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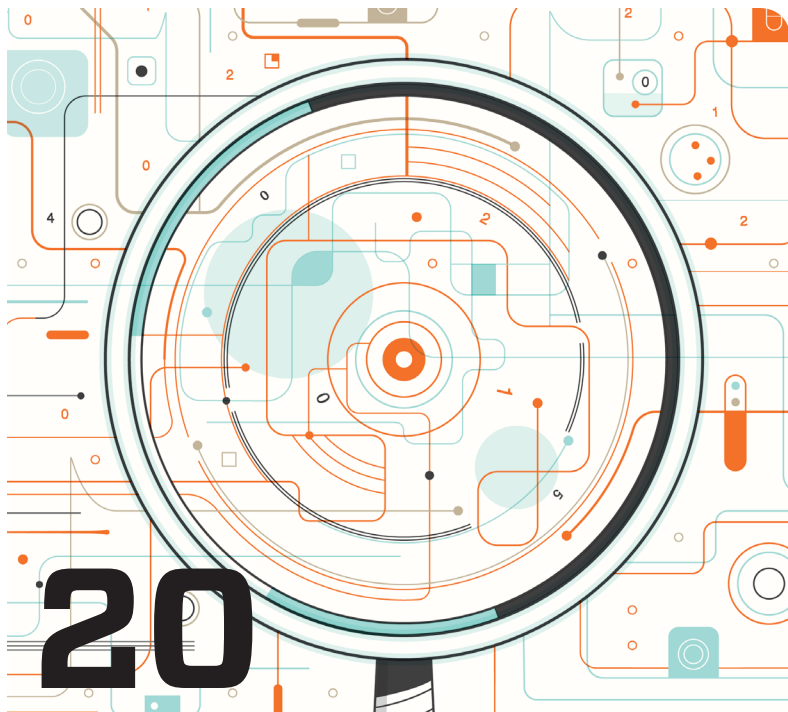
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CREATIVITY *at* WORK

Changing the tune of music at work

Music has the power to boost your mood, but its effects on workplace productivity are a bit more complex. "It depends on the song and the task," says Kathleen Keeler, a Ph.D. student in management and entrepreneurship at VCU's School of Business. Keeler's research, in press with the Academy of Management Review, suggests that managers can use music to help motivate employees and achieve organizational goals.

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Technically Speaking

BACK IN THE 1920S, the new technology of talking movies completely upended the filmmaking industry and put an entire class of professionals out of work. I don't mean the silent film stars themselves—I'm referring to the orchestra musicians who, up until this point, had had nightly gigs playing music to accompany the unspooling of the silent features.

When talking movies came with musical soundtracks as well as live dialogue, all those musicians were unemployed. "Who got the blame? Robots," writes Steve Carper in a delightful article called "A Robot Has No Soul," posted September 26, 2018, on the *BlackGate* magazine site. He recounts the long and ultimately fruitless campaign by the American Federation of Musicians to win jobs back for its members by demonizing the soulless robots who were destroying the artistic culture of live music.

Nearly 50 years before talkies hit the screen, people were worried about the health effects of a different kind of new technology: trains. Critics feared that the jerky motion of the locomotive could injure riders' brains or incite them into crazed outbursts known as "railway madness." (There's a fun description of this malady at www.atlasobscura.com/articles/railway-madness-victorian-trains.)

The point is, probably since the invention of the wheel, every new technology has stirred profound apprehension even as it changed the world. For business leaders, the only path past this fear is to make use of the tech instead of hoping it will just go away. That means that business schools have a clear role as well: They must train business leaders so they understand how the technology works and how they can use it to gain competitive advantage.

This issue of *BizEd* takes a look at the way business schools are—or should be—training students to understand and make use of data analytics and artificial intelligence. In "Analyzing the Future," Babson's Thomas Davenport describes the skills employers are looking for when they hire data scientists and how business schools can turn out the graduates these companies want.

In "AI at the B-School," Steve Muylle of Vlerick Business School looks ahead at ways artificial intelligence might show up at universities—not just as a topic being taught, but as an assistant in the classroom or the admissions office. Finally, in "Deriving Meaning from Data," we look at how individual business schools—such as those at ESSEC, Arizona State, and the University of South Carolina—are integrating analytics into their curricula in comprehensive ways.

I confess, I've always been a late adopter of new technology, but even I am rooting for the deployment of analytics in certain fields, like medicine. I was fascinated by a September 8, 2018, article in the *South China Morning Post*, which detailed how AI algorithms are being used to predict which comatose patients might eventually wake up, even though doctors had determined that these patients had a low chance of recovery. So far, the AI system has had a 90 percent accuracy rate on prognostic assessments.

That's the kind of news that makes me grateful for the advent of new technology—and ready to welcome analytics into most corners of 21st-century life.

Sharon Shinn
Co-Editor

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B-School Communications &
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Clearwater Beach, Florida

MARCH 17–19
Assessment & Impact Conference
#AACSBassessment
Charleston, South Carolina

APRIL 14–16
International Conference &
Annual Meeting
(see inset photo)

MAY 5–7
Redesigning the
Undergraduate Curriculum
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Providence, Rhode Island

MAY 17
Latin America & Caribbean
Summit, #AACSB
Bogotá, Colombia

MAY 26–28
Annual Accreditation Conference:
Asia Pacific, #AACSBap
Kuala Lumpur, Malaysia

MAY 26–28
Co-Lab: Connecting Business
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Philadelphia, Pennsylvania

SEMINARS

JANUARY 29–30
Assurance of Learning I
Tampa, Florida

JANUARY 31–FEBRUARY 1
Assurance of Learning II
Tampa, Florida

FEBRUARY 7
Accounting Accreditation
Tampa, Florida

FEBRUARY 8–9
Assurance of Learning I
Vancouver, British Columbia, Canada

FEBRUARY 9
Continuous Improvement Review
Vancouver, British Columbia, Canada

FEBRUARY 11–MARCH 24
Online Teaching Effectiveness
Delivered online

FEBRUARY 18–19
Business Accreditation
Mexico City, Mexico

FEBRUARY 20–21
Assurance of Learning I
Mexico City, Mexico

FEBRUARY 25
Continuous Improvement Review
Lausanne, Switzerland

FEBRUARY 26–27
Assurance of Learning I
Lausanne, Switzerland

MARCH 12–13
Business Accreditation
Amsterdam, the Netherlands

MARCH 12–13
Business Accreditation
Tampa, Florida

MARCH 14
Faculty Standards & Tables
Amsterdam, the Netherlands

MARCH 14–15
Advisory Council
Tampa, Florida

MARCH 20–21
Assurance of Learning I,
Assurance of Learning II
Charleston, South Carolina

APRIL 4–5
Engagement, Innovation
& Impact
Tampa, Florida

APRIL 12–13
Engagement, Innovation
& Impact
Edinburgh, Scotland

APRIL 13
Quality Assurance Professionals
Edinburgh, Scotland

APRIL 23–24
Business Accreditation
Marrakech, Morocco

APRIL 25–26
Assurance of Learning I
Marrakech, Morocco

MAY 4–5
Lessons for
Aspiring Deans
Providence, Rhode Island

APRIL 14–16 *Edinburgh, Scotland*
International Conference & Annual Meeting (#ICAM2019)
With its theme "Challenging Core Foundations," ICAM 2019 will explore new approaches in business education and feature keynotes by London Business School's Lynda Gratton and IMD's Howard Yu. The Engagement, Innovation, and Impact seminar and the Quality Assurance Professionals Workshop will directly precede the event.

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Development Association
Annual Conference
Casablanca, Morocco
www.bmda.net

APRIL 10–12
BALAS Annual Conference
Lima, Peru
www.balas.org

APRIL 11–12
European University
Association Conference
Paris, France
www.eua.eu

BAUER MEANS BUSINESS

THE #METOO MOVEMENT MAY HAVE UNINTENDED CONSEQUENCES.

For nearly a year now, a steady stream of #MeToo headlines has captured the world's attention. Hollywood media moguls and well-known, powerful people in law, politics and business, have all taken turns in the sexual harassment spotlight.

Bauer College Management Professor Leanne Atwater and colleagues have taken the conversation a step further, constructing two surveys that ask men and women how they believe things will change at work in the wake of the cultural watershed that is #MeToo.

"We don't always think of unintended consequences," Atwater says. " Men and women both believe there will be some positive outcomes of #MeToo, but also some backlash such as excluding women or being more reluctant to hire them."

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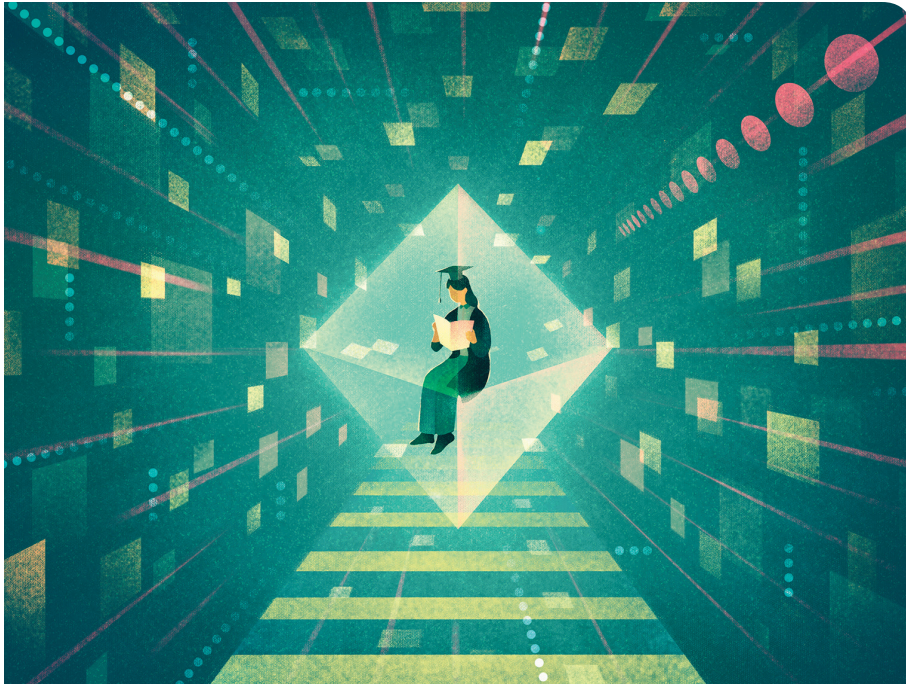
Better Data, Better Outcomes

USING ANALYTICS TO IMPROVE THE STUDENT EXPERIENCE.

COLLEGES USUALLY RELY on marketing, alumni networks, and positive word-of-mouth to attract new students, but what if predictive analytics could do a better job of creating the perfect match between students and universities? And what if advanced analytics could help schools develop better processes for increasing enrollment, reducing attrition, and improving job prospects for graduates?

These questions were considered in October at the inaugural Advanced Data Analytics Summit hosted by the University of Pittsburgh in Pennsylvania and Othot, a Pittsburgh-based provider of advanced analytics for higher education. During the two-day summit, representatives from U.S. universities shared how they are using advanced analytics to grow their enrollment, maximize tuition revenue, and improve overall performance.

Keynote speaker Jaime Casap, education evangelist at Google, discussed the factors that Generation Z will bring to the education equation in the future. Specifically, he noted that members of Generation Z are willing to give information about themselves as long as an experience is meeting their expectations. He added that schools can use analytics to create the educational programs that these students are seeking. Other education and technology experts offered their own insights, which resulted in four key takeaways:

1. Most schools are paying attention to the aggregate, when they need to focus on the individual. Students don't decide to attend colleges in cohorts of 4,000; they decide one by one. To increase conversion rates, colleges have to ask the right questions; then they can let data indicate the right tactics that human admissions officers can use, such as telecounseling, to engage with individual students.

2. Schools are losing students they shouldn't be losing. Even before they step on campus, students send myriad behavioral signals that let colleges know they might not stay. Schools need to pay attention and respond proactively, or those students will be gone by midterms. John P. Campbell, vice provost of West Virginia University in Morgantown, said, "The goal should be to identify early signs that can enable early interventions, so that you can re-recruit your freshmen to become sophomores."

3. Advanced analytics can help create a more meaningful definition of student success. Schools can't merely consider graduation rates; they must focus on the entire lifecycle, from admissions to retention to graduation to post-graduation success. A whole host of factors influence why students choose schools and complete degrees, and universities must support students holistically, not just academically. For instance, the smartest student won't

Google's education evangelist Jaime Casap gives the keynote speech at the Advanced Data Analytics Summit.

graduate if she can't pay tuition, so schools must understand and respond to each student's financial situation.

Advanced analytics allow schools to ensure that students are in the programs that suit them best and that they are receiving the support that will help them through academic, financial, and personal difficulties. As Marc Harding, vice provost for enrollment at the University of Pittsburgh, pointed out, "Analytics is the art and the science of acting in the right moment" in ways that nudge students toward desired outcomes and away from negative ones.

4. Data alone won't drive the change. The people using the data influence the outcomes at every stage, from admissions through graduation. According to Jamie Hansard, executive director of undergraduate admissions at Texas Tech University in Lubbock, "Data-driven decision making is about empowerment. What does the data tell you?"

One final insight came from Andy Hannah, CEO of Othot. He is also an adjunct professor of entrepreneurship and analytics and an entrepreneur-in-residence at the University of Pittsburgh. He noted that data will be valuable only if leaders can utilize the insights to improve outcomes—for students as well as schools.

Is 'Lean In' Misleading?

Asking women to tackle workplace inequality by changing their own behavior could both hurt and help efforts to address the problem, according to new research from Duke University's Fuqua School of Business in Durham, North Carolina. The study was conducted by Aaron Kay and Gráinne Fitzsimons, both professors of management, and PhD student Jae Yun Kim.

The researchers found that when individual women are more assertive—that is, when they "lean in," as suggested in a book by Facebook's Sheryl Sandberg—people might come to believe that women can solve inequality on their own. Not only that, people might think women are at fault for, and have the responsibility for fixing, gender inequality in the workplace.

"Leaning in could be good advice for anyone, and we're not saying it doesn't work," Kay says. "But the way this message is being communicated and interpreted might be causing unforeseen problems."

Kay, Fitzsimons, and Kim conducted six studies to determine whether exposure to "lean in" messages affected how almost 2,000 participants felt about women's roles in causing and solving gender inequality. In one study, participants first read Sandberg's description of gender imbalance. Next, some read about the external barriers facing women while others read about Sandberg's "lean in" approach to overcoming internal barriers. Additional groups read both or neither.

The researchers found that people who read the "lean in" messages were more likely to believe women could solve the problem. They were also significantly more likely to believe it is the responsibility of women to solve the problem, and that women caused the problem in the first place. This was true even if they also read about the structural challenges women face at work. The researchers obtained the same results when participants watched the relevant portions of Sandberg's TED talk on the subject instead of reading about it.

The researchers also presented participants with a real-world example—a

news story about how software code written by female engineers at Facebook can take longer to be approved than code written by men. Again, participants who read the "lean in" messages were more likely to believe women caused the problem and to hold them responsible for fixing it. They were also less likely to think that structural changes at the company—such as having managers review code without knowing who wrote it, or training managers on addressing unconscious bias—would make a difference.

These results indicate the complexity of the gender inequality issue, notes Fitzsimons. The challenge now, she says, is to figure out how to present information about inequality in ways that don't cause people to blame women—and don't allow them to "wash their hands of any need to change the way they do business."

"The Effects of Lean In" is forthcoming in the *Journal of Personality and Social Psychology.*

The Science of Social Media

WHEN SHOULD FIRMS post information on their social media accounts to draw the most attention from consumers? New research suggests that if they capitalize on the sleep-wake cycles of their customers, firms could increase social media traffic to their websites and boost digital ad profits by at least 8 percent.

Research also shows that consumers' engagement with content varies by time of day and content characteristics, say Vamsi Kanuri, assistant professor of marketing at the University of Notre Dame's Mendoza College of Business in Indiana; Yixing Chen, a doctoral student in marketing at Texas A&M's Mays Business School in College Station; and Shrihari Sridhar, an assistant professor of marketing at the Mays School.

More specifically, Kanuri says, in the morning consumers are more likely to engage with posts that spark high-arousal negative reactions such as anger, stress, anxiety, or fear. In the afternoon,

he says, they are more likely to engage with "boosted" posts—that is, paid content—as well as posts that require higher cognitive processing, such as op-eds or scientific material.

Kanuri explains that these differences occur because people's working memory capacity is highest when they wake, lowest in mid-afternoon, and moderate in the evening.

"Higher working memory makes us feel alert and curious, meaning consumers are more likely to devour content in the morning," he says in an article on Mendoza's website. "When working memory is resource-deprived, the brain prioritizes information to remain efficient and will better respond to boosted content, which legally must look different to consumers. The different look signals to the brain the information is important, thus, boosted content is most effective in the after-

noon as working memory lowers."

When the team interviewed social media managers from several major content platforms, as well as examined a year's worth of Facebook posting and boosting data from a West Coast newspaper, they found that managers relied on gut feelings when deciding what to post, but gave little thought to how readers' emotions might come into play. "The fact that firms can increase their engagement without spending an additional dime is jaw-dropping for most managers we interviewed," Kanuri says.

Kanuri, Chen, and Sridhar developed an algorithm to help social media managers know when to post content and which posts to boost, so they don't need to rely on "general rules-of-thumb posted on various blogs all over the internet."

"Scheduling Content on Social Media: Theory, Evidence and Application" is forthcoming in the *Journal of Marketing*.

MY #1 — STUDENTS: CHOOSE BY 'FIT,' NOT RANK

It's not always a good idea for students to choose a university because of its high position in the media rankings. In fact, they're probably better off choosing a school that seems like a good "fit," according to a white paper written by scholars at the Stanford Graduate School of Education (GSE) in California and released in October by Challenge Success, an initiative affiliated with the school. The researchers reviewed dozens of studies on U.S. undergraduate education to determine what college rankings say about student success and what determines the right fit.

"Research tells us that the most successful students, both in college and beyond, are the ones who engage in the undergraduate experience regardless of how selective a school may be," says the paper's co-author Denise Pope in an article on the school's website. Pope is a senior lecturer at the GSE and co-founder of Challenge Success, which seeks to redefine success in student learning and

achievement. "This is almost always the case whether a student attends the top-ranked or 200th-ranked college."

While data indicate that students who attend elite schools often enjoy financial benefits, the biggest disparities in earnings show up in graduates from the same school. At the same time, some students attend college not to make more money, but to improve their well-being or attain more rewarding careers. Research shows that for those students, the colleges they attend matter less than how much they engage in the undergraduate experience.

The report concludes by encouraging students to discount the rankings and instead look for programs that fit their needs in academics, financial aid, location, or extracurricular opportunities.

▶ **Find a link to download "A 'Fit' Over Rankings" at ed.stanford. edu/news/first-step-choosing-right-college-ignore-rankings-says-stanford-researcher.**

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Unhappy in the Home Office

FOR SOME PEOPLE, it can be more stressful to work from home than in the office, say Sara Perry, assistant professor of management at Baylor University's Hankamer School of Business in Waco, Texas; Cristina Rubino, professor of management at the David Nazarian College of Business and Economics at California State University in Northridge; and Emily Hunter, an associate professor of management at Baylor.

The team surveyed 403 working adults, measuring their autonomy (defined as level of independence), strain (defined as exhaustion, disengagement, and dissatisfaction), and emotional stability (referring to a person's ability to handle stress). For instance, people high in emotional stability might respond calmly to stress and try to figure out the problem, while those low in emotional stability might spend their energy feeling frustrated or discouraged instead of dealing with the issue at hand.

The researchers had three key takeaways: Autonomy is critical to protecting remote employees' well-being and helping them avoid strain. Employees who report high levels of autonomy and emotional stability appear to be the most able to thrive in remote-work positions. Employees reporting high levels of job autonomy with lower levels of emotional stability appear to be more susceptible to strain. In fact, the authors say that those who are lower in emotional stability may not need or want as much autonomy in their work and may not do well when working remotely.

They offer several recommendations for managers who design or oversee remote-work arrangements. First, consider employees' behavior. "If someone does not handle stress well in the office, they are not likely to handle it well at home either," says Perry. Second, if less emotionally stable individuals must work remotely, alleviate strain by providing resources to foster strong relationships with co-workers.

Finally, consider providing proper support for remote work. This might mean encouraging separation of work and family spaces, developing clear expectations, and providing regular contact (virtual or face-to-face) with co-workers and managers.

"Stress in Remote Work: Two Studies Testing the Demand-Control-Person Model" was published online June 29, 2018, in the *European Journal of Work and Organizational Psychology.*

WOMEN AND STEM

The Center for Talent Innovation (CTI), a New York City–based think tank dedicated to building a more diverse labor force, has released a study to identify strategies that lead to increased retention and career advancement for women. The study, which surveyed 3,212 respondents between the ages of 21 and 65 with STEM credentials, notes that many women in the field feel stuck in their jobs and more than half eventually quit. It also ranks ten company-led initiatives by their effectiveness in retaining and advancing women in STEM roles.

