

POWER OF THE QUESTION

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② Six Questions State Boards Should Ask to Foster Effective Digital Learning

By Ji Soo Song

A decade of substantial state infrastructure investment has helped transform the teaching environment, equipping thousands of schools with connectivity and digital devices.¹ However, preparing students for the future requires more than technology access; it requires educators who truly know how to leverage it to accelerate learning across content areas.²

Yet educators continue to report that they do not feel prepared to do so.³ These challenges became particularly acute with the outbreak of the COVID-19 pandemic, which illuminated and exacerbated the gaps, not only in access to devices and connectivity, but also in educator capacity. Weeks after schools closed, 41 percent of districts reported that they were still not ready to implement online learning for all students.⁴ One of the key barriers facing districts is educators' lack of instructional capacity to support such technology-based models.⁵

This gap has severe implications for equity. As the U.S. Department of Education's Office of Educational Technology wrote in its 2017 National Education Technology Plan (NETP), "A digital use divide continues to exist between learners who are using technology in active, creative ways to support their learning and those who predominantly use technology for passive content consumption."⁶ Unless state education leaders empower educators to facilitate students' technology use, many students—particularly those from disadvantaged communities—will miss important opportunities to prepare for the changing demands of work and postsecondary education.

This urgent, defining moment calls for policymakers to take steps to ensure that all educators are trained to help students use technology actively, which could occur in online settings in the near term and be sustained in blended and face-to-face settings when the crisis subsides.

To assess how educators are using technology, members of state boards of education should convene relevant stakeholders in the state education agency, governor's office, business and higher education

sectors, district leaders, administrators, instructional technology coaches, classroom teachers, parents, and students. Specifically, the group should assess the extent to which educators are leveraging devices and the internet to develop students as active participants in their own learning rather than passive vessels for accumulating knowledge. It should also determine appropriate next steps to advance that goal. State boards can use model efforts around the country as a roadmap to address the needs their stakeholders identify (box 1).

Bringing together diverse perspectives to arrive at a long-term, comprehensive policy strategy requires a clear, action-oriented set of priorities. To help state boards begin this work, ISTE offers six questions they can ask their stakeholders.

1 ARE WE SETTING A SHARED VISION FOR EFFECTIVE TEACHING AND LEARNING WITH TECHNOLOGY?

The NETP makes a clear distinction between the active use of technology, where digital tools are leveraged to transform learning processes, and passive use, where media are consumed without meaningful engagement. Researchers continue to find value in the role of technology to promote active learning. For example, the National Academy of Sciences highlights the "importance of stimulating active student learning rather than merely delivering information to the student through books and lectures" and writes that "[d]igital technologies offer a variety of possibilities for stimulating and engaging learners."⁷

Computer science classes are an increasingly common model for active use of technology, as students use programming languages to engage in creative design processes and data analysis. Fortunately, many states are adopting learning standards and policies to expand K-12 computer science offerings.⁸ However, it is limiting to think about the effective educational use of technology solely in terms of computer science. The NETP cites many more exemplars, including remote access to college and career preparation and mentoring resources, collaboration with peers and subject matter experts, and creative media production to demonstrate learning.

Clear standards for technology use can help educators and administrators realize a shared vision for effective teaching and learning with technology. The third generation of the International Society for Technology in Education's (ISTE) Standards for Students synthesizes active-use exemplars and more into seven distinct personas—empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and global collaborator—each of which is broken down into distinct competencies that students can

BOX 1. UTAH'S PREPARATION PAYS OFF DURING COVID-19 CRISIS

Utah's educator capacity building efforts over the past several years helped districts transition to online learning within a few days of the pandemic-induced school closures in spring 2020. Sarah Young, director of strategic initiatives at the Utah State Board of Education, says, "It is clear that our fearless teachers and investments in digital teaching and learning have enabled the solutions . . . that we have seen across the state."^a

