ACTIVE LEARNING IN A SCREEN-SATURATED ERA

THE PENDULUM IS SWINGING

PITSCO EDUCATION



A research brief for K-12 administrators, principals, and lead educators navigating the next chapter of classroom learning.



EXECUTIVE SUMMARY

If you lead a K-12 school or district, you are in a wonderful position to shape how technology and hands-on learning work together in your buildings. Parents want school to be a place where their children focus and connect, teachers want students who are present and hands on, and legislators are moving quickly on new device policies. All of that energy is pointing in the same direction, toward classrooms where students are building, testing, and figuring things out using their own hands.

Great teaching has always meant reaching for the right tool at the right time, whether that is a tablet, a textbook, or a kit of materials on a workbench. The pages ahead bring together current research, recent policy shifts, and practical levers you can pull to give screens and hands-on learning each their proper place, so students build the skills and confidence they will carry well beyond the classroom.

THREE FINDINGS SHAPE THE PAGES AHEAD

FINDING 1

Screen-time policy has moved from anecdote to action. By the 2025-26 school year, more than 30 US states had enacted laws or policies on student device use during the school day.

FINDING 2

The strongest research points to passive, prolonged use as the central concern. PISA 2022 data show that 15-year-olds who spent up to one hour a day on devices for leisure at school scored 49 points higher in mathematics than peers who spent five to seven hours daily.

FINDING 3

Active, hands-on learning produces measurable gains. A 2025 evidence assessment of 44 studies found that experiential, hands-on learning had a predominantly positive effect on academic achievement for children aged 4 to 14, with the strongest results in science and mathematics, and clear gains in critical thinking and problem-solving. The effects were strongest of all among students who had already been struggling.

Hands-on learning is the lever that restores the human side of instruction while keeping digital tools that earn their place. The rest of this brief walks through the research, the policy shifts, and a practical framework you can put to work.

THE STATE OF SCREEN TIME IN K-12 TODAY

If the screen-time conversation feels louder this year than last, the data confirms what you are hearing. Five years ago, most districts were asking how to expand one-to-one device programs. Today, the question has revised itself into something different: how to use those devices with greater intention, and in many states, what to set aside during the school day altogether.

POLICY MOMENTUM AT A GLANCE

Florida passed HB 379 in 2023, becoming the first state to require schools to prohibit student cell phone use during instructional time. California followed in September 2024 with the Phone-Free School Act (AB 3216). As of July 1, 2026, every public school district in the state must have a policy limiting or prohibiting student smartphone use.

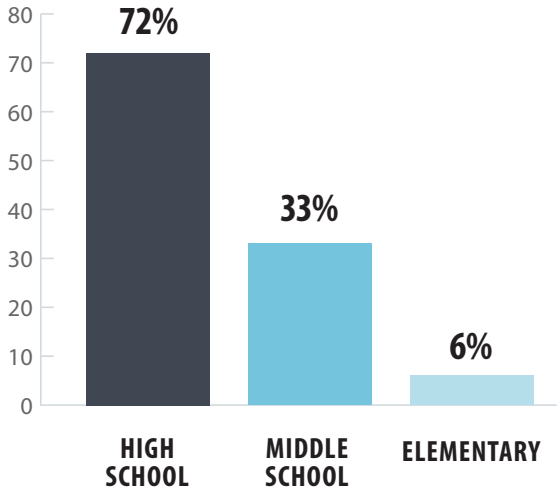
Los Angeles Unified, the second-largest district in the country, voted in June 2024 to restrict student cell phone use during the school day, with implementation beginning in 2025. New York adopted a statewide bell-to-bell restriction for the 2025-26 school year. By the start of that year, tracking from Education Week and Ballotpedia placed more than 30 states in the column of having acted in some form.

The policy movement sits downstream of a broader cultural rethink, and the numbers behind it are striking. The Common Sense Census, published in 2021, reports that US teens ages 13 to 18 spend an average of 8 hours and 39 minutes per day on screen-based entertainment outside of schoolwork, while tweens ages 8 to 12 average 5 hours and 33 minutes. Those totals sit on top of the time students already spend on screens during the school day.

