Digital Promise®
Accelerating Innovation in Education

Learning in the 21st Century:
How the American Public, Parents,
and Teachers View Students' Potential
and Their Learning Experience

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Executive Summary

Americans believe:

- Most students are capable of high levels of achievement
- Learner variability exists
- Tailoring instruction to that variability could work
- Technology matters, with some caveats

At least three-quarters of public school parents, teachers, and the American public believe most students are capable of reaching high levels of educational achievement. About the same also say that learners vary by way of their "personal background and knowledge, their health and psychological well-being, and how they think, among other things." They express an overwhelming preference for approaches more tailored to students' learner variability—their strengths, challenges, social and emotional situation, and background—and less emphasis on "helping students get good grades on tests." Only 19 to 29 percent of those surveyed say most students are reaching high levels of educational achievement today.

In addition, survey respondents rate their own K-12 education more highly than the education most students receive now.

The broadest gap is among public school teachers themselves: 69 percent say they received an excellent or very good education, while just half as many—35 percent—say that's the case for most students today.

This study[1] surveyed U.S. adults on a range of issues related to learning, including the capability of students to achieve at high levels, learner variability, tailored approaches to learning, technology, and what teachers rely on to do their work. The survey was conducted April 5-16, 2019, among a national sample of 1,880 adults, including oversamples to a total of 550 public school parents and 516 public school teachers. Interviews were conducted via the Ipsos KnowledgePanel®, in which randomly recruited participants are given internet access to complete surveys online.

What is Learner Variability?

"Learner variability" refers to the abilities students have and the challenges they bring to the learning environment. Factors include their cognitive, social, and emotional skills, as well as personal background, including health and psychological well-being, among other things.

Results are reported for the three main respondent groups: general American public and public school parents and teachers. All differences described in this report have been tested for statistical significance. The study includes statistical modeling using regression analysis, an approach in which potential contributors to a given outcome are held constant in order to see which emerge as the strongest independent predictors of that outcome, controlling for all other predictors in that model. Such analyses identify positive predictors—items that independently contribute to an outcome—and negative predictors, which independently detract from that outcome. Predictors, it should be noted, are correlates, and not necessarily causal.[2] Full details on the poll's methodology are available at the end of the report.

The survey covers additional topics including: current use of educational technology (edtech), which is extensive in schools and homes alike; perceived factors in student achievement; and influences on how teachers perform their jobs. **Relatively few teachers, for example, report relying on academic research to do their work; those who do are much more likely to be very comfortable using edtech.**

This is the first in a series of Digital Promise-led polls designed to develop a better understanding of people's attitudes toward learning, learner variability, the role of technology in learning, how teachers and school systems respond to burgeoning research, and the obstacles to applying research and addressing the needs of the full diversity of learners.

Key Findings
Student Potential

The majority of Americans (77 percent), parents (75 percent), and teachers (89 percent) agree that most students can indeed achieve at high levels if offered appropriate supports. Significantly fewer, however (19 percent of the American public, 29 percent of parents, and 28 percent of teachers), concur that most students today are reaching high levels of educational achievement.

This produces gaps of 46 to 61 percentage points between what students are seen as capable of doing and what they are doing, with the widest gap among teachers. While there's broad consensus that schools should focus on helping students reach their potential, in reality, just 35 percent of Americans say it is the schools' priority. Instead, 64 percent of Americans say that schools mainly focus on test performance.

> *Survey Question*
>
> - Given the right environment and support, how many students do you think are capable of high levels of educational achievement?

[2] Because this study did not seek to measure the full range of attitudes about education, several of the models explain very little of the total variance in outcome variables. Nonetheless, they identify the most influential demographic and available attitudinal factors among those that are available, and as such offer additional insight.

Learner Variability and Tailored Instruction

The public widely recognizes that students vary from one another in how they learn individually, as well as in how they learn across school subjects. Among the general public, parents, and teachers, 78 to 83 percent think there's a great deal or good amount of variability across learners, and 74 to 77 percent (teachers, general public, parents) say there is a great deal or good amount of individual learner variability across school subjects.

Respondents who perceive a great deal or good amount of learner variability are more likely than others to support tailored instruction. Tailored instruction is seen as helpful to all students, not only certain subsets of learners. **Vast majorities—79 percent of parents, 80 percent of the general public, and 86 percent of teachers surveyed—see tailored instruction as the "better way for students to learn."** More than six in 10 feel that way strongly, including 67 percent of teachers.

Yet, comparatively few think public schools currently do an excellent or good job supporting learner variability—35 percent of the general public, 42 percent of parents, and 53 percent of teachers. Underscoring dissatisfaction with the current system, only 20 percent of the general public, 31 percent of parents, and 39 percent of teachers believe tailored instruction is commonly used in schools today. Instead, many Americans see an overemphasis on testing. Sixty-four percent of the general public, and about half of parents and teachers (55 and 53 percent, respectively), say schools focus more on "helping students get good grades on tests" than on "helping students reach their full potential as learners." Each group is nearly unanimous in its belief that helping students achieve their full learning potential should instead be the focus.

📄 *Survey Questions*

Learner Variability

- How much do you think students vary from one another in how they learn?

- How much do you think learner variability depends on subject area?

- As far as you're aware, how good a job do the schools in your community do in supporting learner variability among students?

Tailored Instruction

- Which of these do you think is a better way for students to learn?

  - *Whole group instruction:* Students learn the same content at the same pace—keeping the whole group together and working on the same things at the same time.

  - *Tailored instruction:* Students learn different content at a different pace—instruction is adjusted for each individual based on an evaluation of how they learn.

- Would you support or oppose creating a tailored instruction program in your community's schools?

- Creating a tailored instruction system could take additional staff and resources. Would you support or oppose increasing local property taxes to create this kind of system in your community's schools?

- On average, by how much more money a year would you support raising property taxes in order to create a tailored instruction system in your community's schools?

Parents' Perception of Their and Their Child's Education Experiences

As with teachers, parents are more apt to view their own school favorably compared with public schools generally.

- Just 34% of parents think most students receive an excellent or very good education.

- More (50%) say their own child's education reaches that level.

- At the same time, this leaves a substantial number of public school parents saying their child's education is a middling "good" (39%) or worse (11%).

- 55% of parents believe schools mainly focus on helping students get good grades on tests, while 43% say schools mainly focus on helping students reach their full potential. Yet, 94% of parents believe schools should help students reach their full potential, with that percentage about the same for the general public (95%) and teachers (96%).

Groups more likely to rate both their own and their child's education positively include:

- College-educated parents versus those without a four-year degree.

- Parents living in suburban or rural areas versus those in urban areas.

Educational Technology

The survey finds broad support for the use of educational technology (edtech) in schools, but also some caveats. Sizable majorities say edtech improves students' learning experiences—69 percent of public school parents, 75 percent of the general public, and 78 percent of teachers. Perceived benefits of using edtech are enhanced information gathering and new learning strategy approaches.

Comparatively few, though (14 to 16 percent of teachers, parents, and the general public), think edtech improves student learning outcomes "greatly." Perceived disadvantages of edtech are a lessening of student collaboration, additional screen time for children, costs, data privacy concerns, and doubts about its effectiveness.

Digital Promise LVP Survey

For Teachers: How much if at all do you use educational technology in your classroom?

- Every day — 35%
- Most days — 23%
- Some days — 24%
- A few days a month — 9%
- Less often than a few days a month — 6%
- Not at all — 2%
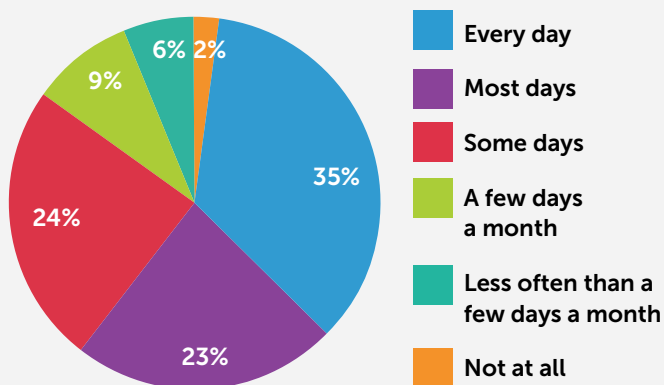
For Teachers: How much input do you have into which educational technology you use in your classroom?[3]

- A lot — 17%
- A good amount — 26%
- Some — 29%
- A little — 16%
- None — 11%
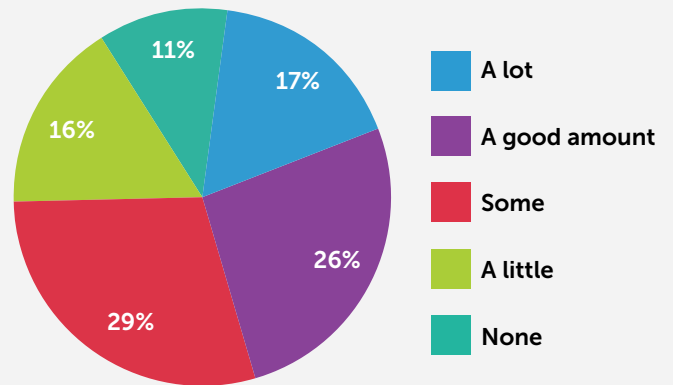
[3] This was not asked of the teachers who said they do not use educational technology in their classroom.

📄 *Survey Questions*

How do you think educational technology affects students' learning experiences?

Do you think the use of educational technology helps or hurts students do each of these?

- Develop organizational and task management skills
- Develop their ability to work with others
- Find new learning strategies
- Find new information and ideas

How comfortable are you/ would you be using educational technology in your classroom?

Do you feel you are adequately prepared to use educational technology, or not?

Factors that Inform Teacher Practice

When asked how much they rely on each of a series of supports to inform their work, teachers say they rely more on experience (96 percent) and instinct (90 percent) than their education and professional development (66 percent) or academic research (53 percent).

Notably, **teachers who rely on academic research are more likely than others to say they are "very comfortable" with edtech, 64 percent versus 46 percent.** Those who rely on academic research are also more apt to say edtech greatly improves students' learning experiences, at 21 percent versus 6 percent of those who rely on it just some of the time or less. That said, they're no more likely to want more edtech resources than they have now.

📄 *Survey Questions*

How much do you rely on each of these as a teacher?

- Your experience
- Your instincts
- Academic research
- Educational resources, such as teaching guides, textbook guides, or curriculum
- Your education/ professional development
- Teacher peers
- Administrators

Learning in the 21st Century:

How the American Public, Parents, and Teachers View Students' Potential and Their Learning Experience

At least three-quarters of public school parents, teachers, and the American public overall believe most students are capable of reaching high levels of educational achievement.

Seventy-eight percent of the general public, 80 percent of parents, and 83 percent of teachers also say that learners vary by way of their "personal background and knowledge, their health and psychological well-being, and how they think, among other things."

And while most support instruction tailored to the unique strengths, challenges, and background of each learner, most of the general public also feel that school systems today are more focused on helping students get good grades on tests than they are on helping students reach their potential. Just 19 to 29 percent of those surveyed say most students are reaching their potential today.

