Can we predict the future of postsecondary education?

Sarah Forgie
Past predictions about the future...108 years of them

Quartz rounded up what artists, educators, and thinkers from the past century thought college would look like today. Few of the forecasts about future classrooms actually hit the mark, note Quartz's Natasha Frost. But the predictions, which date as far back as 1920, do point to anxieties and hopes about technology, automation, and policies that universities and students still grapple with today.

**Prediction 1: Students will download knowledge into their brains (1910)**

The French company Villenard commissioned artists to depict the year 2000. In one print, titled *At School*, artist Jean-Marc Colin depicts a teacher crunching textbooks into knowledge with a crank-handled machine. The machine then transmits the knowledge into students' minds via a headset.

**Prediction 2: Students will learn through the radio (1924)**

Science and Invention editors predicted that educators would use radio to deliver lessons. The format they describe seems very similar to podcasts, which can teach students anything from how to launch a business to how to be happier. Frost points out that MOOCs also match this prediction, with remote learning taking place online.

**Prediction 3: Teachers will be replaced by machines (1958)**

In Arthur Radebaugh's futuristic comic, *Closer Than We Think*, he predicted that most teaching would happen through sound movies and mechanical tabulating machines. In his vision, future classrooms would have more students and fewer teachers, and students would use machines to answer questions and learn at their own pace.

Radebaugh was right that technology would help students answer questions in class (think *clickers*) and learn at their own pace, writes Frost. But he was wrong about the automation of teachers.

**Prediction 4: Learning will be a lifelong endeavor (1965)**

Cognitive psychologist George Miller predicted that students would have to know more than their predecessors, due to the rise of personal computers. "As automation advances and new industries replace old," he wrote, "learning will not be regarded as ending with graduating from school, but will become a way of life for everyone."

Sound familiar? Students continue to hear similar advice from executives and educators about the need to keep learning after graduation in order to stay competitive in the workforce. And universities still face pressure to equip students with future-proof skills to help them forge sustainable careers.

**Prediction 5: Students will zap knowledge into their brains (1965)**

Herman Kahn and Anthony Weiner, both self-described futurists, argued that future students would be able to optimize their learning through "practical use of direct electronic communication with and stimulation of the brain." The vision of electrode stimulation hasn't been realized—and probably shouldn't be anytime soon, notes Frost.

**Prediction 6: Classrooms will fly (1962)**

The kids' whole future is going to take place on an airship that travels the world. "Classes will never be boring on an airship traveling around the world! Imagine gliding over the Amazon River in South America or retracing Ulysses' journeys through the Greek Islands," the book reads.

**Prediction 7: Higher education will collapse (1987)**

Conservative activist Herbert London told *The Futurist* that liberal ideas would lead to the collapse of the university. He argued that campuses had become such hotbeds of Marxism, feminism, and affirmative action that people would no longer want to attend Frost. Quartz 11/08. Image Villenard 1910, accessed 12/11.

4 predictions about higher ed in 2040 from Georgia Tech

7:30 AM - May 29, 2018

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Georgia Tech’s Commission on Creating the Next in Education recently released a report on the public research university of 2040 and beyond. The Chronicle of Higher Education’s Beth McMurtrie sat down with Rafael Bras, provost and executive vice president for academic affairs, to talk through Georgia Tech’s higher ed predictions.

Prediction 1: Artificial intelligence will play a greater role

Georgia Tech previously experimented with an AI teaching assistant and found that the agent could handle the majority of exchanges between students and professors, says Rafael. While there’s more work to be done to design a sophisticated AI tutor, the technology will be instrumental to improve students’ access to information.

Prediction 2: The path to graduation will become less linear

The report suggests that the future student’s college journey will include numerous entry and exit points. Graduation may no longer be a student’s final goal—especially for student entrepreneurs.

