonstrate understanding of the organization and basic features of print.” These large differences persisted across other grade and subject-area standards, as can be seen in the separate file for appendices accompanying this report.

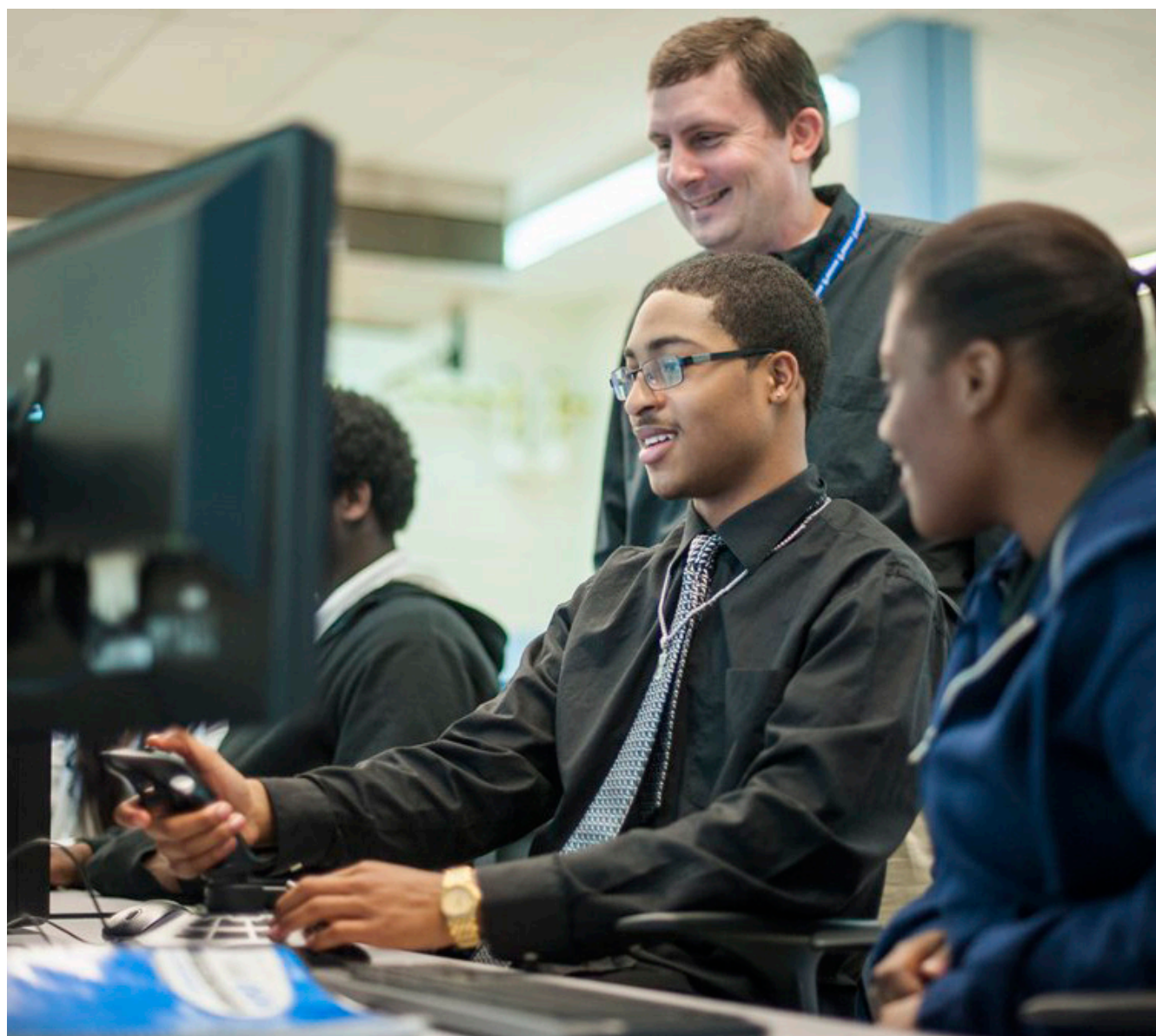
¹ *Primary Sources: America’s Teachers on Teaching in an Era of Change.* Scholastic Inc. and the Bill & Melinda Gates Foundation, 3rd edition, February 2014.

Most teachers do not find instructional resources sufficient to help them teach new college- and career-ready standards, and less than half say they have these resources in digital formats. Among the teachers surveyed, 88 percent reported that instructional resources (both digital and non-digital) designed to meet standards are available in their subject or grade level. But only 55 percent of surveyed teachers said these resources were actually sufficient to help their students meet these standards. The figures are even lower for digital instructional tools: Only 43 percent of teachers surveyed say these resources to teach the standards are available, sufficient, and present in digital form.

Teachers in some individual subjects and grade levels reported much greater needs for instructional resources (both digital and non-digital). In general, math teachers' responses showed that they are more likely to have instructional resources available and that those resources are more sufficient than those in other subjects

to help meet standards. But the higher the grade level they teach, the less likely the math teachers were to report having instructional resources, and their view of the sufficiency of these resources also declines. The reverse is true of ELA-only resources; ELA teachers in upper grade levels were more likely to report having resources, while the unmet demand for resources is much more acute for their counterparts in younger grade levels. There appear to be more acute gaps in instructional resources to help teachers meet standards in elementary school ELA, in high school math, and in middle school social studies. There also were acute gaps in science instructional resources across all grade levels, with only 33 percent of science teachers reporting that they had instructional resources that were available, sufficient, and digital.

The graphic on p. 15 breaks down the differences in availability and need among grade levels and subjects in more detail.

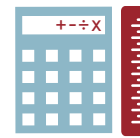
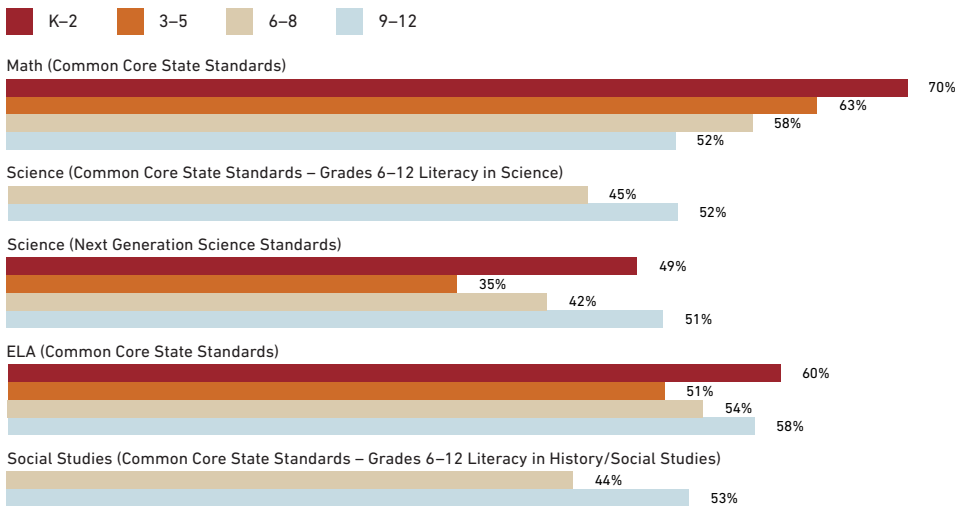


DO TEACHERS HAVE THE RESOURCES THEY NEED TO TEACH THE STANDARDS?

Across all grades and subjects, teachers reported that resources are widely available to help students meet college- and career-ready standards; however, these resources are largely insufficient and non-digital.