Among these ten strategies are a commitment to pay equity; an opportunity for employees to connect with female and minority consumers; time outside of core job functions for innovative side projects; sponsorship programs; management training on empathy, integrity, or inclusion; mentorship programs; leadership development programs for women or people of color; concierge services or family care; employee resource groups; and

anti-bias policies or training.

The rank order of the top ten interventions was derived by calculating the percent increase in the number of women in STEM who advance and intend to stay at a company with a specific intervention, as compared to those who are at companies that do not have that specific intervention. "Companies can now prioritize specific interventions that advance and retain women," says Pooja Jain-Link, senior vice president and head of research at CTI.

The study also identifies six strategies women can use to be successful in STEM fields, whether or not their employers deploy interventions. The women in STEM who are satisfied with their jobs, respected for their expertise, and in senior-level positions are more likely to be extremely confident in their abilities; confront the situation when their contributions are ignored; invest in peer networks by helping colleagues; sponsor others; be authentic; and build their personal brands with activities such as networking and attending conferences.

In previous research, CTI has identified a number of common challenges that women experience in the STEM industries, which include alienation, extreme hours, bias, and exclusion and isolation. Additionally, many feel that their supervisors do not view them as having leadership potential.

According to Pat Fili-Krushel, CEO at CTI, "The more organizations and individuals turn their attention to strategic solutions, the more progress we can make—both in giving women fair access to opportunities, and in drawing upon the full range of talent, ideas, and innovations they can offer our companies and our world."

▶ **For more information on "Wonder Women in STEM and the Companies that Champion Them," visit www. talentinnovation.org.**

How Much Does Management Matter?

WHAT *IS* THE ROLE of management in an organization's failure or success? How do management styles differ across facilities? The U.S. National Bureau of Economic Research (NBER) has explored how management practices compare across organizations through the administration of its Management and Organizational Practices Survey (MOPS). With funding from the U.S. National Science Foundation, the Kauffman Foundation, and the Sloan Foundation, MOPS was delivered to 32,000 U.S. manufacturing plants belonging to more than 10,000 firms, as a mandatory 16-question supplement to the U.S. Census Bureau's Annual Survey of Manufacturers.

The authors of the report based on the survey found that management practices varied significantly not only among organizations, but also among manufacturing plants within the same organization. The larger the size of the firm, the greater the variation among its plants. In addition, individual plants that had adopted more structured management practices were more productive, profitable, and innovative—and experienced greater rates of growth—than plants with less organized practices.

Management practices "account for about a fifth of the cross-firm productivity spread, a fraction that is as large as or larger than technological factors such as R&D or IT," the authors conclude. They emphasize four factors that contribute to an organization's adoption of consistent structured management practices across all facilities: product market competition, the regulatory business environment, learning spillovers from larger and more productive plants, and education.

This government-sponsored survey's "coverage of units within a firm, its links to other Census data, as well as its comprehensive coverage of industries and geographies," write the report's authors, "enables us to address some of the major gaps in the recent management literature."

▶ **"What Drives Differences in Management Practices?" is forthcoming in the** *American Economic Review*. **It is available as a working paper at www2.census.gov/ces/wp/2017/CES-WP-17-32.pdf.**

STRATEGIC IMAGINATION: THE NEXT KEY SKILL?

Innovators, entrepreneurs, and business leaders who want their ideas to be successful will need to be able to imagine solutions that people don't even yet know they want, say Violina Rindova, professor of management and organization at the University of Southern California's Marshall School of Business in Los Angeles, and Luis Martins, director of the Herb Kelleher Center for Entrepreneurship at the University of Texas at Austin's McCombs School of Business.

Rindova and Martins point to standout examples of business success such as Whole Foods Market and Starbucks. Whole Foods, for example, "required a different imagination of the future to combine an organic farmers market with a big grocery store, and a strong focus on conscious capitalism," says Martins. Starbucks had the same transformative approach to coffee when its co-founders envisioned a future when more people would be willing to spend six dollars to drink high-quality coffee.

The researchers call this skill "strategic imagination," and they argue that most business schools don't place enough emphasis on teaching it to students. Instead, most faculty ask students to analyze past business strategies and adapt those strategies to present contexts—a process that rarely leads to business breakthroughs.

In his own courses, Martins helps students develop strengths in three key components of strategic imagination: anticipatory thinking, analogical reasoning, and design thinking. In the process, Martins encourages students to imagine how current trends could lead to completely new goods, services, and markets.

"We are running out of runway for mass-market thinking," Martins says. "I think strategic imagination will become an ever more important aspect of the strategist's job."

"The Three Minds of the Strategist: Toward an Agentic Perspective on Behavioral Strategy" appeared September 10 in *Advances in Strategic Management*.

EMBAS IN PROFILE

The top trends in executive MBA programs today include more globalization of EMBA programs, strategic use of technology to support classes and enrollment, and an increase in distance learning to meet the needs and learning styles of students. These trends were highlighted in the 2018 Membership Program Survey conducted last fall by the Executive MBA Council (EMBAC), a nonprofit association of universities and colleges that offer EMBA programs. Here's a closer look:

THE TECH

54% of programs offer distance learning options, up from 42 percent in 2015.

56% of respondents use video (primarily YouTube) to promote programs, up from 44.7 percent in 2014.

17% of programs indicate an increase in the use of classroom video recording.

THE PARTICIPANTS

38 remains the average age for enrolled EMBA students, who have an average of 14 years of work experience.

45% are self-funded. Thirty-five percent receive partial sponsorships.

29.6% are women, an increase of 4.2 percent from 2014.

12.8% of entrants are employed in the healthcare, pharma, and biotech fields. The next most popular field for entrants is technology, at 9.9 percent.

▶ For more information, visit www.embac.org.

Prepping for the Digital Future

TWO RECENT RESEARCH projects at European schools examine how business leaders should be preparing themselves for the transformations that will be brought about by technology.

■ Developing a digital culture is the biggest challenge human resources professionals face, according to the 170 HR executives who responded to a survey conducted by the HR Innovation Practice Observatory at Politecnico di Milano School of Management in Italy. Researchers also found that companies are struggling with several other aspects of digitalization: integrating new technological roles with those already present (48 percent), beating competition to attract talent (43 percent), and planning relevant training to upskill staff (37 percent).

"Our research indicated that there is a limited level of maturity and awareness about how to create a culture that is truly focused on digital technology," notes Fiorella Crespi, head of the Observatory. "However, encouraging interaction between those with IT skills and those without is becoming increasingly common in businesses, through initiatives based on gamification, like hackathons." She adds that more companies are investing in people "who can help to spread a culture of digital innovation throughout the company."

But there's work to do: The research suggests that only 35 percent of companies have defined a people strategy. Says Crespi, "An organization's ability to remain competitive will depend on it being able to review and transform its processes, products, and business models in order to respond to the challenges of this digital revolution."

"People 4.0: Staying Ahead to Avoid Falling Behind" was published September 12, 2018, and is available for purchase through the Observatory's website at www.osservatori.net/ww_en/observatories/hr-innovation-practice.

■ But organizations can't simply invest in new technologies, according to a white paper on digital transformation from HEC Paris in France. They also must adapt their company cultures to both embrace and think beyond technological solutions, write Jean-Rémi Gratadour, executive director of HEC Paris Digital Center; Kristine de Valck, associate professor of marketing; Marie-Hélène Delmond, associate professor of marketing; and Stéphane Madoeuf, affiliate professor of innovation and entrepreneurship.

The researchers argue that an organization's digital tools and strategies can all too easily be replicated and improved. True competitive advantage will rely on human initiative and an openness to new ideas. Digital transformation can be embraced by all employees, regardless of their skill levels or functions, if leaders encourage team members to share knowledge and work together.

A great digital leader, they say, is committed to lifelong learning, remains open to new ideas, uses data to make decisions, has the right to fail, leads by example, and works via networks. This leader needs both hard skills (including an understanding of digital marketing, systems management, and data science) and soft skills (including a focus on leadership, change management, and coaching).

"Digital transformation is not only about adopting new technologies," says Gratadour. "It's highly cultural. Gone are the days of all-powerful managers controlling events from their ivory towers. Leaders need to become doers who are not afraid of challenging ideas and being challenged by their teams."

▶ **"When Digital Culture Transforms Business" can be downloaded at execed.hec.edu/en/news-resources/news/white-paper/how-to-develop-a-digital-culture-that-transforms-your-business.**
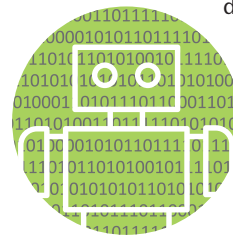
COMMUNICATIONS IMPERATIVE

According to Ellucian, a software provider serving the higher ed market, 48 percent of students who apply to multiple colleges have decided against enrolling in an institution because of poor communication. In contrast, 87 percent of students who receive personalized communications from colleges during their application process consider it an important factor in their choice of which school to attend.

▶ **"Students, alumni, and administrators agree: Data-driven Communications Make a Difference" is based on a survey of 500 college students, 500 recent graduates, and 300 administrators. It can be downloaded at www.ellucian.com/Insights/Data-driven-communications-make-a-difference.**

Stable Market for Business Grads

Demand for graduate management education was stable in 2018 compared with 2017, according to the Graduate Management Admission Council's annual Application Trends Survey, which was released last fall.

Applications to MBA, business master's, and PhD programs increased by 8.9 percent in the Asia-Pacific region; by 7.7 percent in Canada; and by 3.2 percent in Europe.

International applications largely fueled the growth in Canada and Europe, while domestic applications drove the growth in the Asia-Pacific.

> A decline in international application volume in the U.S. could be driven by the political environment and the emergence of opportunities abroad.

At the same time, the United States experienced a nearly 7 percent decline, including a 1.8 percent decline in domestic application volume and a 10.5 percent drop in international volume across all programs. One reason for the decrease might be low unemployment in the U.S., says Sangeet Chowfla, GMAC president and CEO. He notes that "young professionals have an increased opportunity cost of leaving their jobs in pursuit of an advanced degree." Other factors could be "a disruptive American political environment and the emergence over the past decade of tremendous educational and professional opportunities abroad."

The survey also found that the full-time, two-year MBA is still the most popular program, attracting a similar volume of applications in 2017 and 2018. In Europe, most master in management and master of finance programs reported greater demand. In the U.S., most master of data analytics programs reported more growth in international applications than in domestic applications in 2018.

Conducted last summer, the survey was based on responses from 1,087 graduate business programs at 363 universities in 44 countries. The participating programs received a combined total of 466,112 applications during the 2018 application cycle. 🅑

ILLUSTRATION BY
HARRY CAMPBELL

BY THOMAS H. DAVENPORT

What kinds of programs should business

schools develop to fill the growing need

for data analysts and AI specialists?

ANALYZING THE FUTURE

THE RISE OF DATA ANALYTICS is one of the hallmarks of 21st-century business. By the turn of the century, companies had been accumulating data in various transaction systems for several decades, and many desired to analyze the data to make better decisions. Their interest intensified in the early 2000s as they saw the great success of online firms from Silicon Valley, many of which were highly analytical.

In fact, during the mid-2000s, I conducted research showing that some companies were "competing on analytics"—that is, emphasizing their analytical capabilities as a key element of their strategies—and that those companies tended to outperform other firms in their industries. Information about analytics even made it into popular culture, especially through books such as *Moneyball,* which was also a successful movie. Both depicted the way the Oakland A's of California built a winning baseball team through targeted data analysis.

These market forces rapidly led to a demand for analytical talent within firms. The first wave primarily focused on traditional analytical professionals and web analytics experts. But by 2010, online firms had started to realize they needed a new version of the analytics professional, someone who could analyze the massive amounts of data they had been collecting from online clickstreams, social media, and the sensors within internet-enabled devices (the "Internet of Things"). They needed professionals who not only had strong analytical skills, but who also could push the frontiers of the new technologies—many of them open-source programs—that were designed to store and structure data. They needed data scientists.

Not only did Silicon Valley companies hotly pursue data scientists, mainstream businesses also saw the need to bring them on board. In a 2011 report, McKinsey Global Institute researchers estimated that there would soon be a shortage of up to 200,000 data scientists in the U.S. alone—although there was never great clarity about what it took to become one.

Then, around 2015, companies became enthused about the potential of artificial intelligence (AI) to transform business, and this excitement sparked a new wave of analytics-related demand. Silicon Valley companies such as Google and Facebook again led the charge, incorporating many AI capabilities into their offerings, and other firms soon followed. I have helped conduct surveys that suggest that up to 25 percent of large companies in the U.S. have multiple AI projects underway. A few highly aggressive firms have launched more than 100 projects, some of which are entering the production deployment stage.

Not surprisingly, all of these firms are seeking data scientists or AI engineers who understand how to apply new technologies such as deep learning to business contexts. As before, these firms face what appears to be a severe shortage of individuals with this skill set. What kind

MASTER'S DEGREES IN ANALYTICS ARE AMONG THE MOST POPULAR BUSINESS SCHOOL OFFERINGS.

of opportunity does this represent for business schools?

WHERE WE STAND NOW

Business schools were swift to respond to the first wave of demand for professionals with analytics skills. Many quickly designed master's programs in analytics by drawing from strengths in established disciplines, including statistics and operations research. They also brought in faculty from marketing, finance, and organizational behavior to show how analytics can relate to those specific business disciplines.

As a result of all this activity, master's degrees in business analytics currently are among the most popular new offerings in business schools. North Carolina State University debuted what might have been the first master's in advanced analytics in 2007; today, according to estimates from AACSB International, there are more than 400 analytics degree programs offered by nearly 220 business schools worldwide. An article on the Poets & Quants website declared, "Without a doubt, the business analytics master's is the belle of the specialty degree ball."

But business schools have found it somewhat more difficult to respond to the second and third wave by creating programs in data science and artificial intelligence. Not only is data science relatively new and difficult to define, it also has a strong computer science orientation. Unlike data analytics programs, which primarily focus on analytical/statistical methods, data science programs teach students complex programming methods for handling big data. For that reason, many data science programs are

offered by schools of engineering, information, or computer science.

In fact, some universities have multiple analytics programs residing in various colleges within the institution. For example, the University of Minnesota and the University of California San Diego offer master's degrees in both data science and business analytics. At Minnesota, the MS in business analytics is offered through the Carlson School of Management, while the MS in data science is run by the schools of engineering, liberal arts, and public health.

The University of California, Berkeley, has at least six different master's degrees that are oriented to analytics. An MBA focus area in data science and strategy is offered by the Haas School of Business; the rest can be found within other departments and colleges, such as engineering, public health, and computer science. To help students navigate the many options, the university maintains a datascience@berkeley webpage that describes the "rich ecosystem of data science-related research, teaching, and communities across campus."

While data science degree programs have begun to proliferate, programs built around AI are still rare. Both Northwestern University's engineering school and the University of Georgia's college of arts and sciences offer master's programs in AI, and both MIT and Carnegie Mellon University's computer science schools have recently instituted undergraduate programs in AI. Several schools, mostly in Europe, also offer master's degrees in artificial intelligence—these include the University of Gothenburg, the Free University of Amsterdam, and the Ecole Polytechnique

in Paris. However, these programs are either contained within the computer science or engineering schools, or they draw from multiple schools within the university.

To my knowledge, no business schools in the U.S. have degree programs in AI. This is not surprising, given the paucity of faculty with expertise in AI. Technical faculty who are able to develop AI programs often have been hired—at very high compensation levels—by private sector firms such as Google and Facebook. Such faculty maintain university affiliations, but often not with business schools.

PRIMARY SKILLS

Because AI programs are so difficult to put together, most business schools will concentrate on programs for analysts and data science professionals instead. In my opinion, these professionals must acquire four different types of expertise to be competent in their jobs.

Quantitative and statistical skills are the foundation of any analytics role. Anyone holding such a job must be proficient at general statistical analysis—at least up to logistic regression analysis, often conducted in fields such as medicine and the social sciences to predict binary outcomes based on one dependent and one independent variable. Such professionals also should be able to analyze categorical data, probability and statistical inference, optimization, and basic experimental design.

If graduates want to be hired into specific industries or business functions, they also will need to master other quantitative techniques, such as lift analysis in marketing, stochastic volatility analysis in finance, biometrics in pharmaceuticals, and informatics in healthcare fields. Some types of analysts—those involved in "business intelligence" or reporting work—may be able to get by without substantial statistical knowledge, but this lack probably would limit their careers.

Analysts also must know how to use the software associated with their type of analytical work, whether it is used to build statistical models, generate visual analytics, define decision-making rules, conduct "what-if" analyses, or present business dashboards. These tools once were offered only as proprietary packages from vendors, but are increasingly open source today.

Data management skills are just as important to analytical professionals as statistical and mathematical expertise. Such professionals spend the majority of their time manipulating data—finding, integrating, cleaning, matching, and so on. And surveys suggest that the skill most commonly sought by data scientist employers is not expertise with a statistical program, but rather with SQL—a query language for data management.

Like analytics professionals, data scientists also perform data management tasks, but their tasks tend to be more complex and often rely on languages such as Python. Their jobs often involve taking relatively less structured data like text and images and creating the rows and columns of numbers that are well suited to statistical analysis.

The topic of data management also encompasses data privacy, security, and ethical issues. In fact, some master's programs in analytics, including one from the University of Notre Dame, require students to take a course in ethics.

Business knowledge and design skills enable analysts to be more than simple backroom statisticians. Analysts need enough general business background to understand the problems and processes they are analyzing, so they should be familiar with marketing, finance, HR, and new product development. They also should know how analytics can be used to drive business value, and they must have insight into the opportunities and challenges their employers are facing. Many of these skills and content domains are taught in MBA programs, but most business analytics degrees don't require a lot of traditional MBA courses.

Relationship and communication skills are vital to the success of all analytical projects. Analysts who can advise, negotiate, and manage expectations will be able to work effectively with their business counterparts to conceive, specify, pilot, and implement analytical applications.

These skills are critical when analysts must communicate the results of their work. They will need to share best practices with their bosses and colleagues, while emphasizing the value of analytical projects. Outside the business, they will need to develop working relationships with customers and suppliers. They also might have to explain the role of analytics in meeting regulatory requirements—for instance, an analyst might use data to help a utility company make a successful bid to increase its rates for service.

Analysts who can "tell a story with data" are highly prized. The ability to communicate effectively about analytics is the single most sought-after capability among graduates from analytics and business intelligence programs, according to one survey of employers, and some schools realize this. For instance, Communicating with Data is a required course within the new master of business analytics program at the Massachusetts Institute of Technology's Sloan School of Management.

In addition to mastering these four sets of skills in the classroom, students typically participate in internships or practicums, during which they work on real analytical problems for real organizations. Students not only gain experience in what it's like to be analysts or data scientists, they also get a chance to meet potential recruiters.

For schools, the challenge is combining all these necessary components into a single degree program. It's particularly difficult to cover all the material because the typical master's in analytics is only one year or three semesters long—hardly enough time to adequately train students who arrive at the program lacking basic analytics skills. It is probably more feasible for business schools to target students who already have undergraduate degrees in quantitative fields and provide them with "finishing school" skills in business and communication.

Another challenge schools face is assembling faculty with expertise in all the relevant areas. Some universities draw on faculty members from multiple schools to create their analytics programs. For instance, the master's in advanced analytics at North Carolina State, which was intended to be cross-disciplinary from the beginning, involves faculty from the statistics, mathematics, bioinformatics, and computer science departments—and even the English department, because communicating effectively about analytics is so important. Such cross-disciplinary programs can be excellent for student learning, but are not always easy for schools to maintain.

THE NEED FOR DIFFERENTIATION

There's yet another challenge business schools face as they design their analytics offerings: how to set their programs apart from those of their competitors. Geography simply isn't enough of a differentiator, because many programs are wholly or partially online, and others are offered at multiple locations. For instance, Notre Dame runs one MS in business analytics program on its main campus in South Bend, Indiana, aiming it at students right out of undergraduate programs—but it runs a second one in downtown Chicago, where it targets working professionals.

Instead of competing based on their locations, schools commonly differentiate themselves by the topics they focus on in their programs. For instance, some emphasize "applied analytics," assuming that students will need a mixture of business and analytical expertise. Others are more quantitatively intense or give more weight to data science issues.

Going on the assumption that analytics generalists won't be enough for some employers, other schools have focused their programs on functional specialties within the field. For instance, Pace University's Lubin School of Business has an MS in customer intelligence and analytics, American University's Kogod School of Business has an MS in human resource analytics and management, and Rutgers University offers a master's in supply chain analytics. Stevens Institute of Technology and New York University both offer master's degrees in financial analytics, while Babson College's MS in business analytics aligns with the school's entrepreneurship orientation by focusing on the intersection of analytics and entrepreneurship. Washington University's Olin Business School offers multiple tracks in subject areas such as healthcare, supply chain, financial technology, and customer analytics.

In the future, I expect that more master's programs will focus on specific analytical methods and tools, particularly AI, although specialist AI programs may remain within schools of engineering and computer science. At this point, it's not yet clear what the role of business schools will be in the next wave of analytics programs.

ANALYSTS WHO "TELL A STORY WITH DATA" ARE HIGHLY PRIZED.