Teachers feel the effects of it. A 2024 Pew Research Center survey found that 72 percent of US high school teachers say students being distracted by cellphones is a major problem in their classrooms, compared with 33 percent of middle school teachers and six percent of elementary teachers. Families are paying attention too. In a Pew survey from the fall of 2024, 68 percent of US adults said they support banning cellphone use during class for middle and high school students.

TEACHERS ON PHONE DISTRACTION

TEACHERS WHO CALL IT A MAJOR PROBLEM



Source: Pew Research Center, June 2024. US public school teachers.

Teachers, parents, and administrators are asking for the same thing. They want technology used deliberately, with clear attention to what it crowds out when it takes over the day.

Policy is one lever, but classroom design is another, and the research on active learning points clearly toward the second.

> **"Kids these days, when they get really super interested in something, it's their world. It consumes them. If you can get a kid interested in a rocket or a drone or something in the skilled trades, they'll dive right in. They're kind of fearless."**
>
> **Kevin Garner, CTE coordinator, Dallas ISD**

"There's no one right answer, so get comfortable with failure and get comfortable with struggle. It's really about the process."

Conor Walsh, principal, Bath Middle School, Bath, ME



"When they're challenged, they're engaged. And when they're engaged, they're learning. That's it right there."

Glenn Hair, CTE teacher, Orange Park Junior High

WHAT THE RESEARCH SHOWS ABOUT PASSIVE SCREEN USE

The literature on screens and learning has grown substantial enough to support some confident conclusions. The most useful of those conclusions reframes the question. What matters is no longer only *how much* screen time students get, but what kind of screen time, and what other activities it replaces.

THE ACHIEVEMENT SIGNAL

Large-scale studies show a consistent inverse relationship between heavy recreational screen use and academic performance. In PISA 2022, across OECD countries, 15-year-olds who used digital devices for leisure for up to one hour a day at school scored 49 points higher in mathematics than peers who spent five to seven hours daily, even after adjusting for the socioeconomic profiles of students and schools. A 2019 longitudinal study in JAMA Pediatrics, following nearly 2,500 children, found that higher screen time in early childhood was associated with weaker performance on a developmental screening test covering communication, motor skills, and problem-solving.

THE ACHIEVEMENT SIGNAL

49 POINTS

higher in math for students on devices an hour a day or less, compared with peers at five to seven hours.

Source: OECD, PISA 2022 Results. Leisure device use at school. 15-year-olds, adjusted for student and school socioeconomic profile.

THE ATTENTION SIGNAL

Heavy, notification-driven media use adds another layer. A 2025 study in JAMA, following more than 6,500 adolescents over two years, found that those whose social media use rose over time scored lower on tests of reading, memory, and vocabulary than peers who used little or none, after adjusting for age, sex, socioeconomic status, and other screen time. When students spend much of their lives in fast, notification-rich switching, the work of building sustained, focused thinking lands more heavily on the school day.

None of this supports pulling technology out of schools. The strongest researchers in this space draw a careful line between passive, prolonged, recreational use and active, intentional, instructional use.

The evidence points toward balance and intentional design rather than wholesale removal. The work for administrators is building learning environments where students get the focused, hands-on experiences their development needs, alongside the digital tools that have become a real part of modern instruction.

"I definitely see measurable growth in their critical-thinking skills, improvement in their problem-solving, and even working together. They were so used to working on their own. Each person would always say, 'just let me do what I know what I'm doing.' But now it's like, 'so what do you think we should do?' There's a difference in the way they communicate."

Dr. Saede Hammad, STEM coordinator, Al Ihsan School

THE CASE FOR HANDS-ON, ACTIVE LEARNING

The research base for active, hands-on learning is among the most studied bodies of evidence in education science, and the headline findings have held steady across decades, grade levels, and subjects.

