Technology in US schools:
Are we preparing our kids for the jobs of tomorrow?

Only 10% of US teachers surveyed feel confident teaching higher-level technology skills.

pwc

Introduction

A recent study conducted by PwC in conjunction with the Business-Higher Education Forum shows a concerning gap between the digital skills business leaders need to build a workforce of the future and educator's ability to prepare students to meet those demands.

The study has significant implications for workforce preparedness and the US economy. By 2020, 77% of all jobs will require some degree of technological skills, and there will be one million more computing jobs than applicants who can fill them. That means there's a growing need for workers trained in STEM skills but a shortage of graduates who have them. In fact, according to PwC's annual CEO Survey, 79% of US CEOs are concerned that a shortage of people with key skills could impair their companies' growth.

"The idea that hard work and determination are enough for anyone to become successful in America seems to be evaporating," says Shannon Schuyler, head of PwC's Responsible Business Leadership practice. "We believe that building the careers and the financial and technical skills of young people from underserved communities has never been more important."

In order to better understand the struggles teachers face in helping young people acquire digital skills, PwC conducted a survey of more than 2,000 K–12 educators in spring 2018. We also aimed to explore strategies to help educators equip students with the technology and career-readiness skills they need to be prepared for the jobs of today and tomorrow.
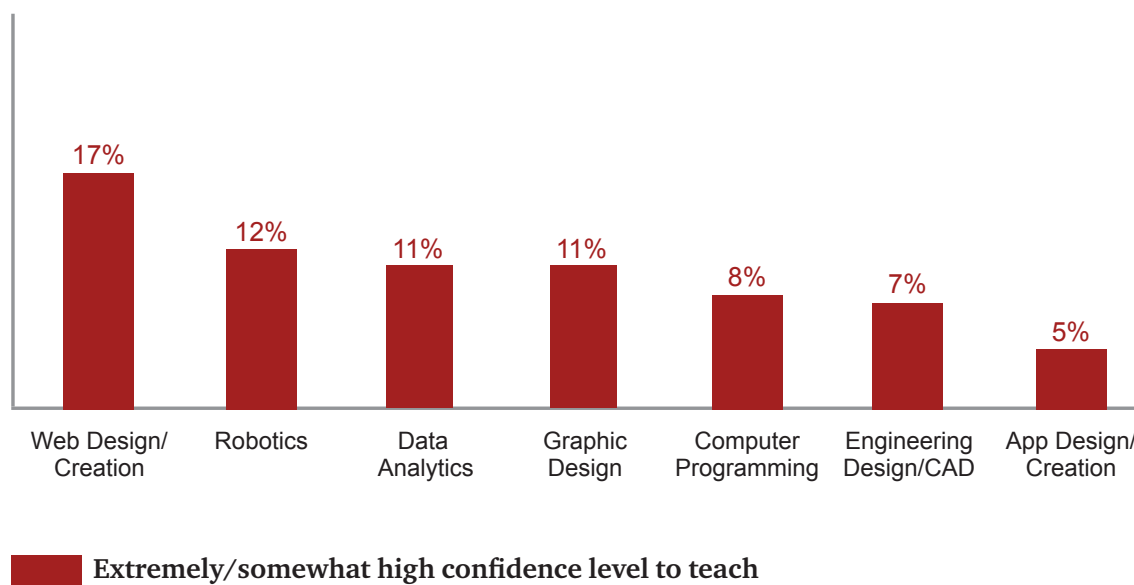
Are US schools preparing students for the technology jobs of today and tomorrow?

Six trends, according to educators:

1. **Most K–12 teachers are not confident teaching higher-level technology skills, like data analytics, computer programming languages, website design/creation, and robotics.** Only 10% of K–12 teachers feel confident incorporating higher-level technology into student learning. This data held true across grade level, school affluence, and teacher experience level.

2. **Technology-related courses are offered to high school students, but more schools need to offer data analytics and app design/creation courses to high school students.** Only 35% of high school teachers report that their school offers app design/creation, and only 20% say their school offers data analytics.

3. **Students do not spend much time in school actively practicing the higher-level technology skills needed for job readiness.** More than half, 60%, of classroom technology use is passive (e.g., watching videos, reading websites). Only 32% of classroom technology use is active (e.g., coding, producing videos, performing data analysis). Active technology use requires students to practice the higher-level technology skills that are required for many jobs.

4. **Teachers want more support from their districts.** Of the teachers surveyed, 79% of them say they would like to receive more professional development for technology-related subjects.

