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What Ivanka Trump should know as she embarks on ed-tech policy work

By Mark Lieberman

20-25 minutes

In a [New York Post op-ed](#) last week, Ivanka Trump said she intends for education technology to be one part of her White House portfolio. “Given the high and increasing demand for workers with computing skills, it is imperative that all of our students, including women and minorities, have access to computer-science education,” Trump wrote, emphasizing the need for K-12 students to have opportunities to learn computer science at an early age.

Educational technology is a complex field, and Ivanka Trump does not appear to have sustained experience engaging in those complexities. “Inside Digital Learning” wanted to assemble a syllabus for her as she dips her toe into this world; we posed the following questions to a panel of experts.

- Which authors and texts should Ivanka Trump read as she prepares to try to influence national policy?
- Which education programs should she study as models for

how to incorporate ed tech into learning environments?

- What advice would you give her about how to think about ed-tech's role in education relative to other priority issues facing students at all levels, especially college students?



**Bryan Alexander, futurist, writer, educator, consultant;
founder and president of Bryan Alexander Consulting**

In response to presidential adviser Ivanka Trump's recent call for increased teaching of computer skills in K-12, I would recommend paying careful attention to certain key issues in this field.

First, the question of access. American students, while constitutionally guaranteed education, nevertheless experience uneven access to learning. Economic differences radically alter the K-12 experience, as do racial and religious identities. We connect with the digital world in a similarly unequal way, as families marked by education, racial, income and especially geographic differences can't reach the same levels of hardware, software and networking, despite decades of technological advancement.

Second, the rich variety of digital learning options. Students can learn to code or to make machines, take proctored exams or discuss issues online, be creative and digitally literate, or master skills and study obedience. Federal policy should account for this diversity and support what's best for students.

Third, the rise of big data and data analytics offers opportunities both helpful and damaging. We need to realize the benefits for improving our understanding of learners and learning while preserving student privacy, securing data against hacks and empowering students. At the same time we have to remember that metrics can only tell us so much about the complexity of students' learning and lives.

Fourth, the changing natures of students. At the K-12 level,

the student body is increasingly shaped by racial changes and widening economic divisions. A growing number of college students are adults (rather than 18- to 22-year-olds), military veterans (from America's longest war), dealing with learning disabilities or caring for family members. Again, many are shaped by escalating income and wealth inequality. Any technology strategy must speak to the actual people it would serve.

Fifth, the power of open. Teachers, researchers, publishers, technologists and librarians have been urging the benefits of open education resources (OER), open-access scholarly publication, open-source software and open educational practices, such as sharing class materials and other professional material on the web. Realizing this vision isn't easy; the federal government could help a great deal.

Sixth, teaching about technology issues. Topics ranging from online privacy to copyright, online identity to bullying, political organization to personal creativity are all well addressed in scholarship and nicely positioned for class exploration. Put another way, students should learn to think about and around tech while learning how to use it.

Seventh, the education ecosystem that is changing deeply and in surprising ways. Plan for where it's headed, not for where things now are.

I recommend several readings to get started:

- [Personal Learning Networks](#) by Will Richardson and Rob

Mancabelli explores how learners can use the web more ambitiously and effectively.

- [*Paying the Price*](#) by Sara Goldrick-Rab establishes the many problems of supporting today's students through financial aid.
- [*Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*](#) by Cathy O'Neil is a powerful caution to the misuses and limits of big data.
- [*Our Kids*](#) by Robert Putnam offers the best and most current analysis of social divisions separating today's families.



**Lindsey Downs, communication manager,
WICHE Cooperative for Educational Technologies (WCET)**

In her White House adviser position, Ivanka Trump has a significant opportunity to raise awareness regarding best practices in aligning technology education required for employability in all sectors of the modern economy. WCET supports her comments that “it’s not simply about learning to use computers, but about the problem-solving skills that come with it.”

Excellence in technology-enabled learning comes from access to technology along with instructor training. If our teachers aren’t prepared and supported, they won’t be able to effectively teach students.

