RESEARCH REPORT

From Distraction to Deeper Learning

How hardware keeps students engaged and connected

logitech | FullScale

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Executive Summary

Artificial Intelligence (AI) currently sits at the center of most national conversations about education and technology. Although important, this narrow focus risks overlooking core foundational elements of the edtech environment, particularly regarding educators' access to and use of hardware and accessories to meet learners where they are.

Logitech and FullScale conducted a national study with 676 K-12 leaders and educators to explore how hardware and accessories serve as catalysts for innovation in teaching and learning, and the extent to which they are recognized as essential tools for fostering engagement, creativity, and deeper learning. Educator responses reveal that the right technology setup, with hardware and software working together, extends students' focus, deepens learning, and supports authentic, personalized instruction across K–12 classrooms.

Key Findings

The Engagement Challenge

Short attention spans remain among the greatest barriers to deeper learning. Educators say maintaining students' focus is one of their toughest classroom challenges. Distractions from personal devices, peers, and the lower appeal of non-digital activities make it difficult for students to stay cognitively engaged long enough for meaningful learning to occur.

In fact, most teachers report that learners stay focused longer with digital tools, and that the difference is significant.

- In grades 3–5, 41% of educators said digital tools hold attention for over 20 minutes, compared with only 8% for non-digital tasks.
- By high school, digital tools still nearly doubled sustained attention (37% vs. 18%).

The Digital Difference

Digital experiences are not just more engaging, they are more enduring. Teachers report that digital tools transform brief bursts of attention into longer, more productive learning windows. Students are more likely to stay "in flow" with interactive, visual, or multimedia activities, turning engagement from a momentary spark into sustained cognitive effort. *"The students love to write on [the interactive display]. That's a huge deal. If we're reading something on paper, only a few hands go up. But when I ask someone to come up and write on the smart board, every hand goes up, even my reluctant learners."*

Hardware: The Missing Link

Hardware helps turn digital potential into deeper learning.
Educators overwhelmingly agree: technology's impact on attention and engagement depends on the tools as much as the software.

When asked whether integrating hardware and software improves attention on challenging tasks, over 60% said they are equally useful, depending on context. Hardware and accessories—like cameras, headsets, and interactive displays—give students the tactile, visual, and auditory channels that make learning stick. They transform passive consumption into active participation.

Hardware enables deeper learning across a range of teaching practices:

- Direct instruction (66%)
- Whole-class discussion (61%)
- Project-based learning (57%)
- Personalized learning (57%)
- Collaborative learning (56%)

Personalized at Scale

Hardware helps teachers personalize learning at scale.
While software often gets credit for enabling personalization, educators in this study see hardware as equally essential. With the right tools, teachers can adapt instruction to individual needs, enable student-created content, and make learning more equitable, ensuring that every learner has a voice and a view.

The New Digital Pedagogy

Teachers are infusing classroom practices with digital culture.
Educators are not just using technology, they are designing with it. They are developing multimedia fluency and digital design skills that make lessons more personal, accessible, and relevant. By blending instructional intent with the familiar formats of digital culture, teachers are meeting students where they are and taking them further.

Introduction

Today's learners engage with technology in fundamentally different ways than previous generations. Digital immersion is not simply changing the tools students use; it is reshaping how they receive and process information.[1] Constant exposure to fast-paced multimedia creates increased cognitive, emotional, and social demands on their attention.[2] This evolving learning landscape calls on educators to design environments that mirror how today's students interact with information to foster more engaging and impactful learning experiences.

Deeper Learning and Edtech

Of course, technology alone does not drive deeper learning.[3] Rather, it is pedagogical practices that are grounded in the science of learning and complemented by the right technological tools that enable it. That science tells us that students learn best when they are actively engaged in their learning, when they take ownership of their learning in ways that enhance their agency,[4] pursue personalized pathways to mastery,[5] and progress at a pace that meets their individual needs.[6] Achieving this type of deeper learning at scale requires tools that support collaborative inquiry, personalization, real-world problem-solving, and authentic assessment.[7]

Across the field, every day, educators demonstrate creativity in integrating a range of tools into classroom practices, tools such as edtech software, hardware, accessories, and AI, though the options available often depend on local resources. In this study, we focus on hardware and accessories. Though often seen as supplemental, when used well, they can be enablers of important pedagogical shifts. For example, modeling tools like document cameras and webcams can improve teacher clarity, while student input tools like headsets with microphones and keyboard cases can empower learners to express their thinking autonomously and actively.

Despite the promise, however, little is known about how these tools are being used to advance deeper learning with today's learners. Logitech partnered with FullScale to explore this question with district leaders, technology coordinators, and educators across the country. Building on Logitech's commitment to evidence-based design for learning tools, the study sought to understand how hardware design influences focus, agency, and accessibility in classrooms.

We began with the hypothesis that today's learners have shorter attention spans,[8] which limits their ability to stay engaged in the more cognitively complex learning processes that characterize "deeper learning."

As a result, educators need a mix of digital tools—including interactive displays and document cameras—not only to capture students' attention, but also to engage them in ways that cultivate agency, curiosity, and critical thinking, thus fostering deeper learning.

The following questions guided our study:

- What are the barriers to keeping today's learners focused and engaged in deeper learning?
- To what extent are hardware and accessories being used in ways that resonate with today's learners who have grown up in the digital age? What are the barriers and enablers?
- Have teaching practices kept pace with the ways today's learners like to consume content and learn?

The study included 567 participants from a non-probability panel and 109 participants from direct outreach; 676, total. These respondents were grouped into three role categories: 1. Classroom instructors (n=330, 49%); 2. School administrators (n=290, 43%); and 3. District staff (n=56, 8%).

The study achieved broad geographic coverage, with participants from 47 U.S. states, the District of Columbia, and U.S. territories. The study included five educators who were also interviewed to gather more in-depth perspectives.

See Technical Endnote for more information.

Glossary of Hardware Solutions and Accessories

Interactive displays: Large, mounted touchscreen devices used for presenting and interacting with digital content

Speakers: Devices that convert electrical signals into audible sound

Headsets: Wearable devices that combine headphones and a microphone for listening and communication

Document cameras: Cameras with built-in lighting that project non-digital materials onto a screen for presentations or instruction

Whiteboard cameras: Cameras designed to capture content from whiteboards or interactive displays

Webcams: Cameras built into or connected to a computer or device, used for capturing video for online communication

Video conferencing solutions: Integrated hardware and accessories that enable high-quality virtual meetings and collaboration

Styluses: Pen-shaped tools for writing, drawing, or navigating on touchscreens

Standalone microphones: Independent devices that capture sound for amplification, recording, or transmission

Alternative keyboards: Specialized keyboards designed to support individuals with diverse accessibility needs

Keyboard cases: Protective cases with integrated keyboards that attach to tablets

Findings

The findings of this research are organized by research questions. The first set of findings explores what survey respondents report are the greatest challenges to student engagement in learning: student attention spans. The second set of findings explores both access to hardware and accessories and how they are integrated into educators' pedagogical strategies for deeper learning. Finally, the third set of results explores how educators have kept pace with new technologies and applications to increase student engagement and deepen their understanding and mastery of concepts. It also examines the enablers and barriers to educators' practice shifts.

Research Question 1: The Distraction Challenge and the Digital Response

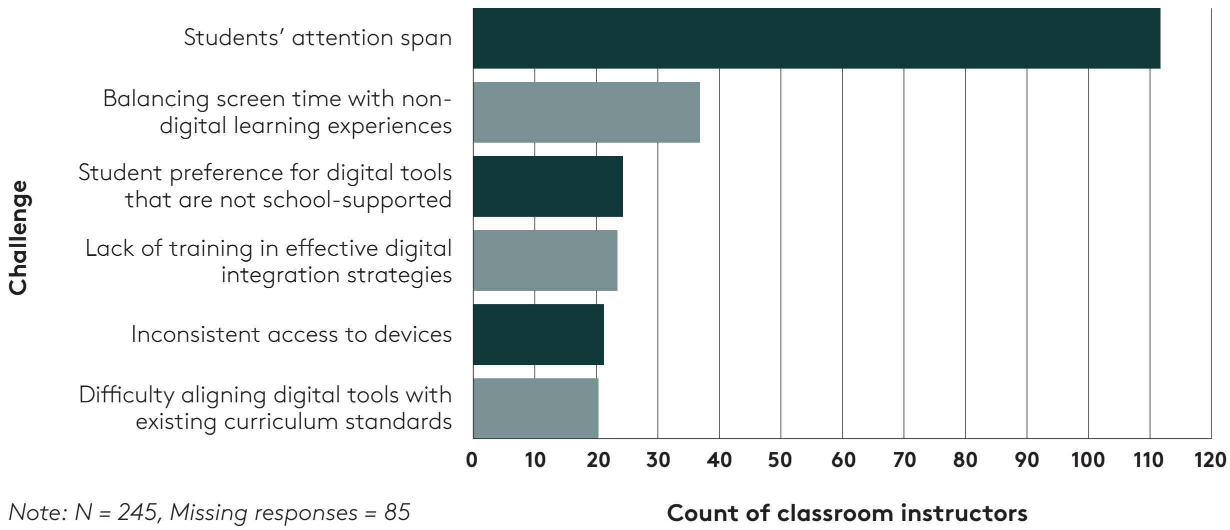
Today's learners navigate complex digital environments that place increased demands on their attention. Because students can only process a limited amount of information at once,[9] the fast pace and volume of digital content can easily overwhelm their focus. Without structured support, this can hinder students' ability to sustain focus, particularly on moderately to highly demanding mental tasks such as problem solving. This does not account for other environmental and personal factors (e.g., trauma) that inhibit working memory and associated executive functions.

Simultaneously, the rise of digital offloading (the use of external digital tools as a substitute for internal memory[10]) may reduce students' desire to internalize content, reshaping how long-term memory is used and how learning occurs. These shifts present challenges for engagement and call for learning environments that are deliberately designed to support focused, sustained attention for increasingly complex learning tasks.

Educators perceive students' attention span as the most significant challenge to deeper learning.

When asked to identify the most significant challenge in keeping students engaged in learning, classroom instructors almost universally pointed to students' attention span as the primary concern (n=115, 47%). As shown in Figure 1, a much smaller share of respondents reported balancing screen time with non-digital activities as a secondary challenge (n=38, 15%).

Figure 1. What is the top challenge you face when trying to keep today's learners engaged (i.e., invested, enthusiastic, actively participating) in learning?