THE FUTURE OF ANALYTICS

What *is* clear is that technology is continuing to reshape the competencies that students will need to cultivate. Up until this point, analysts have needed the ability to select the right algorithm for the problem and data at hand. For example, if I'm trying to predict a binary variable using several continuous variables, I need to know that logistic regression is the method of choice. Whatever the algorithm used, I also need to know the process of analysis—such as how to choose independent and dependent variables, select data, deal with missing data, do the analysis, create some variable transformations to improve the fit of the model, and interpret the outcome.

Increasingly, however, these types of expertise are not required of human analysts. "Automated machine learning" programs can determine which type of algorithm is most appropriate; they also can perform most of the process described above with relatively little intervention by the data scientist. In other words, we are probably entering a "post-algorithmic" era in which detailed knowledge of analytical methods may no longer be necessary.

If this trend continues, it's likely that the most valuable skills will be nontechnical ones—understanding the business, building relationships and trust, communicating analytical outcomes, and working in teams to convert analytics into action—the very skills taught in business school. If automated systems can eventually do most of the analytical heavy lifting, it may be that an MBA is the perfect analytics degree of the future.

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THE INTERSECTION OF BUSINESS & TECHNOLOGY

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DEAN GEORGETTE CHAPMAN PHILLIPS

Business Analytics is the core in our new core curriculum.

Business analytics is revolutionizing the world in profound ways. Lehigh University's College of Business and Economics has made it the centerpiece of a comprehensive redesign of our undergraduate core curriculum. Check out our blog to learn more about our ground-breaking business analytics curriculum.

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LEHIGH UNIVERSITY | College of Business and Economics

As b-schools integrate analytics across the curriculum, they aim to teach students at all levels to become data strategists, not just data scientists.

DERIVING MEANING FROM DATA

IT'S OFFICIAL: BUSINESS LEADERS now count the seemingly never-ending supply of data generated by their staff, vendors, and customers among their most valuable assets. But this value can be realized only if their organizations have a steady supply of managers who are able to mine data in ways that reveal patterns, make predictions, and provide insights that lead to better business decisions.

Industry is calling on academia to produce more graduates who can accomplish that task. In response, business schools are creating new analytics courses and degree programs with a common objective: to teach students at all levels to program, manipulate data sets, and use data to solve real-world problems. In the following pages, we take a look at how several of these schools are educating a new generation of problem solvers who are ready to hit the ground running in an increasingly—and inevitably—data-driven business world.

ILLUSTRATION BY HARRY CAMPBELL

ANALYTICAL TO THE CORE

IN RESPONSE TO INDUSTRY DEMAND, ARIZONA STATE
INTEGRATES ANALYTICS THROUGHOUT ITS CURRICULUM.

BY HOWARD RIELL

Victor Benjamin, assistant professor of information systems at the W.P. Carey School of Business at Arizona State University in Tempe, has been working in analytics for more than a decade. In that time, he has seen "a great evolution" in the teaching of analytics, as new technologies make it easier for individuals in nontechnical disciplines to explore the use of information systems and the application of analytics to business problems. In short, says Benjamin, "Analytics is no longer just for nerds."

Once a nontraditional part of business curricula, says Benjamin, data analytics programs quickly are becoming the norm in many business programs. In fact, the W.P. Carey School has made analytics a priority in its curriculum, by adding courses that meet industry needs, strengthening industry partnerships, and exposing students to the tools and techniques they'll need to become proficient data analysts and strategists.

TRAINING 'TECHNICAL WIZARDS'
When the school asked members of its executive advisory board what they most wanted from an analytics curriculum, they emphasized the need to train undergraduates in principles of design thinking and data visualization and expose graduate students to innovations such as sensor technologies and open artificial intelligence platforms.

For undergraduates, the school has introduced a required core course called Problem Solving and Actionable Analytics, which trains junior-level business majors to define and apply data analytics and modeling solutions. Students practice "self-service analytics," in which

they identify a meaningful research question, and then choose appropriate methods to gather, clean, and analyze the data, explains Yili (Kevin) Hong, associate professor of information systems and a co-designer of the course.

"It amazes me that students come up with such relevant questions and address them with rigorous methods," says Hong. "One team used visualization to identify key factors for the gender wage gap; another used regression analysis to find that women, children, and the elderly are most likely to survive catastrophic events. Considering that students have not conducted a research project before, these are big achievements that inspire them to use analytics for decision making in their future work."

MBA students can take a similar but more advanced version of Problem Solving to practice decision making with analytics. Last fall, the school also added new graduate offerings such as Information-Enabled Business Modeling, a course in its master of science in information management; and a data and analytics track in the School of Accountancy's master of accountancy (MACC).

This track represents a significant transition for the MACC, one that recognizes "how the business world—and the accounting profession, specifically—will function for the next 20 years and beyond," says Andy Call, interim school director and professor of accountancy.

In another new graduate course in the school's master of science in business analytics program, Applied Projects, students work on data-driven

projects submitted by corporate partners. Over the semester, students devise solutions, outline their methods, and advise companies on ways to improve their data, says instructor Raghu Santanam, department chair and professor of information systems.

One corporate partner to Applied Projects is Ports America, a shipping container and cruise ship terminal operator. Its leaders ask student teams to recommend strategies for improving the safety and efficiency of its terminals. "It would be very difficult for us to hire 25 data scientists to work on these problems," says Tianbing Qian, a senior vice president with the company, in an ASU video.

The city of Phoenix asked one team to track the movement of inventory in its warehouse to find evidence of theft; it asked another to look for ways to improve the efficiency of its waste collection service. Lisa Faison, lead business systems analyst for the city's public works department, emphasizes just how many solutions are available to organizations that take data mining seriously. "In garbage alone, you'd be surprised at how much data is available," Faison notes. ASU students now are examining garbage collection data to compare the extent to which residents use the city's curbside pickup and alley pickup services. Faison says that the city will use the students' findings to increase participation in recycling programs and meet its goal of diverting 40 percent of its waste from landfills by 2020.

Courses across the curriculum prepare students for work with corporate

clients through smaller projects that require them to identify the data sets and technology most relevant to the problem at hand. For instance, student teams in the school's master of science in information management role-play as social media analysts within companies of their choosing. Each team identifies potential problems within its chosen company that can be investigated using social media data, before spending the next few weeks determining solutions. In the process, teams experiment with technologies such as natural language processing techniques and machine learning algorithms and work with data visualization techniques.

Students who enrolled in the first run of the course came in with different levels of technical proficiency, says Benjamin, who teaches the class. For that reason, he was prepared to provide them with a great deal of guidance. To his surprise, many students quickly applied what they learned to take their projects farther than he expected. Even "individuals who started the course with no programming experience became ecstatic over the new 'technical wizardry' that they had developed," says Benjamin.

CROSSING THE CURRICULUM
Before creating these new courses, the school already offered a business data analytics major and a master's program in business analytics. Its newest program is a certificate in business data analytics, open to all business majors.

Each year, approximately 1,000 undergraduates and 300 graduate students enroll in the school's analytics majors and programs. In its first year, the MACC data and analytics track enrolled 38 students. Students can opt to pursue either a technical track that focuses on the technologies or a managerial track that delves into the implications and applications of analytics.

The school ensures that all of its analytics courses and programs work together by coordinating them across multiple departments. For example, its

master's degree in business analytics cuts across information systems, supply chain management, and marketing. Similarly, the development team for Problem Solving and Actionable Analytics includes individuals from information systems, supply chain management, economics, and the dean's office.

By working together, says Santanam, faculty "find common threads in analytics relevant for all business majors."

CREATING A CULTURE
The W.P. Carey School's ultimate objective is to create and sustain an analytics culture based on collaboration among students, faculty, practitioners, and corporate partners. Several of the school's partners now regularly sponsor six- to 12-month extracurricular projects

completed by faculty-led student teams. Executives also attend the school's academic-industry joint conference that explores issues related to analytics.

In the end, any successful analytics curriculum will be well-connected to industry, dynamic in its response to technological changes, and focused on helping students understand the role of analytics in decision making, Santanam emphasizes. As business schools add analytics-inspired offerings to their course portfolios, he says, they "should plan on integrating practical and immersive learning experiences to increase the business relevance of the programs."

Howard Riell is a freelance writer for Arizona State University's W.P. Carey School of Business in Tempe.

ANALYTICS UPGRADE

THE UNIVERSITY OF SOUTH CAROLINA PREPARES UNDERGRADUATES TO HANDLE THE DELUGE OF DATA THAT'S COMING THEIR WAY.

BY MIKE FITTS

To provide companies with the talent they'll need to make sense of their data, the Darla Moore School of Business at the University of South Carolina in Columbia has significantly expanded the teaching of analytics in its undergraduate core curriculum. This expansion includes required statistics courses at the freshman and sophomore levels, as well as a business analytics concentration. In the spring of 2018, the school also piloted the teaching of R, a widely used open-source computer language, instead of Excel to analyze data in its core statistics courses. R training now has become a mandatory part of the curriculum.

Starting in 2018, all 5,200 of its undergraduates must complete capstone projects using R to analyze real-world business data in the school's just-opened Data Lab. Students have opportunities to work with popular tools such as SQL to learn database management and Power BI to visualize and report data. Tableau, another powerful data visualization tool, is being taught at the graduate level.

The objective is not necessarily to train students to become data scientists, but to equip them with the tools to understand how to draw accurate conclusions from the data, says Peter Brews, the Moore School's dean. "We have to train our students to analyze that data and move it from data into knowledge that leads to better decision making."

FROM STATISTICS TO CODING

Students are first exposed to R in their sophomore statistics class. They still learn to use Excel—however, they use R to clean up imperfect data with missing values and errors, manipulate and analyze data, and create customizable graphical displays not possible in Excel.

Most of the school's 1,400 sophomores have never worked with computer code before, and they might not have expected analytics would be part of their business educations, says Leslie Hendrix, the assistant professor who is coordinating the statistics course. Students who are more familiar with menu-driven software are often intimidated by R's code-writing interface. To ease their way, the school has created video tutorials and other tools and makes those resources available across all course sections.

It's important that students learn to use these resources to troubleshoot code and overcome error messages for themselves, says Hendrix. "I often tell them, 'You can't just watch me to do this. Can you learn to swim by watching someone else swim?'" Once students establish baseline abilities with R, she adds, they don't just have "a heavy-hitter skill" to put on their résumés. They also have developed an aptitude to learn new computer languages throughout the rest of their coursework and careers.

To help faculty keep their skills up-to-date, the school provides them with the same online training resources it offers students, as well as the Data Lab, internal workshops, and external professional development opportunities.

COMPETITION IN THE DATA LAB

Students put their skills in R to work in the Data Lab for the final project of their sophomore statistics class. Their challenge is twofold. First, they must clean up an imperfect and incomplete real-world data set; second, they must use that data to create a predictive model that holds true when applied to another portion of the data set that has been withheld.

During the project's first run, student teams used tools of their own choosing to analyze data involving local real estate prices to predict actual sale prices of homes. Students who used R fared much better in the challenge than those who used Excel, says Hendrix. In addition, students were encouraged to use resources outside of the class to teach themselves new skills.

As the project progressed, each team's predictions were posted and ranked online, with the leaderboard constantly updated as teams submitted their answers. "Students said that they became obsessed with it," says Hendrix. Patrick Nealon, who was part of the pilot class, believes he landed a commercial real estate internship as a result of his knowledge of the language. "Knowing how to use R was one of the main reasons I got the internship. It is so refreshing to learn something that I will be able to use outside of the classroom."

MOST POPULAR CONCENTRATION

After they complete both statistics courses, students will continue to study analytics for the remainder of their undergraduate careers. Faculty are currently adjusting syllabi for upper-level courses to include opportunities for students to use their skills in R in other ways.

Undergraduates who wish to delve into analytics more deeply can complete the school's new business analytics concentration by taking four classes beyond the required core courses. These include an additional class in data analytics that covers database management, SQL programming, and data visualization; and three electives that focus on analytics in particular fields. Every major at the school—including accounting, finance, economics, management, and marketing—has at least one elective that applies to the concentration.

Since the analytics concentration was introduced in 2015, it has become more popular among undergraduates than any other undergraduate concentration or minor at the Moore School. In just one year, enrollment in the concentration has increased from 100 to around 310 in the fall of 2018.

By the fall of 2019, it's possible that number will increase to 500, says Brews. He adds, "I'm hoping eventually every Moore School student chooses to do the analytics concentration."

THE VALUE OF ANALYTICS

In delivering its curriculum, the school works closely with its corporate partners, which are quickly becoming regular customers of its students' skills. These include Nephron Pharmaceuticals, based in Columbia, which is using data analytics to examine every aspect of its operations, from manufacturing to marketing. The company wants to better evaluate its performance, find greater efficiencies, determine what processes are creating production bottlenecks, and identify which sales efforts are bearing the most fruit, says its CEO Lou Kennedy.

Recently, Nephron assigned a Moore School alumnus to analyze its contracts to ensure that its outgoing payments matched contract requirements. The graduate identified mistakes and overpayments—including one error that would have cost the company US$85,000. In total, the graduate saved the company $850,000 in just one year.

Kennedy now participates in the Moore School's career fair days every year, even when her company does not have immediate openings. The event, she says, is an opportunity to discover how students might apply their analytics skills to help the company in ways she has not anticipated.

"It's a data-driven world we live in," says Kennedy. "I recognize the value of these degrees, and I like what I see."

Mike Fitts is a freelance writer based in Columbia, South Carolina.
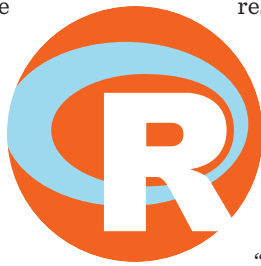
DATA REVOLUTION

AS SCHOOLS INTEGRATE DATA ANALYSIS INTO NEW AND EXISTING PROGRAMS, IT SEEMS LIKELY THAT EVERY STUDENT SOON WILL NEED TO KNOW THIS CRITICAL BUSINESS SKILL.

BY TRICIA BISOUX

Human beings have become incredibly proficient at generating vast amounts of data. In fact, more than 90 percent of the data that exists today has been created in just the last three years, according to "Data Never Sleeps 6.0," an annual report from the cloud computing company Domo. Each minute, human beings post 49,380 Instagram photos, share 473,400 tweets, conduct 3.87 million Google searches, and send nearly 13 million texts. By 2020, the company estimates that 1.7 MB of data will be created each second for every person on the planet. (See more stats at www.domo.com/learn/data-never-sleeps-6.)

But while humans are adept at producing data, they are less adept at mining it for insights, says Kaijie Zhu, director of the MSc in business analytics and associate professor of the department of decision sciences and managerial economics at the Chinese University of Hong Kong (CUHK) Business School. "It has become a pressing and unprecedented challenge," he says, "for organizations to compile business data, derive useful information from the data, and utilize the information intelligently."

As organizations rely more on data to drive their decisions, they're setting the expectation that all students, regardless of specialization, will know how to turn data into solutions for business and society. And this expectation is shaping the business curriculum in pervasive and permanent ways.

ANALYTICS IN DEMAND

One of the first schools to offer a master of science in business analytics was the McCombs School of Business at the University of Texas at Austin, which debuted its program in 2012. The number of applications to its MSBA has increased from 400 in 2012 to 900 so far for 2019–2020, filling a cohort of 65. "We have near 100 percent placement of students who are looking for jobs," says Prabhudev Konana, associate dean of instructional innovation.

CUHK also has seen a surge in applications to its MSc program in business analytics, from 1,000 in 2016–2017 to 1,600 in 2017–2018. This increase has prompted the school to double the size of the cohort from 60 students to 120 students. And at Melbourne Business School (MBS) at the University of Melbourne in Australia, applications to its master of business analytics program have gone from around 350 four years ago to 1,100 (and counting) for the next run of the program this year. That surge has prompted MBS to nearly double its cohort size from 32 to 60; in addition, last year the school added a new master of analytics management to its portfolio.

MBS faculty are now looking for ways to integrate more analytical components into the school's MBA programs, says Ujwal Kayande, an associate dean and director of the Centre for Business Analytics. "We don't want our MBA programs to be technical programs," says Kayande, "but we need to improve the extent to which they have technical components."

EXPANDING CAPACITY

Business schools aren't just adding new courses in analytics—they're launching multiple master's programs, adding concentrations and certifications, and opening new centers. Some universities even are dedicating entirely new colleges and divisions to the subject. (See "Higher Ed Makes Big Moves with Big Data" on page 32.)

At some business schools, recent additions to the curriculum are intended to reach students outside technical disciplines. Here's just a sampling:

■ Last March, the Asian Institute of Management in Manila, the Philippines, opened ACCeSs@AIM (Analytics, Computing, and Complex Systems), a data science and advanced analytics laboratory, in conjunction with the launch of AIM's new MS degree in data science (MSDS). MSDS students and faculty work with data scientists on projects focused on sparking growth and improving conditions in emerging economies in the Asia Pacific, says AIM's dean Jikyeong Kang.

The lab houses a supercomputer donated by the Stan Shih Foundation—Shih is co-founder and honorary chairman of the Taiwan-based computer and electronics company Acer. Equipped with a 500-teraflop system, the supercomputer has the capacity to handle 500 trillion calculations per second; it has 500-terabyte storage capacity and a large graphics processing unit farm that is "optimized for artificial intelligence," says Kang.

■ Starting in the fall of 2018, all undergraduates at the University of South Florida's Muma College of Business will pursue the school's new Citizen Data Scientist certification. The certification is coordinated through the school's Center for Analytics and Creativity, which partnered with data visualization software provider Tableau to design the program. Departments throughout the college worked together to determine

which seven existing courses would include relevant assignments. Individual instructors can determine the specifics of the exercises, as long as each assignment requires students to analyze a relevant data set, produce data visualization graphics, and create videos to highlight their methods.

■ All students enrolled in the master of science in accountancy (MSA) program at Wake Forest University's School of Business in Winston-Salem, North Carolina, now will learn data analytics skills in their core courses. Last July, the school hired Deloitte's Tom Aleman as a professor of practice in accounting analytics, so that he could help the school integrate data analytics into MSA courses. Aleman was formerly Deloitte's U.S. national and global leader of analytics and forensic technology services.

Students now will take four analytics courses throughout the two-semester program. The first, Introduction to Analytics, establishes concepts in data analytics, big data, visualization, and presentation. The second course teaches techniques in data wrangling, which refers to the process of requesting, extracting, and cleaning up imperfect data from different systems and applications. "In the real world," says Aleman, "accounting professionals aren't usually handed a nice clean data set. Data fields change over time, systems are updated, and legacy data is often left in its original form. This leads to inconsistencies, gaps and potentially lost data."

The third course teaches students to master data visualization software such as Tableau and Alteryx, the science of visuals, and the ethics of visualization. The final course focuses on data communications and presentations.

The program closes with a capstone course in which students will work on projects for companies. Students will learn that analytics is "not just about providing a clean spreadsheet to a manager," says Aleman, "but asking the right questions, solving the business issues, finding the insights, and communicating them to inform the organization's decisions."

COLLABORATIVE COMPONENTS
While every school has its own approach to teaching analytics, most programs rely heavily on industry partners to supply students and faculty with real-world projects and data sets. Most programs integrate short-term projects throughout the curriculum, before culminating in capstones that put students to work on projects for corporate clients.

When the McCombs School launched its MSBA, it did so with support from

HIGHER ED MAKES BIG MOVES WITH BIG DATA

Two U.S. universities recently made significant additions to their departmental structures, in bids to make data analytics education a major part of their future plans. In both cases, university leaders have signaled a belief that data analytics warrants its own campus division.

In October, the Massachusetts Institute of Technology in Cambridge announced its US$1 billion commitment to explore opportunities presented by computing and artificial intelligence (AI). A major part of this commitment will be the formation of the MIT Stephen A. Schwarzman College of Computing. The new college will be funded by a $350 million gift from Schwarzman, the chairman and CEO of global asset manager Blackstone. The college is scheduled to open September 2019, and its new building will be completed in 2022.

The college will be an interdisciplinary hub for collaborative work in computer science, AI, data science, and related fields across the university. To support its expanded emphasis on computing, MIT has created 50 new faculty positions, 25 within the college and 25 in joint positions in other university departments. Once these positions are filled, MIT will have nearly doubled the number of faculty with expertise in computing and AI.

In November, the leadership of the University of California, Berkeley, announced its own plans to open a new multidisci-

plinary division of data science and information. The division will coordinate programs and research related to data science across the College of Engineering, the College of Letters and Science, and the School of Information.

The division's creation is a response not only to the growing influence that data has on all aspects of human life, but also to the demand for data analytics training among students from all disciplines and backgrounds. For instance, enrollment has skyrocketed in Berkeley's undergraduate course called Data 8: Foundations of Data Science, from 100 students in the fall of 2015, when it was first offered, to 1,300 students in the fall of 2018. Last year, these students represented 68 different majors; half were women and 11 percent were from underrepresented minority groups. Most had little or no coding experience.

For MIT, too, creating a standalone interdisciplinary college for computing is one way to ensure that technical skills are taught in all disciplines, says L. Rafael Raif, MIT's president. "Computing is no longer the domain of the experts alone. It's everywhere, and it needs to be understood and mastered by almost everyone," he says. "We must make sure that the leaders we graduate offer the world not only technological wizardry but also human wisdom—the cultural, ethical, and historical consciousness to use technology for the common good."