The survey covers additional topics, including current use of edtech, perceived factors in student achievement, and influences in how teachers perform their jobs.

It is the first in a series of Digital Promise-led polls designed to develop a better understanding of learning, learner variability, how teachers and school systems respond to burgeoning research in the field of learning, and what obstacles need to be overcome to apply research to address the needs of the full diversity of learners.

Student Potential

Are students capable of high levels of educational achievement?

As noted, about three-quarters of the general public and parents alike say that most or nearly all students are capable of high levels of educational achievement; teachers are the most likely to report this at 89 percent.

Among teachers, those who teach grades K-5 are 11 points more apt than those who teach grades 6-12 to rate nearly all students capable of high levels of educational achievement.[4]

Far fewer Americans think students are actually reaching high levels of educational achievement—just 19 to 29 percent of all adults, teachers, and parents, which produces gaps of 46 to 61 points between what students *are seen as capable of doing and what they are doing*. Income also differentiates, with a 61-point gap among those with household incomes of $50,000 or more, versus 51 points among those earning less than $50,000.

[4] Significant at 90 percent confidence

Can Students Achieve at High Levels?
Digital Promise LVP Survey

Legend:
- ■ (blue) Think students are capable of high levels of educational achievement
- ■ (green) Think students currently are achieving at high levels

	General public	Parents	Teachers
Capable of high levels	77%	75%	89%
Currently achieving	19%	29%	28%
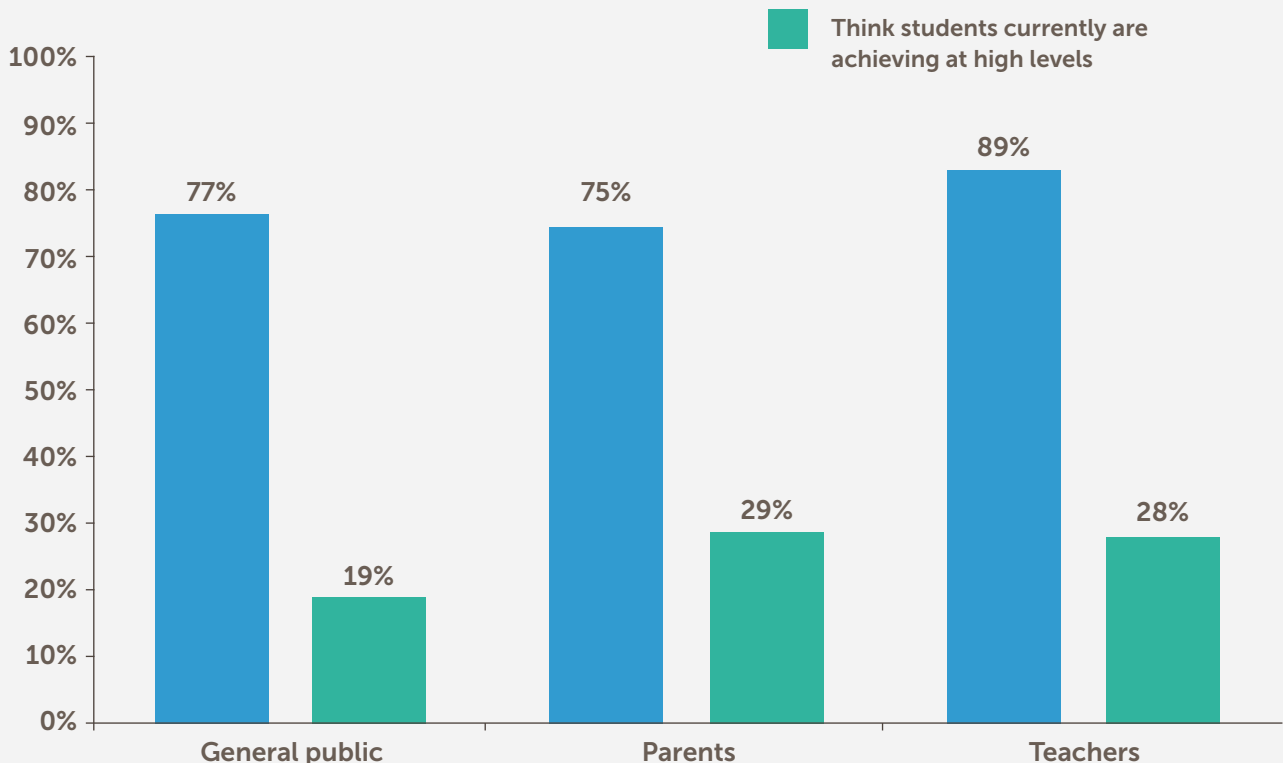
Factors that Influence Student Achievement

While many factors influence students reaching their full potential as learners, this study focused on three:

1. Teacher training and professional development (PD)
2. Up-to-date textbooks
3. Online educational resources

Findings:

- Training and PD top the list—75 to 80 percent of teachers, parents, and the general public say this has a good amount or great deal of influence on students reaching their potential (with the lowest confidence coming from teachers themselves).

- 70 percent of parents and the general public alike feel that up-to-date textbooks are a major influence.

- 64 percent of the general public say online educational resources are a major influence.

- Teachers are slightly less apt than parents and the general public to see current textbooks as influential.

- Teachers of grades K-8 are more likely than high school teachers to think PD and online educational resources significantly impact student achievement.

Teacher Report of Factors that Affect Student Achievement

Grade Taught	Training and PD	Up-to-date Textbooks	Online Resources
K-8	78%	55%	65%
9-12	65%	50%	45%

📄 *Survey Questions*

How much do you think that each of these influences whether or not students reach their full potential as learners?

- Up-to-date textbooks
- Availability of online educational resources
- Professional development/training for teachers

While 75 to 89 percent of parents, the general public, and teachers say students are capable of high levels of achievement, 64 percent of the general public and about half of the parents (55 percent) and teachers (53 percent) think schools focus less on helping students meet their unique learning potential than on test preparation. At least nine in 10 (91-97 percent) people polled across demographic and attitudinal groups agree that helping students reach their full potential as learners is more important than helping them get good grades on tests. But just 35 percent of Americans say that is, in fact, a priority of schools. Sixty-four percent instead say schools mainly focus on test performance, with notable differences between whites (68 percent) and non-whites (57 percent), as well as between adults without children in public school (66 percent) and public school parents (55 percent).

Many public school teachers share this concern: about half think schools focus more on tests than on students' learning potential.

▤ The survey says:

- 82% of college-educated adults think most or nearly all students are capable of high levels of achievement, compared with 74% of those without a degree.

- Among parents, 84% of those with household incomes of $100,000 or more think most or nearly all students can achieve at high levels, compared with 66% of parents earning less than $50,000.

Schools' Focus: Tests vs. Students' Learning Potential

Digital Promise LVP Survey

General public   Parents   Teachers
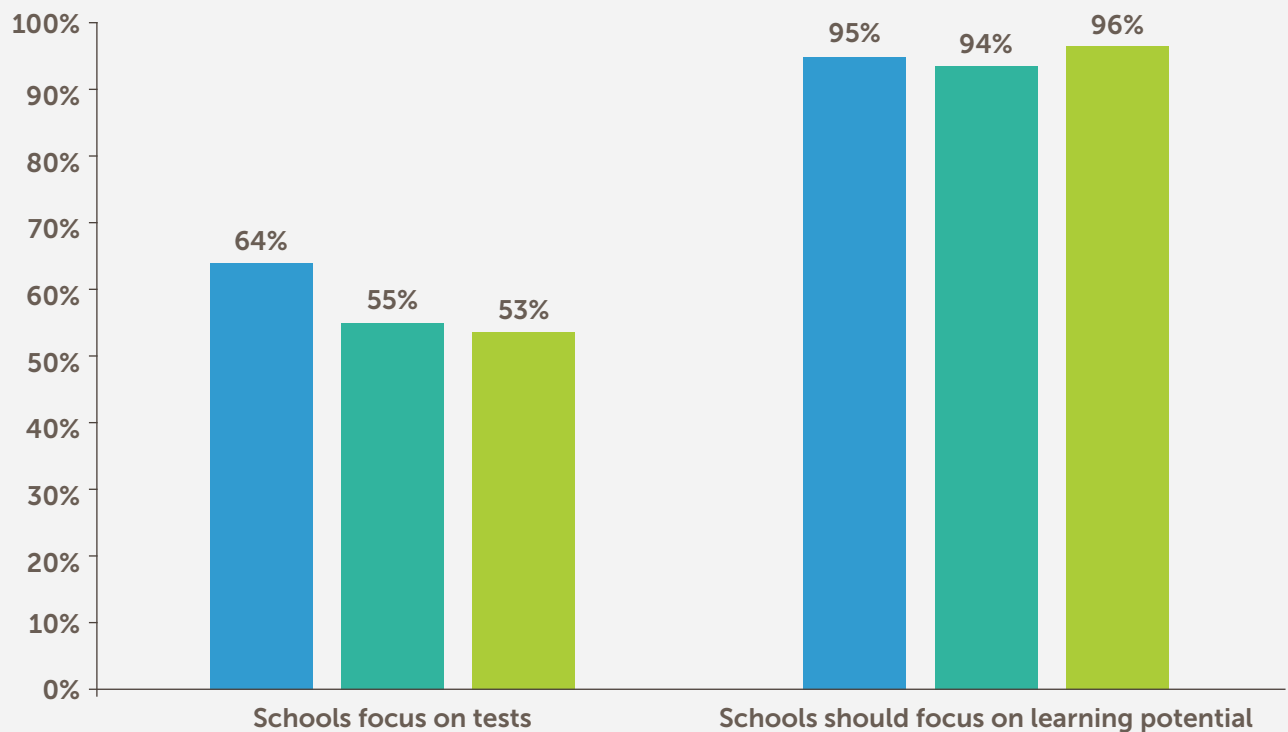
Learner Variability

How much do you think students vary from one another in how they learn?

Seventy-eight percent of the general public think students vary a great deal or good amount from one another in how they learn, far outpacing the 20 percent who say they vary "just some" or less. "Learner variability," as defined in this survey, "refers to the abilities students have and the challenges they bring to the learning environment."

Factors include their cognitive, social and emotional skills, as well as personal background, including health and psychological well-being, among other things. While substantial across groups, recognition of variability peaks among the following groups as compared with their counterparts:

- whites
- adults with household incomes of $50,000 or more

(These differences hold up in statistical modeling when controlling for other demographic variables.)

The survey says:

- Among parents, Hispanic respondents are less likely to hold the view that learners vary.

- Among all adults, higher household income is a positive predictor of perceived variability in how individual students learn.