Utah legislation in 2016 called for a task force made up of members of the state board and the Utah Education and Telehealth Network to develop a plan for improving the use of technology in classrooms. The plan prioritized ongoing professional learning that empowers educators to "facilitate and inspire student learning and creativity, design and develop digital age learning experiences and assessments, [and] model digital age work and learning."^b The plan offered educators several pathways for professional learning that lead to an educational technology endorsement.

a. Sarah Young, personal communication, April 1, 2020.

b. Utah State Board of Education, "Utah Essential Elements for Technology Powered Teaching" (Salt Lake City, UT, 2016), https://www.uen.org/digital-learning/downloads/Utah_Essential_Elements_Technology_Powered_Learning.pdf#a=.

demonstrate to solve real-world problems. All 50 states have adopted the ISTE standards, and 18 have adopted the latest version.⁹

Other commonly cited standards include the Teacher Educator Technology Competencies,¹⁰ which outline skills that educator preparation faculty must possess to ensure that preservice educators are prepared to use technology effectively, and the National Standards for Quality Online Learning.¹¹

North Carolina adopted ISTE Standards for Students in 2019. A steering committee convened by the North Carolina Department of Public Instruction gathered educators' feedback on the state's Information Technology Essential Standards. In February 2019, the committee presented findings to the North Carolina State Board of Education, noting that more than three quarters of district technology directors called for an update because the existing standards lacked key elements like digital citizenship, creativity, collaboration, critical thinking, communication, and blended learning strategies.¹² The committee provided supplemental data to the board at its June 2019 meeting: Approximately 90 percent of surveyed educators said that the ISTE standards represent skills students need to succeed, and 30 percent of districts said they were already incorporating ISTE standards into practice.¹³ Encouraged by this consensus, the board unanimously adopted the new standards, with implementation scheduled for 2020 and 2021.

Nevada also invited educators from across the state to develop a shared vision around effective technology use. The state's educational technology commission had led past efforts to improve access to devices and the internet, but passive technology use persisted, particu-

larly because many educators had not been prepared for active use. In 2017, the state legislature passed SB 200, calling for the development of new educational technology standards in addition to expansion of computer science offerings.¹⁴ In August 2019, the state board approved the Nevada Computer Science and Integrated Technology Standards, which adapt language from the ISTE standards.

To advance a shared vision around effective technology use, state board members can form a task force that comprises diverse perspectives and expertise to review existing state educational technology standards and identify how the language could be strengthened. For example, do the current standards reinforce skills that students are projected to need in college and careers? If new standards are adopted, the task force can also recommend the educator capacity-building efforts necessary to put those standards into practice.

2 ARE ALL IN-SERVICE EDUCATORS PROVIDED WITH AND INCENTIVIZED FOR PROFESSIONAL LEARNING ON TECHNOLOGY-EMPOWERED TEACHING?

According to the Bill & Melinda Gates Foundation, "Large majorities of teachers do not believe . . . [current] professional development is helping them prepare for the changing nature of their jobs, including using technology and digital learning tools," and the Organization for Economic Cooperation and Development reports that only 45 percent of American educators feel "well prepared" or "very well prepared" to use information and communications technology for teaching.¹⁵

Clearly, educators need new professional learning models that will help them build competencies for using technology for active learning. Several states have begun this work through ISTE's certification program, a competency-based, vendor-neutral program aligned to the ISTE Standards for Educators. **Maryland** educators, for example, can earn three of the six continuing professional development credits they need to accrue every five years through this program. To incentivize educators' professional learning, the **Wyoming** Professional Teaching Standards Board voted to allow ISTE certification and other pathways to count toward earning an instructional technology endorsement.¹⁶

To foster more effective professional learning, state board members can work with stakeholders to identify the competencies for which educators require the most support, as Wyoming did in its most recent state digital learning plan.¹⁷ Such professional learning plans should also help districts determine which partner organizations can deliver effective training. In a research review, ISTE identified what good professional learning activities do:

- build on existing networks and encourage educators to build new communities of practice;
- provide ongoing, on-demand support to educators;
- offer educators personalized learning pathways;
- require educators to translate their learning into practice in their own contexts;

- integrate reflection on processes and outcomes; and
- model instruction management and delivery strategies that leverage digital solutions.