Analytics that lead to outcomes.

While enrolled in Saint Joseph's master's of business intelligence & analytics program, Amar Reddy Donthala '17 mastered Tableau and gained a skillset in data science that earned him a top job offer — before graduation.

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Walmart and Deloitte. The school has since added new partners, including Southwest Airlines, Charles Schwab, General Motors, Dell, EOG, USAA, HomeAway, Indeed, and 3M, and practitioners from the companies sometimes teach classes in consultation with research faculty. These partners have asked students to solve a range of data-driven problems, from identifying factors that make managers successful to helping companies optimize their employee rewards programs.

At ESSEC Business School in Paris, France, faculty and students in the Strategic Business Analytics Chair program work with around 15 corporate partners. However, the company playing the biggest role in the program is the global management consulting firm Accenture, which provides funding and coaching for students. The company also connects students with its executives and invites them to its Paris headquarters to work with data on its internal cloud-computing platform.

"The most interesting data are within companies," says Jeroen Rombouts, ESSEC's head of the information systems, decision sciences, and statistics department and the Accenture Strategic Business Analytics Chair. "If we don't collaborate with private companies that are willing to share their data, we cannot teach students. We cannot teach data analytics from an academic textbook or a 20-year-old data set in an Excel file as we did ten years ago."

'THINKING BEYOND DATA'

Although many analytics programs have been in place for only a short time, they already must adjust to the changing needs of industry. ESSEC, for example, has directed more content to the use of artificial intelligence, in areas such as natural language processing and recommendation engines.

Carnegie Mellon University's Tepper School of Business in Pittsburgh, Pennsylvania, recently added two core courses on machine learning to its MS in business analytics program. "To make an impact in practice, students need to go beyond simply running a script in Python or R," says Willem-Jan Van Hoeve, the Carnegie Bosch Associate Professor of Operations Research at the Tepper School.

Tepper's corporate partners have made it clear that they aren't looking for employees who only know how to code, Van Hoeve emphasizes. They want to hire graduates who can identify business opportunities presented by data sets and determine the best analytics methodologies to apply to business problems—who are able to interpret outcomes and communicate results.

"That is why our program includes not only technical courses, but also classes like communication, managing teams, and business fundamentals so that our graduates can both crunch the numbers and make strategic recommendations," says Van Hoeve.

At AIM, MSDS students are strengthening their understanding of data's impact on nearly every aspect of human life, says Kang. That's why they work on a wide range of projects, from predicting global child mortality rates to studying hashtags on Twitter to spot commonalities among social media users. "Our program," says Kang, "emphasizes the importance of thinking beyond data."

THE ETHICS OF INFORMATION

While languages such as Python and R are widely used today, that doesn't mean they will be in a few years. That's why business schools are preparing students to work with programming languages that might not yet exist, say these educators. "Our program is tools agnostic," says Konana of McCombs. "That means we focus on deep skills in methods and solve problems with various tools and skills, including R, Python, SAS, SQL, Hadoop, and Matlab."

"We don't want students to be dependent on one computer language, so we make sure they understand the underlying logic of programming," agrees Kayande of MBS. "While each programming language has its idiosyncrasies, they all are essentially the same."

Analytics programs also are incorporating content that teach more than just the technology. AIM, for example, covers topics such as data governance and data privacy in its Introduction to Data Science course. With the European Union's enactment of the General Data Protection Regulation last year, students at ESSEC now are learning about new roles emerging in many companies, such as that of data protection officer. "Students need to know what the legal and ethical boundaries are when they use data generated by individuals," says Rombouts.

Determining the ethical boundaries surrounding the collection, management, and application of data could be one of the most important skills students learn in their analytics education, says Kayande. At MBS, for example, companies have expressed increased concern over the ethical use of data. This concern has led faculty to bring in guest lecturers to speak on the issue, as well as ask students to write essays in response to different ethical scenarios.

How to teach the ethics of data is still an evolving part of the analytics curriculum at MBS, says Kayande, who stresses that no matter how adept students become at using data as strategic tools, they will need a strong moral compass to ensure that their decisions do no harm. "They are going to have incredible power in their hands," he says. "They will have to decide where to apply data and where not to, and if their companies are encouraging them to misuse that power, it will be their job to push back. Employers like the fact that our graduates push back and aren't afraid to have those difficult conversations. We tell our students, 'At the end of the day, it's going to be on you.'"
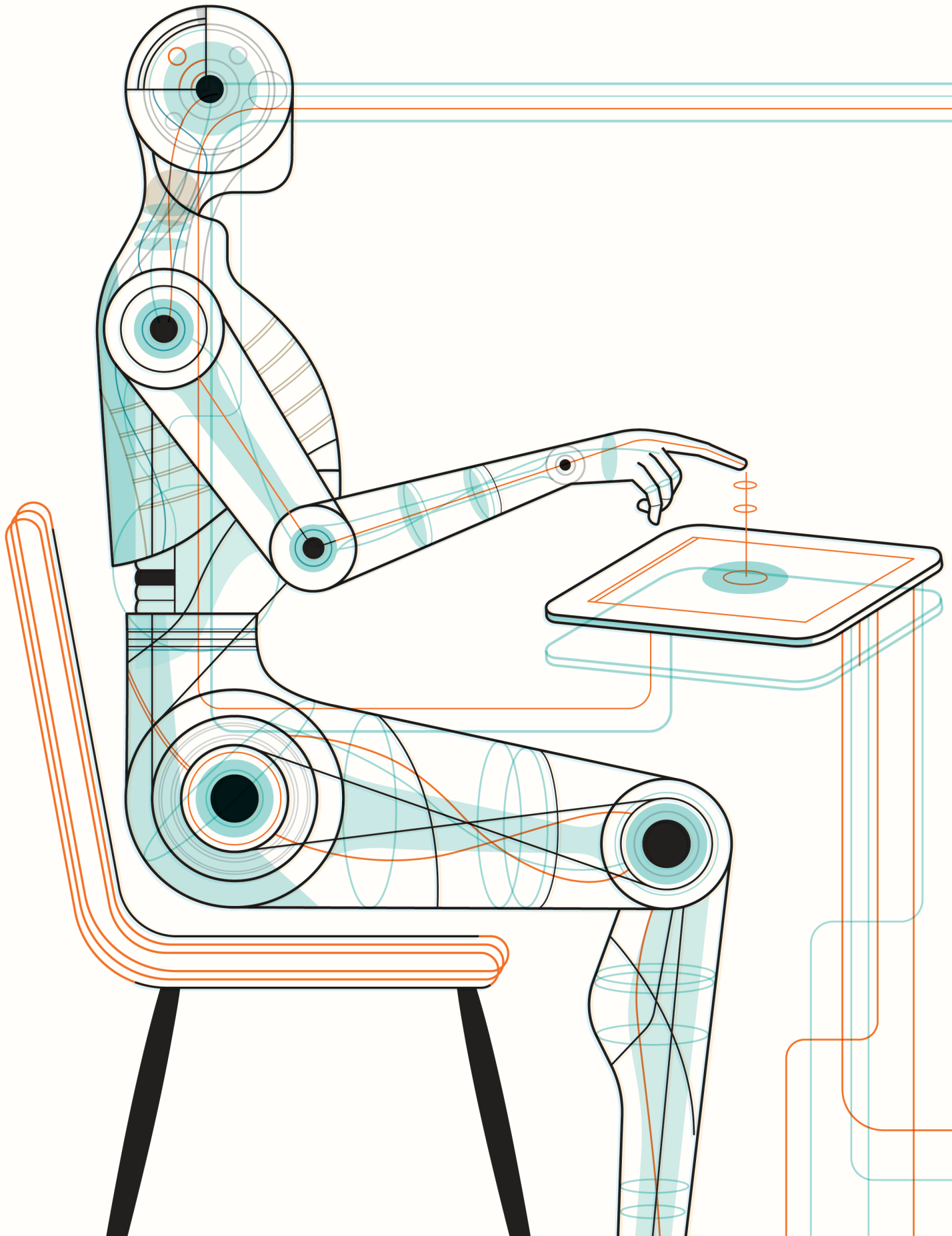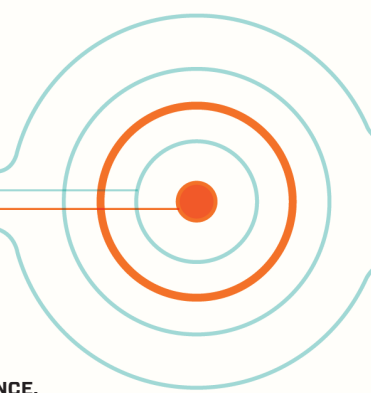
ARTIFICIAL INTELLIGENCE, commonly known as AI, has the potential to impact everything that humans do, from completing everyday tasks to implementing business strategy. The rapid rise in the development and use of AI means that the next generation of business leaders must understand its function, its benefits, and its ethical implications. In fact, a survey by the Graduate Management Admission Council finds that slightly more than 70 percent of employers plan to hire business school graduates who have a knowledge of AI so they can fill data analytics roles. Therefore, it's no surprise that interest in master's programs in data analytics has doubled in the past five years, according to GMAC.

AI AT THE B-SCHOOL

Even schools that are teaching AI in the classroom could do more to take advantage of this powerful technology.

BY STEVE MUYLLE   ILLUSTRATION BY HARRY CAMPBELL

But business leaders aren't the only ones who have to be on top of AI. Business schools, too, should be incorporating it into their own systems and processes. However, even schools that are teaching the theory and application of AI might not be practicing what they preach. Based on my experience in designing and delivering learning journeys on digital strategy for businesses, I see three primary areas where AI could be implemented to profoundly improve business school operations.

1 STUDENT RECRUITMENT

Social media companies already use algorithms to target users with advertising. Similarly, business schools could use AI to identify the best potential applicants for their programs. Schools could use AI algorithms to analyze publicly available data and information posted on social media; in this way, they could scan, evaluate, and identify people who could be good candidates for their programs, before students even begin the application process. For example, they could target people who require a specific skill to progress in their careers—a skill that the business school specializes in teaching.

But AI can be helpful to admissions officers well beyond the initial recruitment process. For instance, during the interview stage, AI can be used to analyze the enthusiasm of potential students. AI can record phone calls and interviews to evaluate the applicants' speaking patterns and facial expressions to gauge how positively they are responding to the recruitment officers. This fascinating and innovative use of AI will help administrators identify the candidates who are most interested in their schools' programs, which will save recruitment officers a lot of time.

This technology, which already exists, also can help schools shape their future admissions processes. As they monitor applicant interviews, AI programs can determine which phrases and conversational points spark the most interest and enthusiasm in applicants, showing recruitment officers what to focus on in future recruitment interviews.

After students are admitted, administrators can use AI to help students customize their courses by inputting data about each individual's career path, ideal way of learning, and desired skill sets. With this information, AI algorithms could quickly identify which course of study would benefit each student the most, whether it's an MBA, a master's degree, a credential program, or even specific electives and modules.

2 CLASSROOM TEACHING

While some critics fear that AI could ultimately end the role of the professor altogether, it is more likely that AI will help professors make their teaching more efficient and more accessible to a larger audience. In business schools, AI is most likely to take the form of robo-assistants, which are programmed with professors' knowledge and expertise and then made available to answer students' questions in specific courses. Unlike their human counterparts, robo-assistants don't need to take time off—they are available 24/7. This availability is especially convenient for students who are working professionals, as they are likely to be studying during evenings and weekends.

A case in point is Ashok Goel's Knowledge Based Artificial Intelligence course offered in Georgia Tech's online master of science in computer science program. In 2016, to help him answer questions from the approximately 300 students in the class, Goel and a team of Georgia Tech graduate students began building a virtual teaching assistant. The assistant, whom they created by tapping into IBM's open developer platform, was named Jill Watson. (Read more at www.news.gatech.edu/2016/05/09/ artificial-intelligence-course-creates-ai-teaching-assistant). Jill has since evolved into two AI instructors that complement about a dozen human assistants who help Goel run the course.

(See www.news.gatech.edu/2017/01/09/ jill-watson-round-three.)

As Goel found, robo-assistants can be beneficial in large classes, where it is often difficult for students to have regular one-on-one meetings with their professors. Because the AI assistant knows everything the professor knows, I predict that students soon will find that speaking to the AI assistant is similar to speaking to the professor. Robo-assistants can deliver quicker and more efficient responses than a lone professor, which will allow schools to serve a larger number of students while offering them even more personalized attention.

I expect to see even more AI innovations in the classroom of the future. It's likely that AI algorithms will be used to aid professors in time-consuming tasks such as teaching the basics of any discipline or grading routine tests. For example, about five years ago, Arizona State in Tempe teamed up with adaptive learning company Knewton to create computer-based courses that would see students through their general education requirements such as college math. (Read more at www.scientificamerican.com/article/how-big-data-taking-teachers-out-lecturing-business/). The school now works with several vendors to use AI in a number of classes, including classes for business students, according to Arthur Blakemore, professor of economics and vice provost for student success.

With more development, AI programs could become student advisors that analyze students' work to determine the areas where they have insufficient knowledge, then supply links to educational resources that the school provides.

3 CAREER CONNECTIONS

Finally, once students have graduated, AI can be a resource for both schools and alumni—particularly in the area of lifelong learning. By gathering data from alumni on their career paths, aspirations, and current employers, AI can

AI CAN BE A FANTASTIC TOOL FOR BUSINESS SCHOOLS, BUT ONLY WHEN IT IS USED ETHICALLY.
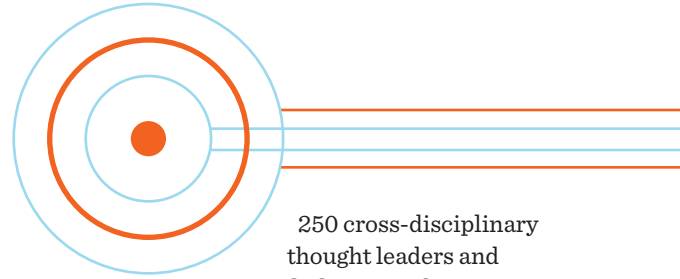
identify the skills that alumni will need to succeed in their careers. AI also can direct alums to tailored, personalized programs or even short courses and relevant learning content offered by the business school.

At the same time, AI can be used to pair current students or recent graduates with alumni who have experience in certain fields and can act as mentors. AI also can help alumni network with each other to find jobs, launch joint ventures, or secure freelance work.

Additionally, administrators can use AI to keep current with the skill sets that are required by various employers. This will enable schools to offer companies more relevant executive programs.

GETTING STARTED

At this moment in time, many of these functions already are being handled by AI algorithms. For instance, a number of business schools that have online programs use AI to monitor conversations with applicants to track their success. In addition to Georgia Tech, a few schools have experimented with AI to provide robo-assistants and sophisticated chatbots that interact with participants to support professors in specialized courses.

However, few schools can implement AI processes on their own. Those that want to integrate AI into their education practices can turn to outside companies—whether these are edtech startups or tech giants such as Amazon, Google, and IBM. Schools that want to find the best possible edtech for their needs might seek the support of an online education partner to bring in the necessary AI expertise and connections. It makes sense for schools to outsource

their AI requirements, because these outside partners tend to have the most up-to-date and innovative AI available. At my own institution, Vlerick Business School in Belgium, we selected an online education partner that can bring in AI capabilities based on its experience in the U.S. market.

Schools that decide to implement AI into their administrative functions must be careful to meet legal standards. In the European Union, for instance, institutions must comply with the General Data Protection Regulation (GDPR), which outlines data protection and privacy standards for everyone within the EU. Under GDPR, as institutions gather data, they must gain permission of students or applicants at each separate step. They must ask candidates to opt in, not expect them to speak up if they want to opt out. For instance, before recording and monitoring a phone or video interview, administrators must explain why they want to make the recording and give the candidate an opportunity to decline.

But it's important for all schools—not just those governed by GDPR—to use information ethically. AI can be a fantastic tool for business schools, but only when it is used in an ethical manner. At Vlerick Business School, I run a digital strategy program in which I discuss all aspects of AI, from the tools that are available to the ethical practices that should be followed. One tool I use is the ethically aligned design treatise proposed by the Institute of Electrical and Electronics Engineers (ethicsinaction.ieee.org).

The Ethically Aligned Design Treatise was created by more than

250 cross-disciplinary thought leaders and includes more than 100 pragmatic recommendations for users, policymakers, and academics who are involved with AI. As the treatise explains, "As the use and impact of autonomous and intelligent systems (A/IS) become pervasive, we need to establish societal and policy guidelines in order for such systems to remain human-centric, serving humanity's values and ethical principles. These systems have to behave in a way that is beneficial to people beyond reaching functional goals and addressing technical problems. This will allow for an elevated level of trust between people and technology that is needed for its fruitful, pervasive use in our daily lives."

At Vlerick, we agree. We want graduates not only to understand the impacts AI can have, but also to learn that it must be used for good.

WHAT'S AHEAD

It's clear that AI can be implemented successfully in all areas of a business school's administration, from recruiting to teaching to maintaining connections with graduates. For the time being, AI will not replace staff or professors; it will simply make their jobs easier and less time-consuming, so they can focus on more important tasks.

But if business school administrators are going to successfully deploy AI, they must experiment with it. They must input more data and update common processes so AI algorithms become more specific and efficient. If they do that, business schools will find themselves not only teaching AI at a world-leading level, but implementing it in ways that ensure a tailored, responsive, and high-quality educational experience.

Steve Muylle is a professor and partner at Vlerick Business School, which has campuses in Brussels, Ghent, and Leuven, Belgium. He also is the academic director of the school's online MBA.

Why more MBA programs should integrate
soft-skills training into their curricula.

THE CASE FOR SOFT SKILLS

TO LAND A JOB in a secure, lucrative leadership position, business school graduates once had to check off all the technical skill boxes. But these competencies are no longer enough to dazzle recruiters—and MBA students know it.

Today, it's the soft skills that are much in demand. Harvard, Yale, Columbia, Wharton, the London Business School, HEC Montreal, and many other business schools are offering courses that focus on the soft skills. For instance, at the Stanford Graduate School of Business in California, I teach "Leading with Mindfulness and Compassion," which covers how students can leverage teamwork, cooperation, mindfulness, and compassion to achieve personal fulfillment and success in their careers. The course is consistently waitlisted as 100 students hope to secure one of 30 spots in the class.

It's been at least since 1972 that some organizations began identifying and prizing soft skills. That's the year that the U.S. Continental Army Command used the phrase in a training manual, which defined soft skills as "job-related skills involving actions affecting primarily people and paper, e.g., inspecting troops, supervising office personnel, conducting studies, preparing maintenance reports, preparing efficiency reports, designing bridge structures."

Other organizations have labeled this set of competencies as "people skills," "essential skills," and "emotional intelligence." No matter what the term, it encompasses skills that are nontechnical in nature, such as teamwork, creativity, problem solving, and adaptability. In fact, the Graduate Management Admission Council has created an infographic called "10 Soft

BY LEAH WEISS
ILLUSTRATION BY
GWEN KERAVAL

STILL A GAP

Are MBA programs investing enough resources in the soft-skills development of their students? Maybe not, these figures suggest.

10% The percentage of 373 business schools that covered decision making in their required classes, according to a 2009 study by Robert Rubin and Erich Dierdorff of DePaul University.

59% The percentage of hiring managers responding to a 2016 LinkedIn survey who said they have trouble finding applicants with the right soft skills.

76% The percentage of employers who cited "the ability to work with people" as one of the skills they value most in employees. The figure comes from an August 31, 2017, article in the *Financial Times,* written by Jonathan Moules and Patricia Nilsson. The authors note that the five skills employers place highest on their list are not "core MBA subjects, such as finance and marketing, but more loosely defined qualities, or so-called soft skills."

97% The percentage of 400 HR and recruiting professionals who agree that "colleges and parents need to do a better job of teaching kids soft skills before they enter the workforce," according to a study conducted in 2017 by iCIMS, a provider of cloud-based talent acquisitions solutions.

Skills Needed for Career Success," in which it cites innovation, operational thinking, decision making, collaboration, interpersonal intuition, resilience, drive, strategic self-awareness, valuing others, and strategic vision as the skills that will ultimately shape the success of MBA graduates.

But why is soft-skills training so popular right now? One reason might be, as I've observed at Stanford, that today's students are rallying against the traditional fiercely competitive corporate culture. Another reason is that more employers than ever are demanding these skills. A 2016 survey in *The Wall Street Journal* found that 92 percent of executives consider soft skills and technical skills equally important. In its Job Outlook 2018 survey, which polled more than 200 employers, the National Association of Colleges and Employers found the skills employers most desire are problem solving, communication, and the ability to work in a team. LinkedIn confirmed the importance of these abilities in a 2016 survey of 291 hiring managers, where 58 percent of the respondents stated that the lack of soft skills in leadership greatly limits company productivity levels.

COMPOUNDED RETURNS

Why do firms care about soft skills? Because employees who possess them can directly impact a company's bottom line. The Indian Department of International Development recently evaluated the impact of soft-skill training on factory garment workers in Bengaluru. Researchers Achyuta Adhvaryu, Namrata Kala, and Anant Nyshadham followed nine months of such training and found that the net return was approximately 250 percent.

