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BizEd

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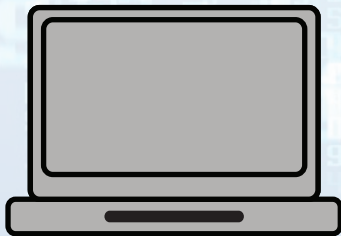
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EDITORIAL

Tricia Bisoux Co-Editor, Tricia.Bisoux@aacsb.edu

Sharon Shinn Co-Editor, Sharon.Shinn@aacsb.edu

2COMMUNIQUE Design, contact@2communique.com

BUSINESS

Becky Gann Director, Business Development, Becky.Gann@aacsb.edu

Debbie Wiethorn Senior Coordinator, Business Development, Debbie.Wiethorn@aacsb.edu

Juliane Iannarelli Vice President, Knowledge Development, Juliane.Iannarelli@aacsb.edu

Brandy Whited Communications Coordinator, Brandy.Whited@aacsb.edu



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Santiago Iñiguez Chair, Board of Directors

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Thomas R. Robinson President & Chief Executive Officer

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777 South Harbour Island Boulevard, Suite 750, Tampa, FL 33602

Tel: +1-813-769-6500 Fax: +1-813-769-6559

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A photo of the author is also required.

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To contact Tricia Bisoux, email Tricia.Bisoux@aacsb.edu or call +1-314-579-9176.

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Distinguishable From Magic

I WAS BRIEFLY IN AMSTERDAM a couple of years ago, but unfortunately, I missed out on the launch of this project: the development of a fleet of autonomous boats that can transport goods and people through the city's waterways. These "roboats" also can become temporary floating infrastructures, such as self-assembling bridges and concert stages, and deploy environmental sensors that gather data about water quality. The project is the first to come out of a new collaboration between MIT and the Amsterdam Institute for Advanced Metropolitan Solutions. You can read details at senseable.mit.edu/roboat/.

If you're more interested in a water adventure on the other end of the spectrum, you could look into Sailo, an online sharing platform that matches luxury yachts and crews with people who want to rent them. The company debuted a couple of years ago and currently acts as a peer-to-peer boat rental marketplace in New York and Florida. Think of it as Airbnb on the ocean.

What these two wildly different examples have in common, besides their nautical theme, is that technology makes them possible. Technology is reshaping every single aspect of our lives, from how we travel through a city to how we book our

vacations. And it's definitely changed how business is done. That means business schools have to teach students the power of technology, whether they're embedding it in their products or relying on it to gather customer data.

In this issue, we look at some of the ways business schools are teaching the tech. In "The Inhuman Touch," professors from Michigan State and the National University of Singapore describe how they collaborate with software providers to give students a glimpse of machine learning in action.

In "Into the Breach," cyber experts from Oklahoma State and St. Edwards University explain all the ways today's systems and products can be hacked and how b-school professors can arm students with the knowledge to fight back. In "Here and There," we explore remote learning via telepresence. And in Your Turn, Peter Rossbach of the Frankfurt School of Finance & Management argues that today's business graduates must learn technology right along with their functional disciplines.

For b-school leaders daunted by the idea of teaching students to use tools that some of their faculty don't completely understand, we've put together "Teaching Tech to Teachers," about some of the ways universities are training their professors in this complex field.

As for myself, I confess I'm happiest with technology when it's so smooth, so invisible that it lives up to Arthur C. Clarke's prediction: "Any sufficiently advanced technology is indistinguishable from magic." But tomorrow's business graduates will need to know how the magic works, whether they're designing the next great sharing app or figuring out the best uses for a self-driving boat. Or, indeed, when they're considering almost any aspect of business at all.

A handwritten signature in black ink that reads "Sharon Shinn".