Perceived Variability in How Students Learn
Digital Promise LVP Survey

Legend:
- Great deal/good amount of variability
- Just some
- A little/none at all

	Great deal/good amount of variability	Just some	A little/none at all
General public	78%	17%	3%
Parents	80%	15%	4%
Teachers	83%	14%	2%
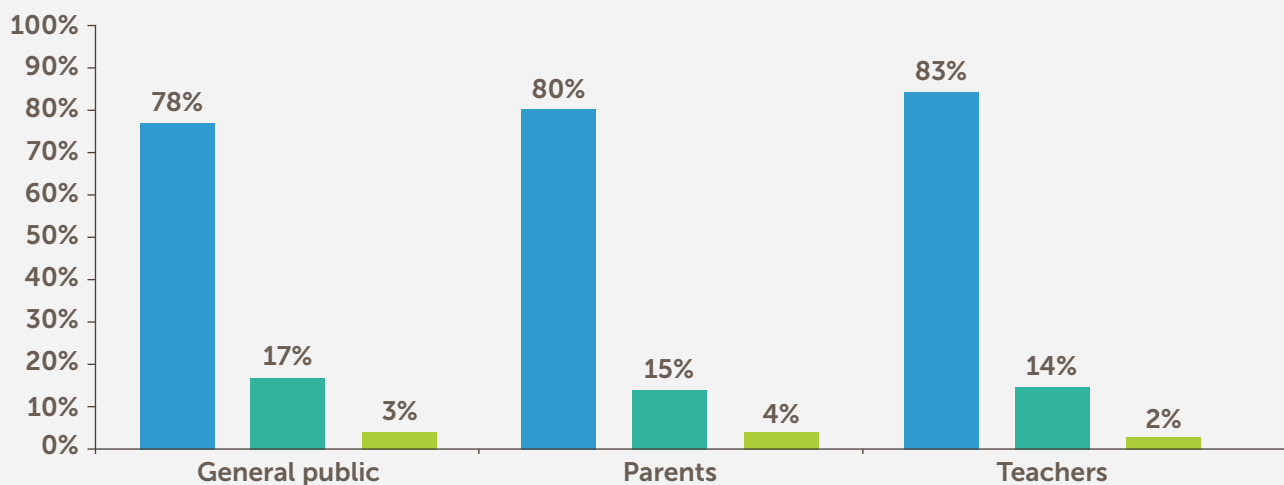
Positive Predictor

- Thinking that students are capable of high levels of educational achievement[5] is a positive predictor of thinking that students vary in how they learn.

Negative Predictor

- Non-white respondents are 15 points less likely than whites to believe students vary from one another in how they learn.

Who Thinks Schools Are Doing a Good Job Addressing Learner Variability?

There are also group differences in thinking that one's local schools do a good job in supporting learner variability among students. This view is held by a minority of the general public and parents (35 and 42 percent, respectively) and about half of teachers (53 percent). Notably, individuals who think their local schools focus more on helping students reach their full potential than on taking tests are much more apt to rate their schools positively for supporting learner variability by 33 to 22 points.

Schools and Learner Variability
Digital Promise LVP Survey

35% General public **42%** Parents **53%** Teachers
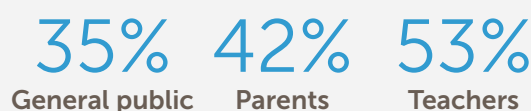
Think their community's schools do an excellent or good job supporting learner variability

⊟ The survey says:

- Compared with people in other parts of the country, those who live in the West are less likely than others to think schools do a good job (or better) on learner variability, at 26% versus 35% of Southerners, 41% of Northeasterners, and 42% of Midwesterners.

- This view is also stronger among seniors than among young adults (ages 18-29), at 44% versus 26%.

- Among teachers, race and teachers' grade levels interact with these views. They are higher among white than non-white teachers (59% versus 35%), and higher among K-8 teachers versus those who teach grades 9-12 (56% versus 42%).

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[5] Illustratively, 82 percent of adults who think most or nearly all students are capable of high educational achievement think students vary a great deal/good amount in how they learn, compared with 69 percent of those who think just some or fewer are capable.

Tailoring Instruction to Address Learner Variability

Which is the better way for students to learn—whole group or tailored instruction?

Seeing tailored instruction as the "better way for students to learn" than whole group instruction is broadly based among all respondents.

Viewing tailored instruction as the better way to learn is slightly higher (by five points) among those who think schools currently focus more on helping students get good grades on tests versus those who see a current focus on learning potential. It's also eight points higher among those who think the quality of education students receive today is less than good, compared with those who think it's either excellent or very good. Again, though, large majorities support tailored instruction.

Among other differences, those who think nearly all students are capable of high levels of educational achievement are 13 points more likely to say tailored instruction is the better way to learn than those who think only some or few students are capable of high achievement.

> **? Question**
>
> Think about how an individual student learns in different subject areas, for example how a student learns in math versus history. How much do you think learner variability depends on subject area?

Better Way for Students to Learn: Tailored or Whole Group Instruction?

Digital Promise LVP Survey

■ Tailored instruction
■ Whole group instruction

	General public	Parents	Teachers
Tailored instruction	80%	79%	86%
Whole group instruction	20%	21%	14%
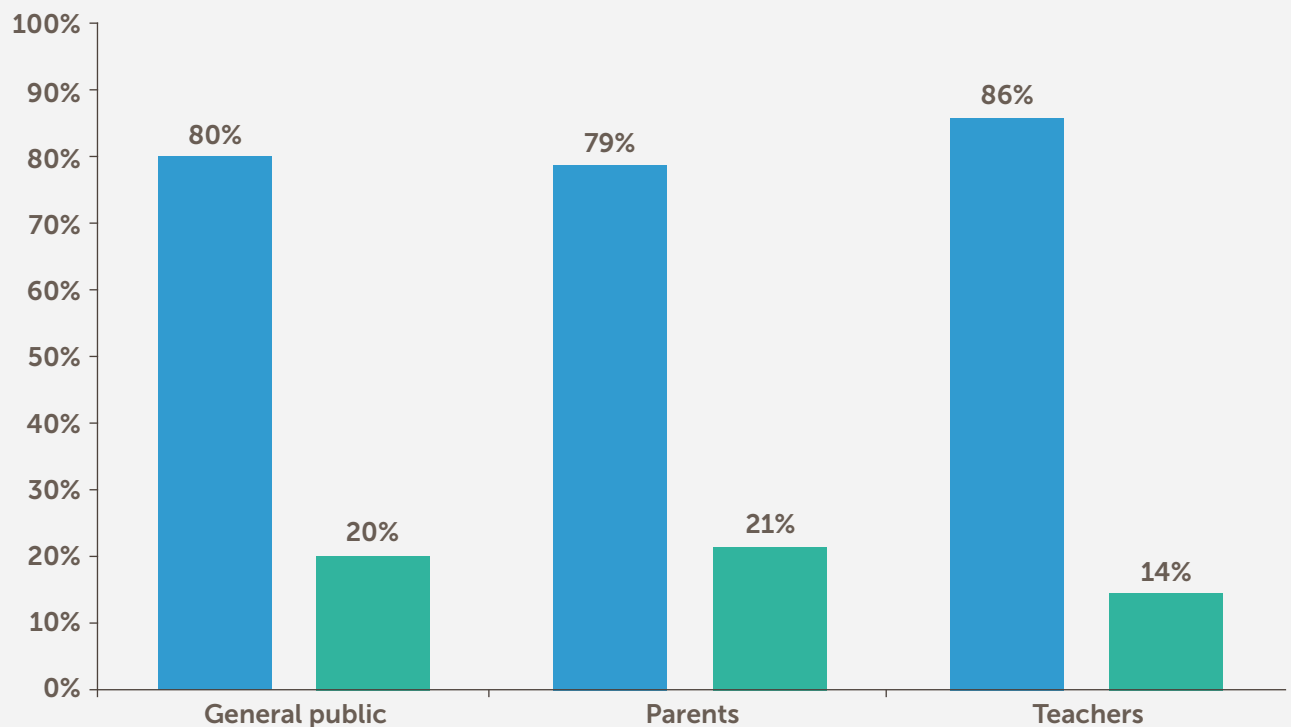
Support for tailored instruction also is higher among more educated adults, reaching 85 percent among college graduates compared with 78 percent among non-college graduates. Similarly, college-educated parents are 10 points more apt than those without a college degree to say tailored instruction is the better way to learn, 86 versus 76 percent.

Notably, in supporting tailored instruction, parents are reaching outside their own experience. While 74 percent say tailored instruction is the better approach for their child, only 23 percent say that about half or more of the instruction they received in school was tailored rather than whole group.

While support for tailored instruction is high in general, strong support for funding a tailored instruction program in one's own community is lower, and objections appear.

Perceived Major Barriers to Providing Tailored Instruction

Digital Promise LVP Survey

Legend: Parents, Teachers

Barrier	Parents	Teachers
Paying for staff	61%	86%
Support from the school community	35%	38%
Professional training for teachers	37%	41%
Providing for students who prefer whole group instruction	15%	9%

According to the survey, major barriers to tailored instruction include:

- Pay for staff to carry out tailored instruction (61 percent of parents, 66 percent of the general public, and 86 percent of teachers) is the most commonly perceived major barrier by far.

- Support from the school community (42 percent of the general public, 38 of percent of teachers, and 35 percent of parents).

- Providing professional development opportunities (37 percent of parents and the general public alike, and 41 percent of teachers).

Among Americans, college graduates are more likely than those without degrees to see major barriers, whether it is in paying adequate staff (75 percent versus 62 percent) or providing professional training for teachers (41 percent versus 34 percent).

The survey says:

- Among teachers, those in the Midwest are most apt to see adequate staffing as a major barrier (95%) versus 82% of teachers in the South and 80% in the Northeast.

- White teachers are 15 points more apt than non-white teachers to see major barriers in providing professional training for teachers.

Taxes for Tailored Instruction

Related to costs, 66 to 74 percent of the general public, parents, and teachers say they would support raising taxes to fund tailored instruction programs, but strong support falls to 15 to 23 percent.

Positive predictors for those likely to back higher taxes for this approach include:

- favoring tailored instruction over whole group instruction
- recognizing subject-specific learner variability
- thinking that more students are capable of high levels of educational achievement
- having a greater number of children

As is often the case with views on government spending, one impediment is a lack of certainty that tailored instruction programs can be implemented successfully. While 59 to 66 percent of respondents think their local schools are capable of creating and managing such a system, just 11 to 16 percent think their schools are "definitely" capable.

Among those who think their schools are definitely capable of implementing tailored instruction, 79 percent support higher taxes to pay for it.

Increasing Taxes to Create a Tailored Instruction Program
Digital Promise LVP Survey

Legend: Strongly Support, Support

- General Public: 15% Strongly Support, 50% Support
- Parents: 20% Strongly Support, 55% Support
- Teachers: 23% Strongly Support, 46% Support
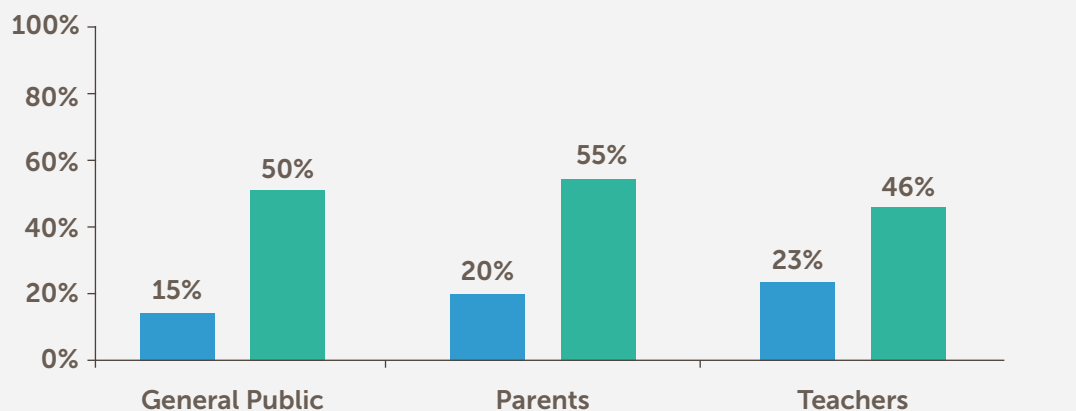
Among teachers, in considering their own school, just 17 percent say their school is "definitely" capable of instituting a tailored instruction program—although an additional 48 percent say their school can "probably" do so. Among parents, only 17 percent see their child's school as "definitely" capable of the task, but 53 percent say the school is "probably" capable.