Note: N = 245, Missing responses = 85

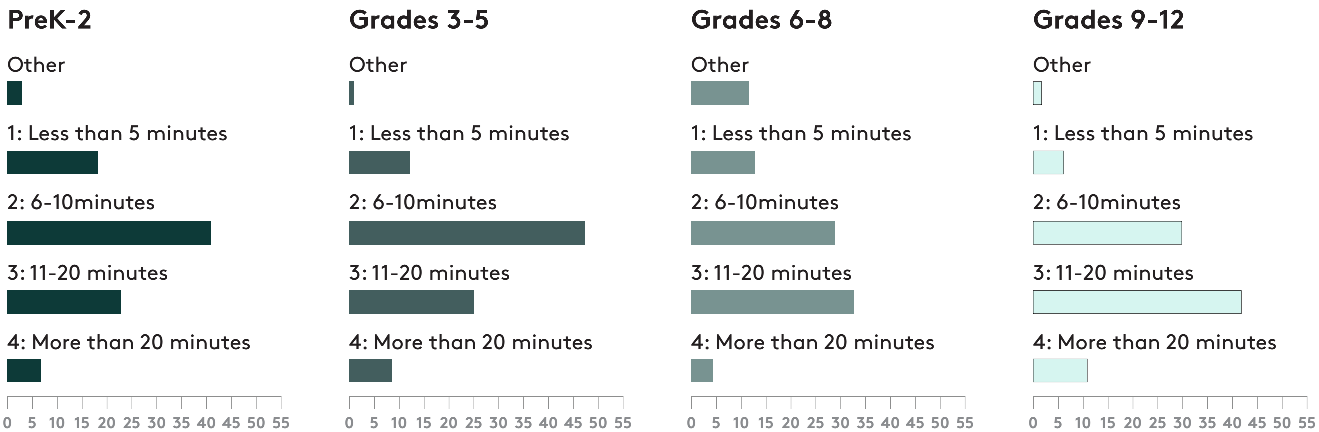
Qualitative data illuminate student attention span as a real perceived barrier to deeper learning for some educators. As one preK-2 teacher shared, "The students have exceptionally short attention spans... If you can't get or keep their attention you likely are not getting to the 'real' or deeper learning portion of the lesson." In this case, the cause for the short attention span may be more developmental than environmental.

By contrast, some educators framed attention as a deficiency in students themselves. As one middle school teacher expressed, "Students are coming to me with such limited knowledge... They have no attention span and no motivation." This perspective reflects a deficit framing that positions learners' attention as a personal failing rather than a product of developmental or contextual factors.

As expected, attention span varies by grade level, with younger students perceived as having shorter attention spans than older students.

We were curious about what constitutes a "short"—or, in the words of the one preK–2 teacher, "exceptionally short"—attention span. Classroom instructors reported that students can sustain attention on a moderately to highly demanding task for about 6 to 20 minutes before becoming distracted. We anticipated that this range might vary by grade level, so we examined attention span perceptions by classroom instructors' grade assignment. As shown in Figure 2, educators reported that elementary students (grades preK - 5) sustain attention for a shorter duration (6–10 minutes), while middle and high school students can typically remain attentive for longer (11–20 minutes).

Figure 2. When students are working on what you consider moderately to highly demanding learning tasks, typically how long are they able to maintain attention before becoming distracted?



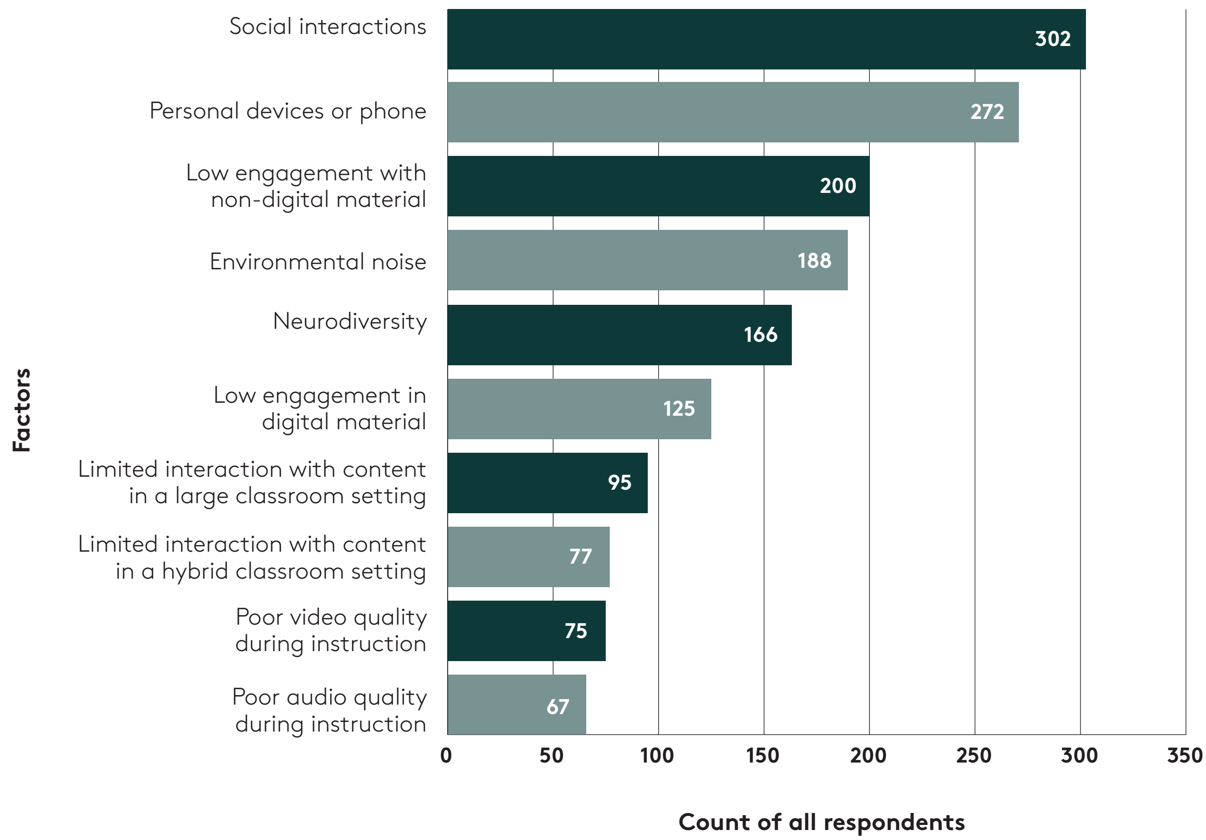
Note. Classroom instructors were permitted to select all grade bands relevant to their teaching responsibilities. As a result, a single educator may be represented across multiple grade bands, and the data may reflect overlapping perspectives rather than distinct respondent groups.

Respondents indicated that students are their peers' greatest distraction and that personal devices further limit their attention span.

If classroom instructors view a short attention span as the primary challenge to deeper learning, what contextual factors might explain this? Survey results point to several influences, with the following emerging as the most impactful in determining how long learners can sustain attention during moderately to highly demanding tasks (Figure 3).

- Social interactions (selected by 302 respondents, 61%)
- Personal devices or phones (selected by 272 respondents, 54%)
- Low engagement with non-digital materials (selected by 200 respondents, 40%)

Figure 3. What factors most influence how long most learners sustain attention during what you consider moderately to highly demanding learning tasks?

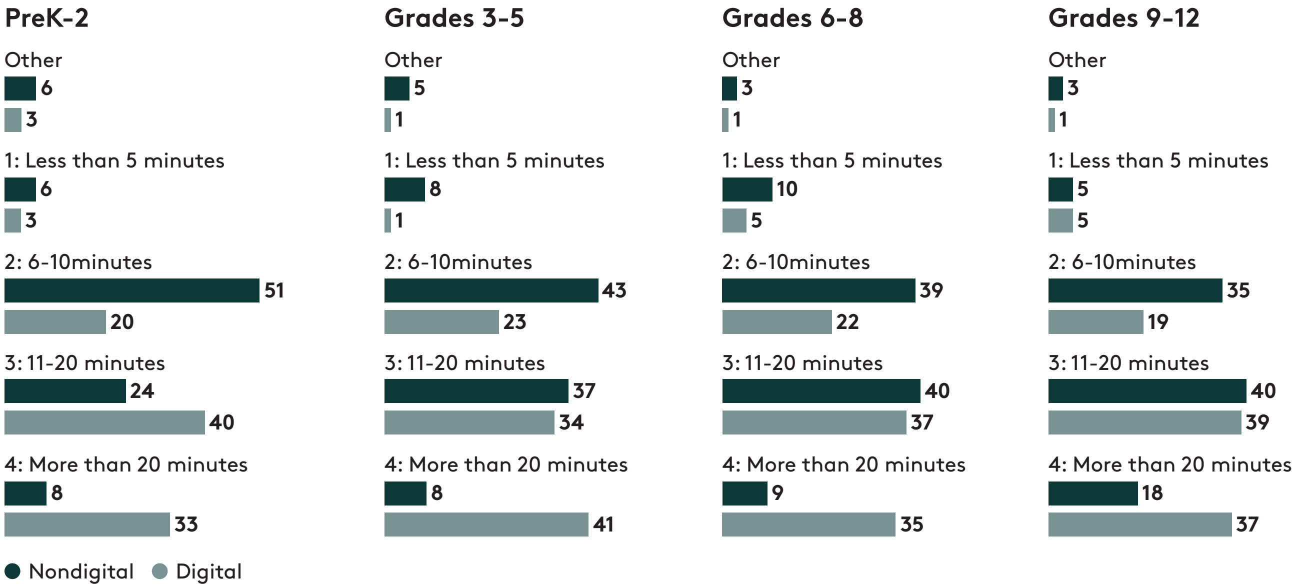


Note: N = 500, Missing responses = 176

The earlier finding also underscored the tension educators face in balancing digital and analog learning experiences. It is therefore unsurprising that low engagement with non-digital materials ranked among the top three factors perceived to impact sustained attention. In fact, respondents report that learners can stay cognitively engaged in digital activities (e.g., watching videos, educational games) longer than in non-digital activities (e.g., silent reading, written work, paper worksheets).

As shown in Figure 4, across grade bands, educators consistently reported that students remain engaged longer for digital activities. The pattern is especially pronounced in the early grades. For example, among preK–2 learners, just 25% of respondents indicated that students could sustain engagement on non-digital tasks for 11–20 minutes, compared with 40% when digital activities were used. Similarly, only 8% of educators believed preK–2 students could stay engaged for more than 20 minutes with non-digital materials, while 33% reported that digital materials enabled longer engagement.

Figure 4. How long can most learners you work with remain cognitively engaged in a non-digital/digital learning activity (i.e., silent reading, written work, paper worksheets) before disengaging?

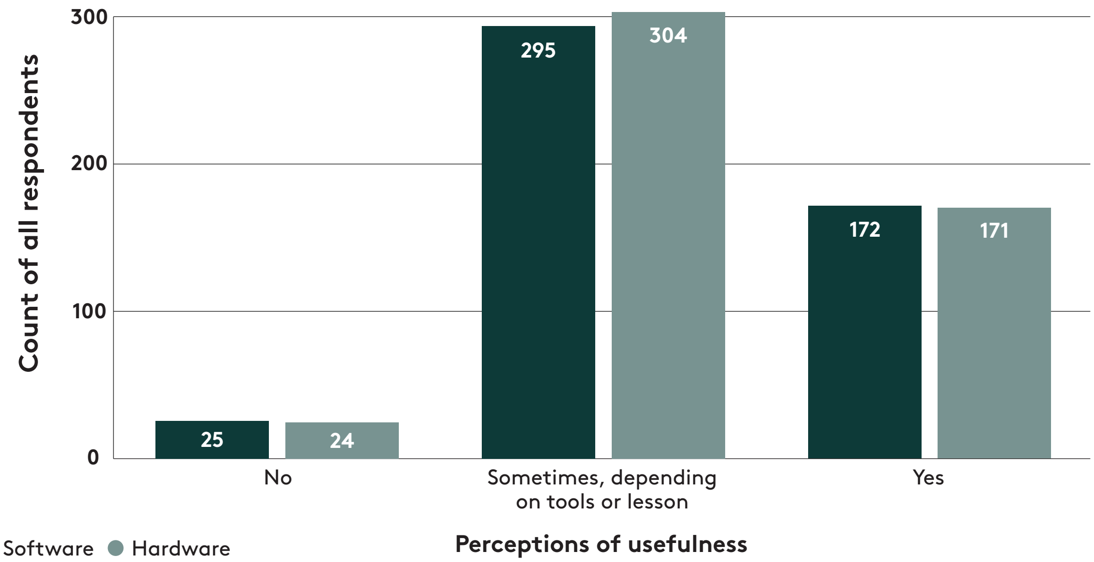


The additive value of digital learning activities is also visible in upper grades, though the contrast is less stark. In grades 3–5, 41% of educators indicated that digital tools held learners' attention for more than 20 minutes, compared with only 8% for non-digital tasks. By grades 6–12, the gap narrows, but digital tools still shift attention toward longer spans. For instance, 37% of high school classroom instructors said students stay focused for more than 20 minutes with digital tools, versus 18% without them.