Individuals who develop soft skills also tend to reap personal rewards and be happier. A 1992 article from Massey University, "On the relation between meaning in life and psychological well-being," shows that when an organization is built around a sense of purpose, employees experience more satisfaction,

greater psychological well-being, and deeper emotional ties with others; at the same time, they feel less psychological distress, negativity, anxiety, and depression. And organizations that promote increased communication and teamwork among their employees go a long way toward fostering cultures of creativity and purpose.

In some contexts, soft skills are emerging as being not just on par with technical skills, but even more important. Education writer Valerie Strauss at *The Washington Post* recently reported on insights from Google's Project Oxygen, which tracked trends in the company's hiring and firing practices. The seven top characteristics of success at Google, Strauss writes, are all soft skills: "being a good coach; communicating and listening well; possessing insights into others (including others' different values and points of view); having empathy toward and being supportive of one's colleagues; being a good critical thinker and problem solver; and being able to make connections across complex ideas." According to Project Oxygen's findings, science, technology, education, and mathematics surprisingly ranked last in terms of importance.

And that demand for soft skills is only likely to grow. According to the 2017 Deloitte Global Human Capital Trends report, a study of more than 10,000 HR participants, companies are actively seeking to assemble adaptable and "team-centric" workplace teams in order to meet future needs. The report states, "New organizational models also require a new approach to leadership. Leaders of networked teams in agile organizations require such skills as negotiation, resilience, and systems thinking."

SOFT SKILLS IN CLASS

Business schools have taken note of the demand for soft skills, and many are responding with their own courses. For instance, the Yale School of Management in New Haven, Connecticut, recently introduced "Global Virtual Teams,"

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which focuses on teamwork, particularly in asynchronous environments where people use technology to connect across time zones and cultures. "One of the big problems global teams face is in how they hand off and coordinate information—when you're not always working together in real time," notes professor Amy Wrzesniewski in an article on Yale's website. "You need to be sure the team has what it needs to execute without interruptions, questions, or delays."

Columbia Business School in New York City offers the Leadership Lab, in which "activities are grounded in a proven blend of empirical assessment, experiential learning, and executive coaching," according to the school's website. The combination helps students sharpen their self-awareness, judgment, and decision-making skills, while expanding their abilities to solve problems.

Soft skills also are highlighted at Hult International Business School, which has locations in the U.S., the U.K., the UAE, and China. A few years ago,

the Hult School redesigned its MBA program to focus more on traits such as self-awareness, cross-cultural competency, teamwork, critical thinking, and communication. The school identified these competencies after conducting interviews with 90 C-suite executives, managers, and academics. Through its think tank Hult Labs, the school also released a white paper on its findings, called "The Future of Business Education & the Needs of Employers." One observation: "The needs of employers are changing constantly, and business schools have no choice but to respond if they want to stay relevant."

At Stanford, the Graduate School of Business offers a course called Interpersonal Dynamics, which students affectionately call the "touchy-feely" course. This is in addition to my own course on mindfulness and compassion. Both of these courses offer lessons that are far more substantial than their names might imply. (See "A Softer Experience" below.)

MORE WORK AHEAD

The case for investment in soft skills is hard to dispute: Employers express a strong demand for them, and both companies and individuals see positive returns when those skills are developed. Yet many MBA programs don't do enough to teach these competencies to their students. (See "Still a Gap" on page 42.)

It seems clear that technical skill sets alone will not fulfill the talent needs of top employers. To stay relevant, business schools will need to offer more courses that provide students with a deep understanding of how to apply soft skills to their future careers. ▣

Leah Weiss is a lecturer in management at Stanford Graduate School of Business in California and a founder of Stanford's Compassion Cultivation Program. She also directs Compassion Education and Scholarship at HopeLab, an Omidyar Group research and development nonprofit focused on resilience. Her book How We Work *was published in March 2018.*

A SOFTER EXPERIENCE

For any workshop or consulting project, I find that one of the most effective ways to teach soft-skills development is to create hands-on exercises. In one such exercise, I point out that everyone we meet throughout our lifetimes knows some part of us. Sometimes the people we have forgotten about or do not pay much attention to can offer the best perspectives on our past, current, and future life goals.

Therefore, I ask students to send a letter, survey, or quick email to people they have met during the course of their lives. These could include childhood friends, current colleagues, and former bosses or mentors. In the letter, they ask a few key questions, often individualized to their own situations. A few sample questions might include:

■ What would you think if I no longer existed?

■ What might you miss about me if I didn't work with you anymore?

■ What are some of the biggest contributions I have made at work during my time with you?

■ What do you think I am good at? What am I bad at?

Once students obtain replies, I ask them to find common themes from these responses, and we build on soft-skill development from there.

Something else I find effective in these workshops is to tie exercises to participants' lives. I often ask both students and business leaders to bring in items that relate to what's happening in their lives right now. New experiences often emerge from current or older situations. As we discuss the examples that illustrate what's happening in the present, we often can find how these situations are rooted in the past.

In my experience, the best way to drive home key points is to hold a class discussion and then follow that up with an exercise such as reflective writing or meditation. Research shows it's helpful to engage students in real-life situations to act out various scenarios. I've also found that, to be most effective, education needs to combine a variety of experiences to create a result customized to every student.

Increasing Adjunct Engagement

BY RUTH GUTHRIE AND CHERYL WYRICK

? **THE CHALLENGE:** In the U.S., the six-year graduation rate of undergraduate students currently stands at 59 percent for public institutions. Research shows that retention and graduation rates improve when students are engaged in the classroom and feel a sense of belonging on campus. Both engagement and belonging are enhanced by faculty interactions—but at many schools today, freshmen receive up to half of their instruction from adjunct faculty. These adjuncts often do not have a close connection to the school themselves, so they can't foster it in their students; and few of them have been trained in the high-impact teaching methods that keep students engaged in the classroom. For these reasons, we know we need to make adjuncts feel just as connected to our school as our full-time faculty.

OUR BACKGROUND:

At California State University (CSU), which has 475,000 students across 23 campuses, the graduation rate for first-time freshmen is about average: 57 percent. But through the Graduation Initiative 2025 (GI 25), the CSU Chancellor's Office has set a goal for reaching a six-year graduation rate of 70 percent within the next seven years. At the same time, CSU seeks to improve the four-year graduation rate of transfer students from 73 percent to 85 percent.

The College of Business Administration (CBA) at California State Polytechnic University in Pomona can be proud of its six-year graduation rate for first-time freshmen, which stands at 66

percent. However, our four-year graduation rate is only 23 percent.

The reasons for this low rate are complex. Our school is made up of about 5,000 students drawn from our diverse, urban area. Half of our students are transfers from community college, and they usually work more than 20 hours a week. In 2016, 42 percent of the entering students had high financial need. In addition, many of our students switch to the business program after performing poorly in courses that will not count toward a business degree.

But that's only part of the equation. At Cal Poly Pomona, as at many universities, adjuncts are teaching a significant

portion of our classes. During the 2007–2009 recession, the CSU system instituted a hiring freeze and required faculty to take furlough days to reduce costs. At the CBA, the percentage of full-time faculty dropped from 67 percent in 2008 to 50 percent in 2016. Today, faculty retirements and attrition are making it difficult to improve tenure density. The result is that about half of our students are being taught by adjunct faculty.

Research indicates that adjuncts may not do as well as full-time faculty in improving graduation and retention rates. Not only do adjunct faculty generally spend less time preparing for class, they also spend less time inter-

We believe there are five key steps involved in making adjuncts feel more engaged with the school and more committed to improving student success rates:

Inform adjunct faculty about the problem. At most schools, committees and discussions devoted to student success rarely include adjuncts, and information about how to improve retention and graduation rates is infrequently communicated to them. If adjuncts are made aware of the problems and asked for their input, they not only will feel more invested in the school, they might also have creative ideas for how to improve student success rates. In addition, adjuncts might be more motivated to include high-impact teaching practices in their own classrooms once they know how much student success hinges on their own teaching.

Provide adjuncts easy access to student support information. For adjuncts to be able to direct struggling students to the proper campus resources, they first must possess the information themselves. They need to know about free campus tutoring services, psychological services, advising services, student clubs, the student writing center, the career center, and financial aid opportunities.

Build adjunct-student relationships. We know that students feel more connected to the school when they participate in advising opportunities, get involved in co-curricular activities, or are required to attend campus events. Adjuncts, too, will feel more connected to the school if they are encouraged to advise students, participate in student clubs, or attend school events. When adjuncts feel a deeper bond with the school, they can draw on that bond to help students develop the same sense of belonging.

acting with students, which means they are not helping students develop a sense of belonging on campus. In addition, according to a national study conducted by Roger Baldwin and Matthew Wawrzynski, adjuncts use fewer student-centered teaching methods and give more multiple-choice exams, which are less engaging ways for students to learn. This is concerning because adjuncts often teach large class sections to freshmen—the very group of students that the college is seeking to engage.

Finally, adjuncts might have difficulty fostering a sense of connection between students and the university because they often do not feel that connection them-selves. Studies frequently show that adjuncts feel isolated and excluded from the colleges where they work. As noted in AACSB's accreditation standards, adjuncts do not typically "participate in the intellectual or operational life of the school beyond the direct performance of teaching responsibilities." Unlike tenure-track faculty, they are not always aware of the college's mission, vision, and values.

At Cal Poly Pomona's CBA, our goal is twofold: We want to improve student success and graduation rates, and we want to accomplish this in part by making sure adjuncts are better teachers who feel a strong bond with the school.

Reward behaviors that promote student success. Professional development is not always available to adjunct faculty, and when it is, adjuncts do not always know about it. If schools encourage faculty to learn more about high-impact teaching practices, and compensate adjuncts for their time and effort, adjuncts will quickly see how much importance the administration places on student success.

Measure the impact adjunct faculty have had on improving student success. Having quantifiable numbers for student retention and graduation rates can help administrators identify where problems exist and show them where particular efforts have failed or succeeded. Moreover, when administrators can prove a positive impact, they can obtain more resources to direct toward student success initiatives, and they can gain more faculty buy-in.

HOW WE DO IT:

At Cal Poly Pomona, we are focused on following those five steps. In the CSU system, the expectation is that adjunct faculty primarily will teach. The campuses are unionized, so any time adjuncts participate in service activities or attend extra events on campus, they need to be compensated. Nonetheless, administrators are working to improve student success by providing professional development opportunities equally to full-time and adjunct faculty.

For instance, the CSU Chancellor's office has several programs that faculty can participate in if they need help revamping courses that have high fail rates. In addition, faculty who teach online or hybrid courses are encouraged to become Quality Matters (QM) certified, ensuring that anyone teaching in the digital space meets a certain standard of quality. Faculty teaching in our master's program receive a stipend for attaining the QM certification. They also are required to provide a report demonstrating that, as a result of their additional training, student learning has improved and pass rates are higher.

Adjuncts also can go to Cal Poly Pomona's Faculty Center for Professional Development to take workshops on topics such as high-impact teaching practices. A few adjuncts participate at a very high level and are recognized leaders in areas such as accessibility and QM.

However, only 10 percent of the business faculty who participate in events at the faculty center are adjuncts. We know there are many reasons for their low participation. The adjuncts who hold positions at several universities might not have the time; those who are graduate students might not have the interest. Those who are retired executives want to give back by sharing their knowledge, but they also have many other demands on their time. At Cal Poly Pomona, 60 percent of the CBA adjuncts have significant outside employment, which makes it impossible for them to participate in daytime faculty development programs.

Nonetheless, the CBA is implementing three new approaches to engaging adjunct faculty in student success:

Providing comprehensive information. Our Freshman Year Experience course not only teaches students how to thrive in college, but also introduces them to business concepts. Adjunct faculty who teach this course must be familiar with campus support services and the opportunities available to first-time freshmen. They also must have a broad knowledge of business. To help adjuncts teach this course, the CBA has created an online repository of support information.
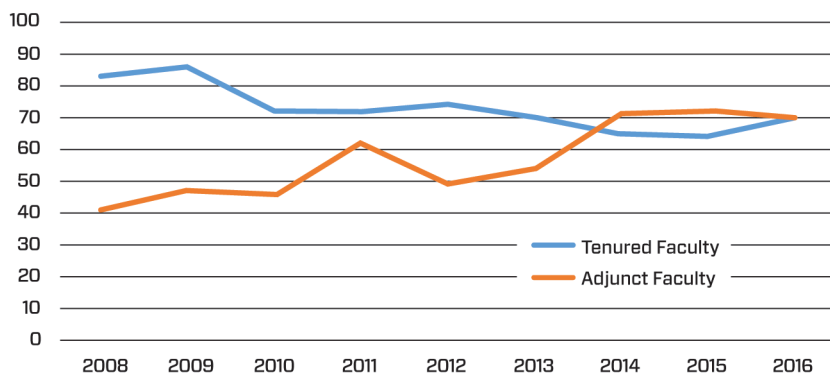
FACULTY HEAD COUNT

Between 2008 and 2016, the number of adjunct faculty began to equal and sometimes exceed the number of tenured faculty at Cal Poly Pomona's College of Business Administration (see graph above). The school began to consider how it could make adjuncts feel as invested in the school as their full-time counterparts, so that the adjuncts, in turn, could help students feel more connected to the school.

Tracking activity. The CBA also is in the process of implementing Digital Measures activity tracking specifically for adjuncts. Adjuncts will attend an orientation session that will familiarize them with the available materials, the best ways to promote student success, and the goals of GI 2025. This session also will provide an opportunity for adjunct faculty to meet each other and begin building a community.

Recognizing leaders. The CBA is planning three annual awards for adjunct faculty: one for promoting student achievement; one for exceptional teaching, especially in the areas of innovation and technology; and one for scholarship, designed for adjuncts who bring their research into the classroom. The recognitions will come with monetary awards.

WHAT'S NEXT:

Even with these efforts, we are not compensating adjuncts for higher levels of involvement. If we had adequate funding, we could pay faculty to participate in advising, internships, and course development, as well as attend courses on high-impact teaching practices.

But a more valuable goal would be to inspire adjuncts to become more invested in the college mission. To accomplish this would require a radical change in a culture that currently ignores the potential of adjuncts to make an impact on student learning and retention.

The issues of tenure density and student success are more interrelated than many administrators realize. If, as seems likely, adjuncts continue to make up a large portion of the business school faculty, administrators will need to build the connection these teachers feel with their colleges and universities. Only then will they see improved outcomes in student success. ◼

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Education in a 'Jetsons' World

WE MUST PREPARE STUDENTS FOR A NEW-COLLAR ECONOMY.

BY KARTHIK KANNAN

THIS ECONOMY IS almost exactly the one we were promised. Decades ago, when we imagined the future, the world looked like the one depicted in "The Jetsons," where people commuted to work in flying cars and managed robots from their desks by hitting an array of multi-hued buttons. Admittedly, we don't yet have flying cars (though we may soon have autonomous ones). But the Jetsons-esque world we dreamt of is finally being realized.

So why are we unprepared? As director of Purdue University's business information and analytics center, I spend much of my time ruminating on technology's effect on the future of business and the workforce. I believe that companies' desire for cost-cutting, combined with advances in artificial intelligence (AI) and machine learning, will dramatically increase automation, leading to a sharp decline in jobs. In fact, in its 2018 "The Future of Jobs" report, the World Economic Forum predicts that by 2022, 75 million jobs will be lost as a consequence of automation.

Most of these lost jobs will belong to blue-collar workers in the manufacturing sector. But, as autonomous cars become more commonplace and AI grows more sophisticated, even truck drivers and financial advisors could end up almost extinct.

It's encouraging to learn that the World Economic Forum also expects that 133 million new jobs eventually will be created by automation. But where will these job opportunities be? The answer will depend on the level of job. Blue-collar jobs will be replaced by "new-collar" jobs, a term made popular by IBM CEO Ginni Rometty to describe positions that don't require a four-year degree but take a certain amount of technical or vocational training. At the same time, white-collar workers will be pressed to learn to use technology to create value for their organizations.

But even if many of tomorrow's workers won't need four-year degrees, our universities won't suddenly become obsolete. Future workers will simply need different skills than today's college courses emphasize—and that means that we need to change the skills we teach.

THE BLUE-TO-NEW SKILLS GAP

In August, CNBC reported that there are approximately 6.56 million unemployed workers, while there also are approximately 6.6 million unfilled jobs. The problem is that the workers available don't have the technological skills the unfilled jobs require. More than 50 percent of Business Roundtable's members report that talent gaps are already "problematic or very problematic" for their companies. IBM alone needs to fill 25,000 positions in the next four years.

But here's the good news: Companies have been partnering with educational

institutions to launch abbreviated training programs to create a steady pipeline of talent. For example, Microsoft has given US$25 million to fund Skillful, a program that fosters skills-based hiring, training, and education. And Rometty led IBM to invest $1 billion in initiatives such as Pathways in Technology Early College High School (P-TECH), a six-year public high school that first opened in Brooklyn, New York, in 2011. Through the P-TECH model, students receive four years of high school education plus two years of college courses that prepare them for new-collar careers. Currently, 110 P-TECH schools are open in the U.S.

The creation of new-collar jobs will offset job losses caused by automation, but workers must be trained to fill those positions. Companies and academic institutions must promote awareness of short-duration programs and remove any stigma around vocational training.

THE WHITE-COLLAR SHIFT

For white-collar workers, the future economy will value four higher-level skills: coding, analytics, design, and interpersonal. Workers with coding and analytics skills will interact more with machines and systems than with people, as they create digital products and experiences. Workers with design and interpersonal skills will help companies understand these products and experiences in the context of people's daily lives.

And new kinds of jobs are continually being created, such as "foresight engineers" who anticipate people's future needs and design entirely new ways for them to do business with each other and with machines. Technological expertise will be in demand even in previously non-tech jobs, like caregiving.

Over the next few years, we'll continue to see an increased demand for workers with backgrounds in coding and analytics. But four to five years from now, I predict that people with design and interpersonal skills will be more sought-after in the job market.

WHAT'S A B-SCHOOL TO DO?

Without a doubt, higher education must adapt to these changing trends. We must realize that the future of innovation is not only in problem *solving;* it's also in problem *finding.* Workers who can identify opportunities for new products, better processes, and faster services will keep the economy moving.

Unfortunately, in education, we place extensive emphasis on problem solving. When we ask students to address a deep business or organizational problem, they almost always begin the conversation with solutions: "We can do this, and this, and this." They don't first consider why the problem even manifests.

To be fair, we must develop students' problem-solving skills in the early stages of education. But as students mature, they must understand that every business solution ultimately benefits humans. Only when students are mindful of human instincts and their consequences will they become adept at detecting problems that organizations might not yet know exist.

At Purdue, I teach a course called Design for Instincts: Social Networks and Engagements, in which students learn a concept I call "instinctual appeal." This refers to the act of understanding human instincts and biases in order to spot potential problems more easily. With this understanding, students learn how to nudge human behavior and design better products, processes, and policies.

In every class meeting, students complete a game, exercise, or fieldwork in which they evaluate alternatives and design solutions with instinctual appeal in mind. In one assignment, for example, students interview shoppers in a mall, before designing a clothing retail business to appeal to today's customers.

Another exercise is inspired by the Red Balloon Challenge, conducted in 2009 by the U.S. Defense Advanced Research Projects Agency (DARPA). For the challenge, DARPA distributed ten balloons across the United States.

The agency then invited teams to locate all ten balloons as quickly as possible by using the geographically distributed knowledge of their online social networks. A team from the Massachusetts Institute of Technology took only nine hours to locate all ten balloons, winning the $40,000 grand prize. In my version, I hide pieces of information—in this case, ten pictures of a duck—across campus. Students ask people in their social networks across the Purdue community to help them find the pictures. The team that finds all ten pictures first wins a more modest prize of $100. The exercise is a way for students to learn to tap, as DARPA describes it, "timely communication, wide-area team-building, and urgent mobilization … to solve broad-scope, time-critical problems."

Our students will need far more experiential learning opportunities like this if they are to succeed in a new-collar economy. So far, my students have applied what they've learned in many ways after graduation. One has redesigned the way badminton championship games are scored in India; others have designed new customer engagement systems for Fortune 500 companies.

If we adapt our educational models, we'll give students a path to success and financial stability, we'll give businesses a deep pool of talent, and we'll position our institutions to thrive in a global landscape. We'll help industries boom and evolve rather than stutter or die.

Then, all we'll need to complete the picture are the flying cars. ◨

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Christine Porath of Georgetown University speaks at a recent TEDx talk organized by the University of Nevada Reno.

More Than Just Talk

TAP TEDX TO DELIVER FACULTY INSIGHTS TO GLOBAL AUDIENCES.

BY BRET SIMMONS AND JEFFREY A. WONG

TED TALKS—CONFERENCES and online videos focused on technology, entertainment, and design—bill themselves as promoting "ideas worth spreading." Over the years, they have provided millions of people with insights into creativity, motivation, statistics, and other topics. Universities and other nonprofits have adopted the same model with sponsored TEDx programs that allow organizations to share knowledge and ideas from their own fields.