THE LANDMARK STUDY

In 2014, Scott Freeman and colleagues at the University of Washington published a meta-analysis of 225 studies comparing traditional lecture to active learning in undergraduate STEM courses. Students in active learning environments scored about six percent higher on exams. Failure rates dropped from 33.8 percent under lecture to 21.8 percent under active learning, which meant students in lecture courses were roughly 1.5 times more likely to fail. The authors concluded that the evidence was strong enough to question lecture as the default mode of instruction. The setting was undergraduate STEM, yet the underlying mechanism, students processing information by doing rather than only listening, carries across K-12 classrooms.

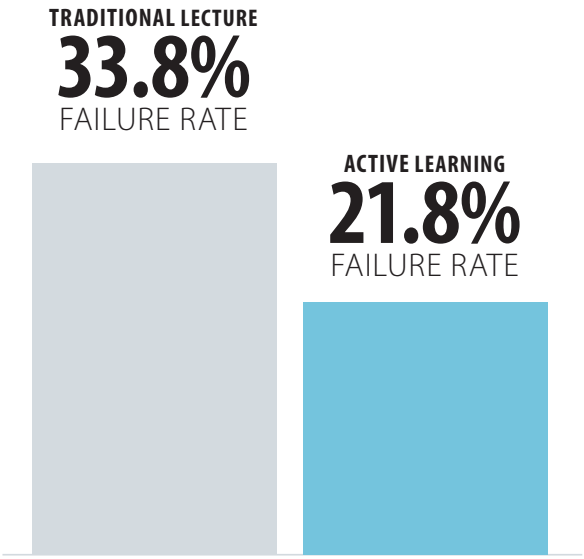
THE K-12 EVIDENCE

A 2025 rapid evidence assessment published in *The Curriculum Journal* reviewed 44 studies of experiential learning for children aged 4 to 14, screened from an initial pool of 465. Hands-on learning showed a predominantly positive effect on academic achievement, with the strongest gains in science and mathematics and clear benefits for problem-solving, critical thinking, memory, and vocabulary. The researchers found the approach especially valuable for low-achieving students, with several studies showing those pupils gained more than their peers.

THE LANDMARK STUDY

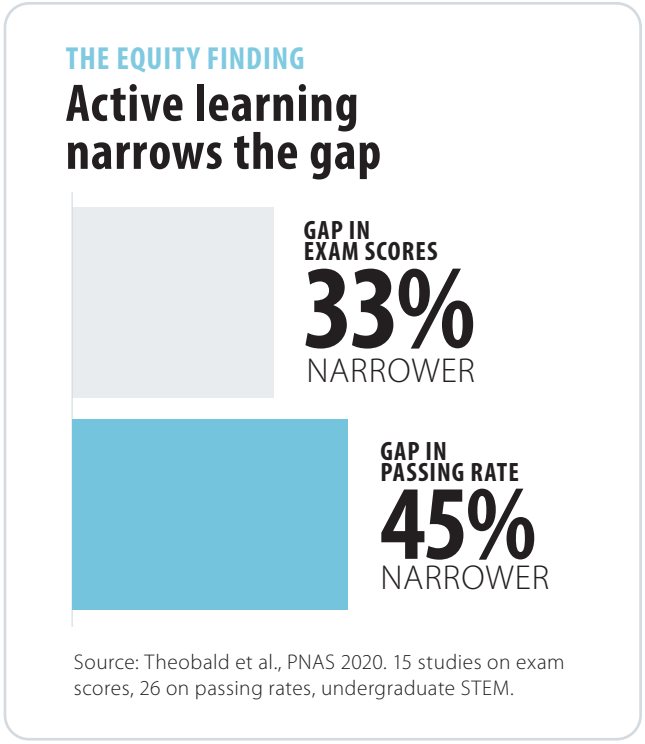
Students were 1.5 times more likely to fail a lecture course.

Source: Freeman et al., PNAS 2014, Meta-analysis of 225 studies, undergraduate STEM.