Evaluating Sufficiency

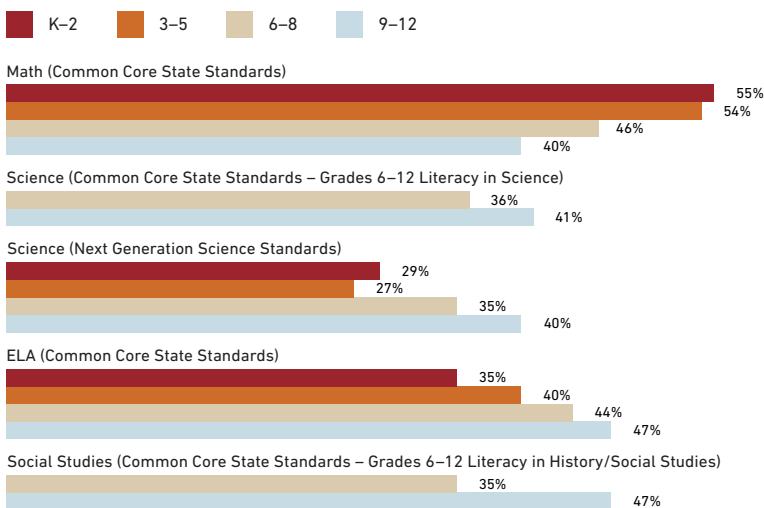
Only 55 percent of teachers who reported that resources were available also said they were sufficient in helping students meet college- and career-ready standards.



Math teachers were most likely to report that available resources were also sufficient.

Digital Versus Non-Digital

Only 43 percent of teachers reported that resources to help students meet college- and career-ready standards were sufficient and digital.



The most acute gaps in digital instructional resources to help students meet college- and career-ready standards appear to be in elementary ELA, middle school social studies, high school math, and all levels of science.

Many teachers told us that the expectations created by new college- and career-ready standards mean that many instructional technologies must change: Resources must go well beyond more traditional drill-and-practice programs. Today's students face much higher expectations about what they must know and be able to do to be successful in high school, college, and the workforce. In an increasingly complex and sophisticated world, students need strong critical-thinking skills and must be able to work collaboratively in teams to solve problems. Students can't just locate and repeat back information to their teachers; instead, they must be able to scrutinize the sources of the information they find, to determine whether they are valid and reliable. They must be able to analyze, synthesize, and evaluate information and communicate clearly, using expression and detail, about what they have learned. Teachers urge product developers to keep pace with these changing expectations. For example, as one teacher explained:

I am not a fan of tools that make kids practice mindless exercises or ... watch boring lectures. Teaching with standards is not equivalent to covering a checklist of topics, [it] is an art form that takes thought for how to challenge students to synthesize and apply the content that they have learned. This is extremely difficult, if not impossible, to achieve through the current state of technological options.

Another teacher wrote about the types of technological resources needed to teach science more effectively, and the practical challenges involved in finding top-notch digital instructional tools and integrating them into teaching plans for multiple classes and grades:

Much of what is currently out there is very simplistic and not promoting critical thinking. ... I'm willing to integrate more technology into my classroom, but I need help finding high-quality resources without having to sift through all the junk that's out there.

Other teachers observed that good educational technology is not just a simple conversion process; products should not just reproduce a textbook or worksheet in digital form. Effective

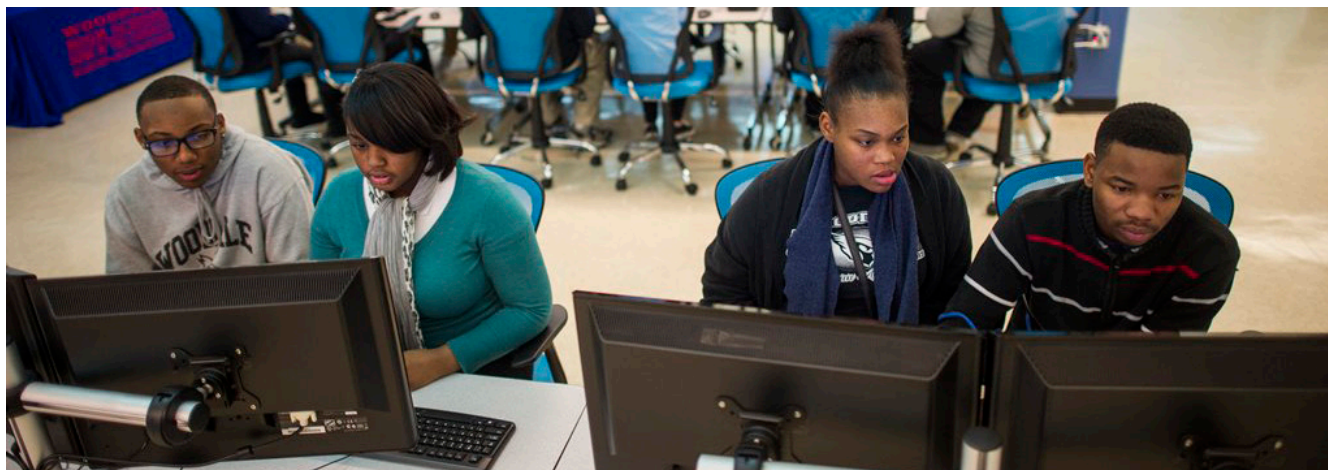
products use technology's unique attributes to transform the learning experience in new ways—whether to make the learning process more interactive, stimulate analytical thinking, or encourage students to make connections across different academic disciplines. As one teacher said:

Always remember that something is not "better" simply by virtue of being digital. So often we fetishize technology, acting as if it improves learning simply by virtue of being technological. Find resources that are inherently valuable, not the-same-thing-but-online-now!

Some teachers complained that some current technologies are not rigorous enough to be useful or said they need a broader range of options for personalization, as well as more opportunities for students to assess their own progress independently as they work. Educators emphasized that digital instructional tools need to be engaging and easy for students to use. It also is important that learning how to use new tools is not very time-consuming for teachers. One teacher observed:

My biggest problem with technology is I'm always told it will take less time, and it will make my job easier—it never does. I don't know if it's because our training isn't good enough ... or the people developing technology for education have no real clue what we need to make things easier. Everything looks pretty, but 90 percent of it is useless, which takes a while to figure out—and more time wasted.

Additional insights from teachers can be found at the end of this report. Collectively, these findings make it evident that a wide range of opportunities exists for product developers to create resources that address the concerns expressed by educators across the country.



HOW CAN PRODUCT DEVELOPERS USE THIS INFORMATION TO MORE EFFECTIVELY SERVE STUDENTS, TEACHERS, AND SCHOOLS?

While hundreds of digital products exist, not all of them are used frequently, and teachers don't always think the ones they use often are effective. These gaps represent opportunities for product developers to address teachers' needs for digital instructional products focused on specific grades, subjects, and product types.

Key Findings

- The research captured 964 student-facing digital products—those used directly by students for learning. About 40 percent of currently available digital products focus on an individual academic subject, with most focused on either math or ELA. About 26 percent of products are content-agnostic platforms (which host or aggregate content).
 - ▶ Three kinds of product gaps exist: availability, usage, and perceived effectiveness gaps.
 - ▶ When asked to list the top five products they direct their students to use frequently, teachers named only 53 percent of the 964 products captured in the survey.
- Even the products that are used frequently are not widely perceived to be effective: only 54 percent of teachers perceive the digital products their students use frequently to be effective.

To learn more about which products teachers actually use and which they think work the best, we asked them whether they thought the products their students use most often were effective. Currently, there is no widely accepted approach for determining the effectiveness of digital instructional tools, and so we asked the teachers to use their judgment to tell us what worked well in their own classrooms. While their responses are not a perfect measure of effectiveness, they do shed light on teachers' perceptions of how and whether digital instructional tools help meet their students' learning needs.