For business schools, TEDx programs offer a chance to create impact on their communities, improve engagement with stakeholders, and promote innovation in their regions—in other words, to support the three pillars of AACSB International's mission.

Impact, engagement, and innovation were among the goals we had in mind at the University of Nevada Reno (UNR) when we organized our inaugural TEDx event in January 2013. As we held that first TEDxUniversityofNevada presentation in a small campus theater for an audience of 100, we didn't know how much our audiences would grow, both in-person and online. By comparison, our January 2018 event was presented at the Reno-Sparks Convention Center for an au-

dience of 1,300, and the 120 videos we've posted from our six events have been viewed online 42 million times. Some of the talks have been translated into 32 languages. This exposure has given our College of Business truly global reach.

We've grown in scale and sophistication as well. When our dean, Greg Mosier, helped us launch that first talk, we funded the whole event with ticket sales and a US$15,000 donation from our EMBA program. Our organizing team consisted mainly of students and staff from the College of Business. For our 2018 event, 30 community sponsors joined the College of Business to help us cover a budget of more than $100,000, and about half of the 50-plus people

on our organizing team came from the Reno-Sparks business community.

Organizing a TEDx talk can be both challenging and rewarding for a university. In our experience, schools can pave the way to a successful and sustainable series by following these three steps:

Realize that TEDx is a licensed event. It's a prerequisite for administrators at your school to thoroughly read the licensing rules provided at TED.com, which explain everything you need to know.

Start small, but dream big. For all organizers who obtain a license, the size of the first event is limited to 100 attendees. We knew we would have to pursue a growth strategy for TEDxUniversityofNevada if we wanted to create a sustainable event. We also knew there was probably a limited supply of great local people with "ideas worth spreading." Therefore, we strove to create a destination event that would bring in speakers from all over the world. So far, we have hosted speakers from the U.S., Canada, Mexico, and the U.K. While our talks have addressed a broad spectrum of ideas, every year we try to include a few presenters who focus on business-related issues.

Secure administrative support. Organizing a TEDx event is a lot of work and leadership buy-in is important. At our school, the dean gives the organizers credit for service productivity and even intellectual contributions, and the events wouldn't be possible without his backing.

After six years of experience, we've compiled this advice for professors interested in participating in TEDx events:

Understand the format. A TED talk is very different from a standard academic presentation. First, it's a maximum of 18 minutes. Second, it will be delivered to an audience that is largely unfamiliar with the professor's area of research expertise or even the extant literature.

For TEDxUniversityofNevada

events, we seek out speakers who can clearly articulate compelling ideas, rather than "topics" for talks. These ideas should be as relevant to people living in Rotterdam or Seoul as they are to people in Reno. We tell our speakers to think first about the global issue, next about an innovative solution, and only then about a local example.

We also advise our speakers that they shouldn't approach the event as if they are giving a talk in front of a live audience and it happens to be recorded; they should approach it as if they are producing a video of a talk that is being broadcast to the world but also just happens to be in front of a live audience.

Look beyond your own campus. If your university is not organizing TEDx talks, see if other schools are. First check to see if your city, state, or region has hosted such events; if so, watch online videos to check out the quality. If you like what you see, contact the organizers and present your ideas. Many TEDx organizing teams are eager to work with accomplished academics who can translate complex research into easily understood ideas.

Make sure you're prepared! Most of the speaking we do as academics is neither scripted nor rehearsed, but a good TEDx talk is both. Consider hiring a coach to help you get ready. At the very least, ask for advice from other faculty who have done successful TEDx talks. For example, in 2017 Christine Porath of Georgetown University delivered an exceptional talk for us based on her civility research. She not only reached out to other speakers for advice, but also hired a professional company to help her develop her slides. That talk has now been published on TED.com and has been viewed more than 1 million times.

Is organizing a TEDx event worth all the time, effort, and preparation? For both universities and individual professors, we think the answer is yes. UNR is not the only school that has reached a

massive audience with its events. Hult International Business School hosted TEDxHultAshridge in September 2017. One of the talks from that event, "Why Driverless Cars Need Philosophers" by professor of entrepreneurship Alessandro Lanteri, has garnered more than 170,000 views.

In 2014, Amy Edmondson of Harvard's Graduate School of Education gave a TEDxHGSE talk on psychological safety in the workplace, and it has now been viewed more than 262,000 times. Speaking at the independently organized TEDxEast in 2013, Wharton's Adam Grant discussed powerless communication—and racked up more than 140,000 views. After Grant and Edmondson were invited to speak at the main TED events, their subsequent talks attracted nearly 13 million and more than 1 million views, respectively.

For UNR, the TEDx events bring together students, faculty, staff, and community members to consider ideas that originated in our university, in our community, and all over the world. We give audience members an experience they cannot get anywhere else. And as millions of people view our videos, we gain evidence that the rest of the world values the work we do locally.

So, here's an idea worth spreading: More AACSB-accredited institutions and faculty should be leveraging the TEDx global communication forum to help fulfill their missions and share their knowledge with audiences around the world.

Bret Simmons is an associate professor of management and Jeffrey A. Wong is a professor and chair of accounting at the College of Business at the University of Nevada Reno.

▶ **To view a TEDxUniversityofNevada video, visit www.ted.com/talks/christine_porath_why_being_nice_to_your_coworkers_is_good_for_business.**

Entrepreneurs on Ice

FOR MOST ENTREPRENEURS, it's a "trial by fire" to pitch their business plans in front of a panel of potential investors. But what if they must face a trial by ice? Oulu Business School (OBS) at the University of Oulu in Finland answers that question with its annual Polar Bear Pitching challenge, where entrepreneurs pitch to judges while immersed chest-deep in the freezing waters of the Baltic Sea.

OBS held its first Polar Bear Pitching challenge in February 2014, soon after the 2012 downfall of the Finnish mobile phone company Nokia. "Many former Nokia employees were establishing high-tech companies," says Mia Kemppaala, who then worked for OBS. "It was challenging for the engineers to communicate their innovations in simple and understandable ways."

That's when Kemppaala got the idea for Polar Bear Pitching. By having to make their pitches from the freezing water, founders would be forced to sharpen their presentation skills and focus on their core messages. The concept was inspired by the concept of *sisu,* which in Finnish refers to the idea of bravery and resilience in the face of adversity—attributes revered among Finns.

Finalists give their pitches after stepping into the "ice hole" cut into the frozen surface of the Baltic Sea. They can take as long as they like to make their presentations, pitching alone or in teams. However, they cannot wear wet suits, thermal suits, or neoprene; and they cannot use slides or props. Through words alone, they must present a clear message and demonstrate the value of their ideas.

The judges—ten to 12 venture capitalists, angels, and Oulu corporate partners—watch the presentations from shore. After completing their pitches, contestants leave the water to sit in an outdoor hot tub, where judges can ask further questions. The winning startup receives €10,000 (about US$11,380).

"Many participants train indoors in tubs filled with ice water, while others train outdoors," says Kemppaala. Since 2017, the semifinals also have been held the day before the finals, so that participants can have the opportunity to pitch from the ice hole, even if they don't make the final cut.

In its first year, the competition attracted 30 startups, most from Finland. Since 2015, the event has attracted participants from 20 different countries. Last year, 30 startups took part in the semifinals, and 12 in the finals.

It's not just startup founders who take the plunge. "We've had ambassadors from the United States and Canada, the foreign trade minister of Finland, and representatives from companies such as Nokia and JP Morgan" give presentations from the water, says Kemppaala. Last year, eco-entrepreneur Alan Laubsch, now CEO of Generation Blue, delivered a keynote speech from the ice hole on the importance of saving the world's mangrove trees, which are efficient synthesizers of carbon dioxide. Afterward, Laubsch called Polar Bear Pitching the "coolest pitch event in the world."

Today, the Polar Bear Pitch finals garner the attention of global media and are livestreamed to audiences around the world. However, the event extends beyond the pitches from the ice. It includes an indoor conference and trade show,

Left: Founders pitch their idea for Fineria, a builder of sustainable hybrid power generators, from the "ice hole" in 2016. Right: 2018 winner Tatsiana Zaretskaya pitches her idea for Artisun, which produces LED lights that maximize plant growth.
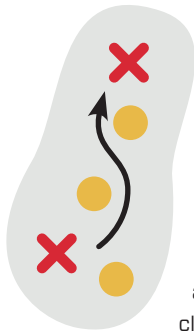
THE STORY BEHIND THE STRATEGY

workshops, and a post-finals networking party.

It also has become a learning opportunity for OBS students, who help organize the event. Faculty and staff members chip in to find sponsors, help with branding, organize workshops for the participants, or invite investors and other experts from their networks to attend.

In 2017, the event was named Finland's Best Startup Ecosystem Initiative by the Nordic Startup Awards. The school intends to expand the event into a global competition, in which participants who win qualification rounds around the world then travel to Finland to compete in a world championship. In 2019, Oulu Business School plans to hold qualification rounds in Norway, Japan, and possibly China. The 2019 finals will be held March 12–13.

"This fantastically bizarre event provides for huge engagement opportunities between students, faculty, and business representatives," says Kemppaala. "It has resulted in dozens of innovations that lead to true impact, not only in Northern Finland but also abroad."

▶ **To watch a video of highlights from the 2018 Polar Bear Pitching challenge, visit www.youtube.com/watch?v=PcKZ4IDS_XA. For more information, visit www.polarbearpitching.com.**

A powerful story can bring any business lesson to life. That's the theory that guides Damian Vaughn as he integrates a series of podcasts into his strategy class at the University of Oregon's Lundquist College of Business in Eugene.

"Great storytelling can enable learning by making insights more memorable and engaging," says Vaughn. "Great stories portray the vivid images of human experience, and they improve understanding far beyond a simple statement of fact."

In early 2018, Vaughn began using the podcast series "Business Wars," produced by podcast network Wondery, in his strategy class. The series focuses on well-known rivalries among iconic business competitors. "I assign the podcasts to be consumed over a two-week period in preparation for in-class discussion," says Vaughn. "We combine the podcast with an assigned reading of a published case on the protagonist brand." He makes sure he can tie the story to theory and models of strategic management.

For instance, in April, the class discussed a "Business Wars" episode about Netflix, Blockbuster, and HBO, which provided a "deeper and broader contextual layer to a published case study on Netflix," says Vaughn. He followed a similar approach with podcasts based on rivals Nike and Adidas. He devotes about six hours of live class discussion to learning from the podcasts.

The podcasts "illuminate the deeply personal side of business strategy by giving insights and perspective into the intentions, motivations, and visions of these brand leaders," says Vaughn. "In the context of a strategy course, Netflix is exemplary in that it tells a story of how a newcomer disrupts incumbent players in a highly competitive industry, changes movie culture, and develops a business model for the digital future. It also sheds light into how previously successful companies fail."

By contrast, he says, the case of "Nike versus Adidas" provides "a story of two colossal brands that capture the human spirit's longing to transcend its physical limits. The 'Nike versus Adidas' episode gives us a rich and engaging narrative on how brands shape a global culture of sport, fashion, and lifestyle."

The stories vividly bring to life the theories and models covered in class, Vaughn continues. "The learning is in the details. In our strategy course, we discover that managing strategy is not so much about the grand plan but the granularity of ensuring all of the activities across a firms' value chain are as integrated as possible to create a sustainable competitive advantage."

When choosing podcasts for the class, Vaughn looks for brilliant storytelling that illuminates the personal struggles of business leaders. The goal, he emphasizes, is for students not only to imagine what it would be like to be in the leaders' shoes, but also to envision a way forward from their own points of view. He looks for stories that weave business strategy with leadership dynamics and personal challenges.

Are podcasts particularly appealing to millennials and Gen Z'ers? Younger students certainly appreciate the on-demand nature of podcasts, Vaughn says; they also like the idea of multitasking while listening. But he thinks podcasting makes material accessible to a diverse range of learners—and that the key component is not the technology, but the story.

"The value of stories in teaching and learning transcends cultures, civilizations, ideologies, even academic disciplines," says Vaughn. "Whether these stories are produced and delivered by print, video, or audio, if they are rich in detail and insight into the characters and dilemmas involved, I don't think the age of the listener matters."

▶ **The "Business Wars" podcast can be found at wondery.com/shows/business-wars.**

Community Benefit

A CROSS-DISCIPLINARY HUB SUPPORTS STUDENT WORK WITH CLIENTS AND THE COMMUNITY.

ONE STAPLE AT many of today's business schools is the student consultancy project, in which cross-disciplinary student teams help real-world businesses solve pressing problems. But finding and coordinating a large number of such extracurricular projects can be a complex logistical challenge, says Jim Jones of the College of Business at Illinois State University in Normal—and it's equally challenging to find and organize the right students for each job.

"Clients would bring us projects requiring skills in risk management, statistics, agribusiness, computer science, and remote sensing, and we would spend a lot of time asking people if they knew students who would be right for the project," says Jones, who is the executive director of ISU's Katie School of Insurance. "It was inefficient and

time-consuming. We just wanted to have a central place for the campus community to direct faculty and students who were interested in doing innovative and cross-disciplinary client projects that impact organizations and society."

To streamline the process of finding and coordinating team projects, the school created its Innovation Consulting Community (ICC). The ICC comprises a dedicated team of coordinators, as well as a virtual hub where faculty, students, and corporate partners can more easily submit, find, and join cross-disciplinary projects. Once students are assigned to project teams, they are provided with mentorship and online learning modules to prepare them for their team project experiences.

Currently, eight faculty and staff from across the university volunteer

as ICC coordinators, including those from the College of Business as well as from the schools of applied science and technology, chemistry, and music. These volunteers also include Missy Nergard, the university's director of sustainability. Together, they identify projects and assign students to teams. Many times, the coordinators hear about potential projects through alumni, advisory board members, and faculty and staff who learn of opportunities as they interact with community organizations.

The ICC team often identifies faculty with similar research or teaching interests to act as mentors. Mentors are asked to meet with their teams once or twice in the fall and once every two weeks in the spring; they also regularly communicate with their teams via an agreed-upon online platform. Each men-

tor provides feedback, supports client management, and helps teams clarify goals and overcome obstacles that could delay project completion.

DRAWING ATTENTION

With this central system in place, ICC coordinators find it easier to bring attention to available projects. Each year, the ICC posts projects on its online hub in late summer to early fall. It also promotes them via ads in the student newspaper, presentations to individual classes and student organizations, articles on college websites, and email blasts targeting specific student populations. "We encourage mentor faculty to recruit students from past or current semesters they feel would have interest," says Peter Kaufman, an ICC coordinator and professor of marketing.

The ICC also plans to create a video highlighting the testimonials of students who have participated in the past, as a way to build awareness of the benefits of ICC participation.

When students read about projects that interest them, they can submit their résumés and project preferences online to ICC coordinators, who interview applicants and try to assign selected students to their first-choice projects. Projects without sufficient student interest will not be pursued. The ICC works with the university's legal counsel to work out any confidentiality or non-disclosure agreements and to explain to students what they can document on their résumés and LinkedIn profiles.

Once selected, students must complete brief online pass/fail modules before meeting with their teams later in the semester to plan for their work in the spring. Projects that are complex or that inspire follow-up projects will continue the following year, with one team passing its work to a new set of students. Students make final presentations of their recommendations to their clients at a year-end symposium, where corporate clients also can identify students they might want to interview for full-time jobs post-graduation.

IMPACT ON PRACTICE

All ICC projects are unpaid and extracurricular, explains Kaufman. This means that the main motivator for students to work as consultants is the opportunity to work on projects that tackle social causes they care about or areas of business that they otherwise would not be able to access. They also appreciate that each team is "student-run rather than instructor-managed," says Kaufman.

Some of the more unusual projects have been proposed by faculty members themselves. For instance, Joan Brehm, a professor of psychology, submitted a project related to her 20 years' experience training dogs to find missing persons during search-and-rescue missions. Brehm's project involved the McLean County Emergency Management Agency, where she volunteers as a K-9 handler. Brehm and ICC coordinator Nergard, who also is a K-9 handler, asked a student team to observe dog training sessions to determine whether trainers should redesign their current strategies with the dogs or follow a completely new protocol.

"We train them to detect odor X and perform behavior Y, and the dogs get rewarded. The dogs need to perform their alert in close proximity so we can direct forensics people where to look," Brehm says in an ISU news story. "We want to get students who come in without preconceived notions and who already think outside of the box."

For other projects, ICC student teams have assessed the market for electric mobility products; developed an app to map all university sustainability assets; and evaluated issues with autonomous vehicles, an important topic for local insurance companies. One team developed a social media promotion for a Major League Baseball team. After its completion, a team executive wrote to the ICC coordinators, noting that "the students not only provided our department with new and exciting ideas on how to target our millennial fan base, but also delivered concepts that were easy to act on—two of which have already been implemented this season."

One sustainability-focused project asked a team to explore options for recycling glass material not routinely accepted by traditional recyclers; the organization that submitted the project wanted to avoid having to ship old glass great distances, and its leaders were so pleased with students' recommendations that a follow-up project is underway, says Kaufman. Local construction companies are showing great interest in the results.

CROSS-CAMPUS ENGAGEMENT

While the ICC has no trouble finding intriguing projects for students to work on, it has found it challenging to sign up enough volunteer mentors every year. As one solution, ICC coordinators are planning to involve more local practitioners who are also ISU alumni. In addition, although clients currently provide the ICC with informal feedback about their experience working with student teams, the ICC plans to conduct more formal surveys to discover what clients do with students' work after project completion.

Since its launch three years ago, the ICC has assigned 149 students from more than 20 disciplines to work on 34 projects. This centralized initiative has become a vital way to attract more talented students from across campus to work as consultants, as well as foster engagement with industry in a mutually beneficial way, says Ajay Samant, dean of the ISU College of Business. Samant adds, "We view this as a step forward on the path to the continuous improvement of business education."

▶ **To read about the ICC, and learn more about its current and past projects, visit innovationconsulting.community.**

ideas in action

tools of the trade
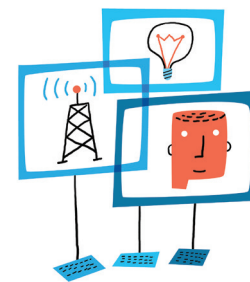
'21 DAYS' TO INNOVATION

Grenoble Ecole de Management (GEM) in France has developed "21 Days: The Innovation Quest," a new serious game designed to teach master's level and executive education students six dimensions of innovation. The game is inspired by research that indicates that it takes at least 21 days of repetitive activity for an individual to establish a new routine or learn a new skill.

In the game, players are stranded on a virtual island where they are given 21 tubes and a diary. Each day, they open a tube containing a scroll inscribed with that day's 15-minute mission, which they must complete using limited resources. Each mission is designed to teach a key component of innovative thinking. After 21 days, players will have completed six hours of training. The game is available in an online version or as a hard-copy board game, which looks similar to the Advent calendars used by many to count down the days until Christmas.

The board game is meant for executive education students, explains Hélène Michel, a professor at GEM who specializes in innovation management and the development of serious games. Michel mentions one group of managers at a large insurance company who have played the game as part of a group. "After each session, the board game is given to a new participant, so each game is travel-ing around the world. As the participants interact with the game, taking information and giving new information, they build a community of players sharing the same view on innovation," she says. "In game design, we say, 'You come for the game, you stay for the guild!'"

The digital version is meant for graduate-level students. In December of 2017, for example, 1,000 students in GEM's master of innovation management program played the virtual version of the game. The students received daily email notifications to complete that day's task.

Since then, developers have integrated "21 Days" into Microsoft Outlook's Calendar. When "21 Days" becomes part of the daily to-do tasks on each player's own calendar, "it aims to make innovation a routine," Michel emphasizes. The game acts as a behavioral "nudge," she adds, that encourages players to embrace and adopt more innovative behaviors and mindsets.

The first version of "21 Days" was developed in the OpenLab Ideas Laboratory, also based in the city of Grenoble, in collaboration with Low Tech Lab, a collaborative research project; Suez, a company that helps organizations manage resources more sustainably; and GEM's research Chair for Public Trust in Health.

Visit 21daysquest.com for more information.

CHANGING MINDS ON CLIMATE CHANGE

If research studies outlining the effects of climate change won't move people to save the planet, maybe a game will. That's the idea behind World Climate Simulation, an online game in which groups of people play the roles of U.N. delegates negotiating a global climate change agreement. The research-based simulation, which can last from 45 minutes to three hours, is intended to help everyone from high school students to executives develop critical thinking, systems thinking, communication, and negotiation skills.

John Sterman, a climate scientist and professor at the Massachusetts Institute of Technology's Sloan School of Management in Cambridge, is a co-creator of the game. He recently conducted research on the impact of the simulation with lead author Juliette Rooney-Varga, associate professor of environmental sciences at the University of Massachusetts in Lowell, and seven other co-authors. According to the study, which appeared in August 2018 in *PLOS ONE,* 81 percent of users who engaged in the role-playing simulation expressed an increased motivation to combat climate change.

Funded by the National Science Foundation, the World Climate Simulation has been used in institutions and organizations in 85 countries.

Visit www.climateinteractive.org/programs/ world-climate. Find a 60-minute webinar about running the simulation at vimeo.com/295678037.