The dominant narrative in student-centered learning emphasizes software like adaptive platforms as the primary drivers of engagement. However, practitioners in this study highlighted that hardware can be equally useful, with its value depending on the context of the lesson and the tool employed.

As shown in Figure 5, when asked whether integrating hardware and software into instruction improves most learners' attention on moderately to highly demanding tasks, the largest share of respondents indicated that hardware (n=304, 61%) and software (n = 295, 60%) are equally useful "sometimes," depending on the specific tool or lesson context (Figure 2).

Figure 5. Of the following technologies, which one do you think has the greatest potential to be used in a way that holds the attention of most learners during what you consider a moderately to highly demanding learning task? (Select one.)



Note: N software = 492 (Missing responses = 184), N hardware = 509 (Missing responses = 167)

Digital solutions that enable interactive presentations are overwhelmingly viewed as having the most potential for expanding students' capacity to sustain attention during cognitively demanding tasks.

When asked which hardware and accessories hold the greatest potential to support students' attention during moderately to highly demanding learning tasks, of the 271 classroom instructors, 190 (70%) selected interactive displays as the top solution. This was followed by:

- Headsets (n=40, 15%)
- Content or document cameras (n=35, 13%)
- Video conferencing hardware (n=29, 11%)

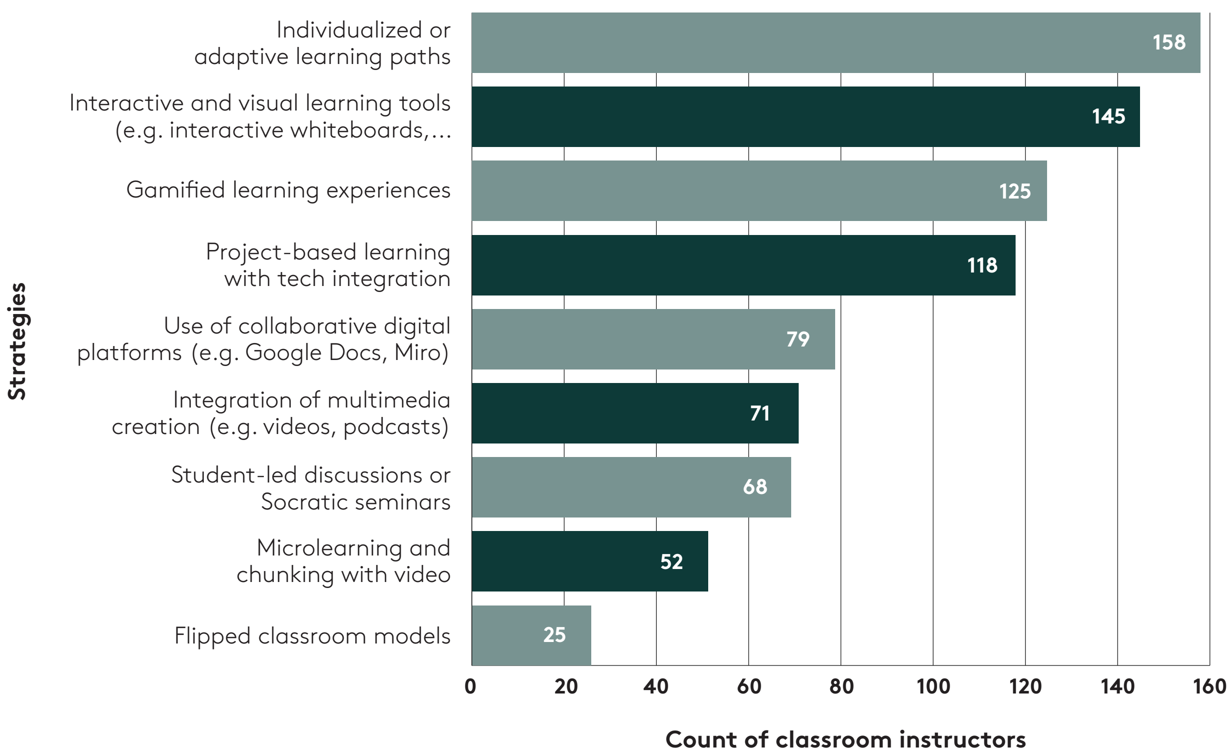
So far, the findings suggest that educators see students' short attention spans—exacerbated by peer distractions, personal devices, and the lower appeal of non-digital activities—as the greatest barrier to deeper learning. These perceptions vary by grade level: younger students are thought able to sustain attention for 6–10 minutes, while older students are seen as capable of maintaining focus for 11–20 minutes.

Importantly, respondents reported that digital activities add instructional value by extending the amount of time learners remain cognitively engaged. In some cases, this shift moves students from brief engagement into longer, more productive learning windows. Educators also see promise in the use of hardware and accessories for this purpose, with their impact depending on the tool and the lesson context.

Research Question 2: Deeper Learning in Today's Classrooms

As shown in Figure 6, when asked which strategies most effectively support deeper learning, classroom instructors most frequently cited individualized or adaptive learning paths (n = 158), interactive and visual learning tools (n = 145), gamified learning experiences (n = 125), and project-based learning with tech integration (n = 118).

Figure 6. Which of the following have you found most effective in promoting deeper learning among today's learners? (Select three.)



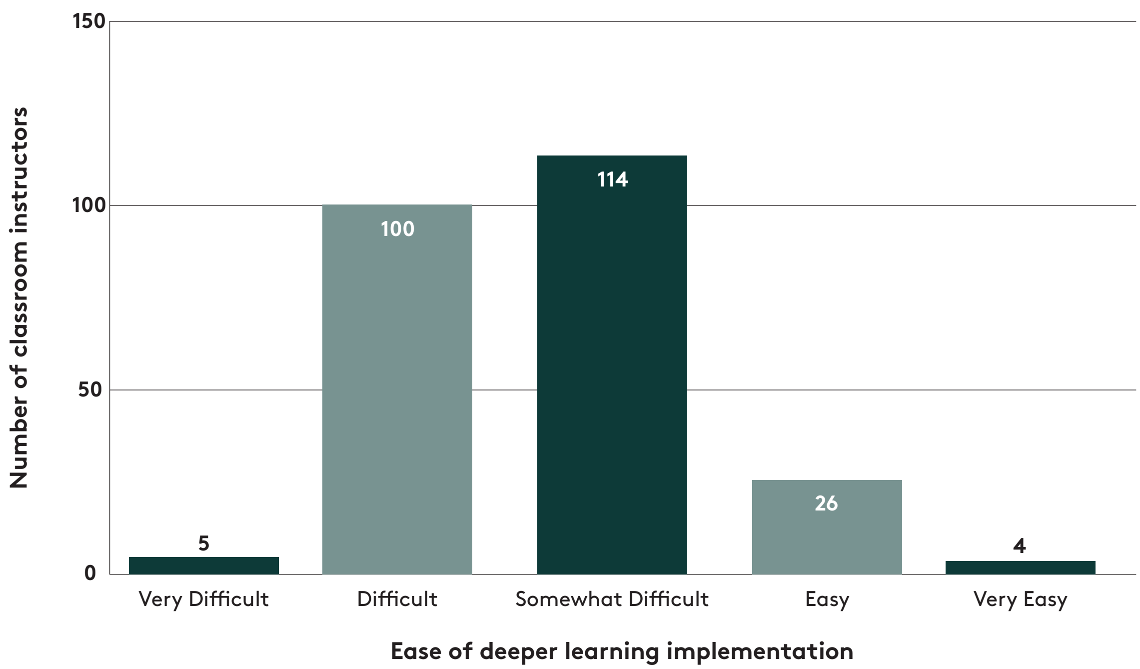
Note: N = 251, Missing responses = 79

Survey respondents universally (91%) reported a belief that technology integration in instruction is critical to deeper learning.

Respondents emphasized that sustaining engagement and deepening learning require technology.

However, the real challenge lies in transforming teaching practices to foster the higher-order skills and outcomes that learning communities value with technology. As shown in Figure 7, far fewer respondents reported that it was "easy" or "very easy" (n=30, 11%) to implement effective deeper learning practices than those who said it was "somewhat" to "very difficult" (n=219, 81%).

Figure 7. How easy or difficult is it to implement teaching practices that are most effective in promoting deeper learning among today's learners?



Note: N = 269, Missing responses = 61

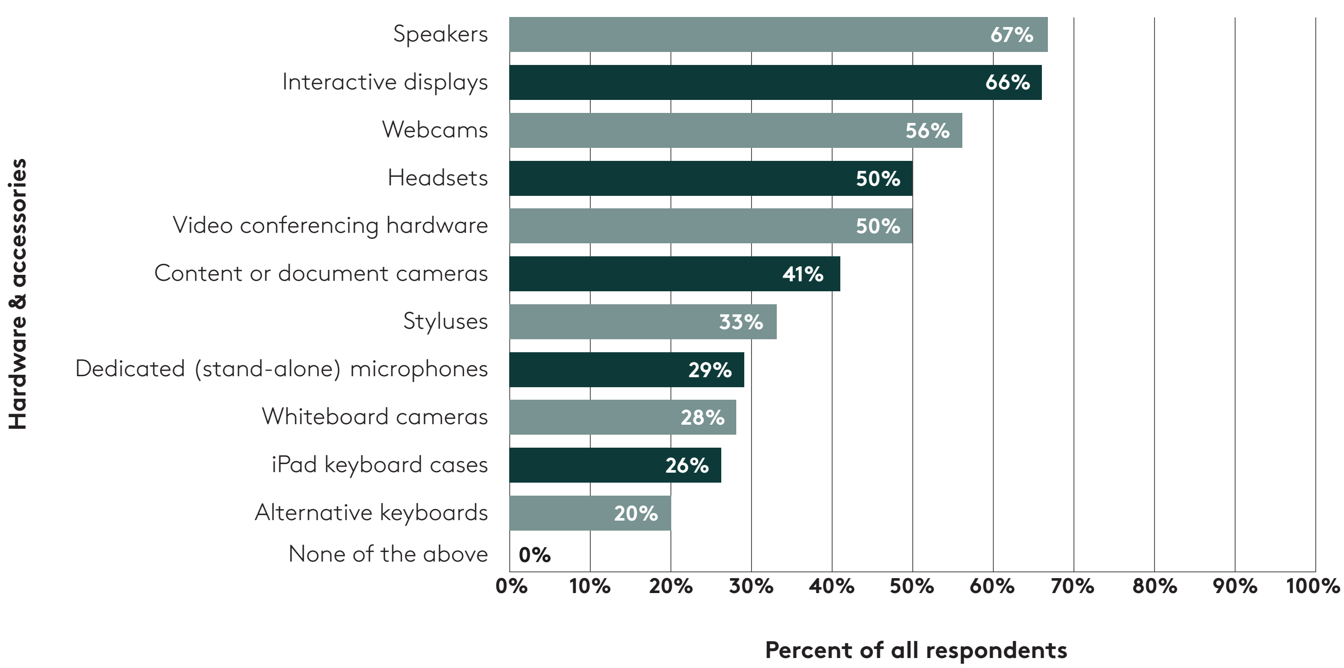
Respondents pointed to the following enabling conditions that support deeper learning:

- **Access to technology and resources.** One respondent noted, *"Deeper learning is easier when students have access to good resources, technology, and a classroom that encourages curiosity and teamwork."* Another emphasized, *"We have great access to technology in our district."*
- **Training and collaboration.** Respondents highlighted the importance of professional learning and peer support: *"Supportive factors include access to technology, professional development, student engagement, and collaboration with colleagues."* Another shared, *"Having colleagues who also want to implement deeper learning lessons helps—shared lesson plans can take off some of the burden."*

- **AI.** Educators described AI as a tool for planning and creativity: "ChatGPT has really helped me come up with ideas for lesson plans." Another noted, "AI technology greatly supports developing new lesson plans and ideas." Yet another shared, "I think technology and AI programs have made it far easier to get things done more efficiently..." (We revisit this theme in the "Teaching in a Digital Culture" section.)
- **Supportive leadership.** Strong school- and district-level backing was seen as essential: *"Having supportive administrative staff and IT support to promote edtech..."* One respondent added, *"We have a VERY supportive administration!!! Our technology coordinator is VERY supportive and helpful as well!!!"*

Building on earlier findings that both hardware and software play a powerful role in engaging learners in complex tasks, and recognizing technology's essential role in fostering deeper learning, we examined the prevalence of specific hardware solutions in schools. Participants reported that speakers (67%), interactive displays (66%), and webcams (56%) were the most widely available (Figure 8). Headsets (50%) and video conferencing solutions (50%) fell in the middle tier, while alternative keyboards (20%), iPad keyboard cases (26%), and whiteboard cameras (28%) were least common. With the exception of whiteboard cameras, these less-prevalent tools are primarily individualized solutions, whereas the top three are versatile for both whole-class instruction and personalized support.

Figure 8. Which of the following technologies do most schools in your district have / do you have in your school?



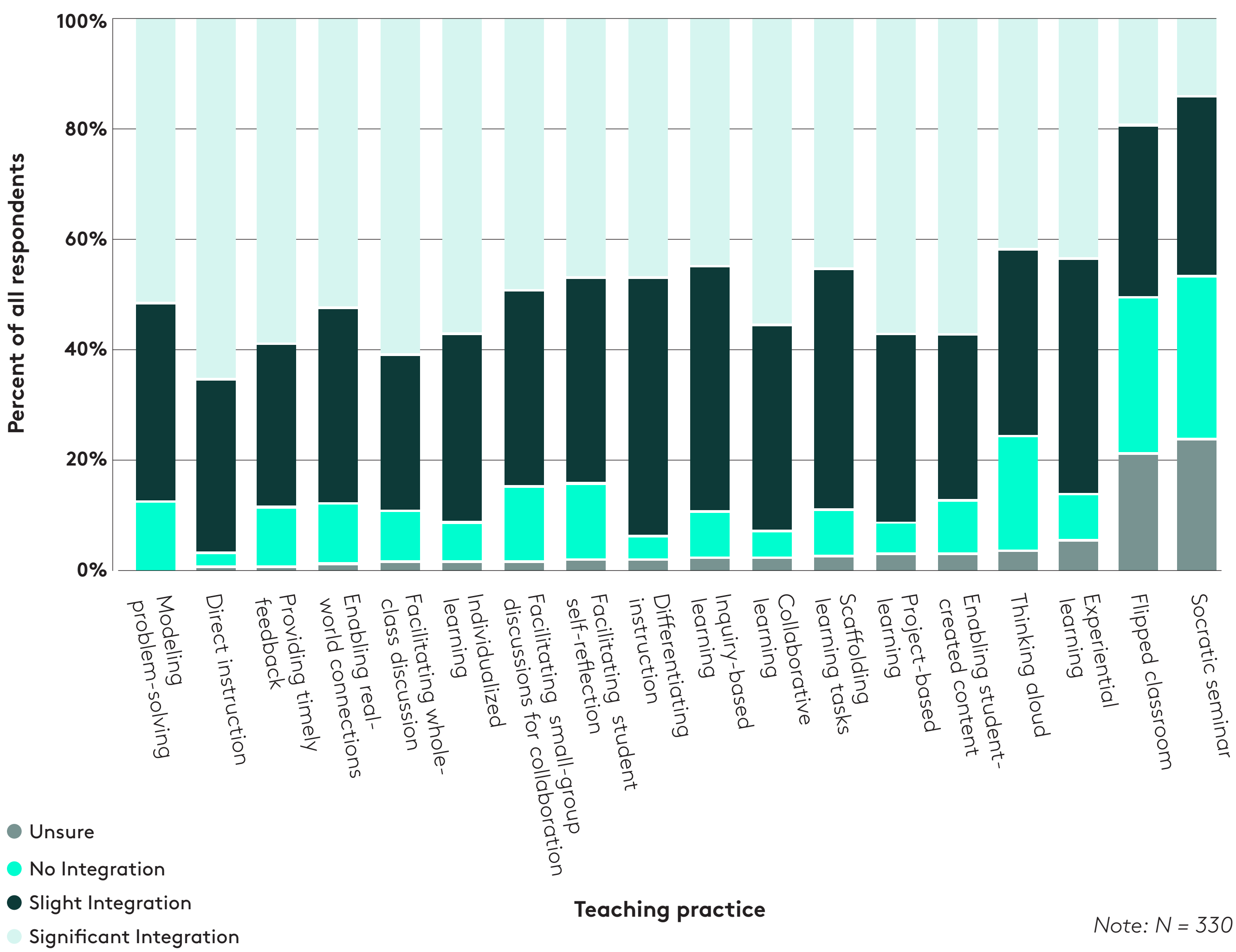
Note: N = 517, Missing responses = 159

Some educators added basic instructional hardware such as Chromebooks, MacBooks, and tablets. Others included more specialized hardware such as 3D printers, laser cutters, and other Makerspace tools.

A foundational element of deeper learning is the degree to which learners have personalized support. As we mentioned above, edtech software is often referenced as a means by which personalization can be implemented at scale across classrooms. In this study, participants have offered up a different perspective: hardware and accessories can be equally powerful in deeper learning. As shown in Figure 9, classroom instructors reported significant integration of hardware into practices such as the following:

- Direct instruction (66%)
- Whole-class discussion (61%)
- Timely feedback (59%)
- Project-based learning (57%)
- Personalized learning (57%)
- Enabling student-created content (57%)

Figure 9. To what extent have you integrated hardware into the following teaching practices?

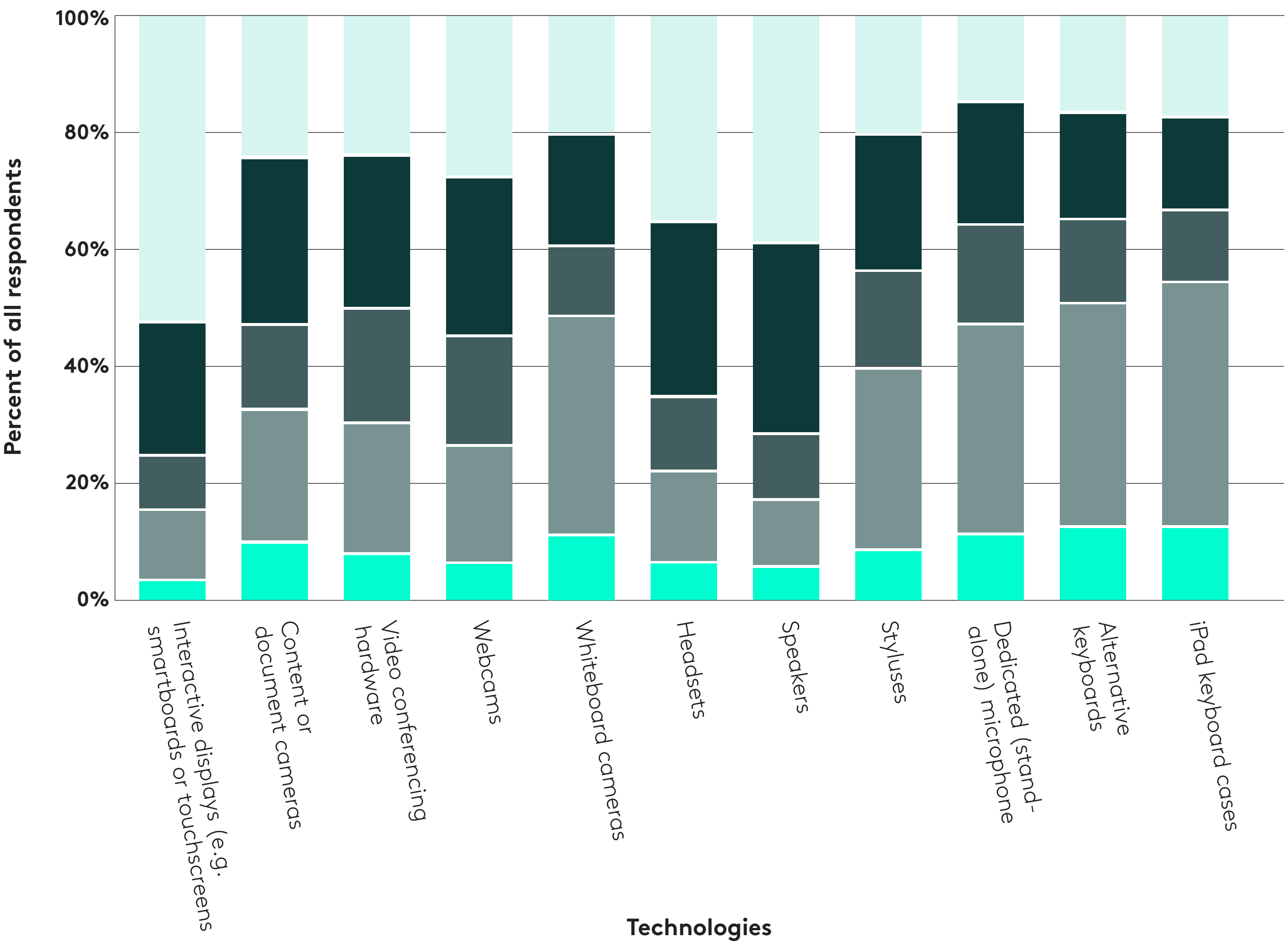


Note: N = 330

The results show stronger use of hardware for whole-class activities than for personalization. It is unclear from this data why this is the case, though it could be related to the tools classrooms can access for personalization and differentiation. The findings here, however, suggest that while there are emerging examples of hardware enhancing engagement and cognitive rigor, only about half of respondents reported meaningful integration into differentiated instruction, despite its importance for personalization. This points to an opportunity to better leverage tools for tailoring instruction to diverse learner needs.