Authors Ivanka should read and organizations she should get to know include:

- Lucy Sanders, CEO and co-founder of the [National Center for Women & Information Technology](#), a nonprofit that works to increase girls' and women's participation in computing related careers.
- [Time for Class 2017](#) by Tyton Partners. Key findings: digital learning is not a strategic, higher education target. Faculty are the linchpin for successful digital learning, but are woefully undersupported, and there is low satisfaction with the current digital courseware market.
- [Robbie Melton](#), who recently retired from the Tennessee Board of Regents and who helped instructors integrate technology and resources into the classroom.
- [National Center for Academic Transformation](#), a nonprofit that uses technology to redesign learning environments and produce better learning outcomes for students.
- [WCET](#), the leader in the practice, policy and advocacy of technology-enhanced learning in higher education. She can visit the [Frontiers](#) blog for updates.

Education programs Ivanka should study:

- University of Montana's [accessibility initiative](#)
- [Saint Leo University](#)
- [Rio Salado College](#)

- University of Central Florida's [DirectConnect to UCF](#)
- [Austin Community College](#)'s [ACCelerator](#), proponent of competency-based learning and examples of industry partnerships (i.e., partnership with Apple for a new app development program)

Ivanka also should consider:

- Accessibility of educational technology continues to be an issue for many students. We must be proactive and ensure accessible content for all learners through universal design, which benefits everyone when built into the course-design process.
- The digital divide stems from lack of access proven to be based on race, gender, educational attainment and income.
- Inadequate access to technology creates a lack of [digital readiness](#).
- The above decreases the opportunity to nurture digital citizenship, which is vital for the modern world and leads to a society where technology is utilized effectively and responsibly so citizens may fully engage in society.
- Inclusion and engagement in society is hampered for those without postsecondary education. The Pell Institute for the Study of Opportunity in Higher Education revealed that 15 percent of students in the bottom socioeconomic quartile earn a bachelor's degree within eight years of expected high school graduation, compared with 60 percent who are in the

top quartile. Closing the degree-attainment gap and improving outcomes for these students who are often first generation and/or students of color is a critical priority for our nation.



**Michael Horn, chief strategy officer, Entangled Ventures;
co-founder, Clayton Christensen Institute**

As Ivanka Trump wades into the world of computer education, computational thinking and coding in schools, it's worth her taking a broader view of the world of education technology first before zeroing in on the more specific field of building

students' computing skills.

I would of course recommend she read my own books on the topic, *Disrupting Class* and *Blended*, but also books that cover the emergence of these new technologies in the postsecondary space.

- Ryan Craig's [*College Disrupted: The Great Unbundling of Higher Education*](#)
- Kevin Carey's [*The End of College: Creating the Future of Learning and the University of Everywhere*](#)
- Jeff Selingo's [*College Unbound and There Is Life After College: What Parents and Students Should Know About Navigating School to Prepare for the Jobs of Tomorrow*](#)
- Goldie Blumenstyk's [*American Higher Education in Crisis?: What Everyone Needs to Know*](#)
- Anya Kamenetz's [*DIY U: Edupunks, Edupreneurs and the Coming Transformation of Higher Education*](#)
- Andy Rosen's [*Change.edu: Rebooting for the New Talent Economy*](#)

I would also encourage her to read Larry Cuban's timeless [*Oversold and Underused: Computers in the Classroom*](#), Paul Peterson's [*Saving Schools: From Horace Mann to Virtual Learning*](#), and Larry Cuban and John E. Chubb's [*Liberating Learning: Technology, Politics and the Future of American Education*](#).

She should study the following educational programs to learn more about how to incorporate educational technology into learning environments:

- [Summit Public Schools](#)
- [Thrive Public Schools](#)
- [The Enlarged City School District of Middletown's public schools](#)
- [Southern New Hampshire University Online](#) and [College for America](#)
- [Arizona State University](#)
- [StraighterLine](#)
- [MissionU](#)
- [The Minerva Project](#)

As she thinks about policy, Trump should think less of ed tech as its own category of policy and more about the policy environment that is necessary to produce the innovation we so sorely need in teaching and learning to help all students build their passions and fulfill their potential to be productive members of society. That would point her to policy that focuses on the learning growth of each individual student and frees up the inputs and processes institutions and educators must follow to help learners realize those outcomes.