At Georgia Tech innovation hub, students have founded over 81 startups, which collectively raised $2 million through investments in just three years. In the future, student entrepreneurs may leave college and rely on faculty mentors as they pursue their business. Later on, they may return to college to graduate, or for other offerings, he predicts. To accommodate a meandering path, colleges may also experiment with subscription models where students pay as they go while they stop and start their studies.

Prediction 3: The campus experience will still matter

More students are enrolling online courses for both flexibility and cost, but the traditional residential experience will still be in high demand in 2040. However, a campus’s student population may widen to include more K-12 students and older students.

Prediction 4: Collaborative spaces will be the key for innovation

The report envisions a shared space with entrepreneurs called the Georgia Tech atrium. In this space, students, alumni, and others can access information, mentors, and lectures (McMurtrie, Chronicle of Higher Education, 5/17).
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Holograms of teachers beamed into classrooms from around the world

Chinese school uses facial recognition to monitor student attention in class

&Dear Mr. Zuckerberg': Students Take Summit Learning Protests Directly to Facebook Chief
Innovating Pedagogy 2019

This series of reports explores new forms of teaching, learning and assessment for an interactive world, to guide teachers and policy makers in productive innovation.

Download Innovating Pedagogy 2019.

This seventh report, produced by The Open University in collaboration with the Centre for the Science of Learning & Technology (SLATE), University of Bergen, Norway, proposes ten innovations that are already in currency but have not had a profound influence on education in their current form.

You can see a summary of each innovation using the menu on the right.

Please add your comments on the report and the innovations on this blog, or comment on social media using the hashtag #IP2019report

Innovations covered in previous reports.

Themes
- Playful learning
- Learning with robots
- Decolonising learning
- Drone-based learning
- Learning through wonder
- Action learning
- Virtual studios
- Place-based learning
- Making thinking visible
- Roots of Empathy
- Themes from previous reports

Previous reports
- Innovating Pedagogy #1 (2012)
- Innovating Pedagogy #2 (2013)
- Innovating Pedagogy #3 (2014)
- Innovating Pedagogy #4 (2015)
- Innovating Pedagogy #5 (2016)
- Innovating Pedagogy #6 (2017)

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More focus on outcomes based learning, experiential learning
3 challenges colleges face to prepare grads for the future of work

Higher education leaders gathered last fall to discuss the future of work at a symposium hosted by Stanford University and CMO Media. Provosts, faculty members, and industry executives explored how colleges and universities can prepare students for an increasingly automating workplace.

Louise Lee, a writer at Stanford Business Insights, rounds up a few major challenges speakers touched on.

**Challenge 1: Break down silos between humanities and STEM**

“Humanities students may be uncertain about their role in an automated workplace, but the technology sector will need liberal arts graduates to ground the industry in history, culture, and philosophy,” says Harry Elam, senior vice provost for education at Stanford. “Colleges will need to prepare students who can ‘humanize technology.’” He adds.

Students with both humanities and technical skills will be the most in-demand candidates, says Trent Haus, cofounder of Mindsumo. Some campus leaders have already started to bridge the gap between STEM and liberal arts. At Stanford, faculty members are designing a computer science-ethics course that focuses on the moral issues that future graduates will have to address.

**Challenge 2: Re-train the workforce**

Online education won’t replace brick-and-mortar campuses, but they will be critical to address changing workforce demands, the speakers predicted. Even after college, workers will need to continue learning new skills. Researchers estimate that up to 1.4 million U.S. workers will be displaced by automation across the next decade. Online courses are necessary to help workers transition to new jobs. Some firms, like AT&T, already use online courses to reskill workers on a massive scale, says Julia Stiglitz, vice president at Coursera.

**Challenge 3: Graduate more diverse students**

Employers want a diverse workforce to build “smarter and more creative” teams, says Joelle Emerson, an adjunct lecturer at Stanford’s graduate school of business. The talent pipeline of diverse candidates can start on campus. Many colleges have committed to recruiting—and graduating—more low-income and first-gen students. The American Talent Initiative, for example, is a band of 95 colleges and universities that seeks to collectively enroll 90,000 more low-income, high-achieving students into roughly 300 institutions with high graduation rates by 2025 (Lee, Stanford Business Insights, 4/24).