This research identified three primary *product gaps* in the digital instructional resource market:

- *Availability gaps* indicate that teachers report an absence of digital instructional tools.
- *Usage gaps* represent a situation in which teachers do not direct their students to use the available digital products frequently.
- *Perceived effectiveness gaps* occur when teachers do not feel that the digital instructional products that they direct their students to use frequently are actually effective. (The survey did not capture specific types of evidence teachers take into account to determine effectiveness; the survey simply asked for teachers' perceptions of whether the products are effective. This report addresses teachers' perceptions of the effectiveness of product categories rather than individual tools.)

There are clear opportunities for product developers to take action to address these gaps by improving product availability, usage, and effectiveness.

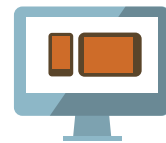
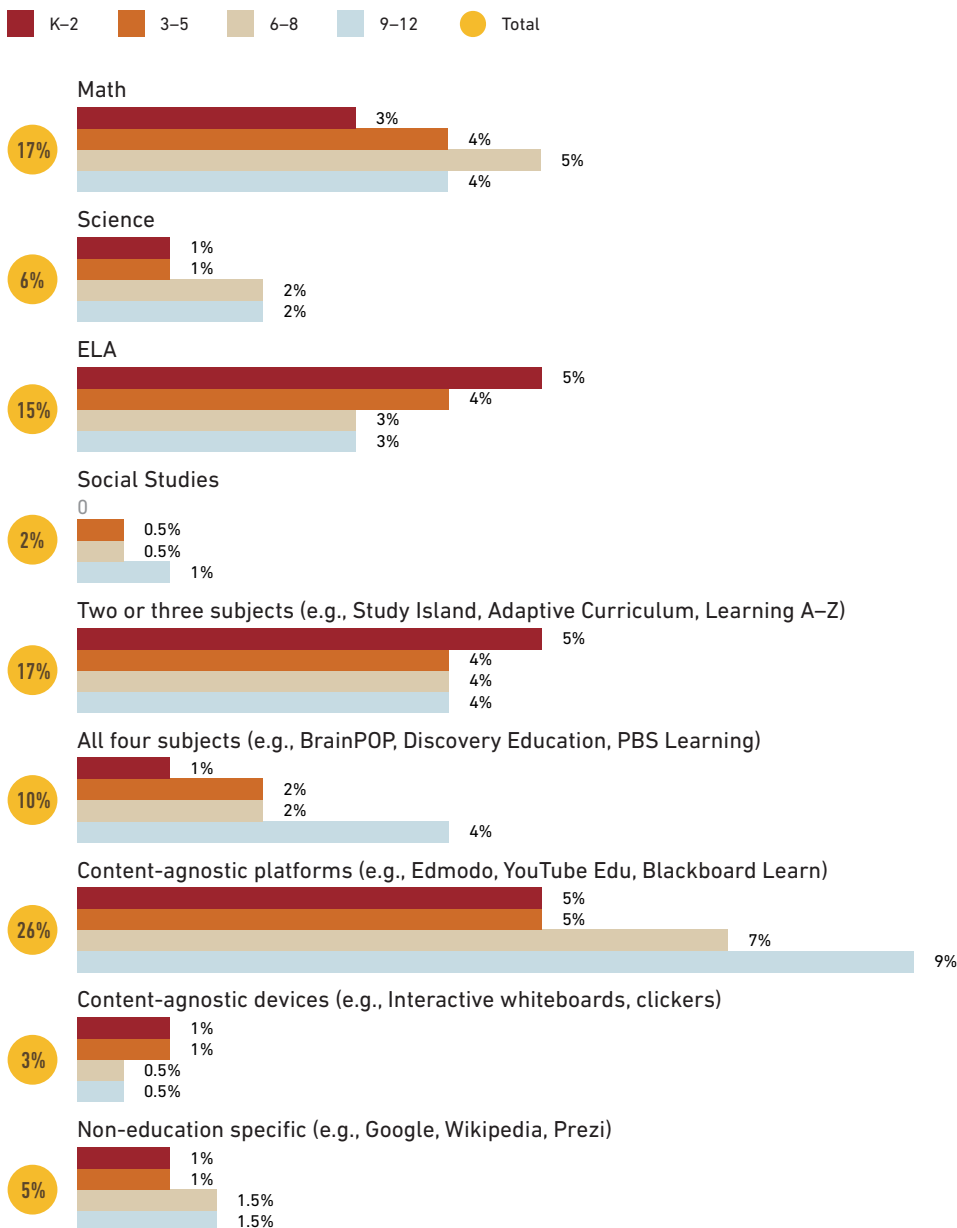
To better understand exactly what teachers think about digital resources, we asked teachers to identify the top five instructional tools their students use frequently. They selected their responses from a drop-down menu of about 870 digital instructional tools previously identified and aggregated using interviews and product sites such as EdSurge and Graphite. We also included a fill-in-the-blank option where respondents could add additional resources they use. Including the open-ended responses, the study identified a total of 964 digital instructional tools, as shown in the graphic on p. 18.

DO TEACHERS HAVE THE EFFECTIVE DIGITAL INSTRUCTIONAL TOOLS THEY WANT?

There are many digital instructional tools available to teachers, but many are not used frequently by teachers, and even the products that are used frequently are not widely perceived to be effective.

Available Digital Instructional Tools by Type

Percent of Total (100% = 964 products)



The survey identified a total of **964** digital instructional products that are available.



40% of products focus on an individual subject—primarily math and ELA.



Content-agnostic platforms make up **26%** of the available products.

These 964 digital instructional products can be organized into six categories:

- Products that cover one individual academic subject (such as Accelerated Reader, Math 180, and Khan Academy)
- Products that cover two to three core academic subjects (such as Study Island, Adaptive Curriculum, and Learning A-Z)
- Products that cover all four core academic subjects of math, ELA, science, and social studies (such as BrainPOP, Discovery Education, and PBS Learning)
- Content-agnostic platforms, which host or aggregate content (such as Edmodo, YouTube EDU, and Blackboard Learn)
- Content-agnostic hardware devices (such as interactive whiteboards, clickers, and other specialized devices)
- Non-education specific tools, which are not specifically designed for educational purposes but that are frequently used for them (such as Google, Wikipedia, and Prezi)

Regarding overall product availability, we found that 40 percent of digital instructional products focused on one subject, with math-only (161 products) and ELA-only (146 products) products having the greatest representation.