State boards can leverage their policy authority to support professional learning in this area. Could state boards specify technology competencies they would like educators to learn and apply? What authority does the state board have over teacher licensure, advancement, and renewal requirements? How could they help educators earn endorsements, license renewal credits, or other types of credentials?

3 ARE EDUCATOR PREPARATION PROGRAMS IN OUR STATE PREPARING ALL PRESERVICE CANDIDATES TO USE TECHNOLOGY TO IMPROVE PRACTICE AND STUDENT OUTCOMES?

Higher education is a critical juncture for educators to learn how to use technology for instruction. Just because preservice educators in preparation programs regularly use digital devices and the internet does not necessarily mean they will know how to use them meaningfully for teaching. In a national survey of four-year institutions, 83 percent of respondents reported that their faculty's lack of training was a barrier to integrating technology within teacher preparation programs, and teacher educators themselves are uncertain about their abilities in this regard.¹⁸

The prevailing structure of educator preparation programs is also worth questioning, as a majority of them offer a single course to prepare teachers to use technology, and this approach fails to equip teacher candidates with pedagogical knowledge on how to best integrate technology to support learning.¹⁹ It thus often falls on cash-strapped districts to train their new teachers.

State leaders are navigating this gap through standards adoption and certification requirements (box 2). For example, the **Texas** legislature requires teacher candidates to undergo instruction aligned with ISTE's standards for teachers. Digital learning specialist candidates in **New Hampshire** must demonstrate knowledge of key elements in these ISTE standards as part of their certification.

State board members should consider two key actions. First, they can convene higher education institutions that are instrumental to this work. What are the key preparation programs in the state? Are they effectively helping new educators integrate technology into instruction? If so, how? Do their practices align to these guiding principles articulated in the NETP:

- focus on the active use of technology to enable learning and teaching through creation, production, and problem solving;
- build sustainable, programwide systems of professional learning and teaching;
- ensure preservice teachers' experiences with educational technology are both deep and wide—not one-off courses separate from their methods courses; and
- align efforts with research-based standards, frameworks, and credentials recognized across the field.

Second, state board members can leverage their authority to improve educator preparation. How can competencies be incorporated into certification requirements? New requirements run the risk of becoming a “checklist” for educator preparation programs to cross off. Which state agencies state boards can coordinate with to ensure meaningful implementation and oversight?

4 ARE OUR FUNDING MODELS DESIGNED TO SUSTAINABLY IMPROVE EDUCATOR QUALITY AND STUDENT LEARNING EXPERIENCES WITH TECHNOLOGY?

One-and-done models do not meaningfully improve practice in teaching with technology. Thus state boards must plan for sustainable professional learning, which involves a robust, continuous investment of public dollars. To ensure the greatest impact, state leaders must not focus solely on the amount invested. Funds should be deployed strategically and make use of policy levers that propagate best practices and meet the needs of each school district.

BOX 2. CONNECTICUT GETS EDUCATORS UP TO SPEED

Over the last three years, Connecticut has been actively building educator capacity for effective technology use, including online learning. Barbara Johnson, president of the Connecticut Educators Computer Association and Connecticut Association of School Librarians, noted that teacher leaders at Colchester Public Schools have used technology effectively during the COVID-19 crisis because they were already familiar with using digital collaboration tools to foster student agency.