Sharon Shinn
Co-Editor

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MARCH 27–29

B-School Communications and
Development Symposium
(#AACSBbcds)
New York City, New York

APRIL 4

Best Practice Speaker Series
Santiago, Chile

APRIL 6

Best Practice Speaker Series
Dubai, UAE

APRIL 23–25

AACSB International Conference
& Annual Meeting
(#ICAM2017)
Houston, Texas

SEMINARS

JANUARY 30–31

Assurance of Learning I **A**
Tampa, Florida

FEBRUARY 1–2

Assurance of Learning II **A**
Tampa, Florida

FEBRUARY 4

Continuous Improvement Review **A**
New Orleans, Louisiana

FEBRUARY 9

Accounting Accreditation **A**
Phoenix, Arizona

FEBRUARY 13–14

Business Accreditation **A**
Mumbai, India

FEBRUARY 15–16

Assurance of Learning I **A**
Mumbai, India

FEBRUARY 20–21

Business Accreditation **A**
Tampa, Florida

FEBRUARY 23–24

Leading in the Academic Enterprise
Series: Strategic Thinking and
Creative Problem-Solving **P**
Tampa, Florida

MARCH 6–7

Advisory Council **A**
Tampa, Florida

MARCH 11–12

Assurance of Learning I & II **A**
Phoenix, Arizona

MARCH 13–14

Business Accreditation **A**
Tokyo, Japan

MARCH 13–14

Leading in the Academic Enterprise
Series: Strategic Thinking and
Creative Problem-Solving **P**
London, United Kingdom

MARCH 15

Impact Forum **A**
Phoenix, Arizona

MARCH 15–16

Assurance of Learning I **A**
Tokyo, Japan

MARCH 15–16

Business Accreditation **A**
London, United Kingdom



MARCH 27–29 New York City, New York

B-School Communications and Development Symposium (#AACSBbcds)

Join communications professionals to explore strategies for branding, marketing, donor development, and alumni relations.

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MARCH 16

Continuous Improvement Review **A**
Phoenix, Arizona

MARCH 27–28

Associate Deans **P**
Taipei, Chinese Taipei

MARCH 27–28

Teaching Effectiveness **O**
Tampa, Florida

MARCH 29–30

Data Analytics **C**
Taipei, Chinese Taipei

APRIL 2–3

Strategic Management **A**
Dubai, United Arab Emirates

APRIL 3–4

Teaching Design for Creativity
and Innovation **C**
Cleveland, Ohio

APRIL 4–5

Business Accreditation **A**
Dubai, United Arab Emirates

SEMINAR CATEGORY KEY:

- A** Accreditation, Quality Assurance & Impact
- P** Professional Development
- O** Pedagogy Development & Online Learning
- C** Curriculum Development Series

other events

JANUARY 16–20

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Paris, France
www.thecasecentre.org/educators/

JANUARY 17–20

GMAC Leadership Conference
San Francisco, California
www.gmac.com

APRIL 5–7

BALAS Annual Conference
Santiago, Chile
www.balas.org/annual.php

APRIL 6–7

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Seeking Solutions Across Sectors

THE BENEFITS OF NGO COLLABORATIONS

WITH SO MANY PEOPLE in the world living in poverty, conflict zones, or both, more researchers are examining how the involvement of business could help improve their plight. Two recent papers—one on supply chains, one on the Syrian refugee crisis—focus on how cross-sector partnerships could provide much-needed solutions:

NGOs and the sustainable supply chain. Academics often don't consider how nongovernmental organizations (NGOs) help make for-profit supply chains more sustainable. That's why a recent paper examines NGOs' collaborations with emerging-economy suppliers and for-profit buyers. Its authors find that NGOs' "nontraditional" activities in the supply chain help alleviate poverty and mitigate environmental hazards such as excessive pesticide use in farming.

The co-authors include Jorge Rodríguez, assistant professor of supply chain management at Escuela Superior Politécnica del Litoral (ESPOL) in Guayaquil, Ecuador; Cristina Giménez Thomsen, professor of operations, innovation, and data sciences, and Daniel Arenas Vives, associate professor of social sciences, both of ESADE in Barcelona, Spain; and Mark Pagell, professor of sustainable supply chain management at University College Dublin in Ireland.

The team cites examples such as the Rainforest Alliance, which has trained small suppliers to work with larger firms, and Solidaridad, which has helped farmers become certified to work within agricultural supply chains. That training has "resulted in reductions in child labor and improvements in poor producers' profits and women's access to labor opportunities," the authors write. "NGOs are often better placed than for-profits to address many issues of social sustainability and we know that they manage their supply chains to do so. What motivates this study is how little we know about these phenomena."