The innovation that is needed is not to allow all people to afford expensive, subsidized higher education, but to create

affordable models of higher education that are flexible, more efficient and efficacious. Few issues could be more important to the future of the country, but the answers won't always lie in policy. Beware of creating short-term fixes that will create perverse systematic incentives.

Finally, my read is that Trump's focus will be less on ed tech and more on how to create more opportunities for students to learn coding in schools. That's all well and good, but I'd encourage her to focus not just on how to build an army of coders -- which might not be as in demand in the future as people think -- but instead learners who master the skills of computational thinking to be able to harness computers to create. Toward that end, I'd encourage her to read the writings of Mitch Resnick of MIT and Karen Brennan of Harvard.

I also would encourage her to focus on leveraging human capital from outside of schools to complement teachers such that students have access to relevant knowledge and skills for the workplace, but also access to social capital in the form of mentors who can opportunistically support them as they move into careers.

**Adam Newman, managing partner, Tyton Partners**

Last week Ivanka Trump announced the launch of another government initiative to focus on upskilling Americans' technology and computer science capabilities. The initiative implies a need to strengthen resources for everyone from rising kindergartners to displaced workers, driven by fear that we're leaving too many ill equipped to be successful in our society.

This is a good thing, but it's not enough. And that's not a knock on the policy, as much as it is on our education and work-force systems' continued challenges demonstrating urgency in solving this problem and/or closing the proverbial skills gap.

Nearly 3.8 million children started their educational journey in public kindergarten programs this fall. According to recent Tyton Partners [analysis](#), the U.S. is home to approximately 103 million low-income adults; 50 million are unemployed and 53 million earn less than \$42,500 annually. Within California, a recent survey of adult education and work-force development leaders indicates that more than 50 percent of the low-income adults in their programs can't complete basic word processing, online job searches and online job application tasks. Barely more than 40 percent of their program participants can perform internet searches and send or receive email.

The reality is, there's work we should be doing in the technology-upskilling arena that precedes the higher-order computational thinking and coding development activities gripping the nation. And these first-order issues, like the fundamentals of how to use technology in a professional context, are squarely within the purview of our educational institutions today -- preK-12, postsecondary and beyond -- and likely don't require new government funding programs.

Dynamic, entrepreneurial initiatives targeting low-income, low-skilled adults exist across the country. Our work with the [Employment Technology Fund](#), a multifunder initiative addressing un- and underemployment by investing in social enterprises, has evaluated numerous companies and nonprofit organizations seeking to bring technology tools and services to adults who are being left behind. The fund's first two

investments -- [Cell-Ed](#) and [Northstar](#) -- are building and assessing adults' foundational academic, professional, and digital literacy skills to help them accelerate employment mobility options today.

What these and similar companies lack, however, is more robust, seamless access to the adult education and work-force development programs hosted by K-12 schools and postsecondary institutions across the country. Our institutional leaders need to be more aggressively pursuing, supporting and testing innovative models to solve today's fundamental skills gap issues in existing programs, even as we seek to mitigate the future need to do so with initiatives such as those proposed by Ivanka Trump.

The same urgency and energy we have brought to K-12 school reform and innovative postsecondary delivery models must alight on our adult education and work-force development systems. As our K-12 and postsecondary institutions play a significant role in this work, let's encourage more engagement and leadership from them for students -- more than 100 million of them -- who need better pathways and options.



**Jonathan Poritz, associate professor of mathematics,
Colorado State University Pueblo; officer of the Colorado
State University Pueblo chapter of the American
Association of University Professors**

The history of educational technology is long and somewhat

depressing -- useful context is well told in [*Teaching Machines: Learning From the Intersection of Education and Technology*](#) by Bill Ferster. Too often, educational quality has been sacrificed for some social or psychological theory, or for expediency.

For example, as financial support for public education at all levels has continued to be cut in the U.S., school administrators have sometimes turned to ed tech solely to reduce costs. Online, bundled course materials packaged in a learning management system can be delivered at nearly zero marginal cost. Some elementary schools have given parts of their mathematics education over to computer programs using lively animations and gamification. Instead of teachers, these schools make do with disciplinarians who merely keep the students on task -- and who have far fewer qualifications and lower salaries than actual teachers.