When school closures were announced, the district put in place a personalized professional learning plan to ensure that all teachers would be up to speed. “A mind-set around using technology as a tool has already been instilled,” Johnson said. “Now we are in a place where we’re thinking about whether we are truly optimizing learning for every student.”^a

The state's educational technology commission, which oversees programs to give students and educators robust access to the internet, identified that a lack of state-level requirements around educator technology competencies meant that what educators did with that internet access varied from school to school. So the commission persuaded the Connecticut state board to adopt the ISTE Standards for Students in 2018, showing members that the competencies outlined there addressed skills that students need to succeed in college and careers and could reinforce learning across different content areas. The commission has subsequently worked with Fairfield University to design a program in which education preparation coursework aligns with the ISTE Standards for Educators. Fairfield also offers graduates an opportunity to earn an ISTE certification.^b

a. Barbara Johnson, personal communication, April 7, 2020.

b. Ji Soo Song, “Addressing Preservice Capacity in Ed Tech: How Can States Reimagine Educator Preparation?” *EdNote* blog (Denver: Education Commission of the States, March 25, 2020), <https://ednote.ecs.org/addressing-pre-service-capacity-in-ed-tech-how-can-states-reimagine-educator-preparation/>.

Wyoming leveraged federal funds levied under Titles II-A and IV-A of the Every Student Succeeds Act (ESSA) to enroll 100 educators in ISTE's certification program. **Utah** provided \$20 million annually in grants to promote digital teaching and learning. In crafting the grant program, the state's governor, legislators, and state board members recognized that each district would have unique needs. Therefore, the state did not direct districts to target grant funds toward specific activities. Instead, each was asked to conduct a readiness assessment and use it to create a tailored plan aligned to state board guidelines. Many districts prioritized increasing educator capacity through certification programs that qualify educators to obtain Utah's educational technology endorsement.²⁰

In securing funding to develop educator capacity, state board members can work with their legislatures, governors, and state education agencies to create a new state grant program or tap sources such as Titles II-A and IV-A of ESSA and education stabilization funds authorized in the CARES Act, passed in March 2020. By creating solutions alongside their stakeholders, state boards can foster a sense of local ownership in plans for digital learning.

The state board can set guidelines around allowable uses of funds, as Utah did, to ensure that investments are not spent solely on devices and technical infrastructure. In launching grant programs, state boards can strategize about how equity and sustainability might be prioritized. For example, how can state boards encourage districts to target training for teacher leaders who can propagate best uses of technology within their communities, especially in underserved schools?

5 IS OUR STATE HELPING ALL STUDENTS GROW AS PRODUCTIVE DIGITAL CITIZENS?

The ISTE Standards for Students define digital citizenship as “recogniz[ing] the rights, responsibilities and opportunities of living, learning, and working in an interconnected digital world, and . . . act[ing] and model[ing] in ways that are safe, legal, and ethical.” However, current instruction in digital citizenship tends to focus narrowly on surveillance, online safety, cyberbullying, and internet etiquette.²¹ While these issues certainly require attention, digital citizenship comprises much more. ISTE and other organizations that form the DigCitCommit Coalition believe that good digital citizens display these characteristics:

- **Inclusive:** I am open to hearing and respectfully recognizing multiple viewpoints, and I engage with others online with respect and empathy.
- **Informed:** I evaluate the accuracy, perspective, and validity of digital media and social posts.
- **Engaged:** I use technology and digital channels for civic engagement, to solve problems and be a force for good in both physical and virtual communities.
- **Balanced:** I make informed decisions about how to prioritize my time and activities online and off.
- **Alert:** I am aware of my online actions and know how to be safe

and create safe spaces for others online.

State board members and other state leaders are leading critical conversations around how their states can encourage educators to embrace an expanded definition of digital citizenship.

For example, the **Virginia** state board incorporated digital citizenship in the state's 2013 computer technology standards, where it highlighted “communicat[ing] respect for people when participating in group online learning activities,” “actively participating in positive activities for personal and community well-being,” and “explor[ing] the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.”²² Virginia also recently established the Digital Citizenship, Internet Safety, and Media Literacy Advisory Council to propose local policies, curate resources, identify model instructional practices, and recommend additional state actions.

Utah's state board leveraged its regulatory authority over the state's digital learning grants to require that digital citizenship curriculum be incorporated in district plans.