The team looks specifically at a multinational NGO operating in Latin America, Africa, and Asia. This NGO, focused on poverty alleviation, had begun its first implementation of private sector initiatives. The researchers' final sample included six of the NGO's supplier development initiatives in Ecuador, about which they collected data from December 2011 to July 2013. During this time, the NGO visited potential suppliers—who worked in areas such as farming, carpentry, and metal scrap collecting—to learn their biggest challenges. It designed training programs to help them adopt best practices and improve efficiency, and it facilitated their relationships with buying firms. The NGO acted as a "bridge" between suppliers and buyers to ensure that practices improved suppliers' livelihoods and protected workers and the environment.

“This bridging capability reduced the buying firms’ transaction costs when dealing with poor suppliers,” the authors write. They conclude that NGOs play invaluable roles in building sustainable supply chains without economic tradeoffs. They suggest that buying firms seek out NGOs’ expertise in adapting to local markets and invest in helping poor suppliers integrate into the supply chain.

The authors suggest several paths for future research, including studies that determine what happens to suppliers after an NGO initiative ends. “It is unknown,” the authors write, “whether poor suppliers are better off under long-term relationships with the buying firm or whether their new capabilities would be better off in the market.”

“NGOs’ Initiatives to Enhance Social Sustainability in the Supply Chain: Poverty Alleviation Through Supplier Development Programs” appeared in the July 2016 issue of the *Journal of Supply Chain Management*.

Cooperation and the refugee crisis.

The conflict in Syria has forced 4.5 million Syrians to seek refuge in neighboring countries, leaving governments scrambling to address the social, economic, and political strain of sustaining growing refugee populations. So far, few workable strategies have emerged from state actors. However, a working paper argues that partnerships among the private sector and NGOs might be the key.

Author Derya Büyüktanir, an assistant professor of international relationships in the School of Social Sciences at Abdullah Gül University in Kayseri, Turkey, first points to successful collaborative multistakeholder initiatives (MSIs). These include the United Nations Global Compact, which aims to achieve the U.N.’s Millennium Development Goals. She then turns to private sector involvement in a specific pressing issue: the Syrian refugee crisis.

In the early years of the crisis, Büyüktanir writes, private sector involvement

was minimal. Instead, government agencies and individual NGOs such as Doctors Without Borders tried to manage the crisis, but their efforts were largely ineffective. However, starting in 2014, local companies and multinational corporations “began working with governments, [intergovernmental organizations], and NGOs to decrease the short-term and long-term consequences of massive refugee flows.”

Since then, the number of these MSIs has been increasing. For instance, a partnership between NGOs Oxfam and UNICEF helped supply more than 85,000 people in Lebanon with clean drinking water and supplies. NetHope and Microsoft partnered to create technology centers for refugees in Jordan, Turkey, and Lebanon, where they could access the internet and learn technology skills.

Even so, more MSIs are sorely needed “to inspire others to act proactively,” Büyüktanir argues. “The private sector ...

is still not taking active roles in both leading and funding multi-sectoral initiatives by using more innovative solutions.”

She calls for more research into best practices when it comes to forming strong alliances among private sector companies, governments, and NGOs. “The private sector,” she writes, “can significantly address humanitarian needs and solve problems by using its know-how, resources, and innovative methods with the cooperation of other partners, and improve their own standing and global economics in the process.”

► Büyüktanir presented “Increasing Multi-stakeholder Initiatives and Cooperation in the Private Sector: The Case of the Syrian Refugee Crisis” at the Maas-tricht School of Management’s sixth annual research conference in the Netherlands last September. The working paper is available for download at ideas.repec.org/p/msm/wpaper/2016-2.2.html.

THE NEXT GENERATION

39% of Gen Z students

are interested in exploring options outside the traditional four-year, on-campus college experience, according to new research by branding company Ologie.

45% of these post-millennial students find the college decision somewhat confusing or very confusing.

65% expect to work full-time or part-time while attending college.

11% are interested in attending an elite institution—possibly because they expect to bear most of the cost.

32% of respondents say the financial burden will fall completely on them.

These results are part of ongoing joint research with Student Union, a group of college-bound Gen Z students based in the U.S. For this study, the organization surveyed 1,548 students.

► For information about Student Union and the survey, visit ologie.com.

BOARD EXPECTATIONS

Sixty percent of board directors say there is a gap between the expectations placed on boards and the reality of the board's ability to oversee a company, according to the 2016 Global Board of Directors Survey. The survey was released by Boris Groysberg and Yo-Jud Cheng of Harvard Business School, executive search firm Spencer Stuart, the WomenCorporateDirectors Foundation, and researcher Deborah Bell. The survey captured responses from more than 4,000 directors in 60 countries.