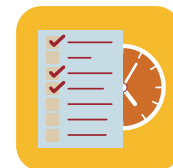
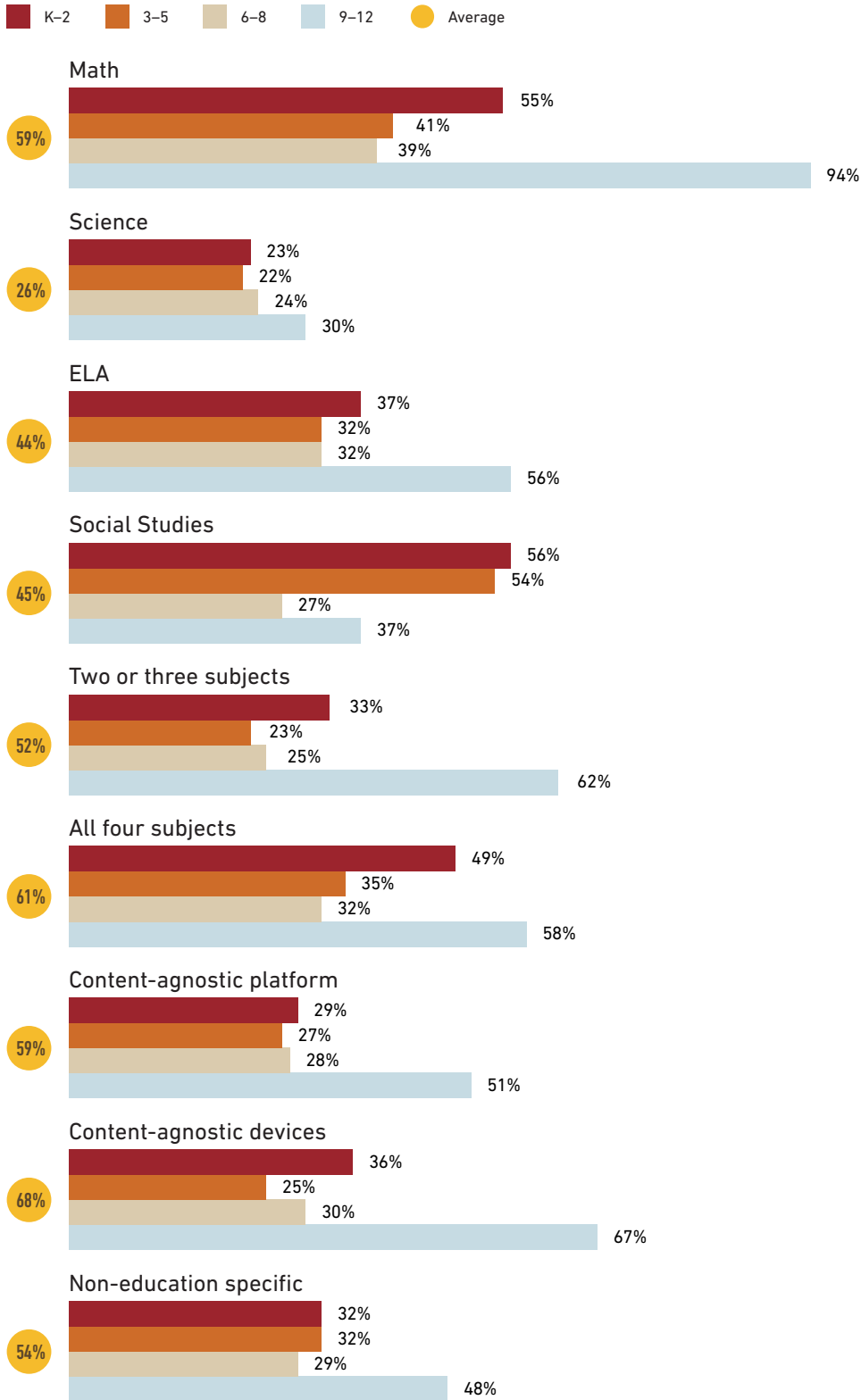
Slightly less than half (47 percent) of the 964 identified digital instructional products that exist in the market today were not mentioned a single time, by any teacher surveyed, as one of the top five tools they direct their students to use frequently (see graphic on p. 21). Only 54 percent of teachers rated the more frequently used tools as effective (see graphic on p. 22). And many of the tools with the highest perceived effectiveness ratings from teachers were used by only a small percentage of the surveyed teachers. A number of factors could contribute to these findings, such as lack of perceived effectiveness, prohibitive cost, lack of sufficient technology infrastructure, and low teacher awareness. All of these factors were cited in other aspects of this study, but further research is needed to definitively pinpoint root causes.



- With the exception of math, individual subject-specific digital products have relatively low usage rates, and products covering multiple or all subjects have higher usage rates.
- High school math-only products have low user perceived effectiveness, with only 47 percent of high school math teachers surveyed reporting math-only products to be effective despite the relatively large number of products available and very high usage levels. (High school math teachers reported using 94 percent of the available products.)
- At the high school level, ELA-only products have slightly above average usage rates (56 percent versus 53 percent, on average, for all products) but are used much less often when compared to high school math-only products. They also have low user perceived effectiveness, with 50 percent of teachers perceiving them as effective. This finding also was confirmed by the responses in the student surveys.
- There are relatively few digital products available in science (53 total products were identified across all grades), but teachers are directing their students to use only 26 percent of the science-only products that are available. Even those that students use frequently are not seen as effective by their teachers, especially in grades 3–8. (Just 48 percent of teachers in grades 3–5 perceived the digital products they used in the classroom as effective, and only 21 percent of teachers in grades 6–8 perceived them as effective.)
- While there are only 20 social studies-only digital products available, 72 percent of teachers perceive them as effective. As one teacher said, “One of the biggest challenges is that social studies is generally left out. There are lots of resources for math teachers, but not really for ancient history.”
- Student surveys indicated that they were slightly more satisfied with digital instructional tools than their teachers, but otherwise they echoed the same themes teachers told us about where there is room for improvement. Like teachers, students in the higher grades tend to be less satisfied with the available instructional offerings, with the exception of content-agnostic devices, such as interactive whiteboards.
- While there are many content-agnostic platforms (251 products), which host or aggregate content, teachers and students don’t tend to perceive them to be effective. (Only 51 percent of teachers and 61 percent of students find them effective.)
- About half of district spending on instructional technology goes to content-agnostic devices, which primarily include interactive whiteboards and clickers. While there are few content-agnostic devices (28 total products across all grades), teachers direct students to use them at high levels, and 67 percent of teachers perceive them to be effective, particularly for lower grades.

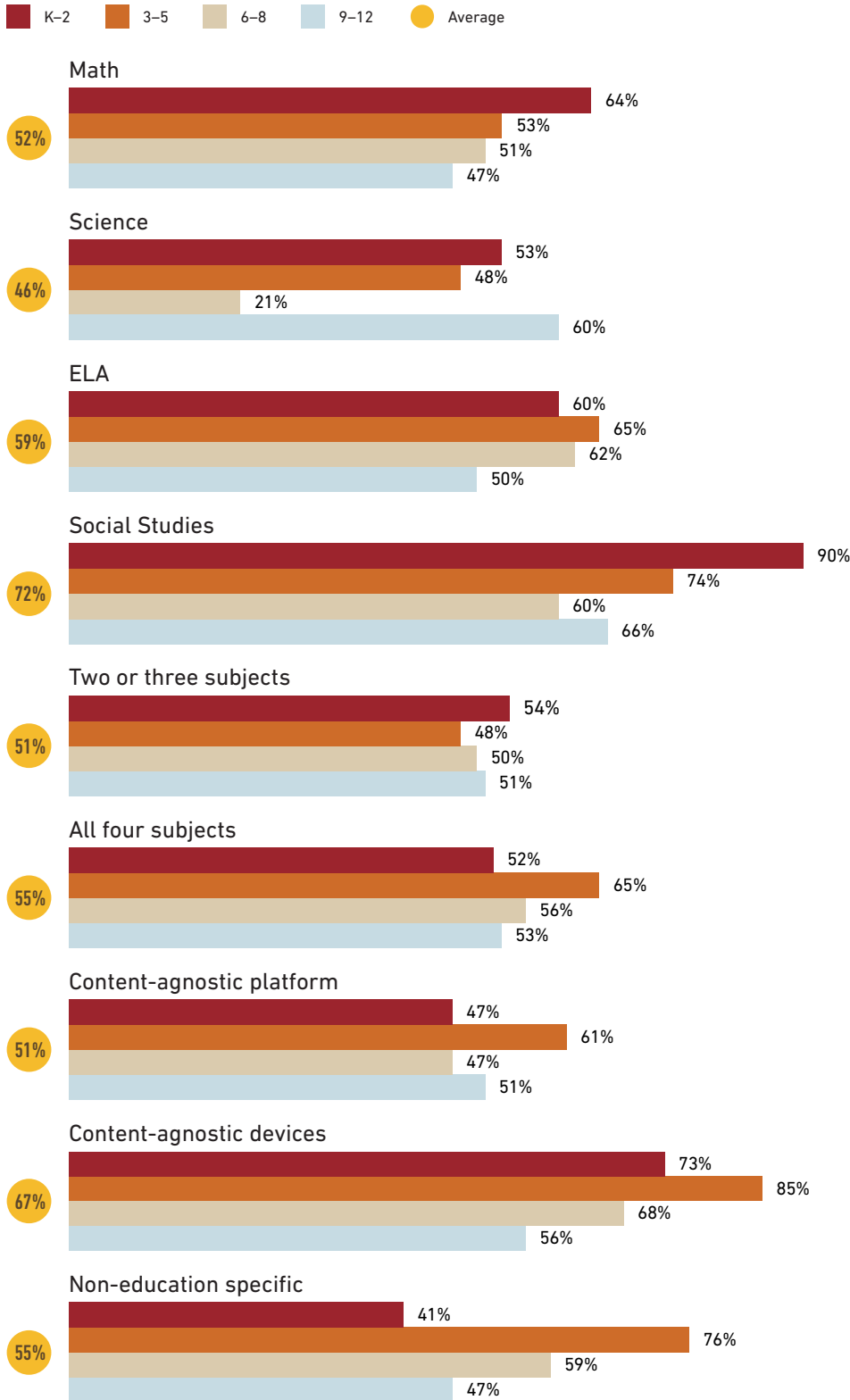


Percentage of Available Digital Products That Teachers Report Using Frequently



Teachers report using frequently only **53%** of the products.