Who Benefits from Tailored Instruction

Another question is who benefits from tailored instruction and by how much. Seventy-nine to 90 percent of the general public, parents, and teachers see a great deal or good amount of benefit from this approach for students identified as gifted, as having learning disabilities, or who have problems with whole group instruction.

Somewhat fewer, but still majorities at 66 to 75 percent, believe tailored instruction can benefit all students.

A larger gap, however, exists when looking at the extent of benefit in tailored instruction. Forty-seven to 58 percent of the general public, parents, and teachers see a great deal of benefit in tailored instruction for students identified as gifted, having learning disabilities, or are in some way challenged by whole group instruction. But substantially fewer, 28 to 36 percent, see a great deal of benefit for all students.

Groups Seen as Benefitting from Tailored Instruction

Among the general public

Digital Promise LVP Survey

Think these groups could benefit "a great deal" from tailored instruction

Students who have learning disabilities	Students who have trouble with whole group instruction	Students identified as gifted	All students
53%	47%	48%	29%
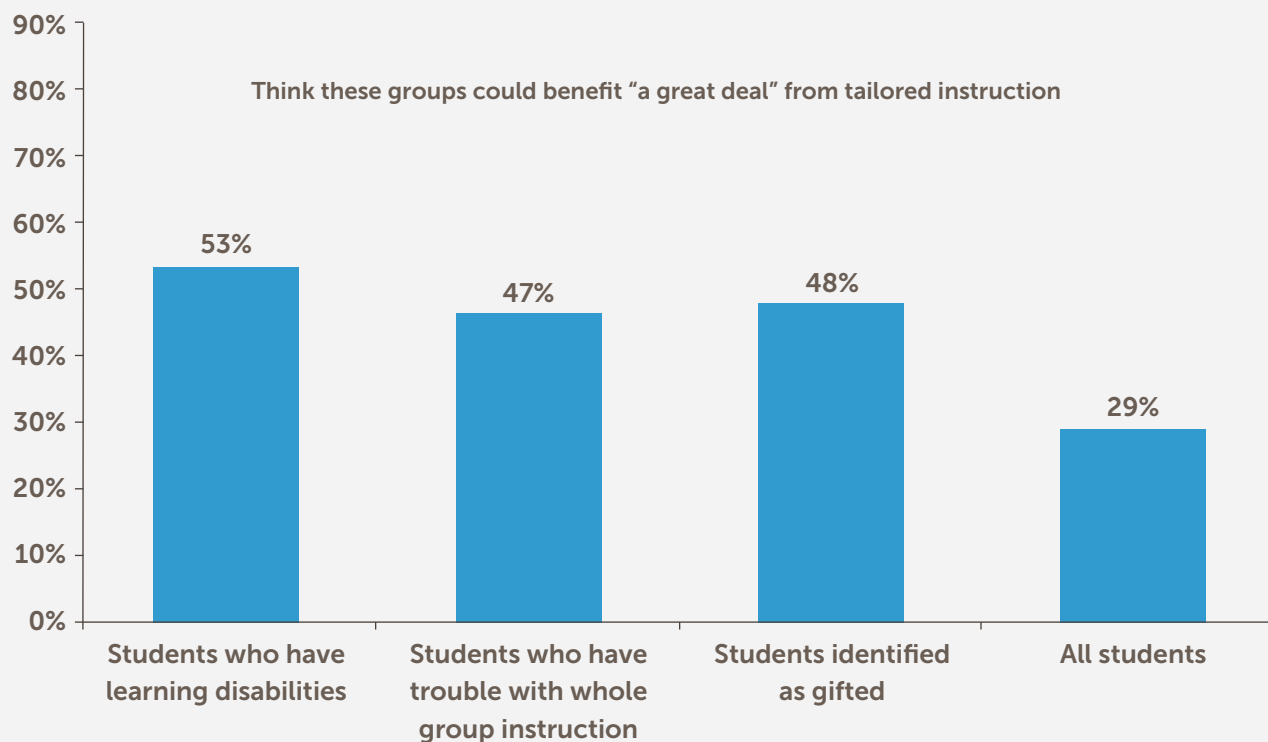
Predictors of thinking all students could benefit from tailored instruction:

- Believing more students are capable of high levels of educational achievement and seeing general learner variability are the strongest independent predictors of thinking all students could benefit from tailored instruction for the general public.

- Believing in subject-specific learner variability also strongly predicts the extent to which the general public and teachers think all students could benefit from tailored instruction.

- Believing that most students are capable of high educational achievement is also a positive predictor for teachers and parents.

Predicting the same outcome among teachers, subject-specific learner variability holds the most weight. Other positive predictors include income, relying on academic research, and being Hispanic. Conversely, the effect of teacher tenure is a negative one—with more years' experience, teachers are less likely to think all students could benefit from tailored instruction, controlling for other factors.

Educational Technology

How does technology affect students' learning experiences?

Thirty-five percent of teachers report using educational technology (edtech) every day in their classrooms; an additional 23 percent say they use it most days. Just two percent say they do not use it at all.

There's limited demand for more edtech resources. About two in 10 parents and teachers say their schools are using too little edtech, and about as many say they're using too much. Sixty-three percent of parents and 60 percent of teachers say their own school's current use of educational technology is about right.

The survey says:

- 42% of teachers with a post-graduate degree say they use edtech every day, compared with 26% of those with only a bachelor's degree.

- K-8 teachers use edtech most frequently; 39% say they use it every day, compared with 23% of high school teachers.

Use of Educational Technology

Among public school teachers

Digital Promise LVP Survey

Comfort with using edtech in the classroom

- Very comfortable: 55%
- Somewhat comfortable: 41%
- Uncomfortable: 4%

Do you feel prepared to use edtech, or not?

- Very prepared: 38%
- Somewhat prepared: 54%
- Not prepared: 8%
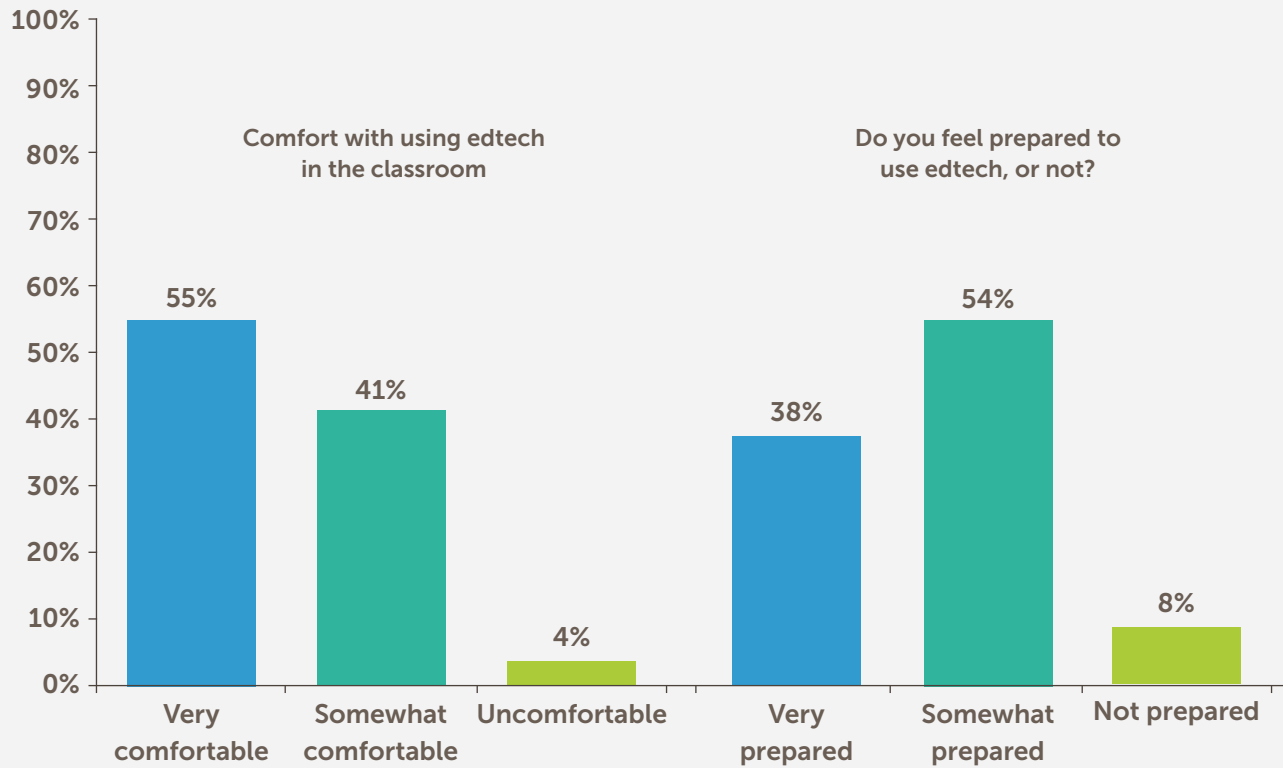
Similar to teachers, 34 percent of parents who think edtech diminishes or has no effect on the learning experience also think their child's school is using it too much, compared with just 11 percent of those who think it improves learning. In another division, Northeasterners are more likely to see overuse of edtech at their child's school, 28 percent, versus 15 percent in other regions.

[6] Significant at 90 percent confidence

The survey says:

- Non-white teachers are especially likely to say that their school makes too little use of edtech (36%), compared with 17% of white teachers.

- Teachers in suburban and rural areas are about twice as likely (21%) as those in urban areas (11%) to say that their school makes too much use of edtech.[6]

Benefits of Edtech

As with tailored instruction, views on the use of edtech are supportive in important respects but also include some caveats. Drilling down, a range of pluses and minuses is seen. At the peak, 85 to 91 percent of parents, the general public, and teachers say edtech *helps students get new information and ideas*. Even among those who think edtech diminishes the learning experience overall, 72 percent say that it helps in this regard.

Fewer overall—but still 62 to 72 percent— say edtech helps students *find new learning strategies*, while 53 to 65 percent say it helps with *organizational and task management skills*. Notably, teachers were least likely to say edtech helps with organizational and task management skills.

Caveats to the Use of Edtech

In a comparative weakness, 45 percent of teachers say edtech hurts, rather than helps, when it comes to students developing their ability to work with others; a third think it helps. Thirty-seven percent of the general public and 34 percent of public school parents share the view that edtech weakens collaboration.