As shown in Figure 10, when hardware is used for differentiation, respondents identified interactive displays (75%), speakers (72%), and headsets (65%) as the most effective in supporting students' interaction with instructional content during cognitively demanding tasks.

Figure 10. To what extent have the following technologies supported differentiated student interaction with instructional content?



Note: N = 676

> "Using hardware as a tool to personalize learning can sustain student focus and deepen learning. When educators are supported to align hardware, software and creative teaching practices, technology becomes a catalyst for student engagement."
>
> **Madeleine Mortimore**
> Global Education Innovation and Research Lead, Logitech for Education

Still, many teachers face significant challenges in fostering deeper learning with technology. One high school teacher's story illustrates how educators strive to harness the benefits of classroom hardware while navigating persistent technical barriers.

"The [popular interactive display/whiteboard] does make it easier to toggle between things. I'm old school, though, I miss my projector because then I can project on the board, and then I can have the students come underline on the board. I can still do those kinds of things, but sometimes the technology glitches, if you don't touch the button in the right way...then I'm even having issues because I've updated the program. So finding the nuances and the slight differences, making things work the way I want it to, or how I envision it to, can get frustrating." — High School World History Teacher

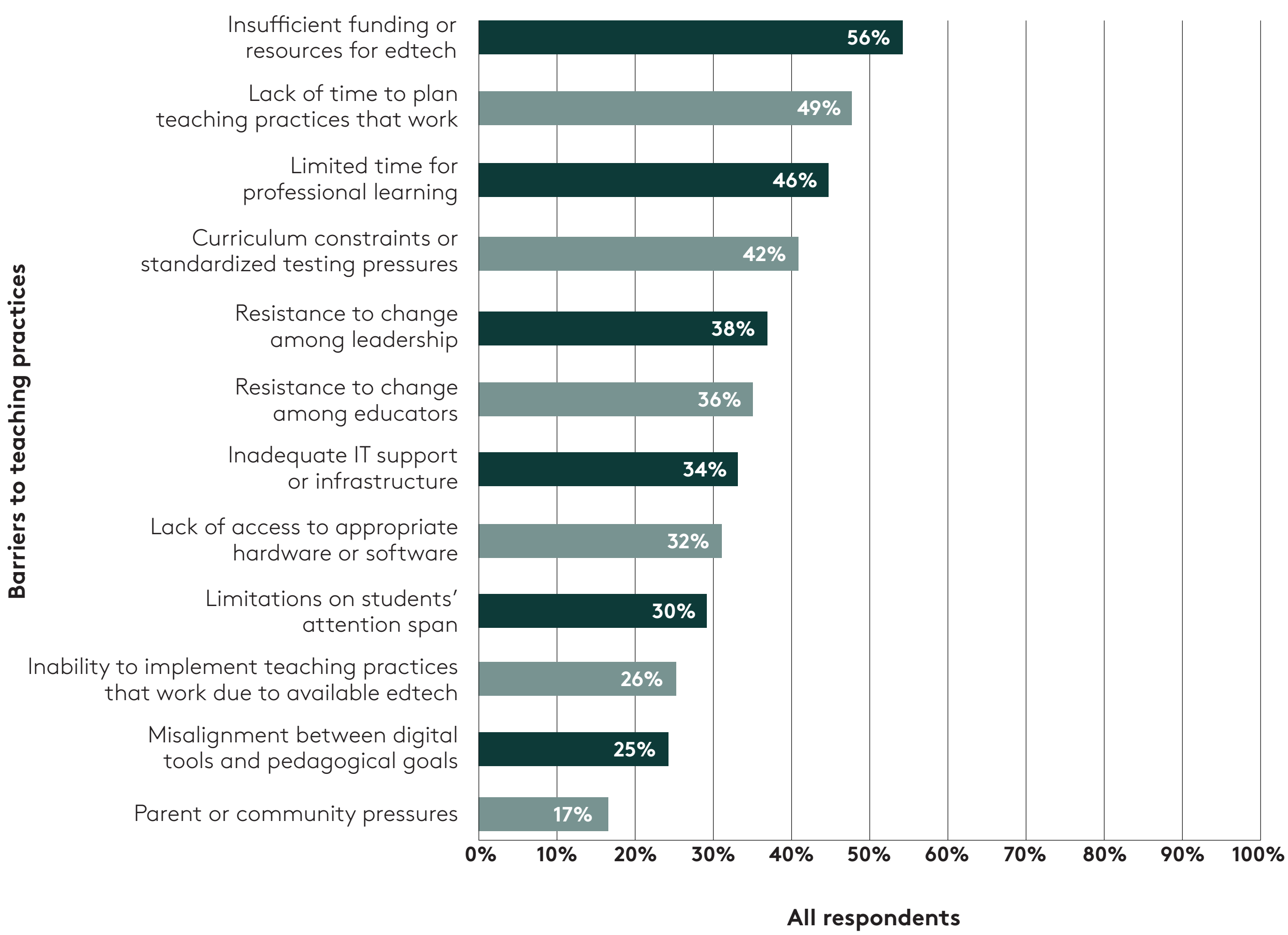
Even when teachers are enthusiastic about using digital tools, they often confront practical barriers that limit how students can show their thinking. As one high school STEM teacher explained, in physics, where visual modeling and drawing are central, digital interfaces can make these tasks clunky and impractical:

"Our school has a very robust online LMS [learning management system] because we're an alternative student, they access our program in many different ways and at many different points. Students are using personal devices, so technically they could use the draw function, but that's a pain because of the trackers on the pads. So, forget it. In physics, we do force diagrams where you have to draw the arrows, show the direction of the force, label it, and color code it. Doing that electronically is just painful. It's painful for me, and I'm 50 years old, and I love physics! I have to be realistic about what I ask my students to do. In that sense, it's limiting, because students can only really access this if they have a printout, which sort of defeats the purpose of having an online LMS. — Alternative School STEM Teacher

Some teachers also raised concerns about students damaging hardware, which diverts school budgets toward repair and replacement. While this strain limits access, it is not what most respondents see as the main barrier to innovation and deeper learning. When asked about the obstacles that make it difficult to fully implement deeper learning practices, lack of access to appropriate hardware or software ranked near the bottom (Figure 11). Instead, educators pointed to the following leading limitations:

- Insufficient funding or resources for edtech (56%)
- Lack of time to plan teaching practices that work (49%)
- Limited time for professional learning (46%)

Figure 11. Which of the following barriers make it more difficult to fully implement teaching practices that promote deeper learning? (Select all that apply.)



Note: N=505

Respondents' open-ended feedback reinforced these findings. When asked what factors hinder their ability to implement deeper learning practices, several common themes emerged:

- **Technology quality.** Several educators noted that unreliable or low-quality student devices hinder learning. As one 5th-grade teacher explained, when basic functions like keyboards or touchpads don't work, students are distracted from deeper engagement with content. The teacher felt responsible for removing such logistical barriers so students can focus on thinking and learning rather than troubleshooting hardware issues. *"I'm all about being a problem solver, but they don't have to solve technology problems. They can't solve that. And some of that's financial. So I don't want that to be an issue for them."*

- **Funding and access gaps.** Building on the challenge described above, one respondent noted, *"The lack of funding, lack of tech support. The tech we have often doesn't work or can't connect to the internet."* Another added, *"Students not having devices charged is a major hindrance. Also, students not having internet access at home."* Others affirmed this point: *"Not all families use technology the same way, and there is such a lack of money in the school system."*

- **Limited time for planning and instruction.** Respondents cited challenges such as, *"The time it takes to set it up and plan for it,"* and, *"Time constraints, curriculum constraints, and financial constraints."*

- **Skills gaps.** Participants highlighted skills gaps and insufficient professional learning as key obstacles to meaningful technology integration. One teacher explained that although schools promote technology use, many educators still rely on basic functions due to limited time and support for developing new competencies. They emphasized the need for more teacher-centered professional development that prioritizes experimentation and play, allowing educators to build comfort and creativity with digital tools.

- **District policy and accountability constraints.** Another respondent observed, *"Our district has extremely strict and rigid guidelines... This can make innovation and bringing in new ideas extremely difficult."* Another educator shared, *"State testing consumes so much conversation and time during the school year that the focus has to be on that, rather than doing projects or having the students be creative and hands on."*

The STEM teacher expressed a strong desire for interactive hardware such as a whiteboard to better support student learning, particularly in teaching note-taking skills. They emphasized the value of modeling notes in real time and providing structured note templates, especially for students who are absent or have trouble staying organized. Access to such tools was described as important not just for instruction, but also for improving access and equity in learning.

They also expressed the need for a tool that allows students to write out math work by hand on a digital pad that converts it into a digital format. The goal is not just to check answers, but to see students' step-by-step reasoning in order to diagnose exactly where they made mistakes. Especially in an alternative high school setting, the teacher emphasized that requiring students to type math work adds unnecessary cognitive load. They want tools that preserve the process of learning—not just the product—and make it easier to assess thinking, not typing.

These findings suggest that educators welcome hardware and accessories as essential supports for deeper learning.

Without them, enriching the learning experience would be far more difficult. Teachers emphasized the need for a diverse set of user-friendly tools that enable students to engage in learning agentically and authentically. Achieving this requires adequate funding for technology, equitable access for every learner to enable equity in learning, dedicated time for planning and experimentation, collaboration with colleagues, and ongoing training.

Research Question 3: Teaching in a Digital Culture

This next section expands our understanding of how teachers are transforming their approaches to keep pace with the way today's students like to consume content and learn.

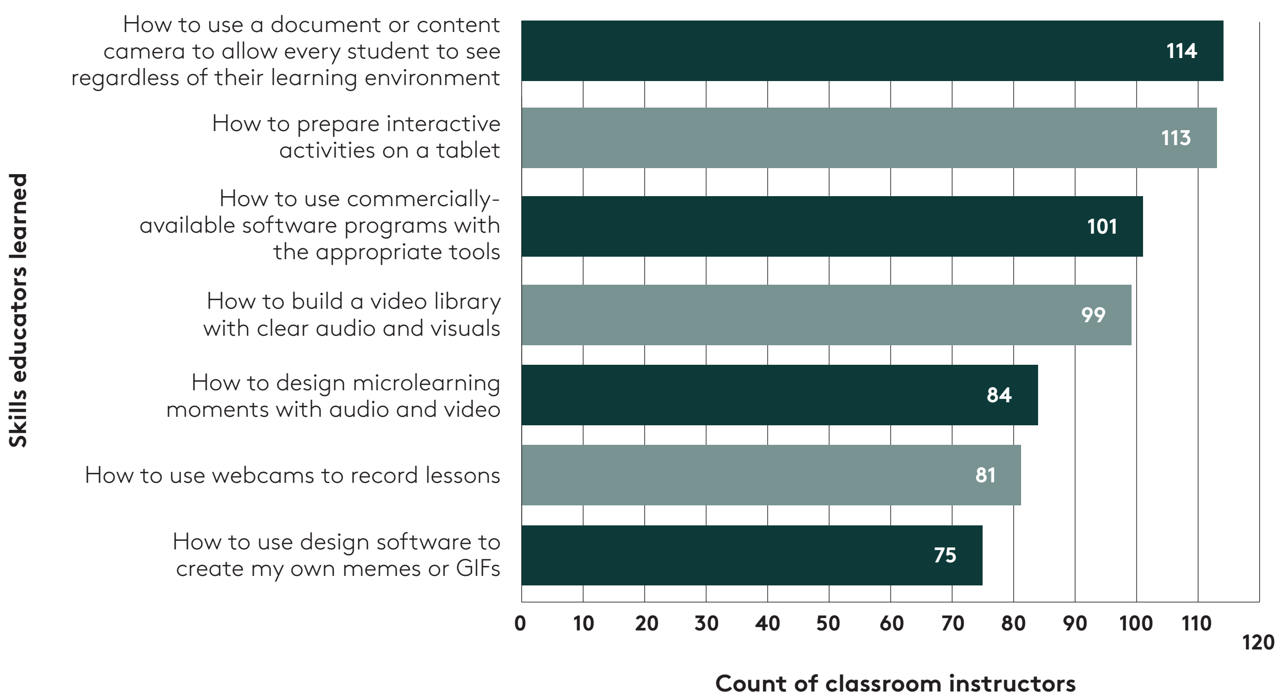
If we're going to be successful in helping students use technology in their lives, we need to be able to do it ourselves, and we need to be able to take the time to do so.