Percentage of Teachers That Perceive the Products They Use Frequently To Be Effective



On average, only **54%** of teachers perceive the products they use frequently to be effective.

WHAT DO WE KNOW ABOUT HOW TEACHERS AND DISTRICTS SELECT AND PURCHASE DIGITAL INSTRUCTIONAL TOOLS?

Across different districts and schools, wide variations exist in who makes decisions about which digital instructional products are purchased and who pays for them. These variations may also affect teachers' perceptions of the effectiveness of the products they use.

Key findings

- Teachers don't use their own money to purchase the majority of the instructional technologies they use with their students. Teachers in this survey said that only 4 percent of the digital products they use are purchased with their own money.
- Teachers are just as likely to find effective the free products they use as they are those purchased for them by their school or district.
- Teachers don't get to choose many of the products their students use, but when they are given the opportunity to select them, they are more likely to report that products were effective. Additionally, the less choice they have, the less likely they are to report that products were effective.
- Teachers said they find out about products primarily by word of mouth from other teachers and administrators, at professional meetings, and online via search engines and social media.
- Districts are spending much more on ELA-only products than is suggested by the extent to which teachers direct their students to use these products frequently or rate them as effective.

To shed light on the current state of demand and get a clearer sense of where it is headed in the future, the study team interviewed curriculum and technology administrators in 16 districts and collected data about district spending on both digital and non-digital instructional materials and the types of funding used to purchase them. We also examined information about these topics from the teacher survey findings.

Interviews with district leaders confirmed what we hear constantly from product developers—that it is often difficult to locate the decisionmakers who determine which digital instructional tools to buy. Given the evolving nature of the demand for digital resources, there is some variation in which divisions or administrators have the primary responsibility for choosing and purchasing digital instructional tools. In some cases, these decisions are made primarily by district curriculum leaders, and in others they are made by district technology administrators. In other instances, decisions are made at the school level by individual teachers or academic departments. We found the districts were about evenly split between those where purchasing decisions are made centrally and those where the decisions are made by individual schools and teachers.

Our research also uncovered insights about who selects and who pays for instructional tools and what impact these factors have on teachers' perceptions of the products' effectiveness. One notable finding is that teachers don't use their own money to purchase the majority of the digital resources they use with their students. Teachers in our survey reported that only 4 percent of the digital resources they use are purchased with their own money. Most of the products they use are paid for by their school (62 percent) or are available for free (28 percent). They also purchase a small proportion of products with money they acquire from other sources, such as grants or funds from parent-teacher organizations (5 percent).

Teachers are just as likely to find effective the free products they use as they are those that are purchased for them by their school or district. Fifty-eight percent of teachers rate free products as effective, just a small fraction less than the 60 percent of teachers who rate products bought for them by districts as effective. They tend to be less satisfied with products they bought with their own money (50 percent of teachers) or had to find outside funding to purchase (49 percent of teachers).

Teachers who can choose more of their products are 30 percent more likely to report they are effective compared to those who have relatively little choice about which products they use. Only one-fifth of teachers select more than half of the products they use; perhaps not surprisingly, this group reports the highest perceived effectiveness. Conversely, one-third of teachers get to choose less than 10 percent of their own products, and this group is most likely to rate them as ineffective.

We learned that teachers' product choices are driven primarily by word of mouth, confirming anecdotal reports. Teachers are actively looking online, searching social networks, and looking to peers and colleagues for recommendations about what digital instructional tools can be most helpful in the classroom.

- 59 percent of teachers said they rely on recommendations from administrators.
- 53 percent search online, with the top sources cited being Google or other search engines, Pinterest, Amazon, Edutopia, and educational conferences or conventions.
- 47 percent of teachers said they rely on recommendations from other teachers.

Similar to teachers, students also rely on word of mouth—both from adults and peers—and search engines when trying to find new digital products.

- 38 percent rely on recommendations from adults, such as a parent or coach.
- 38 percent learn about products from a search engine or social networks.
- 28 percent rely on recommendations from friends.

Across the country, districts are spending inconsistently as they seek new solutions to meet student and teacher needs. They are purchasing many different products; for example, the 16 districts examined in this study collectively purchased more than 183 different products. This figure does not include any free products, products teachers purchased with their own funds, or products teachers purchased with other outside funds.

Every district we studied relies on at least some free products. Most districts use free or reduced-price pilot programs as a way to test products on a smaller scale before they make broader purchases, and so current product usage is actually much higher than district spending rates alone might initially suggest. Another factor in the mismatch between spending and usage is the prevalence of free or discounted products beyond pilots.

In some cases, districts are spending in different areas from those that teachers say they need, as the graphic on p. 25 shows.

- Districts have recently allocated a larger proportion of their spending to ELA-only products than the low teacher usage and effectiveness rates for these products would suggest makes sense. (While 21 percent of total district spending goes to ELA-only products across all grades, teachers reported using only 44 percent of the available products, and only 59 percent of teachers perceive the ELA-only products they use frequently to be effective.) Comparatively, only about 3 percent of recent spending in the districts we studied went to math-only products, despite similar levels of teacher perceived effectiveness. (Only 52 percent of teachers perceive the math-only products they use frequently to be effective.)