Overall, while 69 to 78 percent of parents, the general public, and teachers say edtech improves students' learning experiences, comparatively few (14 to 16 percent) think it does so "greatly."

Edtech Learning Experiences
Digital Promise LVP Survey

Parents
Teachers

	Edtech improves learning experiences	Does so "greatly"
Parents	69%	15%
Teachers	78%	14%
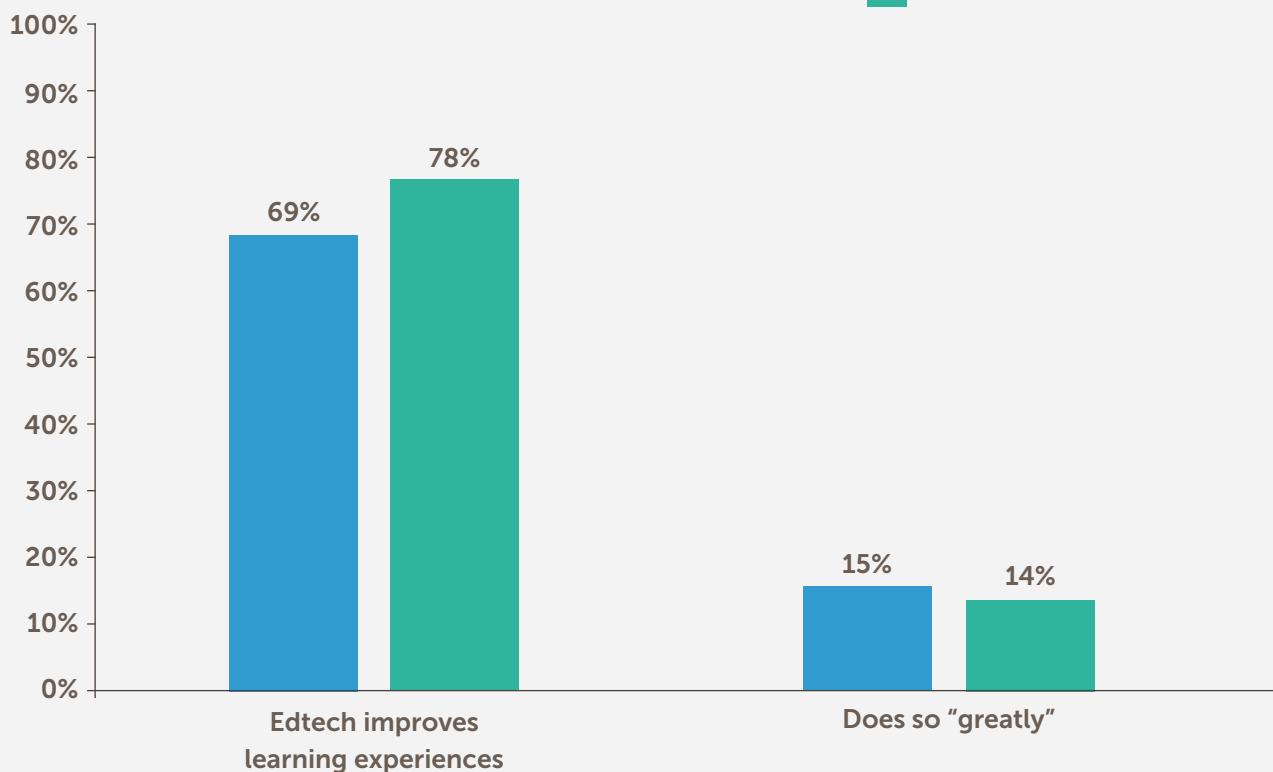
Results also track with attitudes about students' capabilities. Among those who think that all or most students can achieve at a high level, 78 percent say edtech improves the learning experience. Among those who are more skeptical of student capability, 68 percent also believe edtech can improve the learning experience.

As with younger adults in general, younger parents are more skeptical about edtech. Sixty-four percent of parents under 40 think it improves the learning experience, compared with 74 percent of older parents.

Does Edtech Use Help or Hurt Students...
Digital Promise LVP Survey

	General Public		Parents		Teachers	
	Helps	**Hurts**	**Helps**	**Hurts**	**Helps**	**Hurts**
Find new information and ideas	85%	3%	85%	4%	91%	3%
Find new learning strategies	71%	9%	72%	9%	62%	13%
Develop organizational and task management skills	62%	13%	65%	12%	53%	21%
Develop their ability to work with others	36%	37%	40%	34%	33%	45%

Barriers to Edtech

Several barriers to the use of edtech in schools were noted. More than eight in 10 of those surveyed overall see the **cost** of computers for students as a barrier to using edtech, and substantial shares call this a major barrier—42 percent of parents, 49 percent of the general public, and 51 percent of teachers. **Too much screen time** is another comparative weakness, with 85 to 90 percent of survey respondents seeing concerns about too much screen time as a barrier to edtech. Fewer respondents, but still about four in 10, call it a major barrier.

Other top concerns include data privacy and questions about the effectiveness of edtech, although fewer respondents see these or other factors, including resistance from parents, teachers, and school administrators, as well as the cost of internet access, as major barriers.

Results on whether or not edtech improves the learning experience are largely consistent across groups, with a few exceptions. Adults with no more than a high school education are less apt to see edtech as an improvement, as are younger adults (including younger parents). It's also lower in the Midwest, 68 percent, than in other regions (75 to 78

percent), and is seen as more beneficial by more rural and suburban residents than urban ones, 80 and 77 percent versus 70 percent.

In modeling, among all adults and parents alike, being older is a significant positive predictor of thinking edtech improves learning, as is seeing greater subject-specific learner variability.

Views are divided on one potential application of edtech: using it to provide teachers with suggestions for tailored instruction plans. Forty-nine percent of parents, and fewer teachers or Americans generally (40 percent alike), are confident that a system like this could work effectively. Most of the rest are unsure, rather than lacking in confidence, while only seven to 10 percent are very confident in the prospect.

Attitudes about edtech's overall impact inform these results. Among parents who think edtech improves the learning experience,

52 percent are also confident in using it in tailored instruction. However, it's 41 percent among parents who do not think edtech enhances learning more generally.

Among teachers, confidence in using edtech to inform tailored instruction is highest among those already using edtech. Forty-seven percent of those who use edtech in their classrooms on most days or every day (58 percent of all teachers) are confident that this kind of system could work, compared with 32 percent of those who use it less often.

As for parents, those whose oldest child is in high school are less confident than those whose oldest is in elementary school, 40 versus 58 percent. It's 52 percent for those whose oldest is in middle school.

What Teachers Say About the Effectiveness of Edtech

Most teachers are not calling for new technological resources. Seventy percent say they have access to the edtech software they would like to have, even though fewer (43 percent) report having substantial input into what edtech resources their school supplies. The rest of the teachers divide between having some input or little to none on edtech resources.

Lack of full confidence using edtech is apparent from respondents. Ninety-two percent of teachers say they are adequately prepared to use edtech resources; only 38 percent say they are very prepared. While nearly all teachers say they are comfortable with it, 55 percent report being very comfortable.

Edtech at Home and School

Home

- Six in 10 parents say they have educational software or apps at home
- Peaks among those with higher incomes and more education
- Skepticism about edtech does not preclude adoption of such software at home: 53% of parents who don't think it improves students' learning experience have it at home, rising to nearly two-thirds of parents who think it does improve learning[7]

Schools

- Edtech tools in schools are highly prevalent
- 91% of parents say their child's school is equipped with computers
- Eight in ten say their child's school offers high-speed internet and educational software alike (double-digit percentages do not know whether their school has high-speed internet or educational software)

Teachers

- 94% of teachers say their school has computers, laptops, or tablets available for students to use
- 51% say these resources are available "always, whenever needed"
- An additional 36% say they are "often" available
- 90% say educational apps are available
- 89% say there is high-speed internet access in their school

[7] Significant at 90 percent confidence

Factors that Inform Teacher Practice

A window into what resources teachers draw on in the classroom can be seen from a question asking what they rely on to do their work.

Atop the list, 96 percent of teachers say they rely a great deal or good amount on their experience, and 90 percent cite relying on their instincts. Indeed, 70 percent say experience is something they rely on a great deal, far and away most prominent. Fifty-two percent say the same about their instincts.

At the same time, 61 to 68 percent of teachers say they rely substantially on their educational resources, their education and professional development, and their teacher peers; 27 to 33 percent rely on these a great deal. Fewer teachers (53 percent) say they rely a great deal or good amount on academic research. Only one item comes in lower: 32 percent say they rely on school administrators a great deal or good amount, and just 8 percent say they do this a great deal.

Teachers rely on different resources based, to some extent, on their tenure. Relying a great deal on experience and instinct peaks among those with at least 10 years' experience (78 and 58 percent, respectively), while reliance on educational resources is highest, albeit just 39 percent, among those with fewer than 10 years' experience.

Notably, teachers who rely on academic research a great deal or good amount are more likely than others to say they are "very comfortable" with edtech, at 64 percent versus 46 percent. Indeed, comfort with edtech is predicted by teachers' reliance on academic research. Those who rely on academic research are also more likely to think edtech greatly improves students'

The survey says:

- Non-white teachers are more apt than white teachers to rely on administrators a great deal or good amount, at 47% versus 27%.

- Conversely, non-white teachers are less likely than white teachers to say they rely on their instincts (80% versus 93%).

learning experiences, at 21 percent versus six percent, albeit no more likely to want more edtech resources than they have now.

Finally, teachers take evident pride in their school. Just 35 percent say most students across the country receive an excellent or very good education. Sixty-five percent, by contrast, say that the school in which they teach offers an excellent or very good education.

What Teachers Rely On

Experience	96%
Instincts	90%
Teacher peers	68%
Education/ professional development	66%
Educational resources	61%
Academic research	53%
Administrators	32%

Conclusions

Digital Promise's Learner Variability Project (LVP) study finds that about three-quarters of Americans believe most students are capable of achieving at high levels.

Additionally, the survey shows high levels of public support for tailored instruction, most commonly referred to as personalized learning. These beliefs are informed by fundamental concerns about the state of public education today, with vast numbers of parents, teachers, and the general public saying that students are currently falling short of their potential for educational achievement.

The two approaches on which this survey focused—tailored instruction and the use of educational technology—receive broad public buy-in. Eighty percent of Americans see tailored instruction as better than whole group instruction for student learning. Seventy-five percent of the general public say edtech improves students' learning experiences. Both results indicate a positive platform on which understanding, acceptance, and adoption of these approaches can be built.

But there's considerable work ahead for proponents of tailored instruction and edtech. Backing for both is wider than it is deep, with significantly lower levels of "strong" support for tailored instruction and limited belief that edtech "greatly" improves student learning. Compunctions about both, in terms of costs and implementation, are considerable.

On tailored instruction, paying for adequate staff is seen as a major barrier—notably, by 86 percent of public school teachers, who are closest to schools' budget constraints. While 66 percent of Americans support higher taxes to fund such programs, just 15 percent feel that way strongly—an impediment because it generally takes strong sentiment to motivate action.