OPEN SOURCE ON ALEXA

Canvas, an open online learning management system created by Instructure, has made the code for its Canvas Skill app for Amazon Alexa open source. Launched last year, Canvas Skill for Amazon Alexa enables users to link their Canvas accounts within the Alexa app so that they can ask Alexa for details about their courses. Canvas leaders hope that, by making the code open source, they will encourage the 350,000 members of their customer community to design their own applications to be deployed on Alexa. Such apps might focus on simplifying tasks such as providing feedback to learners or checking in on at-risk students. ▶

Students play the board game version of 21 Days.

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bookshelf

THE AI ADVANTAGE

Futurist Roy Amara stated that people tend to overestimate the effects of technology in the short run and underestimate them in the long run, and artificial intelligence embodies the truth of his observation. Babson's Thomas Davenport reports on what AI has accomplished so far, where it has failed, and where it might soon spectacularly succeed. While AI clearly offers value already, "much of that value isn't terribly sexy or visible," he says. He explains the different types of tech that commonly fall under the AI umbrella, explores the ways businesses are incorporating AI into their processes, and examines the ethical considerations of this powerful new technology. For instance, he says, "A new social credit system in China, which will be mandatory by 2020, is likely to punish consumers for political dissent." Still, most predictions for the future are still guesswork, he admits. "All we know for sure is that people won't do all the work in the future, and machines won't either." (MIT Press, US$29.95)
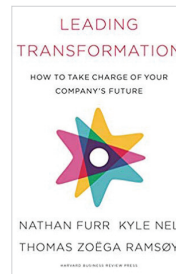
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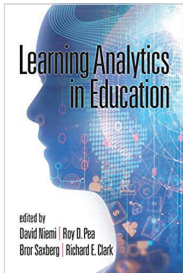
Changes in the way education is delivered, particularly online, have produced extraordinary amounts of data, but there is still much to discover about how analytics can improve the learning experience. Those issues are explored in this collection of essays edited by David Niemi of Kaplan Inc., Roy Pea of Stanford, Bror Saxberg of the Chan Zuckerberg Initiative, and Richard Clark of the University of Southern California. So far, there's little proof that access to data significantly improves education, write Niemi, Pea, and Philip Piety of the University of Maryland. "Simply because analytics can predict that certain groups of students are more likely than others to drop out of school, for example, doesn't mean that teachers or anyone else will know what to do about that." They believe that learning analytics must become a unified field that draws on insights from computer scientists, cognitive scientists, educational experts, and other groups. Contributors address topics that range from how learning analytics differs from other kinds of education data and how it can be used to improve academic persistence. A timely look at a topic of growing importance to higher education. (Information Age Publishing, US$45.99)

LEADING TRANSFORMATION

"Transformation may be one of the hardest things leaders are called on to do," note Nathan Furr of INSEAD, Kyle Nel of Uncommon Partners and formerly of Lowe's, and Thomas Zoëga Ramsøy of Copenhagen Business School. They describe how they transformed Lowe's from a second-place hardware retailer to a futuristic home renovation company that lets customers use 3-D and augmented reality tools to envision remodeling projects. While the authors relied on radical approaches—such as asking science fiction writers to imagine the company's future and presenting the information to executives in comic-book form—they offer three steps all business leaders can take to achieve transformation. They must develop a strategic narrative that tells a story about a reimagined future; they must break the bottlenecks, such as fear and resistance, that derail change; and they must design key performance indicators that let them know they are on the right track. "The future, as a fixed destination to be reached at some impending date, does not actually exist," they write. "The future only happens when someone takes action and creates it." (Harvard Business Press Review, US$32)

CHOOSING LEADERSHIP
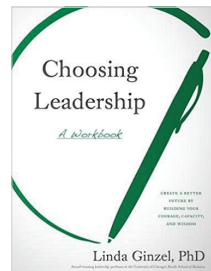
Linda Ginzel of the University of Chicago has created a practical workbook built around a core tenet: Leadership is a choice. "You make choices that will change the future, create better outcomes, generate more meaning, and help shape your future self." Her goal is to help people "unfreeze" from current limited views to more expansive and useful approaches that will allow them to continue to grow. She takes readers through a variety of thought-provoking exercises in which, for instance, they write their personal definitions of leadership,

describe their earliest experiences as leaders, or compose a commencement speech full of their own earned wisdom. In one exercise, she asks readers to articulate their foundational beliefs in a brief essay. "Understanding and communicating are key leadership skills," she explains. "When leading, you need to be able to recognize the gist of something and then be able to communicate that gist to your peers." The book is slim but full of powerful ideas. (B2Books, US$24.95)

HOW TO WASH A CHICKEN

Despite the fact that Tim Calkins does, in fact, open with an account of how to spruce up a chicken, his book is less about poultry and more about presentation. His goal is to help everyone, from student to business executive, become better at standing in front of people and delivering information. Calkins, a clinical professor at Northwestern, briskly lists the critical elements every presentation must have—such as a cover page, a purpose, an agenda, an executive summary, and a conclusion—but he also offers insights on the external factors that will affect a presentation's success. For instance, who is the intended audience—the CEO or the marketing staff? What do those people care about? When he worked for a manager who valued fresh thinking, he framed every suggestion as an innovation. "I was innovating on promotions, advertising, packaging design, and customer service. I had the most innovative team in the company." With both brevity and humor, Calkins shows anyone how to present in public. (Page Two Books, US$19.95)

DRIVING IT INNOVATION
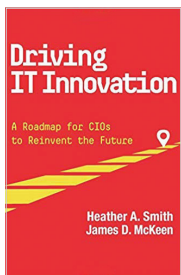
Because technology is critical for almost all innovation, write Heather Smith and James McKeen of Queen's University, "IT must reorient itself into a forward-thinking, business-oriented unit capable of marshaling forces to produce innovative business models." Smith and McKeen interviewed a focus group of senior IT executives and managers in the U.S. and Canada to discover how these CIOs believe IT can drive innovation in organizations. They identified three stages of IT innovation: *opportunity,* defined as developing an understanding of the specific technologies that could be disruptive; *discovery,* the process of determining how these technologies can be integrated into a strategy; and *delivery,* or the development of management practices to govern the new IT. Along the way, they consider everything from the possibilities and limitations of artificial intelligence to the challenges faced by IT leaders when their organizations resist new technologies. "IT is moving into a brave new world where creativity, innovation, and new ways to deliver value are the norm," they write. Therefore, they say, just like businesses, IT itself must continually adapt. (Prospect Press, US$24.50)

UNLOCKING THE CUSTOMER VALUE CHAIN
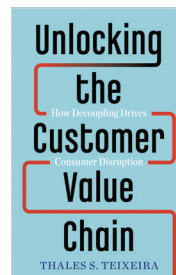
"Disruption has become a permanent condition of modern markets," writes Harvard's Thales Teixeira. Most executives believe they must counter disruption with digital innovations, but Teixeira has a different theory: He thinks they need to innovate their business models, particularly by decoupling one part of the customer experience from another. This requires them to turn their attention away from their own products and services to focus on what Teixeira calls the customer value chain, or "the series of activities that customers perform in order to fulfill their needs and wants. These activities include searching for, evaluating, purchasing, using, and disposing of products." For instance, Amazon's price checking app allowed customers to visit Best Buy to perform one task (evaluating merchandise), while they performed another task (purchasing) online. After trying many unsuccessful tactics to discourage this practice, Best Buy decided to benefit from the decoupling behavior by renting showroom kiosks to Samsung, LG, and other retailers, a business model innovation that has been highly profitable. Teixeira advises other company leaders to figure out where decoupling is happening in their industries—and innovate around it. (Currency, US$28)

LOONSHOTS
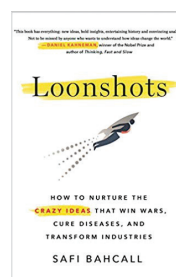
"The most important breakthroughs rarely follow blaring trumpets and a red carpet, with central authorities offering overflowing pots of tools and money," writes biotech entrepreneur Safi Bahcall. "They are surprisingly fragile. They pass through long dark tunnels of skepticism and uncertainty, crushed or neglected, their champions often dismissed as crazy." Moreover, inventions such as radar, cancer-fighting drugs, and smartphones can't be developed without the financial backing and personnel resources of large corporations or governmental agencies, which rarely want to underwrite wild ideas. How can big organizations become open to radical innovation? Bahcall turns to physics and the concept of phase transition—the moment when, for instance, water turns to ice. In that transitional phase, the molecules are malleable enough to be fluid but rigid enough to hold a shape. Bahcall thinks that, with a few small changes in structure, even mature and conservative organizations can find the sweet spot of transition where innovation is both permitted and supported. (St. Martin's Press, US$28.99)

A panel discusses the Manifesto at the CEEMAN conference in Prague last September. From left to right: Andreas Antonopoulos, rector of the University of New York in Prague; Danica Purg, president of CEEMAN; Roger Martin, former dean of the University of Toronto's Rotman School of Business; Derek Abell, CEEMAN board member and former president of IMD Lausanne; and Sotiris Foutsis, general manager, UNYP.

Management Manifesto

CEEMAN'S MANIFESTO LAYS OUT THE ORGANIZATION'S PLAN TO CHANGE THE COURSE OF MANAGEMENT DEVELOPMENT. **BY ASTRID SHEIL**

AT ITS INTERNATIONAL CONFERENCE last September in Prague, Czechoslovakia, the International Association for Management Development in Dynamic Societies, or CEEMAN, introduced its Manifesto, a 36-page document that lays out the rationale for business schools to embrace new models of teaching and research.

In his opening remarks at the conference, Derek Abell, a CEEMAN board member and former president of IMD Lausanne, announced, "Change is urgently needed to make management education more relevant to the needs of business and society."

The Manifesto, say its creators, is in response to a level of dissatisfaction with management education and research that has been increasing for the last 20 years. At the conference, attendees and panelists discussed the fact that, for too long, most management development institutions have been more intent on pursuing scientific excellence than managerial relevance; for that reason, schools have not felt any urgency to shift their priority away from academic peer recognition and quantitative rigor of research, and more toward teaching and building bridges to the business community.

"There is an infrastructure that massively rewards academics to speak to other academics," said Roger Martin, former dean of the University of Toronto's Rotman School of Business in Canada and strategy advisor to CEOs. "In this milieu, it is considered academic infidelity to speak to nonacademics. The only way to get [a paper into] an 'A' publication is if it clearly speaks to other academics." Martin went on to say that the academic infrastructure—which is focused on faculty retention, tenure, and promotion—is designed to maintain the status quo.

"Institutions have become disconnected from the market, partly, because

they are affluent," Abell noted in his remarks. "This is why the change will come from developing nations ... the rising part of the world does not have the money to ignore the marketplace." According to Abell, management education is not keeping pace with the speed of innovation and complex changes happening in business. Abell is betting that the Manifesto will help to upend an academic system that is separate and apart from its mission of serving business.

Johan Roos, chief academic officer and professor of general management for Hult International Business School headquartered in Cambridge, Massachusetts, agreed that business education's approach to research needs to be overhauled. "We are now stuck with an academic system in which business schools are run as if they are deaf, blind, and dumb to a completely new emerging world."

The Manifesto is a natural step forward in CEEMAN's progression, says Danica Purg, president of the organization since its inception in 1993. "As Central and Eastern European countries began their conversion to market economies, we learned by 'taking the best from the West,'" she said. "Then, we learned to share our best practices. Now, we are charting a new, more sustainable course with the Manifesto."

All 17 of CEEMAN's board members have signed on and pledged to support the principles of relevance and excellence in teaching and research. Ultimately, the purpose of the Manifesto is to trigger a change of course in management teaching and research worldwide.

"We know it will be hard," Purg noted, "but we have to try."

Astrid Sheil is a professor of communication studies at California State University, San Bernardino.

▶ **To read and download the Manifesto, visit manifesto.ceeman.org.**

Alliance for Education

Six business schools will launch a new digital learning platform designed to offer students a flexible, customized, and globally accessible study experience. Founding members of the Future of Management Education Alliance are Imperial College Business School in London, ESMT Berlin in Germany, BI Norwegian Business School in Oslo, the Lee Kong Chian School of Business at Singapore Management University, EDHEC Business School in France, and Ivey Business School at Western University in Ontario, Canada.

According to Francisco Veloso, dean of Imperial College Business School, "Demand is rapidly growing, from applicants and employers alike, for programs which provide the greater flexibilities and access that today's modern technologies can afford. New pedagogical models and greater governance are needed to ensure business schools can step up to the challenge. The Future of Management Education Alliance brings together a network of forward-thinking business schools who share this vision."

The alliance's custom-built online education platform has been designed by Insendi, an edtech enterprise founded at Imperial. The platform will enable all member schools to redefine and digitize their portfolios of existing programs—from MBAs to MOOCs—to best suit their own students' needs. In addition, the alliance will provide faculty with access to expert digital training and program development support to ensure greater ownership of their own online offerings and to help them develop courses individually and in collaboration with colleagues at other member institutions.

Johnson MBAs Vote for Nondisclosure

In September, students at the Johnson Graduate School of Management at Cornell University's SC Johnson College of Business voted to enact a policy of grade nondisclosure. The Johnson School's letter-grade system will remain in place, but full-time students in its two-year, one-year, and Johnson Cornell Tech MBA programs now will no longer disclose their grades to recruiters until they have received full-time, postgraduate job offers.

However, the new policy will not apply to students seeking jobs outside the for-profit business sector. For instance, JD/MBA candidates still will need to disclose their GPAs to law firm recruiters, and students applying for public sector jobs also will disclose GPA information.

The decision is the culmination of a yearlong study of students' academic experience and recruitment at the school. Says Vishal Gaur, associate dean for MBA programs, "We hope that grade nondisclosure will encourage students to take more academic risks and think holistically about their education, personal development, leadership, and the impact they want to have in the future."

Paul Romer
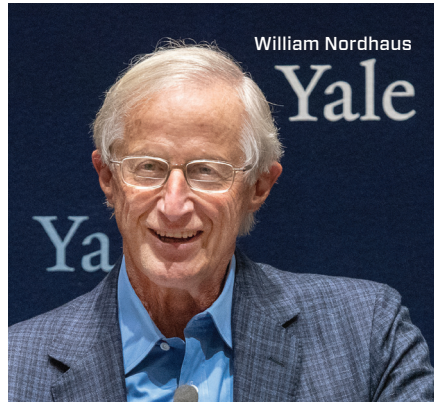
William Nordhaus

Prized Perspectives

TO REVERSE CLIMATE CHANGE, the world first must understand both the economic forces that drive it—and those that could lead to potential solutions. This idea has long underpinned the research of the 2018 recipients of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. In October, the Royal Swedish Academy of Sciences announced that Paul Romer, on leave at New York University's Stern School of Business in New York City, and William Nordhaus, the Sterling Professor of Economics at the Yale School of Management in New Haven, Connecticut, would share the prize.

Romer joined NYU Stern in 2010. In 2011, he founded the NYU Stern Urbanization Project, which is dedicated to studying how policymakers in the developing world can channel urban growth to create economic opportunity and pursue social reform. Romer also has directed NYU's Marron Institute of Urban Management, which works with civic innovators to make cities safer, healthier, more mobile, and more inclusive. He is known for his contributions to endogenous growth theory, which holds that economic growth is driven by internal forces—such as population growth and human innovation—rather than external factors.

On Yale's faculty since 1967, Nordhaus has studied issues ranging from the political business cycle to the effect of resource constraints on economic growth—but some of his most prominent work has involved studying efficient economic models for coping with the effects of climate change. In addition to his post at the Yale School of Management, he serves as a professor in the university's School of Forestry and Environmental Studies.

Nordhaus is well-known for his 1996 study tracing the economic history of lighting, from the oil lamps of Babylonian times to the LED light bulbs of today; in the study, Nordhaus tracked how advancements in illumination have led to innovation and long-term economic growth. Currently, he directs the G-Econ Project, an ongoing effort to provide comprehensive measures of economic activity in regions around the world, based on their geography. (Learn more at gecon.yale.edu.)

The application of economics principles could be the only way to solve large-scale problems like climate change, Nordhaus said at Yale's press conference announcing his win. When asked whether the world should look to the markets for solutions to climate change, Nordhaus was unequivocal. "There basically is no alternative to a market solution," he said. "There are billions of individuals, millions of firms, thousands of governments, and hundreds of nations [in the world], and for them to take action, they're going to have to have incentives. ... We have to raise the prices of goods and services that are carbon intensive and lower the ones that are less carbon intensive."

Romer, however, believes the best solutions will come from smart urban planning, not necessarily from business and economic applications. Urbanization "operates on a scale which is beyond a scale that almost anybody who's getting an MBA" will engage with, Romer said. "Even the biggest firms are not even close to what cities are like." If the world is to respond effectively to alarming trends such as climate change and human population growth, it will need "very big plans," he added. He referred to the 1811 plan for New York City as an example—a plan municipal leaders used to expand the city's footprint and create the grid it still has today. Such large-scale plans, he argued, work best when they are not micromanaged. "You've got to rely on people to fill in a lot of the details, and that's really not indicative of the kind of problems that most people in businesses face."

When Nordhaus was asked whether he was optimistic that the world could reverse climate change, he said that he viewed the current hostility in the United States toward climate change science and environmental policy as "anomalous"—a phase that soon would pass.

"Outside the United States, there's pretty widespread acceptance of the science and even the economics behind climate change views," Nordhaus said. "I think we just need to get through what is a difficult period. But I'm extremely confident that will happen. We're not going to stop climate change—there's a lot of momentum there, and like a super tanker, it will take a long time to slow it down. But I think it's something we can do."

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#6 IN THE NATION
– Predictive Analytics Today

#12
eduniversal
MASTERS RANKING — 2018

#14
BEST RANKINGS
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2018

CENTER FOR ADVANCING BUSINESS ANALYTICS

UConn's Center for Advancing Business Analytics (CABA) connects our researchers and students to companies and organizations who want to gain insight into their business practices and processes. We are proud to be part of the nascent renaissance in the manufacturing and the high-tech industries by collaborating with leading companies such as Stanley Black & Decker and LIMRA.

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MORE SCHOOLS EXPAND FINANCIAL AID

THREE UNIVERSITIES recently have joined the ranks of schools seeking to make college more affordable by offering expanded aid to middle-income students:

■ Rice University in Houston has unveiled The Rice Investment, a new initiative that will award full-tuition scholarships to degree-seeking undergraduates with family incomes of between US$65,000 and $130,000 who are eligible to receive need-based financial aid. In addition, students with family incomes between $130,000 and $200,000 are eligible to receive scholarships covering at least half of their tuition. Support for students from low-income families also will be significantly enhanced under the program, and students with family incomes below $65,000 will receive grant aid covering not only their full tuition, but also all of their mandatory fees and room and board. The plan takes effect this fall.

The Rice Investment also will reduce the burden of student debt. Degree-seeking undergraduate students from families with incomes up to $200,000 who qualify for The Rice Investment will no longer be required to take out loans, but instead will receive scholarships and grants. Students who receive financial aid still will

be expected to contribute toward the cost of attendance through moderate earnings from summer and academic year jobs.

The university is undertaking a $150 million fundraising campaign to support the program. "This bold step reflects our founding principles," says Rice president David Leebron. "When Rice opened its doors in 1912, we didn't charge tuition. Rice changed its charter in 1965 to begin charging tuition, but immediately began offering scholarships to eligible students. This significantly builds on that legacy and on our commitment to make a Rice education accessible and affordable for students from all backgrounds."

■ The University of Virginia in Charlottesville also is promising to make tuition free or significantly lower for low- and middle-income students. New university president Jim Ryan made that pledge during his October 2018 inauguration speech, as reported in the school's newspaper, *The Cavalier Daily*.

Ryan said that Virginia students whose families earn less than $80,000 and have "typical assets" will be able to attend the school tuition-free. Those whose families earn less than $30,000 also will be eligible for free room and board.

In his speech, Ryan said, "I see a community that opens wide the door to opportunity for first-generation, low-, and middle-income students. There is more work to be done in this space, but we might as well get started."

■ Johns Hopkins University in Baltimore, Maryland, has received a $1.8 billion commitment from businessman and former New York City mayor Michael Bloomberg to be used exclusively to provide financial aid to undergraduate students.

The donation enables the school to become permanently "need-blind" with regard to admissions; to offer financial aid packages that do not include loans, which will reduce student debt; to reduce family contributions for low- and middle-income families; to provide comprehensive student support for first-generation and low-income families; and to increase the enrollment of students eligible for Pell Grants. These adjustments will be effective with the fall 2019 semester. In addition, the university will implement an extensive outreach and recruitment program to reach academically qualified students from middle- and low-income backgrounds.

"College is a great leveler," Bloomberg writes in a November 19, 2018, op-ed in *The New York Times* explaining why he made the donation. "Multiple studies have shown that students who attend selective colleges—no matter what their family's background—have similar earnings after graduation. But too many qualified kids from low- and middle-income families are being shut out." He also calls for state and federal governments to make new commitments to improve access to college for these students. He concludes, "There may be no better investment that we can make in the future of the American dream—and the promise of equal opportunity for all."

Pavilion VIII at the Lawn of the University of Virginia

The Time Has Come to Reimagine Business Accreditation:
We Want to Hear From You!