Perhaps to partly fill that gap, boards are seeking out new skills as they appoint new board members. Two of the top three skills that respondents consider most important for board service today are industry knowledge and financial/audit skills. Respondents say they also look for expertise in risk management and globalization.

But boards might be overlooking other key needs, the researchers note: While 67 percent of respondents cite strategy as one of the most important areas of expertise for directors today, only 33 percent feel that their boards are looking for strategy expertise with their recent appointments.

Researchers uncovered other key findings. For instance, while networking is a priority for both men and women directors, women spend slightly more time on the activity (10.1 hours versus 9.1 hours for men, on average). The researchers additionally found that directors believe diversity should be driven by board leaders who become champions, not by quotas or shareholder demands.

▶ [Read the full report at www.womencorporatedirectors.com/page/_2016boardsurvey.](http://www.womencorporatedirectors.com/page/_2016boardsurvey)

LEARNING ONLINE



Students are embracing digital learning and most are happy with the electronic resources their schools make available, according to a survey of 866 students from 131 higher education institutions in the U.K. Some highlights:

100%

of students own at least one portable digital device, most commonly a smartphone.

89%

take their devices to class.

90%

use their devices for last-minute reading or to verify something in class, immediately before a test, or before handing in an assignment.

93%

have used virtual learning environments, such as Blackboard or Moodle, to access lecture notes or other resources.

72%

have used electronic journal articles or databases.

61%

have used digital textbooks during their university studies. The majority (65 percent) borrowed one from the library; 55 percent received one through their institution; 35 percent purchased a copy for themselves.

88%

would recommend an e-textbook to a friend. Among those who used e-textbooks most often, 98 percent would recommend them to friends.

78%

were satisfied with the ease of access offered by their digital textbooks. The two top-ranked benefits were "less stressful—I can access my book any time I need it" and "more convenient—I could download it to my device."

There is still room for improvement, however, as more than 40 percent of students were dissatisfied with the amount of multimedia content available in e-textbooks. Forty-eight percent were dissatisfied with the way lecturers use textbooks, suggesting that professors still need to work on smoothly integrating digital resources into their classes.

The survey was conducted by VitalSource Technologies Inc., which creates and delivers digital content. It was designed to assess student engagement with electronic textbooks and identify institutional practices that lead to student satisfaction.



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LEAN, NOT MEAN

LEAN MANUFACTURING MIGHT be the best way to improve productivity at factories in developing nations while also maintaining ethical business practices, according to three scholars who studied what happened when Nike switched factories from traditional to lean manufacturing. Researchers include Jens Hainmueller, a professor of political economy at Stanford Graduate School of Business in California; Greg Distelhorst of the Massachusetts Institute of Technology in Cambridge, and Richard Locke of Brown University in Providence, Rhode Island.

In the mid-2000s, Nike introduced lean manufacturing principles to its apparel suppliers in the developing world to boost productivity. At the same time, the company performed audits of working conditions by grading factories on labor standards (in areas such as wages, working hours, and disciplinary actions) and health and safety standards. Factories with good workplace conditions received A's and B's, while those with serious violations received C's and D's.

While the programs were not related, their simultaneous deployment allowed the researchers to investigate what happens to labor standards when a factory adopts lean manufacturing. "We were



Nike adopted lean manufacturing principles in the mid-2000s.

not confident that we would find positive effects," Hainmueller says. "This is something Nike committed to for business reasons, to increase efficiency and be more productive. It wasn't clear that workers would necessarily benefit."

Yet the researchers found that factories that incorporated even one lean production line improved by nearly a third of a letter grade; those that became 100 percent lean improved by half a letter grade. The adoption of lean practices reduced the probability of serious labor violations by 15 percent.

What explains the correlation? Hainmueller theorizes that going lean initiates a virtuous cycle where workers are expected to be more than just cogs in a machine. Therefore, managers invest

more in worker training, which makes it more important to retain workers, which leads to better conditions. "With these efficiency gains, you basically increase the size of the pie, and you can share more of that back with the workers," he says.

However, the benefits appear to be geographically specific. The researchers found that, while lean adoption affected labor compliance scores in India and Southeast Asia, they had little effect in China and Sri Lanka. The majority of Nike factories in Sri Lanka already scored well on labor compliance, so they had scant room for improvement, but the researchers are unsure why lean manufacturing had little effect in China.