— Alternative High School Teacher

Over the past five years, classroom instructors have had to build a wide range of technology-related skills to effectively engage today's learners. As shown in Figure 12, the most frequently reported areas of growth include:

- Using document or content cameras to improve student visibility across learning environments (n=114)
- Designing interactive activities on tablets (n=113)
- Effectively integrating commercially available software programs (n=101)

Figure 12. What skills did you need to learn to connect with today's learners over the last 5 years? (Select all that apply.)



Note: N = 246

The STEM teacher also highlighted the lasting value of document cameras, noting their usefulness not only during COVID but also beyond. They emphasized how these tools serve both traditional and modern purposes, projecting work in class and creating instructional videos. As they explained, these recordings can act as a "repository of knowledge," allowing students to revisit problem-solving steps. Rather than simply narrating solutions, the teacher demonstrated how they prefer a more dynamic approach, inviting students to observe the process in real time: "*At this step, this is how we're doing it, and we're canceling terms.*" This real-time modeling, paired with synced audio, was described as more engaging and helpful for student understanding.

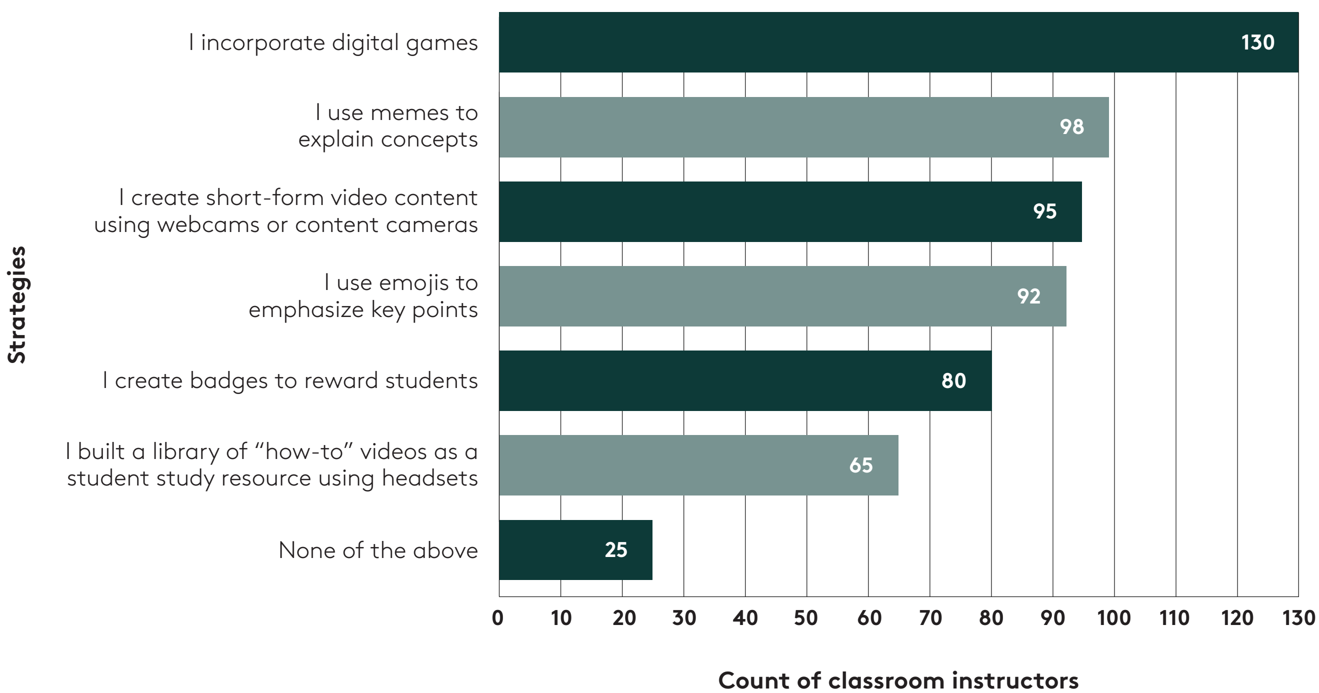
> “Modern learning depends on a careful balance between technology and pedagogy. This research shows us what students and teachers need from their hardware to get the most out of instructional time.”
>
> **Jackie Young**
> Global Head of Education Marketing, Logitech

These findings suggest that educators have adapted to shifting learning environments and evolving engagement needs by developing a robust set of multimedia and digital design competencies. Importantly, these are not just technical skills—they represent instructional strategies that personalize learning, expand accessibility, and sustain relevance in a digital culture.

Across a set of practices grounded in today’s digital culture, educators tend to rely the most on digital games to engage their learners.

Beyond hardware and accessories, classroom instructors are drawing from a wide array of creative and tech-enhanced strategies to keep today’s learners engaged. As shown in Figure 13, the most frequently reported techniques include incorporating digital games (n = 130, 52%), using memes to explain concepts (n = 98, 40%), creating short-form video content (n = 95, 38%), and using emojis to emphasize key points (n = 92, 37%).

Figure 13. Which of the following have you found most effective in promoting deeper learning among today's learners? (Select three.)

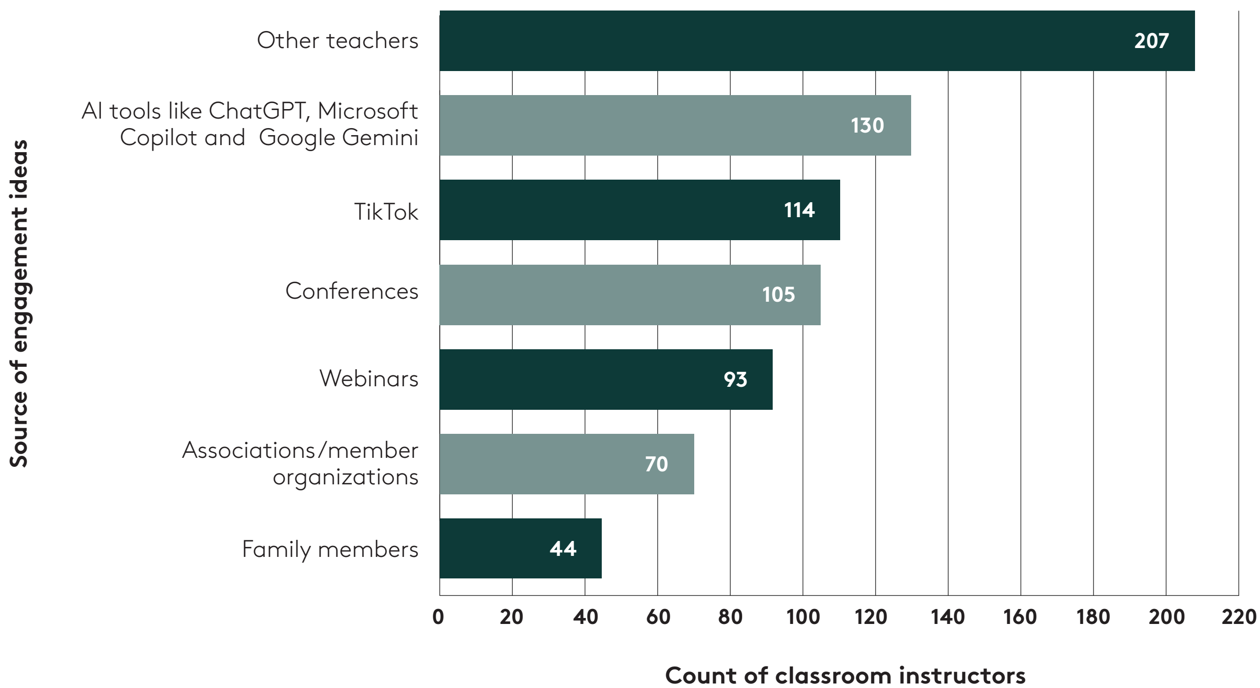


Note: N = 248, Missing responses = 82

These results suggest that educators are blending instructional intent with elements of digital culture; thus, meeting students where they are, fostering both engagement and deeper learning through familiar, accessible formats.

Educators draw inspiration for engagement strategies from a wide range of sources. As shown in Figure 14, the most commonly reported sources include other teachers (n = 207) and AI (n = 130). So, while peer collaboration remains a cornerstone of professional practice, these findings reflect a growing trend toward leveraging AI to accelerate the adaptation, curation, and application of content from environments like TikTok that resonate with students' lived experiences.

Figure 14. Where do you get ideas to keep today's learners engaged in learning? (Select all that apply.)



Note: N = 251, Missing responses = 79

A strong majority of respondents (88%) were either "moderately" or "very" confident in educators' ability to effectively integrate new edtech tools into everyday teaching with adequate support.

Finally, we asked all respondents to indicate their confidence that educators have the skills it takes to integrate new edtech tools into everyday teaching. The results were not surprising. As shown in Table 1, 230 (45%) of respondents reported a moderate level of confidence, suggesting that teachers have an openness to integrate new edtech tools, but more support is needed. A similar share of respondents (n=223, 43%) reported they were very confident. They perceived regular adoption of new edtech tools and effective use of these tools in everyday teaching.

Table 1. How confident are you that you/the teaching staff have the skills to effectively integrate new edtech tools into daily instruction?

Level of Confidence	N	%
Not confident - Lack of support, skills, or interest	9	2%
Somewhat confident - Limited use and unsure how to scale	53	10%
Moderately confident - There's an openness but more support is needed	230	45%
Very confident - There's regular adoption and effective use of tools	223	43%

Note: Missing responses = 161

Discussion

As schools navigate the evolving demands of modern learners, this study surfaces a set of cross-cutting challenges and questions that shape the future of instructional design. Several meta-themes emerged across survey and interview data, pointing to the nuanced interplay between educator practice, policy environments, and technology infrastructure. The findings suggest that the effectiveness of deeper learning strategies depends not only on pedagogical commitment, but also on how well tools, time, and policies align with student developmental stages. From the need for differentiated technology integration across grade levels, to the broader question of whether digitally saturated classrooms are now essential, educators are negotiating complex tradeoffs. While their creativity and adaptability are evident, many are bumping up against structural barriers, which raises the question: are schools and the technologies in them keeping pace with teachers' and learners' digital and creative culture and lived experiences, or are teachers and learners outpacing the systems they work within?