THE EQUITY FINDING

A second meta-analysis, published in PNAS in 2020 by Theobald and colleagues, examined how active learning affects achievement gaps. Active learning narrowed gaps in exam scores between underrepresented and overrepresented students by 33 percent, and narrowed gaps in passing rates by 45 percent. As with Freeman, the setting was undergraduate STEM, though the evidence assessment above found the same pattern among younger students. For administrators thinking about pathway access and who gets to participate in advanced STEM and CTE, that finding carries weight.



WHY IT WORKS

A growing body of cognitive science under the banner of embodied cognition helps explain the results. Physical interaction with materials supports stronger, more durable mental representations. Studies by Susan Goldin-Meadow at the University of Chicago show that students who gesture while learning a concept retain it better than students who do not. The National Academies' *How People Learn II* (2018) reached a similar conclusion: hands-on engagement helps students build the mental models that underlie deep understanding.

Numbers tell part of the story, but the educators living it tell the rest.

When students get something real to do, with materials they can manipulate and problems they can solve, the cognitive engagement the research describes shows up in ways teachers can see and measure.

DESIGNING BALANCED LEARNING ENVIRONMENTS

Administrators who do this work well share an instinct. They treat technology and hands-on learning as collaborators in one instructional plan, each doing what it does best, with clear boundaries between them. The following framework draws on the research above and on practices common to districts that have made the shift.

FIVE LEVERS TO PULL

1. **Audit the Current Ratio:** A two-week classroom observation across a sample of grade levels reveals how time is actually spent, from passive consumption to hands-on building. Most districts find the balance tilts more toward screens than they expected.
2. **Define Intentional Digital Use:** Written guidance that separates high-value use (research, multimedia creation, simulation, accessibility tools) from low-value use (passive video, drill software) gives teachers cover to make better choices.
3. **Restore Time for Tactile Work:** Lab science, engineering design challenges, art, shop, and CTE pathways all count. Districts adding this time back are seeing it pay off in attention, problem-solving, and engagement.
4. **Invest in Teacher Capacity:** A new curriculum or kit works only when teachers learn it first. The strongest implementations pair every materials investment with hands-on professional development using the same tools students will use.
5. **Communicate with Families:** A short policy explainer, a family night that shows hands-on work in action, or a quarterly newsletter can shift the public conversation and build trust before questions arrive.

A CHECKLIST FOR DISTRICT LEADERS

This checklist gives district leaders a strategic snapshot of how effectively technology and hands-on learning are balanced across the district, helping identify strengths, gaps, and priorities for scaling impactful learning experiences.

- ☐ **We have a clear, written policy on personal device use during instructional time.**
- ☐ **Our edtech inventory has been reviewed in the last 18 months, with low-value tools removed or replaced.**
- ☐ **Every school offers at least one hands-on, lab-based, or design-based course per grade level.**
- ☐ **Our teachers have access to professional development that includes hands-on practice with the tools they will use.**
- ☐ **Our middle schools build career exploration into the schedule through hands-on experiences, not only video.**
- ☐ **Our high school CTE pathways use industry-current tools and materials.**
- ☐ **We measure engagement, pathway interest, and post-graduation outcomes alongside test scores.**
- ☐ **We communicate with families at least twice a year about how learning happens in our buildings.**

Balancing screens with active learning is a long-arc effort. The districts making the most progress are the ones that moved from one-off responses to a coherent, multiyear strategy.



RE-CENTERING LEARNING ON DOING

The pendulum metaphor in the title is deliberate. Education tends to swing toward one emphasis, then back toward another, and the current swing toward hands-on, active learning reads best as a recalibration. Digital tools still belong in modern classrooms. The work ahead is fitting those tools alongside everything else students need to grow into capable, curious, resilient adults.

For more than five decades, Pitsco Education has worked with classrooms doing exactly that recalibration. The teachers who shaped this work, the ones quoted throughout these pages, are educators paying close attention to what their students need. What students need is more chances to build, test, fail, iterate, and try again with real materials in their hands.

"Any child, any place, any path, any pace."

It's the shortest way to say what Pitsco has been building toward since 1971, and it's what every educator quoted in these pages is describing in their own words. The research supports that belief with growing clarity. The policy environment supports it with increasing momentum. The students themselves are asking for it, in their attention and in their work, every day.