Legislators in **Washington** passed a bill to expand digital citizenship instruction beyond online safety and called on the state education agency to develop recommendations for implementation. SB 6273 defines digital citizenship as not only “norms of appropriate, responsible, and healthy behavior related to current technology use” and “internet safety and cyberbullying prevention and response” but also “media literacy” and “the ability to access, analyze, evaluate, develop, produce, and interpret media.”²³

State boards can also convene educator-led councils to identify gaps in current instruction and recommend actions the state can take to broaden the understanding of what constitutes digital citizenship. Such efforts align well with educators' calls for addressing the social and emotional (SEL) needs of their students. As increasing numbers of students interact in digital spaces, educators are recognizing that SEL needs should be considered in settings other than face-to-face contexts.

6 HOW CAN OUR STATE BOARD ADVANCE EQUITY IN DIGITAL LEARNING?

Leadership commitment to digital equity is essential. A comprehensive policy strategy that supports technology-empowered pedagogy can be leveraged immediately in online settings during the COVID-19 pandemic and sustained in blended and face-to-face settings when schools reopen. These strategies must be grounded in not only providing equitable access to devices and the internet—in schools and at home—but also a definition of effective use of technology and a vision of how all students can benefit. Systemic supports for in-service and preservice educators, continuous funding, and instruction in digital citizenship will be anchors of these strategies.

When the worst of the COVID-19 pandemic has subsided, students will still face a landscape in which the workplace has shifted significantly, due to both outbreak-related economic disruption and the

advance of artificial intelligence, robotics, and automation. By 2030, American workers are projected to increase the time they spend using advanced technologies by 50 percent.²⁴ Hiring managers will seek employees who can collaborate with colleagues, design creative solutions, and thoughtfully communicate using technology.²⁵

As Jillian Balow, Wyoming's state superintendent, put it: "Educator capacity has implications for equity. When properly trained, educators can empower students through technology to have agency in their learning."²⁶ In a world in which opportunities for educators to develop their abilities to meaningfully integrate technology into instruction remain inequitably distributed,²⁷ state board members are uniquely positioned to challenge this status quo. It has never been more urgent that they do so.

By convening stakeholders and asking questions to assess the nature of technology use in their state contexts, state boards can take steps toward narrowing the digital use divide that pervades our education system and ensure that the state's education programs prepare all students with the skills they need to succeed.

Ji Soo Song is ISTE's senior policy and advocacy associate. The International Society for Technology in Education (ISTE) is a nonprofit organization that works with the global education community to accelerate the use of technology to solve tough problems and inspire innovation. For any questions, please reach out at jssong@iste.org.

NOTES

1 Evan Marwell, "2019 State of States: The Classroom Connectivity Gap Is Closed" (San Francisco, CA: EducationSuperHighway, 2019); Paula Maylahn, "CoSN's 2018–2019 Annual Infrastructure Report" (Washington, DC: Consortium for School Networking, 2018).

2 Brandon Olzsewski and Helen Crompton, "Educational Technology Conditions Support the Development of Digital Age Skills," *Computers & Education* 150 (2020): 103849, <https://doi.org/10.1016/j.compedu.2020.103849>.

3 Organization for Economic Cooperation and Development, *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners* (Paris: OECD Publishing, 2019).

4 Sean Cavanagh, "Four of Every 10 Districts Not Ready for Remote Learning during Coronavirus Outbreak, Survey Shows," *Education Week Market Brief* (March 14, 2020).

5 Chris Rogers and Noelle Ellerson Ng, "Report of Initial Findings: COVID-19 Impact on Public Schools" memo (Alexandria, VA: AASA, the School Superintendents Association, March 27, 2020), [https://aasa.org/uploadedFiles/AASA_Blog\(1\)/AASA%20COVID%20survey%20INITIAL%20032720%20FN.pdf](https://aasa.org/uploadedFiles/AASA_Blog(1)/AASA%20COVID%20survey%20INITIAL%20032720%20FN.pdf).

6 U.S. Department of Education, "Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update" (Washington, DC: Office of Educational Technology), <https://tech.ed.gov/files/2017/01/NETP17.pdf>.

7 National Academies of Sciences, Engineering, and Medicine, *How People Learn II: Learners, Contexts, and Cultures* (Washington, DC: The National Academies Press, 2018).