Even so, they remain optimistic that lean processes can help a company align its business operations with its CSR goals. "There obviously might be other consequences that we have not looked at, but the beautiful result is that there is a business case for doing this, it's in the company's best interest to sustain it, and it also seems to have positive social consequences," Hainmueller says. "Why not go for it, even if all you want to do is maximize your profits?"

► [Read the working paper at www.gsb.stanford.edu/faculty-research/working-papers/does-lean-improve-labor-standards-management-social-performance-nike.](http://www.gsb.stanford.edu/faculty-research/working-papers/does-lean-improve-labor-standards-management-social-performance-nike)

MBA MILLIONAIRES

A significant portion of millionaires in the world—12.1 percent—hold MBAs, according to a study by *Spear's* magazine and wealth consultancy WealthInsight. People more likely to be millionaires also hold degrees in engineering (as 10.7 percent of the millionaires do), economics (8.2 percent), business studies (5.9 percent), law (4.7 percent), accountancy (2.9 percent), finance (2.1 percent), management (2 percent), commerce (1.9 percent), and computer science (1.9 percent).

"Wealthy individuals are often entrepreneurs and innovators who benefit from degrees that encourage new and smart thinking," says Oliver Williams of WealthInsight.



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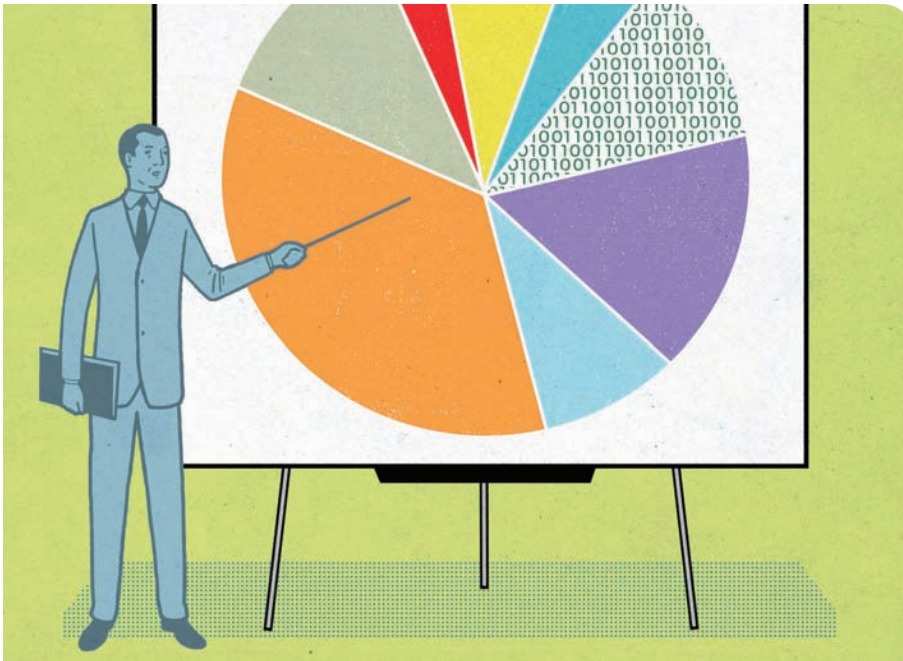
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Attitudes About Open Access

ABOUT THREE-QUARTERS of scholars have made their research data openly available at some point, and a similar number are aware of open data sets for scholars to reuse and redistribute. Even so, many would like more guidance about citing and repurposing open-access data.

These are among the conclusions in a global survey of 2,000 researchers

conducted by Figshare, an online digital repository for academic research. The report, “The State of Open Data,” highlights the extent of awareness around open data, the incentives around its use, and the perspectives researchers have about making their own data open. Here are other key findings:

- Nearly 70 percent of researchers

value a data citation as much as an article citation, and an additional 10 percent value it even more.

- Of the researchers who have made their data open, 60 percent are unsure about the licensing conditions under which they have already shared their data, and so are uncertain of the extent to which it can be accessed or reused. More than half said they would welcome more guidance on complying with policies. Less than half of the respondents said they are confident in how to cite a secondary research data set.