Several reasons for soft support emerge. There is doubt over the magnitude of the positive effects of tailored instruction; just about half of adults think it would provide a great deal of benefit for targeted student populations (those with learning disabilities, who struggle with whole-group instruction, and those who are identified as gifted). Critically, many fewer, just 29 percent, think all students can benefit substantially.

The survey also finds a lack of complete confidence that schools can successfully implement a tailored learning program. In addition to strong sentiment, motivation hinges on confidence that a proposed solution can be achieved. Doubts about implementing tailored instruction are, thus, another challenge for its proponents.

Edtech, while widely used and broadly popular, has its own challenges to address. These include views of too much screen time for children and cost of computers as perceived barriers to adoption, as well as a sense that the use of technology fails to support student collaboration.

At the same time, there's broad recognition of edtech's ability to deliver new information and ideas, as well as its ability to help with learning strategies and support student organization and task management skills.

While a vast majority (92 percent) of teachers reported feeling at least somewhat prepared to use educational technology, the lukewarm response indicates that additional support and preparation may be needed, another area for advocates to consider.

One possible application of edtech, using it to provide teachers with suggestions for tailored instructional plans, results in divided opinions. While 49 percent of parents are confident that a system like this could work effectively, that drops to 40 percent of teachers and the general public alike. Most of the rest are unsure, rather than lacking confidence. But, only seven to 10 percent are very confident in this prospect, possibly indicating that the case for this use of edtech has yet to be made.

And, while 78 percent of teachers say that edtech improves students' learning experiences, only 14 percent say it does so greatly. These views, if unimproved, may hinder a broader adoption of edtech.

Beyond addressing concerns head-on, proponents can look to the underlying motivators of attitudes on tailored instruction and edtech.

In one key result of statistical modeling, **recognizing that students learn differently and believing most students are capable of high levels of academic achievement are the strongest predictors of thinking that all students can benefit from tailored instruction. Seeing greater learner variability, both between students and across subjects, also predicts support for edtech.**

As such, fostering awareness of learner variability and student potential is likely to encourage further support for tailored instruction and edtech alike, particularly if questions about costs, implementation, and positive impacts also are addressed.

In sum, the Digital Promise Learner Variability Project survey establishes the current contours of public, parent, and teacher attitudes on the state of student learning and the pros and cons of new approaches.

Its results can help those invested in educational innovation understand these attitudes and, thereby, best focus their efforts to improve how schools innovate to help students learn.

Acknowledgements

Citation

Digital Promise Global (2019). Learning in the 21st Century: How the American Public, Parents, and Teachers View Students' Potential and Their Learning Experience. Digital Promise Global: Washington, DC.

Appendices

Appendix A: Topline Data Report

This Digital Promise survey was conducted online April 5-16, 2019, among a random national sample of 1,880 adults, including an oversample of public school parents to a total of 550, with an additional random national sample to 516 public school teachers. Results have a margin of sampling error of 3.2 points for the general population sample, 5.1 points for the public school parent sample and 6.6 points for the public school teacher sample, including design effects. Error margins are larger for subgroups.

The survey was produced for Digital Promise by Langer Research Associates of New York, N .Y., with sampling and data collection by Ipsos Public Affairs via its online, probability-based KnowledgePanel®, which provides internet access to randomly recruited participants. Digital Promise wrote, edited and designed this report.

Full results follow. "All" refers to the general public, including parents and non-parents alike. "Skipped" refers to respondents who did not answer the question, when there were no "prefer not to answer" or "no opinion" response options provided on screen. * = <0 .5 percent.

1. Overall, how would you rate each of these items?

a. The quality of education you received as a child

4/16/19	Better				Worse			Skipped
	NET	Excellent	Very Good	Good	NET	Not so good	Poor	
All	50	13	37	39	10	7	3	1
PS parents	48	14	34	42	10	9	1	0
PS teachers	69	23	46	25	6	5	1	0

b. The quality of education most students receive now

4/16/19	Better				Worse			
	NET	Excellent	Very Good	Good	NET	Not so good	Poor	Skipped
All	23	4	19	45	31	25	5	1
PS parents	34	7	27	46	20	17	2	0
PS teachers	35	4	32	54	11	10	1	0

c. [IF PS PARENT] The quality of education your child receives

4/16/19	Better				Worse			
	NET	Excellent	Very Good	Good	NET	Not so good	Poor	Skipped
	50	16	34	39	11	9	2	0

d. [IF PS TEACHER] The quality of education the students in your school receive

4/16/19	Better				Worse			
	NET	Excellent	Very Good	Good	NET	Not so good	Poor	Skipped
	65	16	49	29	6	5	1	0

2. Which of these do you think schools mainly focus on?

4/16/19	Helping students get good grades on tests	Helping students reach their full potential as learners	Skipped
All	64	35	1
PS parents	55	43	2
PS teachers	53	47	*

3. Which of these do you think schools **should** mainly focus on?

4/16/19	Helping students get good grades on tests	Helping students reach their full potential as learners	Skipped
All	4	95	1
PS parents	5	94	1
PS teachers	3	96	1

4. Given the right environment and support, how many students do you think are capable of high levels of educational achievement?

4/16/19	More			Less			Skipped
	NET	Nearly All	Most	NET	Some	A few	Skipped
All	77	21	56	22	19	2	2
PS parents	75	24	51	22	19	3	3
PS teachers	89	25	63	10	9	*	2

5. Given their current environment and support, how many students do you think currently are reaching high levels of educational achievement?

4/16/19	More			Less			Skipped
	NET	Nearly All	Most	NET	Some	A few	Skipped
All	19	2	17	80	64	15	1
PS parents	29	3	26	69	60	10	1
PS teachers	28	2	27	70	63	8	1

6. How much do you think that each of these influences whether or not students reach their full potential as learners?

a. Up-to-date textbooks

4/16/19	More			Less			Skipped
	NET	A great deal	A good amount	NET	Just some	Only a little	
All	70	29	41	29	24	5	1
PS parents	70	32	38	29	24	5	1
PS teachers	53	19	34	47	37	10	0

b. Availability of online educational resources

4/16/19	More			Less			Skipped
	NET	A great deal	A good amount	NET	Just some	Only a little	
All	64	22	41	35	29	6	1
PS parents	66	23	43	34	29	5	1
PS teachers	61	16	45	39	32	7	0

c. Professional development/training for teachers

4/16/19	More			Less			Skipped
	NET	A great deal	A good amount	NET	Just some	Only a little	
All	80	43	37	20	17	3	1
PS parents	80	44	36	19	16	4	1
PS teachers	75	28	48	25	22	3	0

7. "Learner variability" refers to the abilities students have and the challenges they bring to the learning environment. Factors include their personal background and knowledge, their health and psychological wellbeing, and how they think, among other things. How much do you think students vary from one another in how they learn?

4/16/19	More				Less			
	NET	A great deal	A good amount	Just some	NET	A little	Not at all	Skipped
All	78	25	54	17	3	3	*	1
PS parents	80	25	55	15	4	4	0	2
PS teachers	83	33	50	14	2	2	0	1

8. Think about how an individual student learns in different subject areas, for example how a student learns in math versus history. How much do you think learner variability depends on subject area?

4/16/19	More				Less			
	NET	A great deal	A good amount	Just some	NET	A little	Not at all	No opinion
All	76	21	55	19	4	4	*	*
PS parents	77	20	56	18	4	4	*	1
PS teachers	74	20	53	23	3	3	*	0

9. As far as you're aware, how good a job do the schools in your community do in supporting learner variability among students?

4/16/19	Better			Middling	Worse			Skipped
	NET	Excellent	Good		NET	Not so good	Poor	
All	35	4	32	42	21	17	3	2
PS parents	42	6	36	38	17	14	3	2
PS teachers	53	7	46	32	13	12	1	2

10. Which of these do you think is a better way for students to learn? Do you feel strongly that (ITEM SELECTED) is a better way for students to learn, or not strongly?

(**Whole group instruction:** Students learn the same content at the same pace – keeping the whole group together and working on the same things at the same time.)

-OR-

(**Tailored instruction:** Students learn different content at a different pace – instruction is adjusted for each individual based on an evaluation of how they learn.)

4/16/19	Whole group				Tailored				
	NET	Strongly	Not strongly	No opinion	NET	Not Strongly	Strongly	No opinion	No opinion
All	20	11	8	*	80	17	63	1	1
PS parents	21	14	6	0	79	15	63	1	*
PS teachers	14	7	8	0	86	16	67	2	0

11. As far as you are aware, how common is the tailored instruction method in schools today?

4/16/19	Common			Uncommon			
	NET	Very common	Common	NET	Uncommon	Very uncommon	Skipped
All	20	2	18	77	60	17	2
PS parents	31	2	29	66	53	13	2
PS teachers	39	6	32	61	49	12	1

12. In tailored instruction, schools produce a learning plan for each student. It includes subject material, assignments and projects designed for each student and set to their own pace. This plan is reviewed regularly by teachers, parents and students. Some work is done by students as part of the full class, some in groups, and some individually. Would you support or oppose creating a tailored instruction program in your community's schools?

4/16/19	Support			Oppose			
	NET	Strongly support	Support	NET	Oppose	Strongly oppose	No opinion
All	90	27	63	9	7	2	1
PS parents	93	33	60	6	5	1	1
PS teachers	83	21	62	17	15	2	*

13. Creating a tailored instruction system could take additional staff and resources. Would you support or oppose increasing local property taxes to create this kind of system in your community's schools?

4/16/19	Support			Oppose			
	NET	Strongly support	Support	NET	Oppose	Strongly oppose	Skipped
All	66	15	50	32	23	10	2
PS parents	74	20	55	23	18	5	3
PS teachers	69	23	46	31	25	5	*

14. [IF SUPPORT INCREASING TAXES] On average, by how much more money a year would you support raising property taxes in order to create a tailored instruction system in you community's schools?

4/16/19	Average	Median
All	$507	$100
PS parents	$507	$150
PS teachers	$572	$160

15. Do you think the schools in your community are or are not capable of creating and managing a tailored instruction system?

4/16/19	Capable			Not capable			
	NET	Definitely	Probably	NET	Probably	Definitely	Skipped
All	59	11	48	39	32	7	1
PS parents	66	15	51	32	27	6	2
PS teachers	65	16	49	35	28	6	*

16. [IF PS PARENT] Do you think your child's school is or is not capable of creating and managing a tailored instruction system?

4/16/19	Capable			Not capable			
	NET	Definitely	Probably	NET	Probably	Definitely	No opinion
	70	17	53	29	24	5	1

17. [IF PS TEACHER] Do you think the school where you teach is or is not capable of creating and managing a tailored instruction system?

4/16/19	Capable			Not capable			
	NET	Definitely	Probably	NET	Probably	Definitely	Skipped
	65	17	48	34	26	8	1

18. Imagine a computer program that provides teachers with information about what a student seems to know or not know, and also information about what instruction the student needs next. How confident are you that a system like this could work effectively?