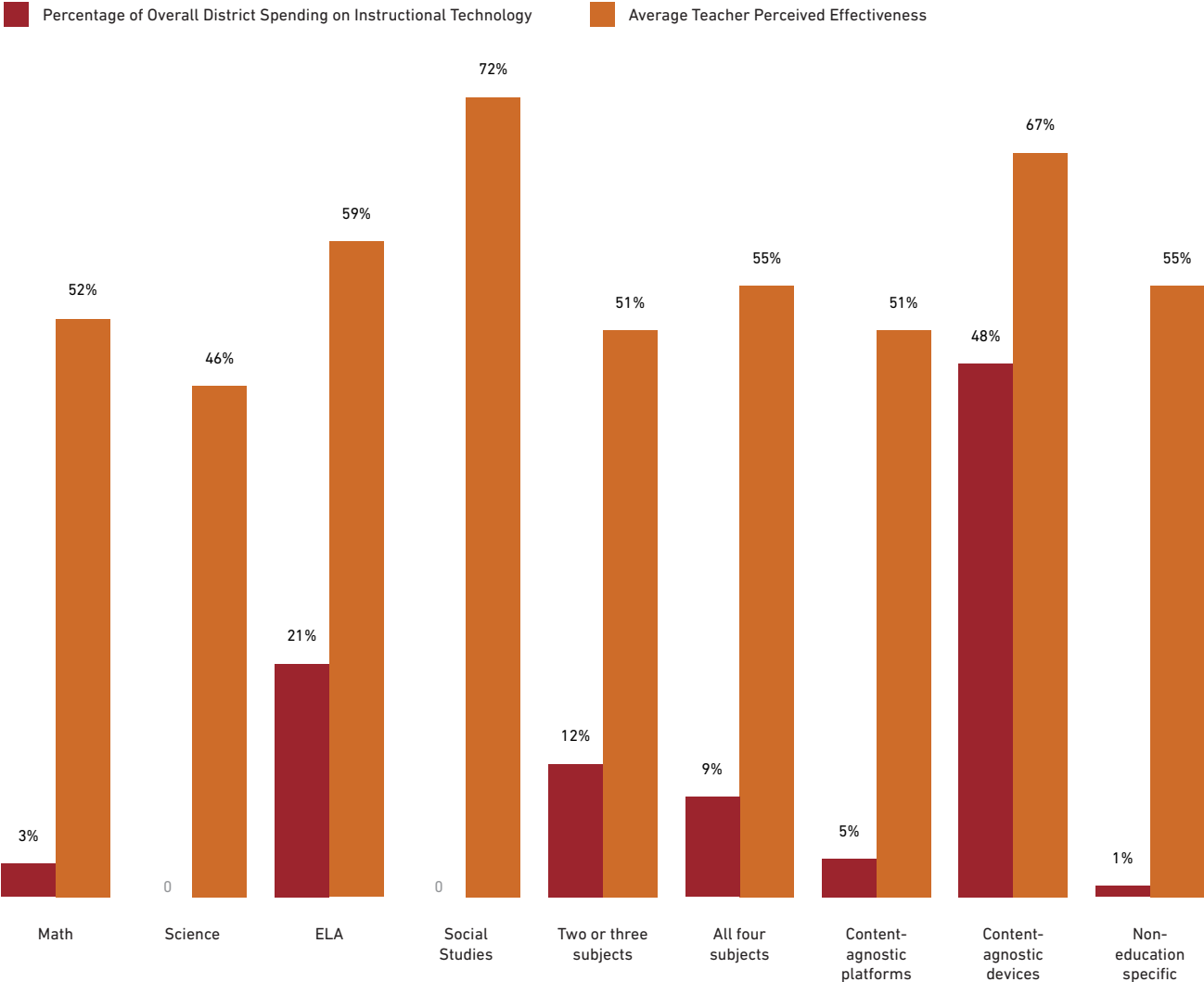
Teachers who can choose more of their products are 30 percent more likely to report they are effective compared to those who have relatively little choice about which products they use.

- Districts have not recently spent much of their instructional technology budgets on social studies-only products, but 72 percent of teachers perceive the social studies-only products they use frequently to be effective.
- Districts also seem to be spending more on products that cover multiple subjects than perceived teacher effectiveness of these products might suggest. While 12 percent of recent district spending went to products that covered two or three subjects, teachers reported using only half of these types of products frequently, and only 51 percent of teachers perceive them to be effective.
- In some other instances, district spending seems more consistent with teacher perceptions. For example, the districts we studied are not buying many science-only digital resources. Similarly, teachers are not using the limited science-only products that are available very frequently, and only 46 percent of teachers perceive the few science-only products that they do use frequently to be effective. Likewise, despite the prevalence of content-agnostic platforms available to teachers, districts only allocated 5 percent of their spending to these types of products. While this might reflect the fact that only 51 percent of teachers perceive these products to be effective, it may also be due to the fact that many products in this category are available to individual teachers for free, and districts and schools are forgoing the option to purchase licenses for the enterprise versions of these platforms.

COMPARING DISTRICT SPENDING TO TEACHER PERCEIVED EFFECTIVENESS

District spending on digital instructional tools is not necessarily aligned to what teachers find effective.

District Spending Versus Average Teacher Perceived Effectiveness



Districts spend much more on ELA products than teachers' perceptions of the effectiveness of these products would suggest.



Half of district spending is on interactive whiteboards and other specialized devices.

WHAT DO WE KNOW ABOUT THE OVERALL MARKET FOR DIGITAL INSTRUCTIONAL TOOLS?

With investors funding more student-facing digital products and districts indicating a desire to try more of them, the future for instructional technology looks bright.

Key Findings

- Investors are funding more and more student-facing digital products—those used directly by students for learning.
- The average investment size has decreased from \$11 million in 2010 to \$2.3 million in 2013 as seed stage capital has grown.
- While seed stage capital has grown significantly over the last three years, Series A capital has remained relatively flat for companies that target K–12 schools in the United States as their primary customers (as opposed to international, direct-to-consumer, and higher education models).
- There are a number of indicators that the market may grow in the next three years: Districts are piloting many digital products, as well as building up their hardware and networking capacities. Districts also are expected to increase their spending on instructional materials after several years of postponing purchases due to economic conditions and the wait for the emergence of materials better aligned with the CCSS and Next Generation Science Standards.

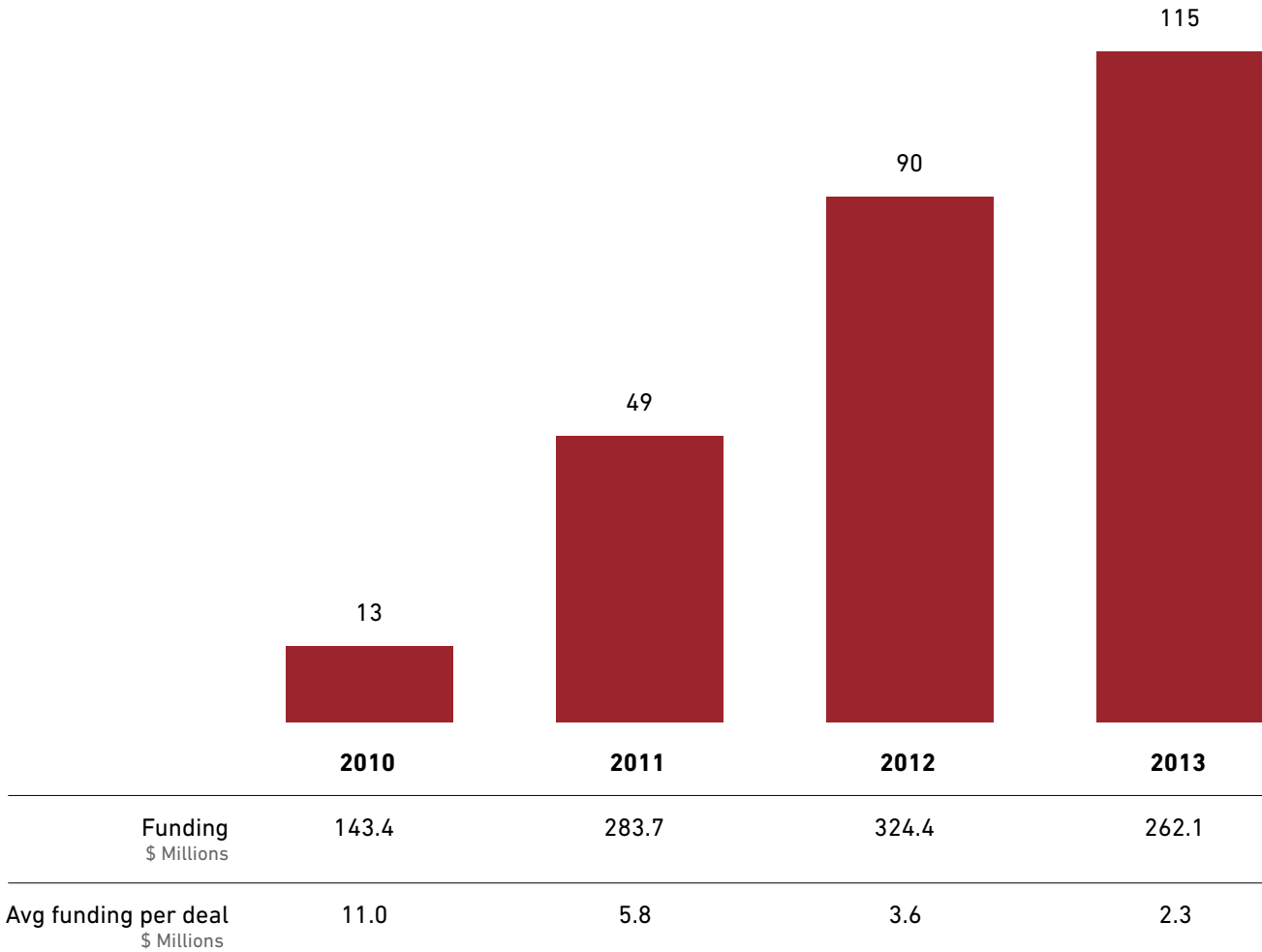
To learn more about the potential growth of the digital instructional tools market, we studied investor activity and district spending trends over the last three years.

