

CASE
STUDY

Diving Into Data to Improve Teaching

How two colleges are using
classroom analytics to help
faculty members succeed

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Ascendium Education Group is excited to support The Chronicle of Higher Education's initiative to prioritize student success. Throughout the duration of the project, this partnership will produce special virtual events, focused reports and a new online resource center, where colleges can search and find creative solutions and useful content from The Chronicle's extensive archives of best practices.

Our support of this project promises a comprehensive look at new and innovative approaches to helping students achieve success. By collecting voices and perspectives from across higher education, The Chronicle's expert journalists can guide colleges to make actionable changes that will help close achievement gaps and fulfill the promise of socioeconomic mobility for all students.

Ascendium supports initiatives that seek to create large-scale change so more learners from low-income backgrounds can achieve their educational and career goals. We share with The Chronicle a passion and purpose to inform and empower higher education trustees, leaders, administrators and faculty members about the pressing issues facing students today. That includes shining a light on students of color and transfer students, as well as those who are the first in their family to attend college.

We believe in the power of education and training beyond high school to transform the lives of learners from low-income backgrounds. The COVID-19 health crisis has exacerbated well-documented opportunity gaps that put these learners at a disadvantage relative to their peers. This makes the solutions raised by this initiative all the more vital.

Thank you for your interest in this initiative. To learn more about Ascendium, please [subscribe to our monthly newsletter](#).

Sincerely,

A handwritten signature in black ink that reads "Amy Kerwin". The script is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Amy Kerwin

Vice President – Education Philanthropy
Ascendium Education Group



Viji Sathy, professor of psychology and neuroscience and associate dean of evaluation and assessment in the Office of Undergraduate Education at University of North Carolina at Chapel Hill, says that data may help instructors reflect on how to improve their teaching.



PHOTO BY DONN YOUNG

For years, student-success staff members have tapped into the increasingly detailed data colleges collect on student demographics and academic performance. Now a growing number of colleges are putting personalized dashboards directly in the hands of professors and instructors. The goal? To help them better understand who their students are, how they're faring, and how to teach them more inclusively and effectively.

A professor who discovers that Hispanic students are earning more D's and F's than are their white classmates in a particular class might add more culturally relevant reading assignments. If transfer students are struggling in an upper-level course, an instructor could assign students to groups early in the semester to create a sense of community. A department chair who sees that students in one introductory class are disproportionately likely to fail or switch to a different major might reassign the instructor to different classes or recommend specific faculty-development workshops to that instructor.

Those are just a few of the ways colleges are using student data to improve teaching. The numbers, of course, tell an incomplete story, and relying too heavily on them can have unintended consequences. This case study will examine how colleges are using data in ways that are responsible and ethical, protecting student privacy and avoiding the temptation to stereotype students or underestimate their potential based on trends in the data.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

The University of North Carolina at Chapel Hill offers those who teach undergraduates a web-based tool its designers call My Course Analytics Dashboard, or [MCAD](#). An online orientation covers stereotypes and implicit bias — the tendency to assume, for instance, that minority or low-income students are less academically prepared than white students are.

When faculty members log on, a dashboard displays an individual instructor's data for past courses in bar graphs and tables that are broken down by students' demographics, gender, first-generation status, and Pell Grant eligibility. The dashboard also reveals the grade distribution for students in different subsets. Course developers stress that the data don't reflect current students, aren't predictive, and shouldn't be used to intervene with specific students. The developers wanted to avoid giving professors information that could help identify specific students and potentially prejudice faculty members' interactions with them. That could easily happen in a class with only a few Black or Hispanic students, for instance. Instead, the idea is that a look at past courses will

allow instructors to reflect more broadly on their teaching.

When faculty members discover troubling trends, they can reach out to the campus' Center for Faculty Excellence for techniques to improve their teaching.

Because they're looking only at data on the students they've taught, it's a far smaller subset than, say, a campuswide analysis. That's another reason the university says the data should be interpreted with caution.

"In addition, you do not have data on outcomes for students in similar courses or other instructors in your department, so you cannot compare your course outcomes to those of peers," the MCAD introduction notes. "You can, however, look for trends across your courses and consider areas you would like to explore further."

Course developers stress that the data don't reflect current students, aren't predictive, and shouldn't be used to intervene with specific students.

The data can reveal information about students that isn't readily visible. An instructor might have a good idea of how many minority students are in a class, but there's no easy way to pick out first-generation or Pell-eligible students.

It's then up to individual instructors to decide how best to bridge the gaps they're seeing. They might conclude that group work could help many first-generation



"I wouldn't assume that everyone who sits in my sophomore or junior class knows Carolina well and understands all the acronyms" and the places they can turn to on campus for help, says Sathy.

PHOTO BY KRISTEN CHAVEZ

"I was shocked. I don't have a discriminatory bone in my body, and I'm a nice guy. It raised questions about how I was doing things in the classroom."

and transfer students acclimate to a class, said Viji Sathy, a professor of psychology and neuroscience and associate dean of evaluation and assessment in the Office of Undergraduate Education. Sathy helped develop MCAD with Kelly A. Hogan, a professor of biology and associate dean of instructional innovation in the College of Arts and Sciences.

In addition, "I wouldn't assume that everyone who sits in my sophomore or junior class knows Carolina well and understands all the acronyms" and the places they can turn to on campus for help, Sathy said.

Alain Aguilar, a teaching associate professor of exercise and sport science at Chapel Hill, said that when he first looked at the data for his classes a few years ago, "most of the white students were getting A's and B's, and most of my students of color, B's, C's, or lower, and the F's were mostly people of color."