At the other end of the educational pipeline, in many public universities, more than half of student contact hours for mathematics are with contingent faculty members. Adjuncts are paid so little per class that they must teach many sections to survive, leaving no time to grade homework themselves. This approach, using fungible, contingent labor paid starvation wages, is only possible with automated homework systems that reduce the workload.

This is education as spam, where individual classes (like emails) are worth very little, but since their marginal cost is

effectively zero, it becomes a viable business model. Whether it benefits the recipients is much more doubtful.

Audrey Watters, in three [Monsters of Educational Technology](#) books and in [essays](#), provides clear-eyed commentary on these and many other ed-tech issues.

Yet ed tech in the hands of insightful and innovative teachers has many successes, from entirely project-based teaching of coding all the way to the burgeoning new field of digital humanities. The promise of technology to transform all levels of education as noted by Seymour Papert in [The Children's Machine: Rethinking School in the Age of the Computer](#) and, more recently, by Mitchel Resnick in [Lifelong Kindergarten: Cultivating Creativity Through Projects, Passion, Peers and Play](#), does seem to be slowly arriving, in forms as varied as hacker spaces and the Scratch community.

Within STEM and STEM education, environments unfriendly to women and minorities are unfortunately common. Progress is possible in organizations outside the formal walls of educational institutions like [#YesWeCode](#) and [Girls Who Code](#). Within those walls, making diversity a priority can yield significant success, as seen at Harvey Mudd College, which went from 12 percent to 40 percent women majoring in computer science during a seven-year effort, according to [Solving the Equation: The Variables for Women's Success in Engineering and Computing](#).

The AAUP has long maintained -- and the success of

American higher education gives weight to this assertion -- that instructors' expertise offers unique insight from which they can design curricula to benefit students. This implies that teacher autonomy and control of ed tech should have absolute priority. These examples show the benefits of this approach and the dangers of abandoning it.



James Wiley, principal technology analyst, Eduventures Research

Any educational technology initiative has to recognize first that technology is not something that lives outside of any context and exists mainly to help us perform tasks or solve problems. The history of education technology, in particular, demonstrates that it has always been intertwined with potent issues, such as access, equity, knowledge, race, class and gender.

Likewise, such a historical view shows that education technology indeed goes well beyond how we tackle specific tasks or solve particular problems to fundamental questions: What do we want our nation to become? How will educational

technology help us get there?

To that end, I would recommend two key texts: [*A Nation at Risk*](#) and [*Inside the Black Box of Classroom Practice: Change Without Reform in American Education*](#). Both texts strike at the critical intersection between education, society and reform and, while not specific to technology, serve to inform the question of the role technology may play in education. *A Nation at Risk*, written in 1983, was a call to action for change in education, using as its basis the need for our children to succeed in an increasingly competitive global marketplace and the aim to have educational equity. *Inside the Black Box*, while touching on technology, looks to explore the issue of why some policy decisions do not seem to result in classroom reforms.

The education program that serves as an excellent model for incorporating educational technology into learning environments is [*Learning Technology Commons at the University of North Carolina*](#). Unlike some other programs that merely rely on one learning solution, UNC offers faculty many solutions, which they can tailor to meet particular learning needs and create specific learning environments for their students. While many blogs and articles highlight how this approach benefits procurement and technology selection, it is more than that -- the real advantage is how UNC faculty can leverage different solutions, depending on the pedagogical approach, to improve classroom learning.

Lastly, we all know that students are concerned with many issues, such as securing employment and student debt. For many of these, educational technology can contribute, for example, by assisting students when it comes to matching their skills to industry needs or providing a clear way to find and manage financial aid. An issue to which education technology cannot contribute, however, is one we hear more and more -- understanding what student success means. Is it merely career advancement or does it include academic success? Does it include students having skills in problem solving or critical thinking?

Furthermore, how does any definition help us as a society? To leverage technology to improve education, we need clear answers to these questions. Without it, we will forever deploy technology haphazardly, focusing only particular problems and not helping us realizing our national vision.