

## 5 Trends in Technology for Student Success



- Chatbots
- Virtual Assistants, Tutors, and Grading Tools
- AI in Course-Planning and Advising
- Predictive Analytics
- Adaptive Learning

Student success — improved access, better-engaged students, better retention, and higher graduation rates — has become an institutional priority for higher education, and colleges are employing a variety of tactics and tools to achieve it. Increasingly, they are turning to a range of technologies to intervene and help students before it's too late.

But ed-tech options are not only numerous, they are constantly evolving. It can be difficult for campus leaders to narrow down the options that make sense for their communities, as well as see through the buzz surrounding new gadgets or platforms.

There's no question the rapidly

changing world of academic technology can be daunting. Indeed, the vast majority of college presidents, vice presidents, provosts, and deans who responded to a survey commissioned by *The Chronicle of Higher Education* in 2018 said that making the call on technologies and their implementation requires more understanding of new tools than it did five years ago. Almost 75 percent find making choices about academic tech at least somewhat difficult. Only one in eight said they like to be involved in making those calls.

At the same time a majority (61 percent) of the respondents said they wished to be involved in more technology decisions. Clearly, college leaders recognize that emerging

technologies offer students convenience and essential support, and that they must keep up with the trends.

As Joshua Kim, director of online programs and strategy at Dartmouth College's Center for the Advancement of Learning told *The Chronicle*, academic technology is "the air we breathe. Everything we do now has tech in it."

Here are five technology trends that are gaining traction in higher education and helping students succeed.

## **Academic technology is "the air we breathe. Everything we do now has tech in it."**

### **Chatbots**

Three hundred members of Georgia State University's freshmen class did not show up in the summer of 2015 — a phenomenon known as summer melt. "Students, especially from low-income first-generation backgrounds, are really left stranded in the summer before they begin college," says Timothy M. Renick, Georgia State's senior vice president for student success. Admissions counselors struggled to keep up with timely responses to thousands of queries about issues like financial aid, registration, and immunization forms.

So Georgia State partnered with a start-up software company to develop an AI-enabled chatbot named Pounce, after the university's mascot. Pounce provides answers to thousands of questions that incoming freshmen commonly ask, is available 24/7, and responds in an average of seven seconds.

In the pilot program, Pounce answered more than 200,000 questions. Ninety percent of the incoming class who had access to the chatbot opted in. As a result, summer melt was about 20 percent lower for the students in the pilot program.

Chatbots can also send out reminders about tutoring appointments and deadlines that undergraduates need to stay on top of. A chatbot named Ana not only nudges students at Bethune-Cookman University, a historically black university in Florida, it seeks feedback from them about any concerns they may have and how they're feeling on issues related to academic matters, emotional concerns, and financial-aid problems. The responses provide the administration with insights about student and prompt follow-ups that can affect retention.

Indeed, the current generation of digital natives may be more comfortable with and respond better to the personalized, constantly available information from chatbots. According to *The New York Times*, this spring semester, Georgia State made Pounce available to all its undergraduates. Fifty-four percent of those who received a payment reminder text from Pounce responded and did what they needed to do within 12 hours. In contrast, less than 20 percent typically open campus emails.

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### **Virtual Assistants, Tutors, and Grading Tools**

In 2016, [Ashok K. Goel](#), a computer-science professor at the Georgia Institute of Technology, relied on nine teaching assistants, including one named Jill Watson, to handle questions from the 300 students. Near the end of the term, Mr. Goel revealed to students that Jill was in fact a computerized assistant.



[Researchers at Carnegie Mellon University](#) are creating conversational agents to promote online discussion. Helen Crompton, an associate professor of teaching and learning at Old Dominion University, uses a chatbot that can answer simple questions, such as due dates for work, thus saving Crompton time and energy to focus on working one-on-one with students or on her research. Students can also text “DIVA” at any time for help. If the chatbot cannot answer the question, Crompton is notified.

At the [University of Michigan](#) at Ann Arbor, students in a statistics class had their writing assignments evaluated by an automated text-analysis tool. And another grading tool powered by AI allows instructors to give more, smaller exams rather than two or three major ones. This approach helps students keep from getting overwhelmed, and allows instructors to gauge whether students are following along with the course material.

### **AI in Course-Planning and Advising**

[Artificial-intelligence software](#) is being used in students’ course-planning and advising, as well. Elon University recently started testing a new platform, which was created by a Carnegie Mellon University computer-science graduate who was motivated by the experience of his own frustration in trying to figure out how dropping a course might affect his path to graduation. He envisioned a personalized pathway platform for students where they could control what they want to do in forthcoming semesters,

but also let administrators and advisers see that experience.

Drawing from databases of requirements, course schedules, and students’ own data, the software allows them to see into their futures, scheduling courses and adapting plans as their paths develop. (Elon students still need an adviser to sign off each semester.)

### **Predictive Analytics**

To support students, it’s necessary to understand them first. Students offer clues — in their backgrounds, academic performances, and behavior — and predictive analytics gathers that information to identify broad patterns and individual needs.

Over the past few years, the University of Arizona has been using predictive analysis to identify struggling students. The university uses an analytical platform to develop a “persistence projection” score for each student. The platform pulls together more than 800 variables, and it is updated each night with data from the campus’s learning-management system. Arizona discovered that freshmen who earned a C or lower in Freshman Composition 101 graduated at significantly lower rates than those who earned A’s and B’s. “This data provides us with a signal,” Hank Childers, Arizona’s executive director for university analytics and institutional research told *The Chronicle*. “Predictive analytics is the beginning, and it opens up more questions as to how we can constructively support, intervene, or nudge.”

Administrators at Middle Tennessee

State University use software to allow advisers to flag at-risk students by looking at various factors, including performance in 10 general-education courses found to be predictive of success. About 80 percent of students who receive an A in a survey course on U.S. history, for example, go on to graduate, compared with only 40 percent of students who get a D.

Before the use of predictive analytics, a D student might never have come onto an adviser's radar. Now, if students struggle in a key course an adviser is alerted.

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#### **Adaptive Learning**

Adaptive-learning programs track students' personal mastery and identify gaps in understanding. Operating like a personal tutor, the programs provide students with ways to learn the material — often through repetition and revision — when they've hit a wall, until it is clear they've grasped the concept and can move on.

In addition, educators can use the courseware to see where individual students are flagging and can intervene before a student fails a course or drops out.

Advocates say that it works best for online courses and large, lecture-size, introductory-level classes where instructors can't customize the teaching. Helping students during these introductory classes is critical, since research also shows a correlation between the number of credit-bearing courses students complete successfully during their first few terms of college enrollment and whether they earn a college degree.

The University of Central Florida has found adaptive learning to be particularly helpful if online students need certain prerequisite courses. For example, adaptive-learning tools can help some students finish intermediate algebra in a few weeks and move on to college algebra to start earning credits.

Educators at Austin Community College, in Texas, use adaptive courseware to help students in remedial math classes. In the college's ACCelerator, an open-air space that houses a computer lab and tutoring center where desks are clustered in groups, students work at computers while instructors circulate to answer questions. Students have said that being surrounded by others who are asking questions and moving at different paces can ease isolation and self-doubt.

Of course, none of these technologies can substitute for good teaching and committed advising. The necessity for investment in training and updating processes cannot be overlooked. But on today's campuses, educational technologies are critical tools in the effort to move the needle on student success.

*“5 Trends in Technology for Student Success” was produced by Chronicle Intelligence.  
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