

What We're Learning About Online Learning

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As virtual classrooms and online learning proliferate, researchers are working to quantify what works and what doesn't.



Nate Zim, a junior at Lab High School in Manhattan, with his mother, Corey Zim, at home in March as he logged onto his first virtual classroom, a Spanish class. Credit: Benjamin Norman for The New York Times

By Benedict Carey

Over four days in mid-March, Cindy Hansen, an 11th grade English teacher at Timpanogos High School in Orem, Utah, had to go fully virtual, and took her class of some 30 students reading “The Great Gatsby” online.

Ms. Hansen had no experience with virtual courses and, like teachers around the country, had to experiment. She decided to upload video lessons — presenting the text of “Gatsby” along with a small window in the corner of the screen, in which she read aloud key passages and assigned essays.

The transition seemed to be proceeding smoothly until, after several lessons, she received a note from a student who rarely spoke up in class.

“He’s one of my sweetest students, and he wrote, ‘Ms. Hansen, those videos are glitchy — I can’t really see the text,’” she said in a phone interview. “I had just assumed they were fine. Well, they were horrible, and the poor kid felt frustrated. I’m glad he said something.” She quickly fixed the problem, she said, by reshooting the videos directly on the teaching site instead of uploading them.

After this spring's on-the-fly experiment in online classes, teachers and school districts across the country are preparing for what will be anything but a normal fall semester. Some districts stumbled in the transition, with classes zoom-bombed and interrupted; many strained to address serious inequities in access to computers. Recent research finds that most students fell months behind during the last term of the year, with the heaviest impact on low-income students.

Other schools, like Timpanogos, transitioned with less disruption, in part by mobilizing facilitators, coaches and other staff members to support both teachers and students who were in danger of logging off and checking out, according to a report by researchers.

Now, most districts are facing a future in which online courses will likely be part of the curriculum, whether that entails students returning in shifts or classrooms remaining closed because of local outbreaks. And underlying that adjustment is a more fundamental question: How efficiently do students learn using virtual lessons?

“What we’re finding in the research thus far is it’s generally harder to keep students engaged with virtual lessons,” no matter the content, said Jered Borup, an associate professor in learning technologies at George Mason University. “Overall, though, that is not the distinguishing feature here. Rather, it’s what supports the student has when learning virtually. That makes all the difference.”

Research comparing in-person to online learning comes from many disciplines and does not benefit from the kinds of controls that scientists prefer; courses, teachers, students and class composition vary too much to make comparisons easily.

Physical presence matters, in ways that are not captured by the scientific method. “Look, I did fine in Ms. Hansen’s class — I just bought the audiobooks and read ‘Gatsby’ on my own,” one student, Ethan Avery, said in a phone interview. “But in some other classes. ... I’m personally a terrible procrastinator, and not having that physical reminder, sitting in class and the teachers grilling me, ‘Ethan, this is due Friday,’ I fell behind. That was the rough part.”

The two most authoritative reviews of the research to date, examining the results of nearly 300 studies, come to a similar conclusion. Students tend to learn less efficiently than usual in online courses, as a rule, and depending on the course. But if they have a facilitator or mentor on hand, someone to help with the technology and focus their attention — an approach sometimes called blended learning — they perform about as well in many virtual classes, and sometimes better.

One state that has applied this approach broadly, for nearly two decades, is Michigan. A state-supported nonprofit institute called Michigan Virtual offers scores of online courses, in languages, the sciences, history and professional development. It also offers 23 virtual advanced placement (A.P.) courses, for college credit.

“We find that if students have support and a schedule — they do the lesson every weekday at 9 a.m., for instance — they tend to do better than just tuning in here and there,” said Joe Freidhoff, vice president of Michigan Virtual. “The mantra of online learning is, ‘Your own time, your own pace, your own path.’ In fact, each of these factors matter greatly, and some structure seems to help.”

In 2012, the institute added a research arm, to track the progress of its students. In the 2018-19 school year, more than 120,000 students took at least one of its virtual courses; the vast majority of students were in high school. The pass rate was 50 percent for those living below the state’s poverty line, and 70 percent for those living above it, averages roughly in line with the public high schools.

The story was different for Michigan Virtual’s A.P. students. In the 2018-19 academic year, 807 students took least one of its virtual A.P. classes. The final exams are graded on a scale from 1 to 5, with scores of 3

or above having a chance to earn college credit. The virtual learners' overall average score was 3.21, compared to 3.04 among Michigan peers who took the course in a classroom. The national average on those same tests was 2.89.

“On these exams, our students consistently exceed state and national averages,” Dr. Freidhoff said. “Of course, being A.P. students, they tend to be very self-directed, motivated students.”

In its scramble to shift courses online in mid-March, the Timpanogos district put facilitators in place, both for teachers who needed them and to check in on some students. It lent Chromebooks to every student that did not have a computer at home. And it implemented a policy that, by all accounts, took pressure off the sudden transition: Students could opt for a “P” for pass, if struggling with a virtual class, without taking a hit to their G.P.A.

“It was a little overwhelming at first,” said Briley Andersen, another of Ms. Hansen’s students. “My physics and computer science classes were taking almost all my time, so I ended up taking a P in those.” She added, “As long as there’s good communication with a teacher, you get the hang of it. If not, it takes too long to figure out what you’re supposed to do.”

Michelle Jensen, who is employed by the district as a learning coach, provided guidance to teachers — including Ms. Hansen — and to students when possible. “The rationale was, do no harm,” she said. “These students are going to have 13 years of education, at least, and our approach to this one term was, help them learn how to make this adjustment.”

In a review of Timpanogos’s transition, a research team led by Dr. Borup and Ms. Jensen found that it was largely the nondigital measures that mattered most. Teachers offered virtual office hours to students, and contacted them when activity fell off. When those interventions weren’t effective, counselors worked with the family.

The last term of the 2020 school year was, in effect, a hard lesson for much of the educational system in what virtual classes could and could not provide. The content is there, and accessible, in any well-prepared course.

But if the evidence thus far is any guide, virtual education will depend for its success on old-school principles: creative, attentive teaching and patient support from parents. As “The Great Gatsby” concludes: “So we beat on, boats against the current, borne back ceaselessly into the past.”