Digital Differentiation by Developmental Level?

The findings of this study suggest that one-size-fits-all approaches to technology integration may be insufficient to meet the developmental needs of learners across grade bands. Educators overwhelmingly report that younger students benefit more noticeably from digital instructional materials that engage them in learning longer than non-digital materials. However, this finding raises a critical question: how do these perceived benefits of digital engagement align with the developmental needs of young children, who may benefit more from tactile, hands-on learning experiences? While digital tools may extend attention in early learners, they may not always support the kind of sensorimotor exploration foundational to early childhood development. This tension points to the need for thoughtful integration that blends developmentally appropriate pedagogy with technology-enhanced engagement.

In contrast, students at the middle and high school levels show more modest gains in engagement from digital materials, suggesting that by adolescence, the novelty or motivational power of digital tools alone may be less impactful. At these stages, technology integration may need to shift from attention-sustaining functions toward supporting agency and authentic learning experiences, such as digital content creation, real-time feedback, and collaborative problem-solving.

These differences highlight a key takeaway: effective technology integration must be developmentally differentiated. What works in a kindergarten classroom may not be as effective—or even appropriate—in a high school setting and vice versa. Schools and districts should consider grade-level needs not just in tool availability, but also in instructional design, training, and hardware investment. Personalization, in this sense, must extend beyond the student experience to the structure of professional learning and support systems for educators at each level.

Is a Digitally-Saturated Learning Environment Inevitable?

The data underscore a critical tension: if the goal is to cultivate deeper learning through critical thinking, collaboration, and creativity, then many of the most promising instructional practices—such as personalization and gamification of learning—require access to digital tools. This raises a difficult question: is a digitally-saturated learning environment an inevitability in modern education? While some members of learning communities may shun this change (e.g., "Some parents are very against the use of technology in the classroom. I've even been told that teachers are lazy now.."), the tools and techniques most frequently cited as effective for engagement and deeper learning are inherently digital. Educators are clearly adapting their practices, but systemic barriers such as funding, infrastructure, or policy constraints often mean the pace of institutional change lags behind the pace of student needs.

In addition, the findings show that the leading perceived influence on students' attention spans is an environmental factor: social interactions. This insight opens the door to reimagining how digital tools like hardware and accessories might be used more strategically to harness students' inherent desire for peer engagement. Rather than viewing social interaction as a distraction, educators and designers could explore ways to leverage it as a productive force to support learning outcomes and developmental goals.

Educators Are Keeping Pace—But Is Technology?

One of the most encouraging takeaways from the findings is that educators are actively evolving their practice to keep pace with how today's learners interact with instructional content. From memes to microlearning, teachers are experimenting with culturally relevant and cognitively engaging strategies. However, several quotes and survey findings suggest that both the availability and quality of technology in schools is often not keeping up with these instructional shifts. Tools that support dynamic modeling, real-time feedback, and student content creation such as interactive displays, styluses, and headsets are not consistently available or well-supported across schools.

Conclusion

Deeper learning starts with strong learner-centered practices and better tools. Hardware may once have been considered peripheral. Today, it is central. It is the bridge between attention and comprehension, engagement and depth, equity and access. In classrooms striving for deeper learning, edtech hardware is not an accessory but a critical accelerator.

As the field continues to explore the role of AI in instruction, it is equally important to invest in the broader ecosystem of technology resources that support deeper, more meaningful learning experiences. This study reveals tensions between an increasingly digital culture and how it is shaping the way learners think, connect, and engage. These shifts raise important questions about the cognitive, social, and pedagogical implications of widespread digital integration in classrooms.

At the same time, the findings point to promising opportunities: educators are demonstrating creativity and adaptability in their use of technology, but the tools and systems in place often lag behind their needs. Sophisticated hardware and software solutions hold great potential to enhance instructional effectiveness, but their impact will depend on access, thoughtful implementation, sustained support, and alignment with learning goals.

Future research should examine how effectively these tools are being adopted, their influence on student outcomes, and how they shape classroom dynamics. Simultaneously, structural policies must evolve to meet the moment. They must address funding gaps, ensure equitable access, and guarantee that educators have the professional learning and institutional support necessary to integrate technology in developmentally appropriate and instructionally meaningful ways.

Technical Endnote

Study Methods

The study employed a sequential mixed-methods design. Quantitative data were collected through a survey. Survey findings informed a qualitative exploration of how hardware and accessories support deeper learning.

Instruments

The *Advancing Deeper Learning for Today's Learners* survey, developed by Logitech and FullScale, examined how today's students learn and how edtech hardware and accessories are being integrated into instruction to support deeper learning. Before it was launched, the survey was reviewed by practitioners and refined based on their feedback. Once launched, participants received role-specific sets of questions along with common anchor questions.

An interview protocol was designed to guide participants through a brief conversation focused on Hardware and accessories usage and how they are shaping greater engagement and agency. It also elicits perspectives on the school and district policy changes that make agentic and student-centered learning more possible.

Survey

FullScale administered the survey between May and September 2025 using two recruitment methods: a non-probability panel and direct outreach to education professionals.

For the panel sample, we partnered with a third-party panel provider to recruit eligible participants based on the following criteria:

- Located in the United States
- Ages 25-55
- First language: English
- U.S. nationality
- Full-time employment status
- Highest education level: Undergraduate (BA/BSc) or Graduate degree (MA/MSc/MPhil/other)

Based on these criteria, the panel provider identified 6,263 eligible participants, of whom 910 responded to the survey. It is important to note that this was a non-probability sample, meaning that not every member of the target population had an equal chance of selection. As such, while findings may offer insights into trends and perceptions, they are not intended to be statistically generalizable to the broader educator population.

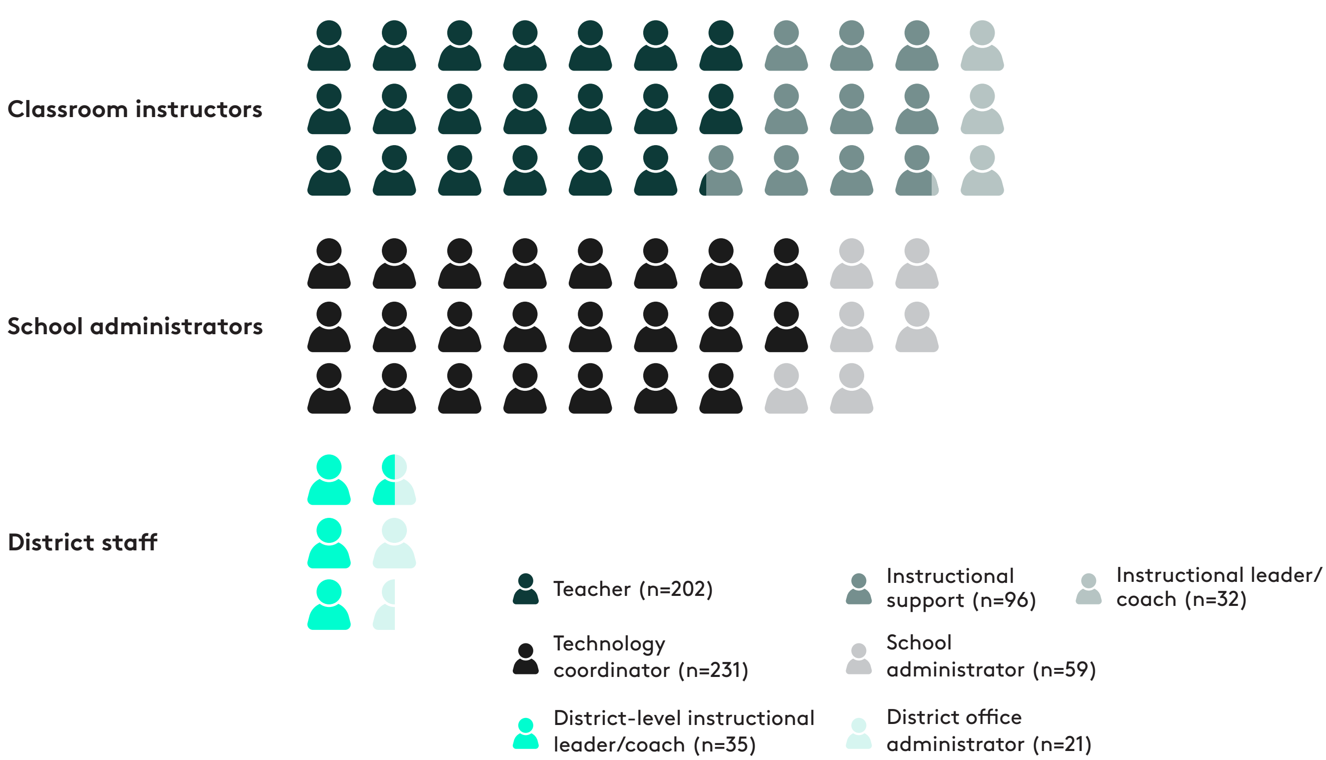
In addition to the panel sample, FullScale also conducted direct outreach to education professionals within its network to ensure a broader representation of perspectives across the K–12 landscape. The survey was administered via Qualtrics and took participants an average of 12 minutes to complete.

As part of the incentive structure, panel respondents were compensated at a rate of $37.80 per hour for their participation. For those recruited through the direct outreach channel, participants were entered into a raffle to win one of several prizes, including:

- Free registration to FullScale's annual Symposium
- A $100 gift card
- Logitech Spotlight presentation devices

A screening question based on role was added at the beginning of the survey to filter respondents who were not in our target population of district leadership and school-level professionals. Despite the survey criteria and filters, there were respondents whose primary roles applied to the postsecondary and workforce domains (e.g., technology coordinators). To maintain focus on K–12 learning contexts, we excluded respondents whose roles appeared to be exclusively in adult, postsecondary, or workforce education. However, we retained responses from those who indicated roles with both K–12 and postsecondary learners, such as dual enrollment or part-time college instruction.