- Consistent with other recent studies, investment transaction volume in K–12 student-facing instructional technologies grew significantly between 2010 and 2013, expanding from 13 to 115 deals (see p. 27 for more details).
- Overall investments in K–12 student-facing instructional technologies nearly doubled during the same time period, while transaction volume grew more than eightfold, driving down the average transaction size.
- Much of the increased volume happened at the earliest stages of investment, especially at the seed round. In fact, relative to the general technology industry, student-facing digital products receive disproportionately high levels of seed investment and disproportionately low levels of investment in Series A and beyond, as shown on p. 28.
- The R&D and growth capital available for companies that target schools and districts as customers for the kinds of digital instructional tools teachers say they need has not kept pace with seed funding or other segments of the educational technology market.
- Much of the capital available for instructional technology companies at Series A and beyond is being invested in content-agnostic platforms with direct-to-consumer “freemium” business models and content creators focused on higher education and international markets.

INVESTORS ARE FUNDING MORE K-12 STUDENT-FACING DIGITAL PRODUCTS

Number of Investments

N=267 deals funding 218 products



More products are being funded, but average funding per deal is decreasing.



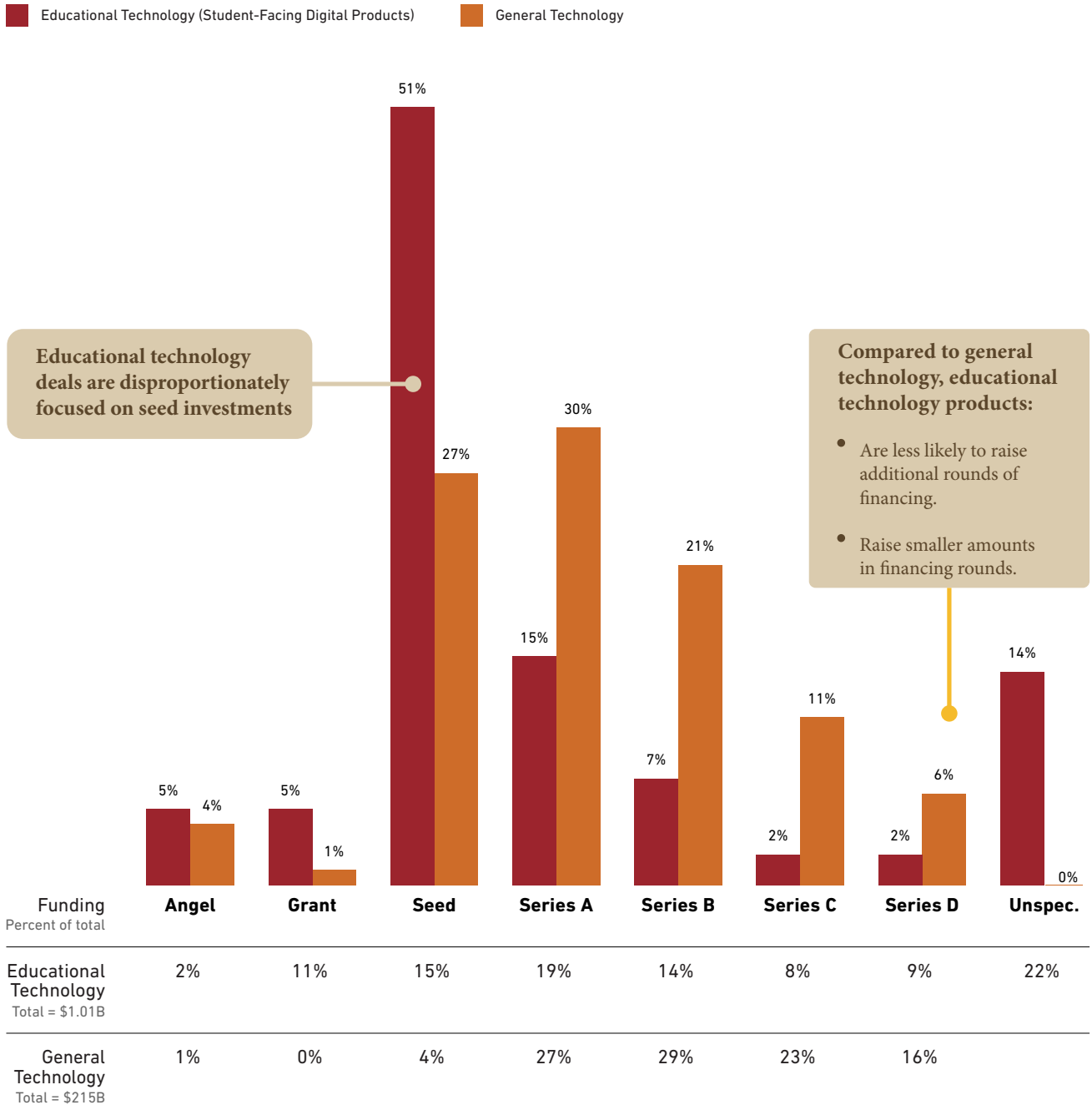
More than eight times as many deals were funded in 2013 as in 2010.

Source: Capital IQ, GSVEdSurge, CB Insights, and CrunchBase

K-12 INSTRUCTIONAL TECHNOLOGY INVESTMENTS COMPARED WITH GENERAL TECHNOLOGY INVESTMENTS

Educational Technology (Student-Facing Digital Products) and General Technology Deals Funded in Each Round

Percent of Deals (N=267 for Educational Technology; N=2,922 for General Technology)



Educational technology deals are disproportionately focused on seed investments

Compared to general technology, educational technology products:

- Are less likely to raise additional rounds of financing.
- Raise smaller amounts in financing rounds.

Source: Capital IQ, GSVEdSurge, CB Insights, Preqin Venture Deals, and CrunchBase

Poised for growth

Looking ahead, the instructional technology market is poised for significant growth. Reasonable estimates show that the market for educational technology products (excluding hardware) saw just over \$2 billion in annual sales in 2012, and this figure grew to \$2.5 billion in 2013.² Furthermore, the following examples from our study suggest that market growth may accelerate:

- Districts are piloting many digital instructional products and say they plan to try more digital content in the future. As one administrator told us, “We are experimenting with many (often free) different products, within the classroom and across the district. Ideally, we will find products we like and purchase them in a more consistent way.”
- In the last few years, districts have been investing in hardware and networking infrastructure to support greater usage. About half of district spending (48 percent) has been on interactive whiteboards and other specialized devices. An administrator explained, “We just approved a special budget to invest millions in infrastructure (networking) and hardware. Once we figure this out, we can then think about and use more digital products in our classrooms.”