Studying a wide range of subjects will “address the rapidly changing competencies students need to succeed in the world of work...foster a sense of adaptability necessary for students working in industries ‘that have yet to be defined’” K. Bergeron Education Dive, 8/16.

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Is online learning the answer?

Current constraints:
- Classroom size, space, operating hours, availability of staff and students
- But...additional costs of instructional design and interactivity, maintenance, more frequent staff/student interactions, staff training
- Faculty prep time, course development and student support services remain the same (or may increase)

Student success = pedagogy (active learning and interactions) and access to support

Myth: Online Learning is Less Expensive to Scale

"Scaling online education should be pretty easy. One course can enroll hundreds of students, so it’ll be cheaper!"

Chief Financial Officer

Myth: Online Education is Less Effective Than Face-To-Face Instruction

"Online learning can never replicate traditional classrooms. How can faculty effectively support students they don’t even know?"

Faculty Skeptic

Myth: Online Learning Makes Geographic Boundaries Irrelevant

"With just a click of a button we can enroll students across the globe. The world is our oyster!"

Board Member

Magda, Aslanian, Online College Students 2018: Comprehensive Data on Demands and Preferences
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Lesson 1: Prioritize physical changes over technology upgrades

Institutions with established active learning classrooms found that lower-resource changes typically lead to an outsized impact. Relatively simple physical modifications—such as whiteboards, swivel chairs, or tables with wheels—can have a greater impact on learning outcomes than expensive technology. Monitors and screen-sharing technologies, on the other hand, are expensive to install and maintain and will quickly become outdated, which requires an additional cost to replace.

Impact Versus Cost of Active Learning Classroom Elements

Lesson 2: Adapt to increased space requirements

Active learning classrooms require more space—approximately 35% more square feet per student. These spaces also require relatively small classes of no more than 45 students. This inherent space inefficiency is necessary to the design of active learning classrooms, which require space for movement and collaboration that lecture-style rooms do not.

Sample Design of an Active Learning Classroom

This increased space requirement is often problematic for facilities leaders, who want to curb unnecessary growth in square footage. However, a schedule which allows active learning classes to meet less frequently can help institutions remain space neutral. In lieu of class time during every session, students can complete projects or watch online lectures, allowing the registrar to assign another course to the active learning space during that time. In this way, the institution avoids additions to its overall space inventory, which keeps space neutral while still providing the benefits of active learning.

Lesson 3: Provide student space outside the classroom

Cost-effective active learning not only requires more classroom space, but also additional spaces for students to collaborate outside of the classroom. You can repurpose unused “dead” space with additional after-hours access, when these classrooms are designated study and collaborative space. Avoid the need for new construction with the addition of movable furniture and whiteboards to hallways and lounges frequently used by students.
It's easy to think of a new technology as simply replacing what we already do with some form of automation, but real change comes when it enables us to do things we could not do before.

The SAMR model stands for 'Substitution, Augmentation, Modification and Redefinition' and the idea is that it helps us understand the process through which a new technology enters the environment (explore the idea by viewing the presentations on Ruben R. Puentedura's Weblog). It's easy to think of a new technology as simply replacing what we already do with some form of automation, but real change comes when it enables us to do things we could not do before.

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In an education system focused on the future, therefore, the core of learning is found not in what is defined in the curriculum, but in how teachers help students discover new possibilities from familiar things, and then from new things. It is, to my mind, transformation from an idea of education defined as acquisition of skills or progression along a learning path to one characterized by exploration, discovery and finally creativity.