- It is likely that data will be even more open in the future. Of those who have not made data open, 44 percent will definitely consider doing so, and an additional 46 percent might consider it.

“These findings show we have reached a key inflection point in the research community,” says Daniel Hook, CEO of Digital Science, the parent company of Figshare. “Understanding copyright, licensing, contractual, and ethical concerns around data sharing is key to participating appropriately in the open community. We need to provide the right education to young academics and provide clear guidance to more established colleagues to ensure a culture change can take place.”

► [To read the report, visit figshare.com/articles/The_State_of_Open_Data_Report/4036398.](https://www.figshare.com/articles/The_State_of_Open_Data_Report/4036398)

EMBA SNAPSHOT

The Executive MBA Council has released its 2016 EMBAC Membership Program survey. Here are a few stats about the participants:

AVERAGE AGE: 38

WORK EXPERIENCE: 14 YEARS

MANAGERIAL EXPERIENCE: 9 YEARS

**SELF-FUNDED:
41%**

**PARTIALLY FUNDED
BY EMPLOYER: 59%**

**PERCENTAGE WHO
ARE WOMEN: 29.7%—
A RECORD HIGH.**



Buying Responsibly May Backfire

When consumers pay more for shirts that didn't come from sweatshops, they might be encouraging firms to be less responsible about how their products are made. The reason? The growing market for more expensive, responsibly sourced products makes it more profitable for companies to split the market and sell cheaper, less responsibly made items to customers who won't pay higher prices.

That's the conclusion of Ruixue Guo of Stanford University's School of Engineering in California, Hau L. Lee of the Stanford Graduate School of Business, and Robert Swinney of the Fuqua School of Business at Duke University in Durham, North Carolina. The team wanted to see what factors encourage firms to make responsible choices, and what external stakeholders can do to encourage responsible sourcing.

They studied corporate social responsibility from a risk management perspective: When firms source from irresponsible suppliers, their costs tend to be lower, but they run a higher risk of repercussions from society. The researchers created a model that laid out the differences between expensive, risk-free suppliers or cheaper but risky ones that might operate in developing countries with few regulations. Then they factored in external influences to see which ones were most effective at encouraging responsible behavior. The list included investigation by advocacy groups, the cost of environmental cleanup, the cost of government fines, and the number of socially conscious consumers who would pay more for responsibly sourced products but punish firms with irresponsible suppliers.

They found that firms typically choose both responsible and risky suppliers so they can create a line of regular products and a subset of fair trade products. This allows them to woo socially conscious customers who will pay more—without losing budget-minded buyers. "It's not optimal for firms to source everything responsibly and be great corporate citizens. It's optimal to pursue a dual sourcing strategy," says Swinney.

Firms were more likely to be responsible if they were punished in some fashion for violating standards or exposed by advocacy groups. This leads Swinney to question the common wisdom that says activists should educate consumers to pay more for responsibly made items. Activists often are reluctant to boycott irresponsible companies, because boycotting just closes factories and puts people out of work. But punishing a company could work better than educating consumers, so that's where consumers might want to focus their efforts, he notes.

"Responsible Sourcing in Supply Chains" was published in the September 2016 issue of *Management Science*. It appeared online December 18, 2015.



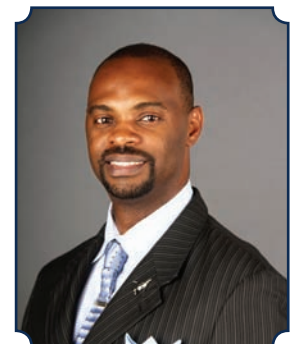
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Reforms Boost Entrepreneurship

THE WORLD BANK GLOBAL INDICATORS GROUP'S annual “Doing Business 2017: Equal Opportunity for All” finds that the world’s economies are becoming friendlier to small and medium-sized enterprises. This result is due largely to key reforms adopted by 137 national economies around the world—a record number in the report’s 14-year history.

More than 75 of the 283 reforms documented by the “Doing Business” report were adopted by developing countries—of those, more than 25 percent were in sub-Saharan Africa. The ten countries on the report’s “top 10 improvers” list include Brunei Darussalam, Kazakhstan, Kenya, Belarus, Indonesia, Serbia, Georgia, Pakistan, United Arab Emirates, and Bahrain.