4/16/19	Confident				Not confident			
	NET	Very confident	Confident	Unsure	NET	Not confident	Not at all confident	Skipped
All	40	7	34	47	11	9	2	1
PS parents	49	10	39	40	9	7	2	2
PS teachers	40	8	33	41	17	13	4	2

19. How much do you think each of these groups could benefit from tailored instruction?

a. Students who have learning disabilities

| 4/16/19 | More | | | | Less | | | |
	NET	A great deal	A good amount	Some	NET	A little	Not at all	Skipped
All	80	53	27	13	6	4	2	1
PS parents	82	58	24	13	4	3	1	1
PS teachers	86	57	29	9	5	4	*	0

b. Students who have trouble with whole group instruction

| 4/16/19 | More | | | | Less | | | |
	NET	A great deal	A good amount	Some	NET	A little	Not at all	Skipped
All	79	47	32	15	5	3	1	1
PS parents	80	53	27	15	4	3	1	1
PS teachers	86	54	32	11	3	3	*	0

c. Students who are identified as gifted

| 4/16/19 | More | | | | Less | | | |
	NET	A great deal	A good amount	Some	NET	A little	Not at all	Skipped
All	79	48	31	13	7	4	2	1
PS parents	80	50	30	15	4	3	2	1
PS teachers	90	56	34	8	2	1	*	0

d. All students

4/16/19	More				Less			
	NET	A great deal	A good amount	Some	NET	A little	Not at all	Skipped
All	66	29	37	26	7	5	2	1
PS parents	73	36	37	20	6	5	1	1
PS teachers	75	28	46	22	3	3	*	*

20. Do you see these as barriers to providing tailored instruction, or not?

a. Providing professional training for teachers to make it work

4/16/19	Barrier			Not a barrier	Skipped
	NET	Major	Minor		
All	83	37	46	16	2
PS parents	83	37	46	16	1
PS teachers	83	41	42	16	*

b. Paying for adequate staff to make it work

4/16/19	Barrier			Not a barrier	Skipped
	NET	Major	Minor		
All	92	66	26	7	1
PS parents	91	61	30	8	1
PS teachers	97	86	12	2	*

c. Getting support from the school community

| 4/16/19 | Barrier | | | | |
	NET	Major	Minor	Not a barrier	Skipped
All	84	42	42	14	2
PS parents	85	35	50	14	1
PS teachers	88	38	50	11	*

d. Providing for students who prefer whole group instruction

| 4/16/19 | Barrier | | | | |
	NET	Major	Minor	Not a barrier	Skipped
All	76	16	61	22	1
PS parents	79	15	64	20	1
PS teachers	79	9	70	20	*

21. [IF PS PARENT] Do you think your child would do better with (whole group instruction) or with (tailored instruction)? Do you feel strongly that your child would do better with (whole group instruction/tailored instruction), or not strongly?

| 4/16/19 | Whole group | | | | Tailored | | | | Skipped |
	NET	Strongly	Not strongly	No opinion	NET	Not Strongly	Strongly	No opinion	
	24	17	6	1	74	10	62	1	2

22. [IF PS PARENT] How much learner variability do you think your child has in different subject areas?

4/16/19	More				Less			Skipped
	NET	A great deal	A good amount	Just Some	NET	A little	Not at all	
	42	11	31	38	17	15	2	3

23. [IF PS PARENT] As far as you are aware, overall, is your child receiving (whole group) instruction or (tailored) instruction?

4/16/19	Whole Group				Tailored			Don't know
	NET	Entirely or almost entirely	Mostly	About half and half	NET	Mostly	Entirely or almost entirely	
	69	28	41	22	9	7	2	*

24. [IF PS PARENT] Would you like this child's education to be based more on (whole group instruction) than it is now, more on (tailored instruction) than it is now, or is it about right as it is?

4/16/19	More whole group than it is now	More tailored than it is now	It is about right	Skipped
	10	64	24	2

25. How would you describe the instruction you received as a child?

4/16/19	Whole Group				Tailored			
	NET	Entirely or almost entirely	Mostly	About half and half	NET	Mostly	Entirely or almost entirely	Skipped
All	78	46	31	16	5	2	2	2
PS parents	75	45	30	17	7	5	2	1
PS teachers	88	41	47	10	2	*	1	*

26. Educational technology means the use of computers, other internet-connected devices and educational software as learning resources. How do you think educational technology affects students' learning experiences?

4/16/19	Improves				Diminishes			
	NET	Greatly improve	Improve	No effect	NET	Diminish	Greatly diminish	Skipped
All	75	16	59	11	11	10	1	3
PS parents	69	15	54	12	16	14	2	3
PS teachers	78	14	64	12	8	7	1	1

27. Do you think the use of educational technology helps or hurts students do each of these?

a. Develop organizational and task management skills

4/16/19	Helps				Hurts			
	NET	A lot	A little	Neither helps nor hurts	NET	A little	A lot	Skipped
All	62	28	34	24	13	9	4	1
PS parents	65	27	38	22	12	9	3	1
PS teachers	53	18	34	26	21	16	6	0

b. Develop their ability to work with others

4/16/19	Helps				Hurts			
	NET	A lot	A little	Neither helps nor hurts	NET	A little	A lot	Skipped
All	36	17	19	26	37	26	11	1
PS parents	40	18	21	25	34	24	10	1
PS teachers	33	12	21	22	45	29	16	*

c. Find new learning strategies

4/16/19	Helps				Hurts			
	NET	A lot	A little	Neither helps nor hurts	NET	A little	A lot	Skipped
All	71	32	39	19	9	7	2	1
PS parents	72	33	39	18	9	8	1	1
PS teachers	62	22	40	25	13	9	4	0

d. Find new information and ideas

4/16/19	Helps				Hurts			
	NET	A lot	A little	Neither helps nor hurts	NET	A little	A lot	Skipped
All	85	52	33	11	3	2	1	1
PS parents	85	50	36	10	4	3	1	1
PS teachers	91	53	38	6	3	1	2	0

28. [IF PS PARENT] Is your child's school making (too much use of educational technology), (too little use of educational technology) or about the right amount?

4/16/19	Too much use of educational technology	Too little use of educational technology	About the right amount	Skipped
	17	18	63	2

29. [IF PS TEACHER] Is the school where you teach making (too much use of educational technology), (too little use of educational technology) or about the right amount?

4/16/19	Too much use of educational technology	Too little use of educational technology	About the right amount	Skipped
	18	22	60	1

30. Do you see these as barriers to the use of educational technology in schools, or not?

a. Resistance from teachers

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	76	23	53	23	1
PS parents	67	19	49	32	1
PS teachers	78	14	64	22	*

b. Resistance from parents

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	74	21	53	24	2
PS parents	71	17	54	28	1
PS teachers	61	6	54	39	*

c. Resistance from administrators

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	77	27	50	21	1
PS parents	66	18	48	33	1
PS teachers	50	9	41	50	*

d. Doubts about its effectiveness

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	81	24	58	17	1
PS parents	74	17	58	25	1
PS teachers	82	17	65	18	0

e. Concerns about too much screen time for children

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	89	40	49	9	2
PS parents	85	38	46	14	1
PS teachers	90	40	50	9	*

f. Concerns about data privacy

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	83	33	50	15	1
PS parents	81	26	55	18	1
PS teachers	82	20	62	17	*

g. The cost of high-speed internet access

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	74	29	45	24	1
PS parents	71	25	47	28	1
PS teachers	71	27	44	29	0

h. The cost of computers for students to use

4/16/19	NET	Barrier		Not a barrier	Skipped
		Major	Minor		
All	88	49	39	10	2
PS parents	84	42	42	15	1
PS teachers	87	51	36	13	*

31. [IF PS PARENT] At home, do you have each of these, or not?

4/16/19	Have	Do not have	Skipped
a. A computer, laptop or tablet for your child to use	89	11	1
b. High-speed internet access	89	10	1
c. Educational software programs or apps	60	39	1

32. [IF PS PARENT] Does your child's public school have each of these, or not?

4/16/19	Have	Do not have	Don't know
a. Computers, laptops or tablets available for students to use	91	4	5
b. High-speed internet access	81	5	13
c. Educational software programs or apps	82	7	11

33. [IF PS TEACHER] Does the school where you teach have each of these, or not?

4/16/19	Have	Do not have	Don't know
a. Computers, laptops or tablets available for students to use	94	5	1
b. High-speed internet access	89	5	6
c. Educational software programs or apps	90	7	3

34. [IF COMPUTERS, LAPTOPS OR TABLETS AVAILABLE] How often does your school make computers, laptops or tablets available to your students?

4/16/19	More often			Less often			Skipped
	NET	Always, whenever needed	Often	NET	Sometimes	Rarely	
	88	51	36	12	12	*	0

35. [IF PS TEACHER] Do you have access to the educational technology software you'd like to have?

4/16/19	Yes	No	Skipped
	70	30	*

36. [IF PS TEACHER] How much if at all do you use educational technology in your classroom?

4/16/19	Every day	Most days	Some days	A few days per month	Less often than a few days per month	Not at all	Skipped
	35	23	24	9	6	2	1

37. [IF PS TEACHER] How comfortable are you/would you be using educational technology in your classroom?

	Comfortable			Uncomfortable			
4/16/19	NET	Very	Somewhat	NET	Somewhat	Very	Skipped
	96	55	41	4	4	*	*

38. [IF USES EDUCATIONAL TECHNOLOGY] How much input do you have into which educational technology you use in your classroom?

	More				Less		
4/16/19	NET	A lot	A good amount	Some	NET	A little	None	Skipped
	43	17	26	29	27	16	11	1

39. [IF PS TEACHER] Do you feel you are adequately prepared to use educational technology, or not?

4/16/19	Prepared			Not prepared			
	NET	Very	Somewhat	NET	Not so	At all	No opinion
	92	38	54	8	7	1	0

40. [IF PS TEACHER] How much do you rely on each of these as a teacher?

4/16/19	More				Less			
	NET	A great deal	A good amount	Some	NET	A little	Not at all	Skipped
a. Your experience	96	70	26	3	*	*	*	0
b. Your instincts	90	52	38	8	2	2	1	0
c. Academic research	53	21	32	36	11	7	4	0
d. Educational resources, such as teaching guides, textbook guides or curriculum	61	27	34	27	12	10	2	0
e. Your education/ professional development	66	29	37	26	8	5	3	0
f. Teacher peers	68	33	36	20	11	9	3	0
g. Administrators	32	8	24	35	33	23	9	0

Appendix B: Statistical Modeling

Predicting Ratings of Students' Capability of Educational Achievement, OLS Regressions

	All Adults
Number of kids	0.01
Male	**-0.11**
Age	-0.02
Northeast	0.01
Midwest	-0.01
West	0.05
Urban	**-0.08**
Rural	0.03
Black	-0.03
Hispanic	-0.04
Other race	-0.05
Education	0.03
Income	0.05
Democrat	0.00
Republican	0.00
Liberalism	0.05
Adjusted R-square	0.02

$p < 0.05$ bolded

Standardized coefficient estimates are from ordinary least squares regressions predicting thinking more students are capable of high levels of educational achievement.