This is the why of Seymour Papert's constructionism. It isn't simply that we are helping students become better mathematicians or better computer programmers (though it is that). It isn't even that we want them to think like a mathematician or like a scientist or like an engineer (though it is that too). It's that we want students to see beyond what is possible in today's world, with today's technology, and acquire the ability to learn skills, conceptualize and design in future environments that do not exist today.
Jobs in 2030

Systems tangilizer
- Help researchers and healthcare professionals understand the workings of health and disease.
- Model the workings of the global economy, shaping not only how finance, economics, and social policy are shaped but also how governments help their citizens participate productively in the world.
- Provide tools to help children learn how to perceive and solve complex systems from an early age.
- Facilitate large scale planning of land use that takes into account everything from the migratory patterns of birds, insects and human commuters to how man-made constructions can affect water, air, and temperature distribution and the availability of sunshine for collection as solar power.

Job Requirements / Skills
You're figuring out puzzles, so you may aspire to be a Puzzle Master. You gain understanding and insight into how things work and what users need by being an active listener. You're an observer who naturally looks for patterns “in the noise.” You can write code that turns information into pictures and use your insight to find the best pictures to “draw” using shades, colours, sound and vibration to lead the mind to meaning.

Biofilm installer
A biofilm installer has a big role in building and retrofitting smart, energy-efficient buildings. They might fit bathtubs with a film that feeds on mold, or install a “living wall” in a bathroom that is covered in a fresh that improves air quality. Biofilm installers will be a great resource for educating people about renovation options for their homes. If a biofilm installer builds a solid network of clients, they will also have the opportunity to open their own business and become entrepreneurs.

Job Requirements / Skills
Biofilm installers are independent workers who are able to tailor solutions for each client’s needs. They build on the work done by biologists, biochemists, microbiologists, and engineers. They will have a solid understanding of ventilation and air conditioning systems, and general contractors are building or renovation sites. They need to be able to train on their own, so that they can keep up to date with developments in what’s happening in biofilm and construction technology. Biofilm installers with a desire to set up their own shop will need some training or education in running a business.

Rewilder
The old name for this job was “farmer,” however, the role of the rewilders is not to feed crops, as it is done more and more in highly efficient skyscraper-like greenhouses known as vertical farms. The rewilders job is to undo environmental damage to the countryside caused by people, factories, cars, and intensive one crop monoculture farming which occurs when only one crop is planted over a large area of land. Removing fences to restore flight paths for birds, tearing up roads and replanting them with forests, and reintroducing native species are just some of the tasks the rewilders engage in. This is likely a government position, paid for from revenues from the carbon tax (taxes for consuming carbon fuel).

Environmental damage is a huge concern for the entire continent, which is why rewilders are much needed.

Job Requirements / Skills
Do you work with your hands? Are you interested in gardening, the environment, or animal protection? If so, you might be interested in becoming a re野er. All the traditional requirements of farming are needed for this role, including managing land and crops, but managing wildlife is also a necessary skill. Rewilders are paid for how successful their crops are, but according to the diversity and health of their land, these ecosystem health is their main concern, rewilders can succeed in both deserts and forests.

Digital Currency Advisor
Money is no longer strictly controlled by governments. As a result, there are now many variations of currency depending on what you need them for: saving, trading, buying or selling. For example, Bitcoin, a digital currency not tied to a country, and its descendants have opened up financial services and started alternative economies that are helping to even out the bumps of the traditional boom-and-bust economy.

However, it’s not easy to know how best to use these new digital currencies. For some, such as Bitcoin, prices still fluctuate wildly; others, like linecoin, a currency that loses value the longer you hold it. It is all about choosing the right digital asset because their value automatically decays over time.

Digital currency advisors specialize in these currencies and show people how to manage their wealth by using the right balance of systems.

Job Requirements / Skills
Financial management, accounting experience and knowledge of digital currency are essential for this position. Familiarity with computer security and a variety of operating systems is also an asset.

https://careers2030.cst.org/jobs/