5. **Even though technology in schools is on the rise, students' lack of access to devices and the Internet at home makes it challenging for teachers to integrate technology in the classroom.** More than one-third, 36%, of teachers surveyed say their school has at least one device per student. Teachers surveyed also say some students do not have access to devices (48%) or the Internet (54%) at home.

6. **Students in underserved schools are even more likely to lack access to technology at home.** A significant portion of teachers at underserved schools report that some students do not have home access to devices (64%) or the Internet (69%). Comparatively, only about one-third of teachers in affluent schools say some students lack access to devices or the Internet at home, 27% and 30% respectively.
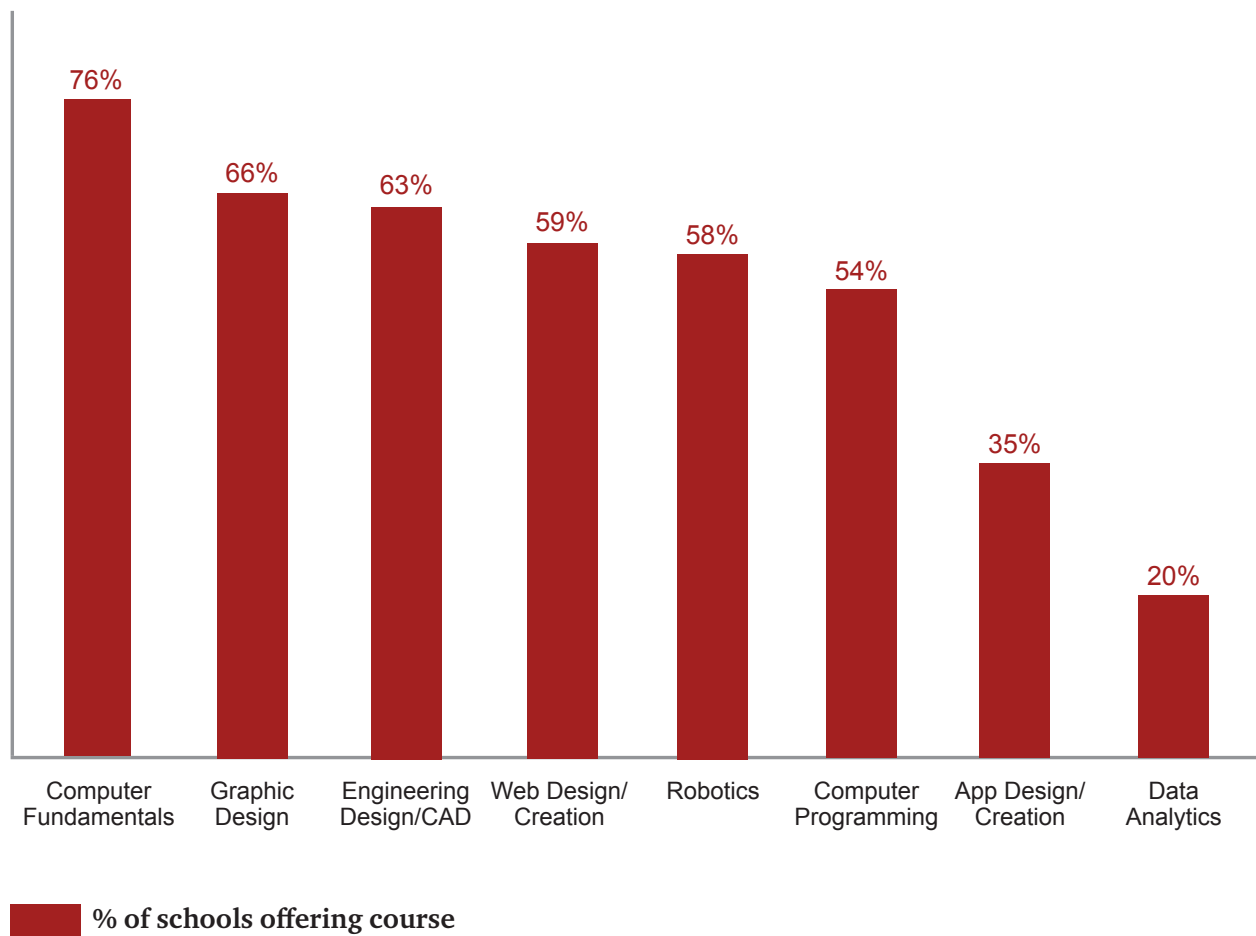
Most K–12 teachers are not confident teaching higher-level technology skills, like data analytics, computer programming languages, website design/ creation, and robotics. Only an average of 10% of K–12 teachers feel confident incorporating higher-level technology into student learning. This data held true across grade level, school affluence, and teacher experience level.