The path forward runs through careful, intentional design: screens used where they add value, and human, tactile, hands-on work given the room it deserves. Thoughtful design is what moves districts forward, and that work is happening in classrooms across the country right now.

WHAT THIS LOOKS LIKE AT PITSCO

The research in these pages describes a mechanism: students learn more when they process information by doing. Since 1971, Pitsco has built every program around it, the same way every time.

Students learn what the problem will demand. Then they build with real materials and find out where the design fails. Then they solve an authentic problem with no answer key, where the thing they built either works or it does not.

That structure holds whether the topic is rockets, robots, structures, or code. A district that adopts one Pitsco program already knows what the next one will look like.

If your buildings are rebalancing screens and hands-on work, a Pitsco Education Advisor can help you map what you already have against the checklist on page 7, and show you where a hands-on program fits without adding to what your teachers are already carrying.

Connect with your local Pitsco Education Advisor.

"Every decision I make is what's best for kids. But what is best for kids is making sure their teachers are really supported and have what they need."

Conor Walsh, principal, Bath Middle School

SOURCES AND FURTHER READING

POLICY AND LEGISLATION

- Florida HB 379 (2023), Florida Senate
- California AB 3216, Phone-Free School Act (signed September 2024, effective July 1, 2026), California Legislative Information; Governor's signing announcement
- Los Angeles Unified School District board action (June 2024), Los Angeles Times
- New York statewide bell-to-bell restrictions (2025-26), Office of the Governor of New York
- State-by-state tracking: Education Week and Ballotpedia

SCREEN TIME AND ACADEMIC OUTCOMES

- OECD, *Students, Digital Devices and Success* (2024) and *PISA 2022 Results, Volume I*
- Common Sense Census: Media Use by Tweens and Teens (2021), Common Sense Media
- Madigan, S., et al. (2019), "Association Between Screen Time and Children's Performance on a Developmental Screening Test," *JAMA Pediatrics*
- Pew Research Center, "72% of US High School Teachers Say Cellphone Distraction Is a Major Problem" (June 2024) and "Most Americans Back Cellphone Bans During Class" (October 2024)
- Nagata, J. M., et al. (2025), "Social Media Use Trajectories and Cognitive Performance in Adolescents," *JAMA*