In an era of unavoidable disruption in the higher education and business landscapes, AACSB must be innovative and responsive. Technological advances, shifts in instructional models and globalization are just a few of the forces that require AACSB to adapt.

To do so, AACSB is embarking upon the process of reimagining business accreditation.

The Business Accreditation Task Force, composed of global leaders with expertise in business education, will spend the next year collecting input from members on challenges and issues related to business accreditation and possible solutions that will poise AACSB to move business accreditation into a new era. Each individual's input is critical to this process—we want to hear from you!

Reimagine business accreditation. Submit your feedback.

AACSB

aacsb.edu/BATF

Scaling Up Entrepreneurship Education

BABSON COLLEGE in Wellesley, Massachusetts, has created the Babson Academy to provide administrators, faculty, and students from other universities access to its entrepreneurial training. Launched in October, the academy will house all of Babson's programs aimed at educators, including its existing Global Symposia for Entrepreneurship Educators (SEE), as well as its Fellows Program for Entrepreneurship Educators, which welcomes approximately 20 select faculty from universities around the world for weeklong, immersive residencies at Babson.

The academy also will house programs intended for non-Babson students, such as Babson Build, a series of one- to three-week immersive experiential programs that are designed to help undergraduate and graduate students develop entrepreneurial mindsets.

"The mission is to provide access, inspiration, and community to the university entrepreneurship education market," says Heidi Neck, academic director of the Babson Academy and the Jeffry A. Timmons Professor of Entrepreneurial Studies.

One of the academy's first new offerings is Heads of Entrepreneurship: Empowering the Educator. Funded by Santander Universities, a philanthropic division of Santander Bank that supports educational endeavors at institutions worldwide, the program helps university faculty and administrators develop their entrepreneurship education programming. In Feb-

ruary, the academy also will host a SEE event at its campus in Dubai in the United Arab Emirates, the first time it will be held at that location.

In some cases, the school provides faculty with financial support to attend its training programs. For example, 40 faculty are invited each year to attend Babson's SEE program in Chile for free. Of those 40, ten are selected to come to Babson as Fellows for a week.

Babson faculty also plan to create a master entrepreneurship teacher certification, along with additional programming on teaching entrepreneurially regardless of discipline, says Neck. In addition, the academy will reach out to other universities through the Babson Collaborative. As members of this consortium, universities can share best practices, co-create programming, and develop and promote global entrepreneurship education.

Creating the Babson Academy was a "logical" way for the college to better coordinate its external programs, connect with a greater number of like-minded university partners—and replicate its model of entrepreneurial education programming across the globe, says Neck. "The launch of the academy allows us to put our portfolio of offerings under one roof," she says. "We want to inspire educators and their students to view entrepreneurship as a life skill to navigate uncertainty and develop the courage to act."

▶ **For information about joining the Babson Collaborative, visit www.babsoncollaborative.org.**
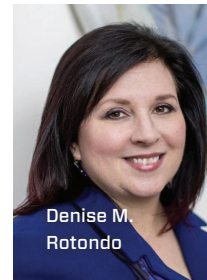
Denise M. Rotondo

Joan Phillips

TRANSITIONS

Over the summer, **Denise M. Rotondo** took her new position as dean of the Richard J. Wehle School of Business at Canisius College in Buffalo, New York. She was formerly dean of the School of Business at the State University of New York, Geneseo, and brings with her more than two decades of experience as a faculty member and administrator.

In August, **Joan Phillips** became dean of the Andreas School of Business at Barry University in Miami, Florida. She was previously at the Quinlan School of Business at Loyola University Chicago, where her positions included marketing professor, graduate program director, department chair, and associate dean. Phillips also was a fellow of the American Council on Education in 2015–2016.

Kevin F. Hallock has been named the new dean of Cornell University's SC Johnson College of Business in Ithaca, New York. Hallock most recently was the Kenneth F. Kahn '69 Dean and Joseph R. Rich '80 Professor in the university's School of Industrial and Labor Relations (ILR), where he guided the school through a strategic planning process, invested in the student experience, and introduced an ILR initiative designed to bring together students, staff, and faculty around a common theme. Hallock began his new role December 15.

Ajay Agrawal of the Rotman School of Management is the inaugural holder of the Geoff Taber Chair in Entrepreneurship and Innovation at the University of Toronto in Ontario, Canada. The chair honors the late Taber, a co-founder of Rotman's Creative Destruction Lab, who died two years ago in a house fire. The Geoff Taber Memorial Award at the Faculty of Law, the Geoff Taber Memorial Scholarship at the Rotman School, and the Geoff Taber Chair in Entrepreneurship and Innovation at

Rotman were established in his memory and are funded by more than CAN$2.5 million raised by the university community.

NEW PROGRAMS

The College of Business and Economics at **North Carolina A&T State University** in East Greensboro is launching a master of accountancy program designed to prepare students to achieve full certification as licensed CPAs. In the past, state requirements that a student must earn 150 semester credit hours and pass the CPA exams to become certified public accountants meant that accounting graduates from A&T had to pursue master's programs elsewhere to complete their professional education; they now will be able to complete all requirements at A&T.

This September, **Imperial College** Business School in London will add an MSc in international management to its Management Master's portfolio. Among the program features will be a yearlong Leadership in Action international business consulting project, a weeklong Global Immersion experience, a greater emphasis on technology and analytics, an increased number of electives, and a careers module. In addition, students will have opportunities to study at partner institutions, including the Chinese University of Hong Kong, HEC Paris, and the University of Texas at Austin.

Imperial College Business School also has debuted a free online course designed to provide investors with better information about the financial risks and opportunities presented by climate change. Launched in partnership with Climate KIC, a European climate change initiative, and hosted by learning platform edX, the course defines the financial risks related to climate change, covers emerging trends in climate-resilient investing, and considers how decreasing costs in solar and wind power are sparking innovation in the energy sector.

The Paul Merage School of Business at the **University of California, Irvine,** has launched an accelerated master of innovation and entrepreneurship, the first program of its kind in the UC system. Students are expected to enroll with an idea for starting a business or for growing an established organization; nine months later, they will graduate with plans to innovate, along with the knowledge and skills to put their plans into action. The new program was designed in collaboration with business leaders in Orange County, and students will be matched with business mentors for the entirety of the program.

A master of science in healthcare management debuts in spring 2019 at the Eli Broad College of Business at **Michigan State University** in East Lansing. To accommodate the schedules of working professionals, the program will be fully online. The program is the result of college discussions about which of society's biggest problems could be addressed through education. In addition to bringing in advisors from industry, administrators are collaborating with the medical college, the law school, and the nursing school to create a multidisciplinary program. Michael Rip, who was previously with the university's College of Human Medicine, will serve as founding director of the program. Also in 2019, the Broad College will launch a master of science in management studies aimed at nonbusiness professionals in STEM fields.

Florida International University's College of Business (FIU Business) in Miami has introduced a new master of science program in logistics and supply chain management. The 10-month, Saturday-only program focuses on logistics technology, data analytics, and distribution modeling. The program was designed with the guidance of supply chain executives at Fortune 500 companies as well as South Florida industry leaders. Areas of specialized coverage include transportation, omnichannel distribution, sourcing, inventory management, and the latest import and export regulation trends.

The master of sport administration and leadership at **Seattle University's** College of Arts & Sciences has changed its name to the master of sport business leadership (MSBL) and has been moved to the Albers School of Business and Economics at the university in Washington state. While the program will be administered by the same faculty and staff, the move aligns the program more closely with its emphasis on developing sport business professionals trained in analytics and leadership.

This fall, the **University of Notre Dame's** Mendoza College of Business in Indiana will enroll the first cohort of students in its new 31-credit master of science program in business analytics. The Notre Dame MSBA is intended for students with little or no work experience, including "fifth-year students" who wish to enter the program directly after completing their undergraduate degrees. The program incorporates 27 hours of core courses in subjects such as data management, predictive analytics, and machine learning, as well as four hours of electives.

Online Courses Scale Graduate Education

EdX.org, the nonprofit online learning platform founded by Harvard and MIT, has launched nine new master's degree programs. These programs follow a successful pilot with **Georgia Institute of Technology** in fall 2017, in which the school enrolled 250 students in its online master of science in analytics on the edX platform. In fall of 2018, enrollment grew to more than 1,200. Tuition for Georgia Tech's online master's on the edX platform costs just US$10,000. By comparison, tuition for its equivalent residential degree program ranges from $36,000 for in-state students to $49,000 for out-of-state students.

The nine new offerings include master's programs in supply chain management at **Arizona State University**, marketing at **Curtin University**, one in analytics and one in cybersecurity at Georgia Tech, one in accounting and one in information technology management at **Indiana University**, data science at the **University of California in San Diego**, leadership in service innovation at the **University of Queensland**, and computer science at the **University of Texas at Austin**.

Several of these offerings build on edX's portfolio of smaller MicroMasters programs. Students who complete MicroMasters programs can stack the credential onto either an on-campus or online master's program.

people+places

COLLABORATIONS

Ryerson University in Toronto, Ontario, Canada, has partnered with Maple Leaf Sports and Entertainment (MLSE) to create the Future of Sport Lab (FSL), which is dedicated to research and curriculum development related to the sport business. In addition to developing content for the MBA and undergraduate curriculum, the FSL will conduct research, foster innovations, and promote collaboration in sport business; it also will pilot test products and services for MSLE.

Starting in June, **Grenoble Ecole de Management** (GEM) in France will offer its doctorate of business administration and executive MBA in Istanbul, Turkey, in partnership with 41 North, a nontraditional business school that works directly with businesses. In the partnership, 41 North will promote the programs and host training sessions in its Istanbul facility, and GEM faculty will travel to Istanbul to teach the modules. Students will travel to Grenoble for the first and last workshops of their programs.

CENTERS AND FACILITIES

The National Science Foundation has awarded the **University of Missouri in Columbia** a US$5.2 million grant over five years to establish the Advancing Research and its Impact on Society (ARIS) Center. The center will work with scientists to help them demonstrate the impact of their research in their communities and society. Partners for the new ARIS Center include Brown University, Duke University, Iowa State, Madison Area Technical College, Michigan State, Northeastern University, Northwestern University, Oregon State, Rutgers University, and University of Wisconsin-Madison.

Singapore's National Research Foundation and Infocomm Media Development Authority have awarded a S$4.5 million (approximately US$3.27 million) research grant to **Singapore Management University**. SMU has used these funds to establish the Centre for AI and Data Governance. The center will support the work of the school's Advisory Council on the Ethical Use of Artificial Intelligence and Data, established in June 2018. Housed within the SMU School of Law, the center will offer seminars, deliver education, and conduct research projects in three subject areas: AI and society, AI and industry, and AI and commercialization. It will link faculty expertise across SMU's Lee Kong

Chian School of Business, School of Information Systems, and School of Social Sciences, as well as work with business and government agencies.

Rice University in Houston, Texas, has opened a data science lab where students will work with companies, academic labs, government agencies, and nonprofits to translate their data into actionable ideas. The Center for Transforming Data to Knowledge (D2K Lab) is supported by a US$4

Smart Solutions for Smarter Buildings

The **University of Central Florida** (UCF) in Orlando, Florida, will collaborate with Orlando-based Siemens, a global technology company, to harness data specifically to improve the performance and efficiency of the world's buildings and the energy grid. Siemens will provide software and hardware to be installed at UCF's Smart Infrastructure Data Analytics Lab. These tools include MindSphere, the company's cloud-based Internet of Things operating system; Navigator, its platform for data analytics related to building technologies; and Desigo CC, a platform that centralizes the monitoring, control, and automation of building systems.

Siemens' Digital Grid Lab, founded last year, will be combined with the Smart Infrastructure Lab and continue to focus on power-grid-specific infrastructure components of the project. UCF will work with local utilities that serve the campus and the surrounding communities to collect utility consumption and related weather data, as well as operational and planning data for their power distribution systems.

The Smart Infrastructure Data Analytics Lab is expected to open early this year.

million gift from Rice alumnus Kevin Harvey and his wife, Catherine. The lab will provide courses and events that link students with organizations that need help interpreting their data.

The **National University of Singapore** (NUS) School of Computing has opened the CRYSTAL (Cryptocurrency Strategy, Techniques, and Algorithms) Centre, a lab and think tank dedicated to exploring blockchain technology. Scholars at the CRYSTAL Centre will conduct research on topics such as verification and testing techniques, privacy, cryptocurrency trading, and peer-to-peer network designs. The center has partnered with Dekrypt Capital, Blockchain at Berkeley at the University of California Berkeley, and Blockchain at NTU at Nanyang Technological University in Singapore.

GIFTS AND DONATIONS

The **University of Toronto's** Rotman School of Management in Ontario, Canada, has received several recent gifts for key initiatives. The Government of Canada has announced a CAN$26 million (US$19.94 million) investment in the school's Creative Destruction Lab, a seed-stage program for massively scalable, science-based companies. Rotman also announced $4 million in new funding from TD Bank Group. Some of the money will support the TD Management Data and Analytics Lab, a key resource for students in Rotman's new master of management in analytics. TD Bank also announced financial support for the health stream initiative at the Creative Destruction Lab, as well as support for the research center known as Behavioural Economics in Action at Rotman (BEAR).

The Wharton School at the **University of Pennsylvania** in Philadelphia has announced a US$25 million gift from the AKO Foundation, an arm of AKO Capital, which was founded by alum Nicolai Tangen. The donation was made at the recommendation of Tangen and his wife, Katja. The gift will spearhead construction of a new 70,000-square-foot building to be named Tangen Hall, which will become a dedicated space for cross-campus student entrepreneurship at the university.

The College of Business at **Clemson University** in South Carolina has received a US$2.5 million gift from Ben and Chari Phyfer. Of this gift, $380,000 will create the Phyfer Innovation Hub.

HONORS AND AWARDS

The Embedding Project, a sustainability initiative that has created global communities of practice to help companies adopt sustainable practices, has been honored with two awards. In August 2018, the Academy of Management recognized the project with its inaugural "International Impactful Collaboration Award"; and in September, the initiative was included on Clean50's 20 Top Projects of the Year, which honors efforts that inspire Canadians. The Embedding Project was founded and is led by **Stephanie Bertels,** an associate professor at Simon Fraser University's Beedie School of Business in Burnaby, British Columbia, Canada. It brings together researchers from business schools at the University of Cape Town in South Africa, the University of Cambridge in the U.K., HEC Montreal in Quebec, Erasmus University in the Netherlands, and the Massachusetts Institute of Technology in Cambridge. Visit www.embeddingproject.org.

Hong Guo has received the Sandy Slaughter Early Career Award from the Institute for Operations Research and the Management Sciences (INFORMS). Guo is the Robert and Sara Lumpkins Associate Professor in Business Analytics at the University of Notre Dame's Mendoza College of Business in Indiana. Guo studies emerging phenomena in IT by characterizing key design features of systems such as mobile platforms, digital games, and product review systems.

The data research platform Wharton Research Data Services has announced the recipients of its WRDS Best Paper Award. They include **Jeffrey R. Brown,** the Josef and Margot Lakonishok Professor of Business and Dean, and **Jiekun Huang,** associate professor of finance, both of Gies College of Business at the University of Illinois at Urbana-Champaign. They were recognized for their April 2017 working paper "All the President's Friends: Political Access and Firm Value," for which they analyzed data from public sources during the Obama presidency. Their study indicated that executives' White House visits are associated with positive outcomes for firms in areas such as stock prices, government contracts, regulatory decisions, and insights about government policies. However, such visits also could set up a risky quid pro quo between firms and elected officials. The paper can be downloaded at www.nber.org/papers/w23356.

WRDS also has named **Nanjing University** in China as the winner of its 2018 WRDS-SSRN Innovation Award for the Asia-Pacific region. The award recognizes the efforts of emerging business schools to improve the impact of their research.

OTHER NEWS

The **World Innovation Summit for Education** (WISE) has announced calls for entries to the 2019 WISE Prize for Education, which acknowledges an individual or a team for contributions to education. Winners receive US$500,000 to support their continued work. The prize was established in 2011 by Her Highness Sheikha Moza bint Nasser; this year's winners will be announced at the 2019 WISE Summit in October in Doha, Qatar. Nominations close on February 26. To submit an application or nomination, visit programs.wise.org.qa.

The **Graduate Management Admission Council** (GMAC) has relaunched its Study in India initiative. First introduced in 2017, the initiative enables students to seek admission to graduate business programs at 13 participating schools. As part of the second version, foreign students now can apply for intern visas from India's Ministry of Home Affairs; these visas will allow them to pursue internships in India after they complete their programs. 🅱

Welcome to the PhD Hall of Fame

Three academics have been announced as 2018 inductees into The PhD Project's Hall of Fame.

Mary C. Gilly is senior associate dean and professor of marketing at the Paul Merage School of Business at the University of California, Irvine. She is the recipient of the 2011 Williams-Qualls-Spratlen Multicultural Mentoring Award of Excellence from the American Marketing Association Foundation for her work with doctoral students.

Miles Davis is the president of Linfield College in McMinnville, Oregon, and the previous dean of the Harry F. Byrd Jr. School of Business at Shenandoah University in Winchester, Virginia. He has been presented with the "Silver Good Citizenship Medal" from the Sons of the American Revolution and was recognized as a "Drum Major for Justice" by the United Covenant Churches of Christ.

Quinetta M. Roberson is the Fred J. Springer Endowed Chair in Business Leadership at the School of Business at Villanova University in Pennsylvania. She is a Fellow in the Society for Industrial and Organizational Psychology and currently serves as vice president/program chair of the Academy of Management.

The PhD Project encourages underrepresented minorities, such as African American, Hispanic, and Native American individuals, to consider doctoral programs in business. The Hall of Fame was established in 2011 "to recognize a select few who have inspired many." The 2018 inductees were honored at the organization's annual conference in November.
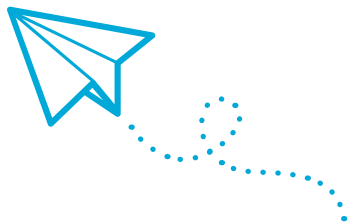

Mary C. Gilly
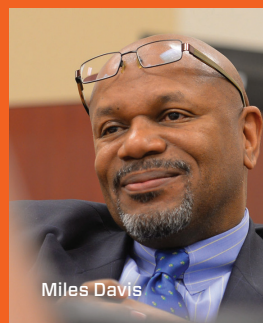
Miles Davis

Quinetta M. Roberson

at a glance

DATA DELIVERY

"Analysts who can 'tell a story with data' are highly prized," writes Thomas Davenport of Babson College. "The ability to communicate effectively about analytics is the single most sought-after capability among graduates from analytics and business intelligence programs."

SEE "ANALYZING THE FUTURE" ON PAGE 20.

54%

The portion of EMBA programs that offer distance learning programs, according to a new survey from the Executive MBA Council. That number was 42 percent in 2015.

SEE "EMBAS IN PROFILE" ON PAGE 17.

CULTURES OF LEARNING

"Google offers us extraordinary lessons about what it takes to innovate and motivate people to design novel services and products," write Promeet J. Singh and Jason A. Kaufman of Minnesota State University, Mankato. "In particular, faculty can learn a great deal about designing more dynamic, innovative, and welcoming classrooms by studying Google's attention to three factors: relationships, resources, and respect."

▶ READ "LESSONS FROM THE GOOGLEPLEX" IN THE YOUR TURN SECTION OF BIZED.AACSB.EDU.

6.56 MILLION

The number of unemployed workers in the U.S. who are not yet trained to fill the 6.6 million new-economy jobs, according to CNBC.

READ "EDUCATION IN A 'JETSONS' WORLD" BY KARTHIK KANNAN OF PURDUE UNIVERSITY ON PAGE 50.

PARTNERS IN EDUCATION

"We must embrace the mantra of open collaboration," writes Kiran Fernandes of the Durham University Business School. "Only by collaborating with others both beyond the classroom and beyond our own institutions will we be able to develop and enthuse future leaders and entrepreneurs who can create, use, and share knowledge to deliver equitable and sustainable futures around the world."

▶ READ "WHY BUSINESS SCHOOLS WILL FIND STRENGTH IN NUMBERS" IN THE YOUR TURN SECTION OF BIZED.AACSB.EDU.

CHANGING COURSE

"We are now stuck with an academic system in which business schools are run as if they are deaf, blind, and dumb to a completely new emerging world," says Johan Roos of Hult International Business School on the need for business schools to overhaul their approaches to academic research.

READ "MANAGEMENT MANIFESTO" ON PAGE 62.

473,400

The number of tweets users posts on Twitter every minute, part of 2.5 quintillion bytes of data created every day, according to the tech company Domo.

SEE "DATA REVOLUTION" ON PAGE 31.

GOOD MORNING, FACEBOOK!

Firms that want to engage more customers with their social media posts should pay attention to the sleep-wake cycles of typical consumers, according to new research. For instance, in the morning people are more alert and have more working memory; therefore, they're more likely to devour content that spurs high emotional reactions. That working memory is overtaxed and lowest by afternoon, but rises again somewhat in the evening.

READ "THE SCIENCE OF SOCIAL MEDIA" ON PAGE 12.

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#8
Online Executive MBA

Princeton Review, 2019

#6
Management Information Systems

College Factual, 2019

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