8 Code.org Advocacy Coalition, "2019 State of Computer Science: Education, Equity, and Diversity" (Seattle, WA: Code.org).

9 International Society for Technology in Education, ISTE Standards, 2020, <https://www.iste.org/standards>.

10 Teresa Foulger et al., "Teacher Educator Technology Competencies," *Journal of Technology and Teacher Education* 25, no. 4 (2017): 413–48.

11 Quality Matters, National Standards for Quality Online Learning, 2020, <https://www.nsqol.org/>.

12 North Carolina State Board of Education, meeting minutes, February 6, 2019, <https://simbli.eboardsolutions.com/Meetings/PrintMinutes.aspx?S=10399&MID=5052>.

13 North Carolina State Board of Education, meeting minutes, June 6, 2019, <https://simbli.eboardsolutions.com/Meetings/PrintItem.aspx?S=10399&MID=5440&IID=505856&AB=true&RC=true&Con=true&t=i>.

14 Ji Soo Song, "Interview: Defining Effective Edtech Use," blog (ISTE, February 20, 2020), <https://www.iste.org/explore/education-leadership/interview-defining-effective-edtech-use>.

15 Boston Consulting Group, "Teachers Know Best: Teachers' Views on Professional Development" (Seattle, WA: Bill & Melinda Gates Foundation, 2014); OECD, *TALIS 2018*.

16 Ji Soo Song, "Accelerating Educator Capacity: How Can State Reimagine Ed Tech Professional Learning?" *EdNote* blog (Denver: Education Commission of the States, February 18, 2020), <https://ednote.ecs.org/accelerating-educator-capacity-how-can-states-reimagine-ed-tech-professional-learning/>.

17 Wyoming Department of Education, "2017–2021 Digital Learning Plan" (Cheyenne, WY: Wyoming Department of Education, 2016).

18 Brian Kleiner et al., "Educational Technology in Teacher Education Programs for Initial Licensure" (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 2007); Dana Uerz, Monique Volman, and Marijke Kral, "Teacher Educators' Competences in Fostering Teachers' Proficiency in Teaching and Learning with Technology: An Overview of Relevant Research Literature," *Teaching and Teacher Education* 70 (2018): 12–23, <https://doi.org/10.1016/j.tate.2017.11.005>.

19 Liz Kolb et al., "Challenges to Creating and Sustaining Effective Technology Integration in Teacher Education Programs," paper presented at American Association of Colleges for Teacher Education annual conference, 2018.

20 Valerie Norville, "Utah Banks on Statewide Approach to Adopting Education Technology," *State Innovations* 24, no. 2 (Alexandria, VA: NASBE, June 2019).

21 Lynn Mitchell, "Beyond Digital Citizenship," *Middle Grades Review* 1, no. 3 (2016).

22 Virginia State Board of Education, Computer Technology Standards of Learning for Virginia's Public Schools (Richmond, VA, February 2013), http://www.doe.virginia.gov/testing/sol/standards_docs/computer_technology/2012/stds_comptech_complete.pdf.

23 Peter D. Tamayo, "Report to the Legislature: Digital Citizenship Recommendations" (Olympia, WA: Washington State Office of Superintendent of Public Instruction, 2016), <https://www.k12.wa.us/sites/default/files/public/legisgov/2016documents/2016-12-digitalcitizenship-legislativevreport.pdf>.

24 Jacques Bughin et al., "Skill Shift: Automation and the Future of the Workforce" discussion paper (New York: McKinsey Global Institute, 2018).

25 Hart Research Associates, "Fulfilling the American Dream: Liberal Education and the Future of Work: Selected Findings from Online Surveys of Business Executives and Hiring Managers" (Washington, DC: Hart, July 2018).

26 Song, "Accelerating Educator Capacity."

27 Kristen Purcell et al., "How Teachers Are Using Technology at Home and in Their Classrooms" (Washington, DC: Pew Research Center, February 28, 2013).