When he saw those disparities, "I was shocked. I don't have a discriminatory bone in my body, and I'm a nice guy. It raised questions about how I was doing things in the classroom."

Aguilar attended faculty-training workshops and learned how students who lack confidence can benefit from well-structured classes with active learning, clear expectations, and more-frequent low-stakes assignments. He started giving fewer multiple-choice tests and more project-based questions that allowed students to apply what they were learning. He ended classes by asking students about the "muddy points" they

were stuck in, and followed up both individually and as a group.

“It was cool to see that, after a few years,” the achievement gaps were narrowing, he said.

Marc D. Cohen, a teaching associate professor of English and comparative literature, said the MCAD data allowed him, for the first time, to see the demographic breakdown of his students and how students in different groups were faring.

Learning that students in low-income families or underrepresented-minority groups were more likely to have lower grades wasn’t a surprise. But “seeing it statistically is a real eye-opener, especially since many of these demographic categories are invisible,” he said.

“Once you have that data, then you have to decide what you’re going to do with it,” Cohen added. He consulted with the Center for Faculty Excellence and the campus’ Office of Instructional Innovation, as well as his peers. Noticing the growth in the enrollment of students from South Asia, he assigned more novels by South Asian authors. While teaching a novel by a Native American author, he invited a group of students who weren’t in his class to visit it and talk about what it was like to be Native American in North Carolina.

Marginalized students, Cohen said, want to be seen and heard, and

those who are struggling “really want a chance to learn from their errors.” He now offers extra credit for students who show how they applied lessons learned from his previous critiques on subsequent papers.

Not all faculty members are as eager to dive into such data, and some may be overwhelmed or view it as just one more task on a bulging to-do list. To deal with those concerns, Sathy and Hogan suggest having faculty members tell stories about specific ways they’ve used the data to improve student success, and offering workshops or learning communities to share tips and ideas. They also acknowledge that maintaining extensive dashboards can be expensive and time-consuming, and suggest that colleges identify offices that will provide continuing support.



Sathy suggests having faculty members tell stories about how they've improved student success by using data.

PHOTO BY DONN YOUNG

MORGAN STATE UNIVERSITY

At Morgan State University, a historically Black institution in Baltimore, instructors learn twice a year how their students' performance stacks up against that of their colleagues. If their students' rates of low grades and failures are particularly high, instructors might be assigned to teach different courses or steered toward teaching-improvement workshops.

That data-collection effort, which requires compiling information from the Office of Institutional Research and various campus dashboards, is part of the university's [campaign to increase graduation rates](#) to 50 percent by 2025.

Data analysis is a big part of the effort at Morgan State, which has a [Center for Predictive Analytics](#) and a graduate program in [psychometrics](#) that uses statistics to design and interpret a variety of educational and psychosocial tests.

“Our job is to present the data, point out the issues we see, and raise the questions.” It’s up to the departments and instructors to craft solutions.

In addition to grade distributions and the numbers of low or failing grades, the data shared with faculty members include how many students repeat courses or change majors, and how many credits they earn, said Tiffany B. Mfume, associate vice president for student success and retention.



PHOTO BY MORGAN STATE UNIVERSITY

Tiffany Mfume, associate vice president for student success and retention at Morgan State University, where data is a big part of an effort to increase graduation rates.

Unlike Chapel Hill, which generally restricts data access to individual professors, those at Morgan State can see how other instructors in their department are doing. When departments share their numbers internally, names aren't displayed, only course sections, but it's not hard to figure out whose sections have the highest rates of low grades and failures.

“Our job is to present the data, point out the issues we see, and raise the questions,” Mfume said. It's up to the departments and instructors to craft solutions.

Asked whether the prospect of being punished by a department chair for low grades and pass rates might encourage grade inflation, Mfume said that's unlikely.

“We'd look at how students fared the following semester,” she said. “If everyone gave out A's and B's, the problem isn't going to go away.”

Asamoah Nkwanta, chair of the department of mathematics, said he had reassigned instructors to sections where, the data show, they've been more successful in connecting with students. As part of their annual reviews, faculty members are expected to devise plans to improve their student-success metrics.



PHOTO BY MORGAN STATE UNIVERSITY

Asamoah Nkwanta, chair of the department of mathematics at Morgan State University, has reassigned instructors to sections where data shows they've been more successful connecting with students.

"We've found that some instructors are better at teaching Calc 3 than Calc 1," he said. Many freshmen enroll with extremely shaky math skills and, in some cases, phobias about the subject. "Some instructors' expectations are a lot higher, and a more experienced student can adjust better" in those classes, Nkwanta said.

When the data showed how many students were challenged by the transition from precalculus to calculus, instructors in the two courses met to coordinate concepts and topics so expectations were clearer.

To make math feel more relevant to freshmen struggling in introductory courses, instructors introduced examples they could relate to. One measured incidents of lead poisoning, a serious problem in the Baltimore neighborhoods where many students had grown up.

Such efforts seem to be paying off. Morgan State has increased its six-year graduation rate for first-time, full-time students from 28 percent to 46 percent over the last decade, Mfume said. It's not where the university wants to be yet, but even with pandemic-fueled setbacks, it's on track to meet its goal of a 50-percent graduation rate by 2025, she said.

For faculty members as well as administrators and staff members, Mfume said, "analytics have turned a mirror on ourselves."

Questions or comments about this Case Study? Email us at ci@chronicle.com.

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