Predicting Ratings of Learner Variability, OLS Regressions

	All Adults	Parents
Number of kids	0.02	-0.02
Oldest child's age	NA	0.08
Oldest child's sex (male)	NA	0.03
Male	-0.04	0.01
Age	-0.04	**-0.12**
Northeast	0.02	-0.05
Midwest	0.03	-0.03
West	0.03	-0.04
Urban	0.03	0.00
Rural	0.01	-0.01
Black	**-0.09**	-0.02
Hispanic	**-0.11**	**-0.22**
Other race	**-0.06**	0.00
Education	0.01	-0.01
Income	**0.07**	0.08
Democrat	0.00	-0.05
Republican	-0.06	**-0.12**
Liberalism	0.02	0.03
Students' capability	**0.13**	0.08
Adjusted R-square	0.04	0.05

$p < 0.05$ bolded

Standardized coefficient estimates are from ordinary least squares regressions predicting thinking that students vary from one another in how they learn.

Predicting Ratings of Subject-specific Learner Variability, OLS Regression

	All Adults
Number of kids	0.00
Male	-0.03
Age	0.00
Northeast	0.02
Midwest	**0.07**
West	0.05
Urban	-0.04
Rural	-0.02
Black	-0.05
Hispanic	-0.02
Other race	-0.01
Education	0.01
Income	0.05
Democrat	0.01
Republican	-0.02
Liberalism	-0.01
Students' capability	**0.14**
Adjusted R-square	0.02

$p < 0.05$ bolded

Standardized coefficient estimates are from an ordinary least squares regression predicting how much people think learner variability depends on subject area.

Predicting Thinking Tailored Instruction is the Better Way to Learn, OLS Regressions

	Parents
Number of kids	0.02
Oldest child's age	0.02
Oldest child's sex (male)	-0.08
Male	-0.06
Age	-0.05
Northeast	-0.01
Midwest	-0.03
West	**0.13**
Urban	-0.04
Rural	-0 08
Black	**-0.10**
Hispanic	**-0.17**
Other race	-0.05
Education	-0.05
Income	-0.06
Democrat	-0.06
Republican	-0.05
Liberalism	0.04
Students' capability	0.08
Learner variability (LV)	0.00
Subject-specific LV	0.03
Adjusted R-square	0.03

$p < 0.05$ bolded

Standardized coefficient estimates are from ordinary least squares regressions predicting tailored instruction as the better way to learn.

Predicting Support for Funding Tailored Instruction, OLS Regression

	All Adults
Number of kids	**0.09**
Male	-0.03
Age	0.05
Northeast	-0.06
Midwest	0.02
West	**-0.07**
Urban	-0.02
Rural	0.00
Black	0.04
Hispanic	0.05
Other race	0.03
Education	0.04
Income	-0.03
Democrat	**-0.08**
Republican	0.01
Liberalism	**0.19**
Students' capability	**0.09**
Learner variability (LV)	0.04
Subject-specific LV	**0.09**
Support tailored instruct.	**0.08**
Adjusted R-square	0.09

p < 0.05 bolded

Standardized coefficient estimates are from ordinary least squares regressions predicting tailored instruction as the better way to learn.

Predicting All Students Benefit from Tailored Instruction, OLS Regressions

	All Adults	Parents
Number of kids	**0.07**	0.02
Oldest child's age	NA	-0.04
Oldest child's sex (male)	NA	-0.06
Male	-0.05	-0.03
Age	0.05	0.07
Northeast	**-0.08**	-0.06
Midwest	-0.01	0.10
West	-0.04	0.10
Urban	-0.03	-0.09
Rural	-0.03	-0.05
Black	**0.08**	-0.02
Hispanic	**0.08**	0.05
Other race	0.02	-0.06
Education	0.01	-0.06
Income	-0.03	-0.09
Democrat	**0.08**	0.09
Republican	0.00	0.02
Liberalism	-0.01	0.09
Students' capability	**0.20**	**0.20**
Learner variability (LV)	**0.20**	0.08
Subject-specific LV	**0.06**	**0.14**
Adjusted R-square	0.13	0.12

p < 0.05 bolded

Standardized coefficient estimates are from ordinary least squares regressions predicting the extent to which all students could benefit from tailored instruction.

Predicting All Students Benefit from Tailored Instruction, OLS Regression

	Teachers
Male	-0.04
Northeast	-0.03
Midwest	0.02
West	-0.05
Urban	-0.08
Rural	0.00
Black	-0.04
Hispanic	**0.16**
Other race	0.05
Education	0.04
Income	**0.15**
Democrat	-0.06
Republican	0.08
Liberalism	0.05
Teacher tenure	**-0.13**
Size of school	0.00
Teach middle school	0.00
Teach high school	-0.06
Teach STEM	0.03

Teach English	-0.01
Teach social studies	-0.01
Students' capability	**0.21**
Learner variability (LV)	0.02
Subject-specific LV	**0.24**
Rely on academic research	**0.13**
Adjusted R-square	0.18

p < 0.05 bolded

Standardized coefficient estimates are from an ordinary least squares regression predicting the extent to which all students could benefit from tailored instruction.

Predicting Thinking Edtech Improves Learning Experiences, OLS Regressions

	All Adults	Parents
Number of kids	**-0.06**	**-0.10**
Oldest child's age	NA	**-0.10**
Oldest child's sex (male)	NA	-0.04
Male	**0.08**	0.01
Age	**0.14**	**0.14**
Northeast	-0.05	-0.02
Midwest	**-0.07**	0.01
West	-0.06	0.04
Urban	-0.03	0.07
Rural	0.04	**0.10**
Black	-0.01	0.09
Hispanic	0.02	0.00
Other race	0.04	0.02
Education	-0.05	-0.01
Income	0.03	-0.01
Democrat	-0.03	-0.03
Republican	-0.05	0.04
Liberalism	**0.11**	0.06
Students' capability	0.03	0.02
Learner variability (LV)	**0.08**	0.06
Subject-specific LV	**0.10**	**0.13**
Adjusted R-square	0.06	0.04

p < 0.05 bolded

Standardized coefficient estimates are from ordinary least squares regressions predicting thinking educational technology improves learning experiences.

Predicting Thinking Edtech Improves Learning Experiences, OLS Regression

	Teachers
Male	0.08
Northeast	0.03
Midwest	0.04
West	0.08
Urban	-0.03
Rural	0.00
Black	0.03
Hispanic	0.05
Other race	**-0.14**
Education	0.00
Income	0.08
Democrat	**0.12**
Republican	-0.05
Liberalism	**-0.12**
Teacher tenure	-0.02
Size of school	0.03
Teach middle school	-0.04
Teach high school	-0.07
Teach STEM	-0.02

Teach English	-0.09
Teach social studies	0.07
Students' capability	**0.17**
Learner variability (LV)	0.05
Subject-specific LV	0.07
Rely on academic research	**0.16**
Adjusted R-square	0.10

$p < 0.05$ bolded

Standardized coefficient estimates are from an ordinary least squares regression predicting thinking educational technology improves learning experiences.

Predicting Comfort With Edtech, OLS Regression

	Teachers
Male	**0.17**
Northeast	0.07
Midwest	0.00
West	-0.02
Urban	**-0.12**
Rural	-0.04
Black	**0.13**
Hispanic	0.09
Other race	-0.02
Education	0.09
Income	**0.10**
Democrat	0.06
Republican	0.01
Liberalism	-0.01
Teacher tenure	**-0.10**
Size of school	-0.08
Teach middle school	0.08
Teach high school	-0.08
Teach STEM	**0.13**

Teach English	**-0.16**
Teach social studies	**0.15**
Students' capability	0.01
Learner variability (LV)	0.03
Subject-specific LV	**0.15**
Rely on academic research	**0.16**
Adjusted R-square	0.14

$p < 0.05$ bolded

Standardized coefficient estimates are from an ordinary least squares regression predicting comfort with edtech.

Appendix C: Methodology

The spring 2019 Digital Promise Learner Variability Project survey was conducted using the nationally representative Ipsos KnowledgePanel®, in which participants are randomly recruited via address-based sampling to participate in survey research projects by responding to questionnaires online. Households without internet connections are provided with a web-enabled device and free internet service.

The survey was designed to include approximately 1,000 adults in the general population, an oversample to 500 parents of public school students in grades K-12 and, separately, 500 K-12 public school teachers. The oversample of parents was weighted to reflect its correct proportion in the general population.

Field work was conducted April 5 to April 16, 2019. After initial invitations, email reminders were sent to all nonresponders on the third and seventh days of the field period. Out of 3,985 panel members invited to participate, completed, qualified surveys were provided by 1,940. Participants completed the survey in a median time of nine minutes.

Quality control flagged respondents who completed the survey in top 2 percent fastest times in each of four groups (non-parents/non-teachers, parents, teachers, and parents/teachers) and all top 2 percent fastest on Q10. Fifty-nine cases were flagged (27 non-parent/non-teachers, 17 parents, 14 teachers and one parent/teacher) and removed from the dataset. Additionally, one case was removed from the teacher sample as she indicated in the survey data that she's not a K-12 teacher.

The sample composition after quality control was 1,389 general population adults, including 550 K-12 public school parents; and 516 public school teachers.

For the general population and parents, data were weighted via iterative proportional fitting to the following benchmark distributions of adults from the U.S. Census Bureau's March 2018 Current Population Survey:

- Age (18-29, 30-44, 45-59, 60+) by gender (male, female)
- Race/ethnicity (white, black, other, Hispanic, 2+ races)
- Census region (Northeast, Midwest, South, West) by metropolitan status (metro, non-metro)
- Education (less than high school, high school, some college, bachelor or higher)
- Household income (less than $25,000, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, $100,000-$149,999, $150,000+)
- Language proficiency (English-proficient Hispanic, bilingual Hispanic, Spanish-proficient Hispanic, Non-Hispanic)
- Parents with children 6–18 (yes, no)
- Marital status (married, not married)
- Hispanic nativity (U .S.-born Hispanic, not U.S.-born Hispanic, Non-Hispanic)

For public school teachers, data were weighted via iterative proportional fitting to the following benchmark distributions for teachers from the full KnowledgePanel:

- Age (18-29, 30-44, 45-59, 60+)
- Gender (male, female)
- Race/ethnicity (white, black, Hispanic, other/2+ races)
- Census region (Northeast, Midwest, South, West)
- Metropolitan status (metro, non-metro)
- Education (less than high school/high school/some college, bachelor or higher)
- Household income (less than $25,000, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, $100,000-$149,999, $150,000+)
- Marital status (married, not married)
- Hispanic nativity (U.S.-born Hispanic, not U.S.-born Hispanic, Non-Hispanic)

Additional weighting benchmarks were obtained from the National Teacher and Principal Survey 2015-2016:

- School type (traditional public, charter)
- Grade (primary school, middle school, high school, combined)
- Teaching year (<4, 4-9, 10-14, 15+)
- Number of students (less than 100, 100-199, 200-499, 500-749, 750-999, 1,000+)

General population weights were trimmed at 0.88 percent and 99.26 percent of their distribution for a design effect, given parent oversampling, of 1.5. Teacher weights were trimmed at 3.48 percent and 97.1 percent of their distribution for a design effect of 2.4. The survey has margins of sampling error of plus or minus 3.2 percentage points for the general population, 5.1 points for parents and 6.6 points for teachers. Error margins are larger for subgroups.