Figure 15. Number of survey participants by role category



Survey Participant Demographic Information

Additional survey participant characteristics highlight that respondents are both experienced in their professional roles and well-acquainted with district and school practices given their tenure. The data below illustrate the breadth of their institutional affiliations, tenure, and instructional experience:

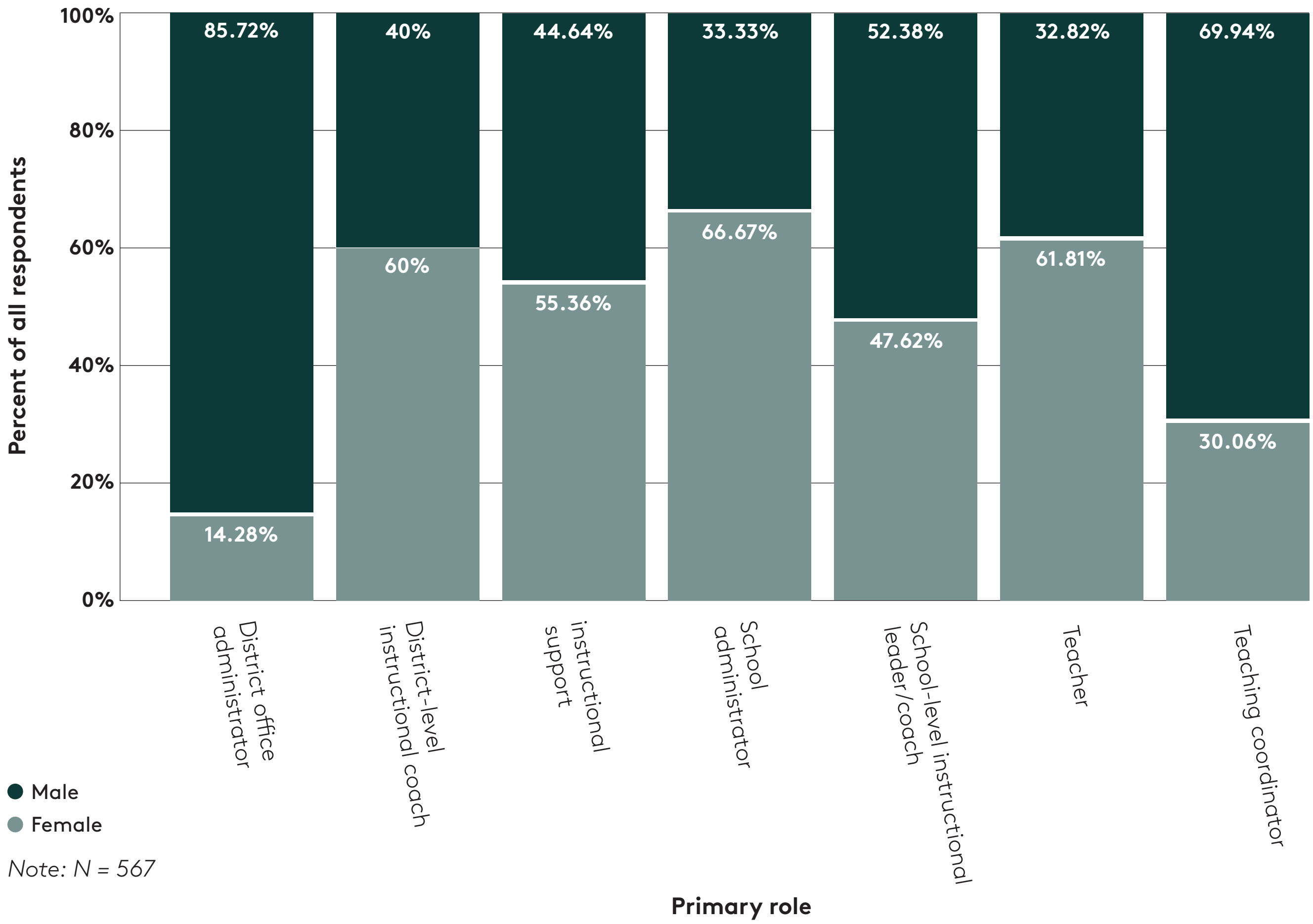
- Classroom instructors (n=219, 81%) and school administrators (n=150, 66%) tended to represent public schools within their respective states.
- District-level respondents tended to indicate tenure of 10 years or more within their districts (n=19, 48%).
- Classroom instructors (n=103, 38%) and school administrators (n=96, 42%) most often reported having one to three years of tenure in their school.
- Classroom instructors report substantial instructional experience. Of the 268 participants who self-reported data, 105 (39%) have 10 or more years of experience and another 73 (27%) indicated four to nine years of experience.
- Lastly, among classroom instructors, grades 9–12 are most commonly represented (n=121), followed by middle grades (n=90), upper elementary (n=85), and lower elementary (n=63).

Sample Representation and Demographic Benchmarking

This study drew on two recruitment sources: a non-probability panel (n = 567) and direct outreach to education professionals within FullScale's network (n = 109). Due to the disproportionate size of the panel-based sample, we focus demographic analyses on the non-probability panel respondents. While generalization to the national population is not the intent of this research, we provide comparisons to national educator demographics to contextualize the representativeness of the sample and support confidence in the validity of its perspectives.

The gender distribution across primary roles in the panel sample largely mirrors national patterns reported by NCES (2018). Consistent with national trends, the teaching and school leadership roles are predominantly female, whereas technology leadership roles reflect a male majority (Figure 16). However, some roles—such as district office administrators—show a more pronounced gender imbalance than typically observed in national data, which may be due to sampling or self-selection bias rather than true workforce proportions.

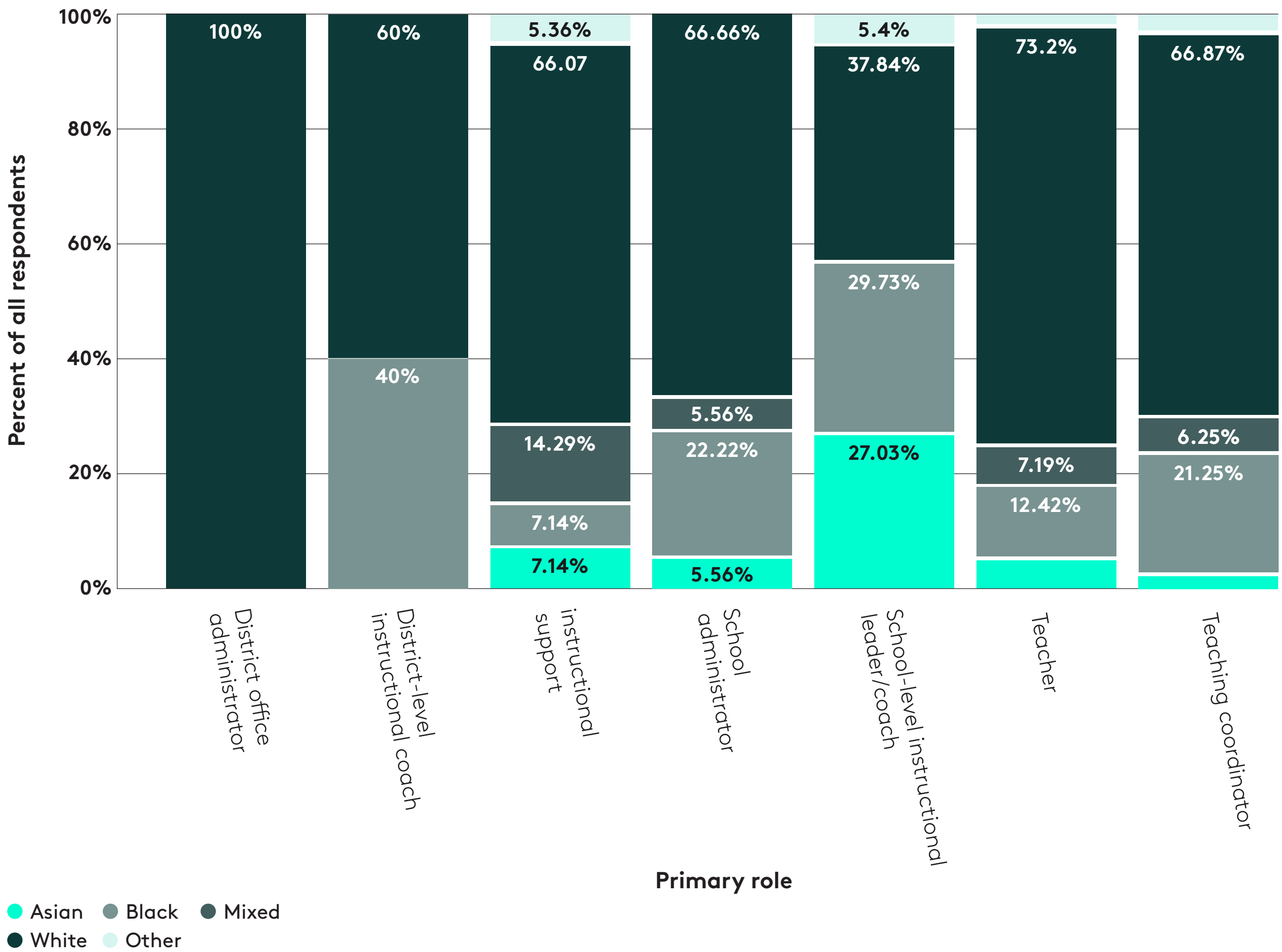
Figure 16. Non-probability panel participants' gender by primary role



Note: N = 567

When compared with national data, the sample's racial and ethnic representation shows both alignment and divergence. Teachers and administrators in the sample are somewhat less White and more racially diverse than national estimates for similar roles, particularly in roles such as Instructional Support and Technology Coordinator. For example, whereas ~79% of U.S. public school teachers are reported White non-Hispanic in national statistics (NCES, 2018), our sample's teacher group is ~73% White, with a larger share of Black and multiracial respondents (Figure 17). However, caution is warranted: demographic data were available only for ~65% of the sample.

Figure 17. Non-probability panel participants' race and ethnicity by primary role



Note: N = 567

We did not collect gender or race and ethnicity data from the direct outreach sample. The omission of these data limits our ability to assess the diversity of the total sample and may restrict our understanding of the full range of perspectives included. However, given that the non-probability panel represents the vast majority of responses (84%), and that its demographic distributions largely align with national benchmarks, we believe the findings can offer meaningful insights into trends and experiences across the K–12 educational workforce.

Structured Interviews

FullScale conducted follow-up structured interviews to complement and contextualize the survey findings. The study included five educators representing a range of roles, grade levels, and school contexts across the United States. Participants included:

- A high school world history teacher from North Carolina, working in a traditional public high school
- A high school science and math teacher from Massachusetts, teaching in an alternative high school
- A middle school science and social studies teacher from Illinois, based in a traditional public middle school
- A former special education teacher, now serving as a school psychologist in a traditional public high school in Wisconsin
- A fifth-grade teacher from Colorado, teaching in a competency-based public elementary school

All interviews were facilitated by a single member of the research team to minimize variability and reduce the potential for interviewer bias. Interviews were held virtually via Zoom, with an average duration of approximately 45 minutes. With participants' informed consent, all sessions were recorded and transcribed verbatim to support qualitative analysis. Participants were provided an incentive of a $50 gift card for their participation.

These interviews served to enhance and deepen the interpretation of survey results, offering real-world examples of how educators experience, adapt to, and reflect on the integration of hardware and accessories. The qualitative data provided nuanced insights into themes surfaced by the survey and helped clarify the context behind patterns observed across grade levels, tools, and teaching strategies.

Data Analysis

For survey data, we used descriptive statistics to examine patterns at the survey level and by role. We presented aggregated findings for the anchor questions posed to all respondents, and disaggregated findings when highlighting the perspectives of particular groups, most often classroom instructors, given their close proximity to teaching and learning.

Qualitative data were open-coded and analyzed thematically to understand broad themes. Direct quotes from these interviews were used in the report to illustrate key findings and ground statistical patterns in lived classroom experience.

Study Limitations

The nature of this study is descriptive and exploratory. Therefore, caution should be taken when ascribing causal linkages, as the study design and methodology do not support such inferences. Further, because the sample was drawn using a non-probability panel and convenience sampling via direct outreach, and does not include responses from all 50 states (notably missing Maine, Nebraska, and North Dakota), the findings are not generalizable to the national educator population. Again, results should be interpreted as directional and exploratory, offering insight into the experiences of a diverse, but not statistically representative group of education professionals.

Also, the overrepresentation of grades 9–12 should be noted as a limitation on the generalizability of findings to the U.S. student population. This is particularly important when interpreting attention span estimates or technology effectiveness. What works for high school students may not be directly applicable in K–5 settings, for example.

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