Educator confidence level for teaching higher-level technology skills

Web Design/ Creation	Robotics	Data Analytics	Graphic Design	Computer Programming	Engineering Design/CAD	App Design/ Creation
17%	12%	11%	11%	8%	7%	5%

■ **Extremely/somewhat high confidence level to teach**

Technology-related courses are offered to high school students, but more schools need to offer data analytics and app design/creation courses to high school students. Only 35% of high school teachers report that their school offers app design/creation, and only 20% say their school offers data analytics.

Technology-related subjects offered in high schools

	% of schools offering course

Computer Fundamentals: 76%
Graphic Design: 66%
Engineering Design/CAD: 63%
Web Design/Creation: 59%
Robotics: 58%
Computer Programming: 54%
App Design/Creation: 35%
Data Analytics: 20%

Students do not spend much time in school actively practicing the higher-level technology skills needed for job readiness. More than half, 60%, of classroom technology use is passive (e.g., watching videos, reading websites). Only 32% of classroom technology use is active (e.g., coding, producing videos, performing data analysis). Active technology use requires students to practice the higher-level technology skills that are required for many jobs.

Time students spend consuming vs. creating technology in US schools

32%

8%

60%

Passive   Active   Unsure
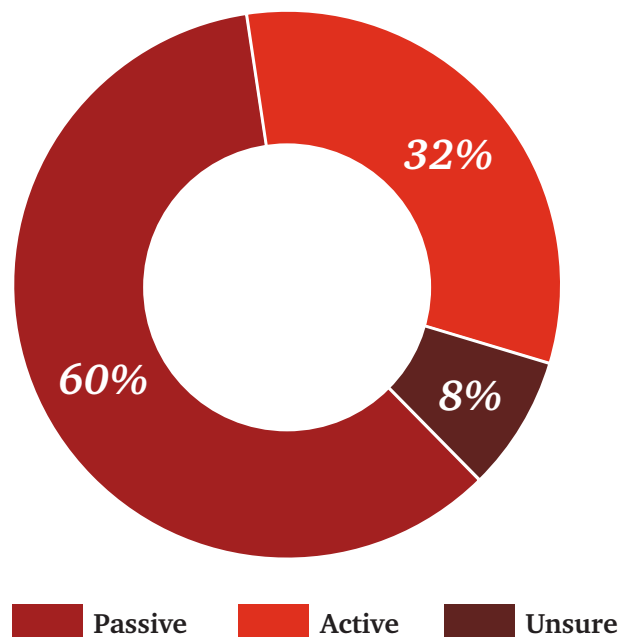
Teachers want more support from their districts. Of the teachers surveyed, 79% say they would like to receive more professional development for technology-related subjects.

Teachers Want More Support From Their Schools/Districts to Teach Technology-Related Subjects

79%
more professional development

81%
more "release time" to attend professional development

**81%**
more funds to attend professional development

81%
more curriculum plans or course materials

Only 36% of teachers work at 1:1 technology status schools

Even though technology in schools is on the rise, students' lack of access to devices and the Internet at home makes it challenging for teachers to integrate technology into the classroom. More than one-third, 36%, of teachers surveyed say their school has at least one device per student. Teachers surveyed say some students do not have access to devices (48%) or the Internet (54%) at home.

Teachers report some students do not have home access to technology
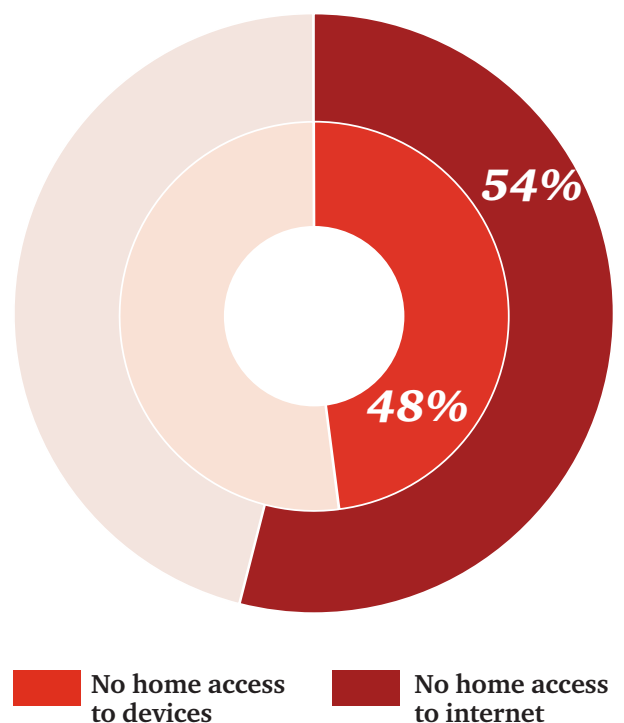
54%