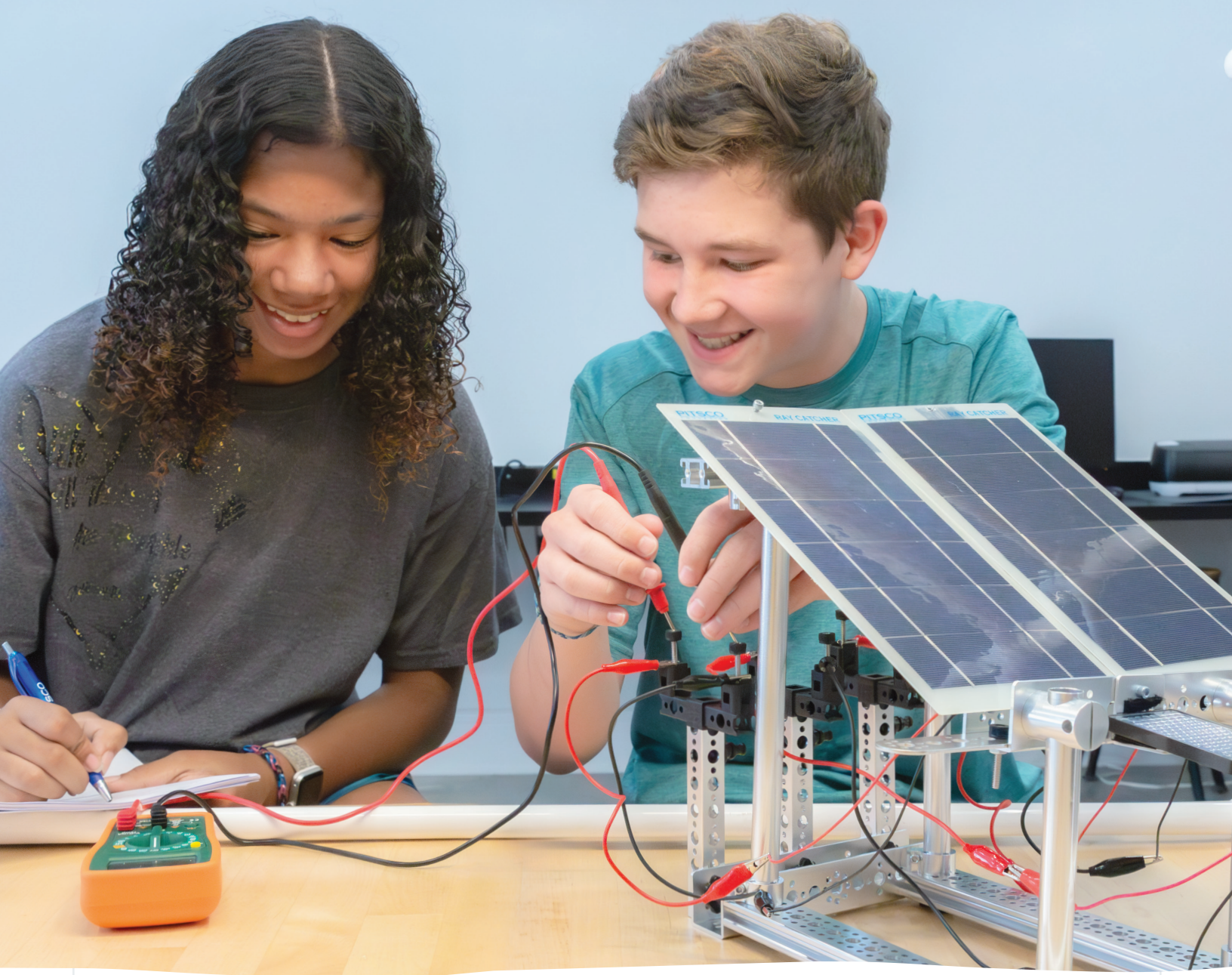
ACTIVE LEARNING AND HANDS-ON INSTRUCTION

- Ranken, E., Wyse, D., Manyukhina, Y., & Bradbury, A. (2025), "The effect of experiential learning on academic achievement of children aged 4-14: A rapid evidence assessment," *The Curriculum Journal*, 36, 417-434
- Freeman, S., et al. (2014), "Active learning increases student performance in science, engineering, and mathematics," PNAS, 111(23), 8410-8415
- Theobald, E. J., et al. (2020), "Active learning narrows achievement gaps for underrepresented students in undergraduate STEM," *PNAS*, 117(12), 6476-6483
- National Academies of Sciences, Engineering, and Medicine (2018), *How People Learn II: Learners, Contexts, and Cultures*
- Cook, S. W., Mitchell, Z., & Goldin-Meadow, S. (2008), "Gesturing makes learning last," *Cognition*, 106, 1047-1058, University of Chicago

TEACHER PERSPECTIVES AND CLASSROOM PRACTICE

- Educator quotes throughout this brief are drawn from Pitsco's library of interviews with K-12 educators and administrators, including Kevin Garner (Dallas ISD), Conor Walsh (Bath Middle School), Glenn Hair (Orange Park Junior High), and Dr. Saede Hammad (Al Ihsan School).

©2026 Pitsco Education, LLC. All rights reserved. Policy and legislative information current as of September 2026. This research brief is provided for educational and informational purposes for K-12 administrators and educators.



LET'S CONNECT!

We'd love the opportunity to learn more about your needs and goals.

Our Education Advisors can help you build a program tailored to your regional, state, and district goals.

CONNECT WITH YOUR LOCAL PITSCO EDUCATION ADVISOR

Pitsco Education • P.O. Box 1708, Pittsburg, KS 66762 • 800-835-0686 • Pitsco.com •

© 2026 Pitsco Education, LLC. All rights reserved.

PE•0926•0000•01 79533