- Districts have held off from purchasing instructional materials over the past two to three years, while the economy and state education budgets have been slowly recovering. Districts have also been waiting for the emergence of new instructional tools more closely aligned with the CCSS and Next Generation Science Standards. Significant spending has been deferred as districts have been waiting to see what happens on both fronts. A typical comment came from one district administrator, who said, “We haven’t bought textbooks since the recession ... but we need to refresh them soon, and would like to go digital if we can support it and if it is economical for us to do so.” Many districts now seem positioned to make significant new purchases over the next three years, as the economic outlook has improved and as they have had time to identify the most suitable products for standards implementation.

The extent of growth in the market may vary, depending on how rapidly and aggressively school districts move to replace print products with digital products.

² *The Complete K–12 Report*, Education Market Research/Simba Information, 2014.



AREAS FOR FURTHER STUDY

Many of the study's findings raise additional questions, and examining them may help better meet the instructional technology needs of teachers and students. The following questions may warrant further exploration.

- While students are the ultimate end users of digital instructional tools, teachers and administrators typically decide which tools students use in schools. Are the benefits teachers seek from tools and their views of the tools' effectiveness closely aligned with their students' opinions?
- How do teachers define whether digital instructional tools are sufficient to help their students meet college- and career-ready standards?
- Why did teachers report frequently using only 53 percent of available digital instructional tools? Have they tried other products but don't view them as effective? Do they find some products too expensive? Are schools not procuring some products or not making them available to teachers? Is the lack of compelling ways to sample certain products deterring teachers from using them more frequently? Or have teachers not tried these products simply because they haven't heard of them?
- How are teachers defining product effectiveness? Does this definition change for different product types, and if so, how? How do professional development and implementation correlate with whether teachers perceive products as effective? To what extent does a product's degree of integration (for example, its compatibility with other products and data interoperability) contribute to perceived effectiveness?
- To what extent are teachers' perceptions shaped by the limits of what existing technology can do? In other words, how much of what teachers say they want from technology is influenced by what teachers can or can't do with the technology they already have?
- What procurement practices are used by the districts in which many teachers rate the technology they use as effective? Do these districts directly involve classroom teachers in the decisionmaking process? If so, how, and what have these districts found to be the most useful approach? To what extent are districts taking into account both the perceived effectiveness of a product and its cost to ultimately determine which products to procure?
- How do product developers interpret and prioritize the different kinds of gaps (availability, usage, and perceived effectiveness) identified by teachers in our survey?
- What are teachers' perceptions of other types of digital products not covered in this study (e.g., those used for professional development, formative assessment, or observation and feedback)?
- Other industries that have experienced low levels of customer satisfaction in their early years have seen significant improvements over time. Are there specific lessons district leaders, product developers, investors, and others can learn from other industries about how to improve customer satisfaction?



CONCLUSION AND RECOMMENDATIONS

This research represents teachers' insights about their instructional technology needs—information that is valuable for product developers, school district leaders, and investors.

It validates what we have been hearing anecdotally in recent years: that information about what is most needed in the classroom had not been easily or widely shared. And the study moves beyond this anecdotal evidence, providing more concrete evidence of the existence of oft-cited barriers, in particular the disconnect between teachers and those who develop and buy instructional tools for them.

Providing teachers with the effective instructional resources that they need—and that are effective—requires a deliberate effort across the education ecosystem.

Above all, we encourage product developers, district leaders, and investors to bridge the gaps by listening closely to teachers. To ensure that instructional resources reach their intended impact, all three groups must use their collective resources to tackle the important challenge of improving existing products and creating new ones that better meet the needs of teachers and students.

Recommendations for product developers

- Build products that can be used for core instruction, are affordable, fully support student mastery, and help today's teachers teach college- and career-ready standards.
- Prioritize product features that facilitate the six instructional purposes teachers are most looking for help from digital products.
- Consider the specific product gaps that teachers say currently exist in availability, usage, and perceived effectiveness.
- Spend more time in classrooms to understand teacher and student workflow and which use cases matter most to them.
- Ask teachers and students for their perceptions of which instructional tools are most effective and why.
- Pay attention to how and where teachers find out about products.



Recommendations for districts and school networks

- Give teachers the flexibility to select resources for their classrooms and involve them in any system-level procurement processes, to incorporate their nuanced understanding of college- and career-ready standards and the extent to which available products are effective and help them teach standards.
- Remember that teachers who have more of a voice in selecting the products they use are more likely to perceive the products to be effective.
- Evaluate products based on the six instructional purposes teachers identified as important.
- Invite product developers to engage teachers in their development process by, for example, inviting developers to see how teachers and students really use technology on a daily basis in schools. Such efforts may help bridge the gaps between what is created and what teachers and students want and need.

Recommendations for investors

- Fund digital instructional tools that are closely aligned with college- and career-ready standards to address the standards gaps teachers identified in this study.
- Prioritize investments in companies that build features to address the six instructional purposes for which teachers say they use digital products.
- Look for investment opportunities that could fill availability, usage, and perceived effectiveness gaps.
- Support entrepreneurs' efforts to create business model innovations that make it possible to build sustainable companies that serve K–12 schools and districts, not just direct-to-consumer models.



TEACHER VOICES

As part of our research, more than 3,100 teachers nationwide shared their insights and opinions about the value of digital instructional tools. Their comments on the state of educational technology speak to specific needs, to the challenges of implementation, and to the continuing gaps between what educators need and the tools that are currently available. The selection of quotes below was taken from more than 800 free responses from our teacher survey.

“There are plenty of random tools available. We need to improve the comprehensive, end-to-end solutions, so that teachers don’t have to do as much to put things together themselves.”

“Digital products have to be designed so that the teacher does not have to spend hours and hours learning how to use them. Teachers do not have the luxury of lots of discretionary time to learn how to use a tool.”

“There is so much out there, and I honestly don’t have time to filter through it. If there was an effective, efficient way to find good programs, I believe more teachers would use them.”

“The biggest problem I have with digital resources is finding well-designed ones, then finding ones for the right topic and age group.”

“Students need opportunities to explore and make inferences. Having resources that allow more open-ended exploration and the opportunities for students to ask questions and search for answers in order to create well-thought-out and rationalized claims. The act of ‘doing science’ is often limited due to space or resources, but creating more online resources that can simulate inquiry-based experiments and lessons would be helpful.”

“In my opinion, many currently available options do not feature enough rigor to be useful. I would also appreciate a wide range of differentiation options, and plenty of opportunities for students to self-assess as they work.”

“Resources need to be developed that are specifically designed to operate on smartphones. Many of my students don’t have access to a computer at home, but most have access to a phone. If we can use phones effectively, learning will increase.”

“Companies need to reach out to the principals of individual schools and not just to the school district offices; I’ve been in the resources room downtown in the special education offices, and there are interventions piled upon interventions that no one ever uses because someone downtown dictates what is used. I know they are looking to see what is most effective, but sometimes what is effective for some students is not effective for all, like mine, who have issues focusing and learning like one might in a traditional setting.”

“I think training is needed for teachers. A one-day workshop will not cut it. Don’t sell products and not be willing to show how to use them. I don’t want to [get] frustrated with a product—that will discourage me from using it.”

“Coordinated training time for teachers—so many of us do this on our own and would love time to share with other teachers. Or we’d love to search, learn, and train together.”

“Develop more cloud-based programs that allow students to use them on all devices (phones, laptops, and desktops).”

“Student learning is the goal. It must remain the goal. We put a man on the moon largely with slide rules and calculators, so it’s hard to argue that the technology is essential for learning. It must enhance the learning experience in order for it to be implemented in my class—I don’t do technology for the sake of the technology. ... Every resource is available to me ... but frankly a lot of technology is more ‘gee whiz’ and fails to meet the criteria of enhancing student learning.”

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Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Based in Seattle, Washington, the foundation is led by CEO Jeff Raikes and Co-chair William H. Gates Sr., under the direction of Bill and Melinda Gates and Warren Buffett.

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