48%

No home access to devices

No home access to internet

Students in underserved schools are even more likely to lack access to technology at home. A significant portion of teachers at underserved schools[1] report that some students do not have home access to devices (64%) or the Internet (69%). Comparatively, only about one-third of teachers in affluent schools[2] say some students lack access to devices or the Internet at home, 27% and 30% respectively.

Lack of home access to technology more pronounced in underserved schools

No home access to devices   No home access to Internet

■ **Affluent schools**   ■ **Underserved schools**
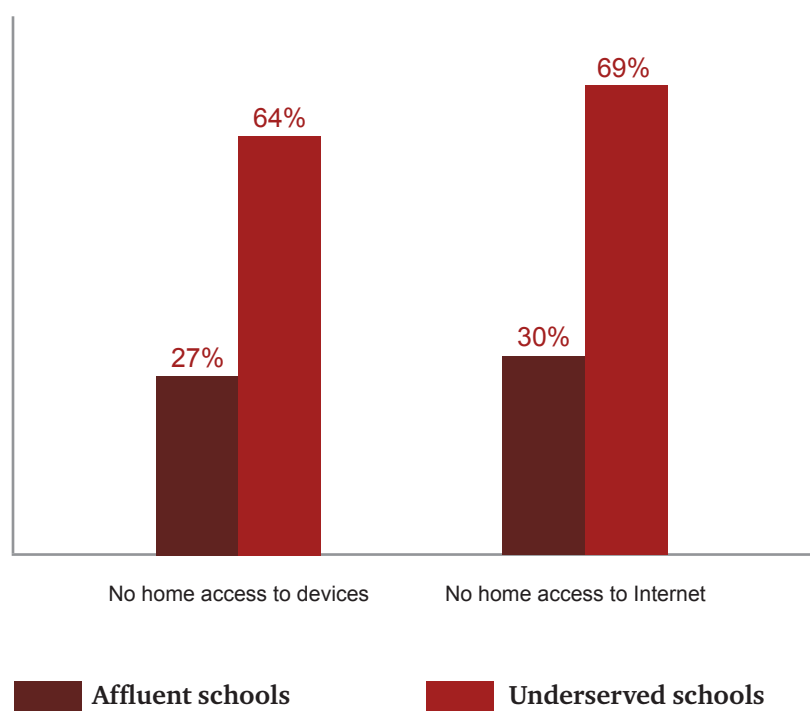
[1] 75%+ students receive free or reduced lunch

[2] 0%–14% students receive free or reduced lunch

Conclusion

Despite teachers' strong support for incorporating technology into student learning, US schools still must overcome obstacles to prepare students for the technology jobs of today and tomorrow. Educators are not confident in their ability to teach higher-level technology skills, and they want more/better professional development as well as curriculum and materials.

In order to bridge the gap between educators' support for teaching higher-level technology skills and their current lack of confidence to do so, we must advocate for the support and training educators need to excel in teaching higher-level technology-related subjects to their students. This will increase teachers' confidence and allow them to balance incorporating classroom technology use that teaches students not only to consume technology (e.g., practice skills on computer programs), but also to create technology (e.g., code computer programs), and to provide US students with the skills they need to succeed in the technology jobs of today and tomorrow.

About PwC

PwC US helps organizations and individuals create the value they're looking for. We're a member of the PwC network, which has firms in 157 countries with more than 208,000 people. We're committed to delivering quality in assurance, tax, and advisory services.

In 2017, PwC launched Access Your Potential™, a five-year, $320 million commitment that aims to help more than 10 million students in underserved communities gain access to financial capability and technology skills curricula as well as equip 100,000 teachers and guidance counselors with tools to prepare and guide students in making sound financial choices and understanding tech-based careers. The commitment also leverages the financial acumen and technology skill sets of PwC's 46,000 partners and staff as well as builds upon the firm's network of educators and nonprofit collaborators.

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