The report noted examples that reflect improvements in the ease of doing business in the world now compared to a decade ago:

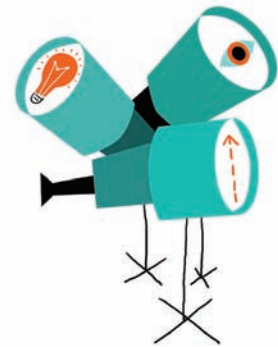
- The time to start a new business now stands at a global average of 21 days, down from 46 days.
- Businesses in the Philippines now make 28 payments to settle their taxes, compared to 48 payments.
- Businesses in Rwanda now require only 12 days to register a property transfer, compared to 370 days.

Even so, hurdles to entrepreneurship still exist, especially for women. In 23 economies, the report finds, married women must complete more steps than men to start businesses, and 16 limit women’s ability to own, use, and transfer property. While several countries in the Middle East and North Africa made the report’s “top 10 improvers” list, 70 percent of economies in these regions create barriers for women starting businesses.

“Government policy plays a huge role in the daily operations of domestic small and medium-sized firms, and onerous regulation can divert the energies of entrepreneurs away from developing their businesses or innovating,” says Augusto Lopez-Claros, who serves as director of World Bank’s Global Indicators Group.

The purpose of the annual Doing Business survey, he adds, is “to encourage regulation that is designed to be smart, efficient, accessible, and simple.”

■ **The report and its datasets are available at www.doingbusiness.org.**



new projects

SMART CITIES GRANTS

The **National Science Foundation** recently announced that it will make available millions of dollars in grants related to projects focused on smart-city development. The foundation wants to bring together community stakeholders and academic researchers to come up with more sustainable strategies for urban growth.

As examples of projects of interest, the NSF cites an effort in Chattanooga, Tennessee, to test an urban network of connected, autonomous vehicles, and another in several cities in Maryland to integrate sensor data and social media posts to provide better advanced notice of flash flooding.

In addition to US\$24.5 million of investments already planned for 2017, the NSF will allocate funds in the following ways: \$8.5 million to support integrative research into future urban design; \$10 million to develop next-generation internet technologies; \$7 million to support academic-industry collaborations focused on emerging technologies; \$4 million for projects involving the Internet of Things; \$2 million for projects involving big data; \$1.5 million to develop next-generation health solutions; and \$1 million each in “high-risk” research and new research into lifelong learning.

The grants are part of the U.S. White House Smart Cities Initiative launched in 2015. Read more at www.nsf.gov/cise/scc/.

SUPPORT FOR REFUGEES

The **European University Association** (EUA) will partner with higher education institutions throughout Europe in a two-year

project called Higher Education Supporting Refugees in Europe (inHERE). The purpose of the project is to develop best practices and train staff to address the needs of refugees, including helping them learn new languages, access funds, and have their academic credits and qualifications recognized in absence of documentation.

The project is inspired by the EUA's Refugees Welcome Map, which outlines best practices in refugee support. inHERE is funded by the European Union, through Erasmus+, a program that supports education for young people. Participating universities include Unione delle Università del Mediterraneo and Sapienza University in Italy; the University of Barcelona in Spain; and Campus France, an organization that helps international students plan their study at French institutions.


The website for inHERE is at www.inhereproject.eu/. To read about practices highlighted in the EUA's Refugees Welcome Map, visit www.eua.be/activities-services/eua-campaigns/refugees-welcome-map/.

THE VALUE OF RESEARCH

Novo Nordisk Foundation has provided 20 million krona (more than US\$2.2 million) for two studies at the Copenhagen Business School in Denmark. Both four-year projects will study the impact of university research, including the connection between research funding, research output, and learning and business outcomes.

The first project will be led by **Anders Sørensen**, professor of economics. His team will examine whether college students taught by research faculty contribute more to innovation within companies than

those who graduate from programs that are not research-based. This project was inspired by recent financial cutbacks at universities in Denmark. "There are multiple opinions concerning the effect of cutbacks, but we don't actually know what the factual consequences are," says Sørensen.

The second project will be led by **Hans Christian Kongsted**, professor of innovation and organizational economics. Kongsted's team will look at the impact of university research on innovation in private companies—for example, the effect of university researchers on the number of patents in the biotech industry. Says Kongsted, "We want to understand how universities, companies, and researchers interact; how they jointly produce knowledge and innovation; and what the socio-economic effects of research are." 



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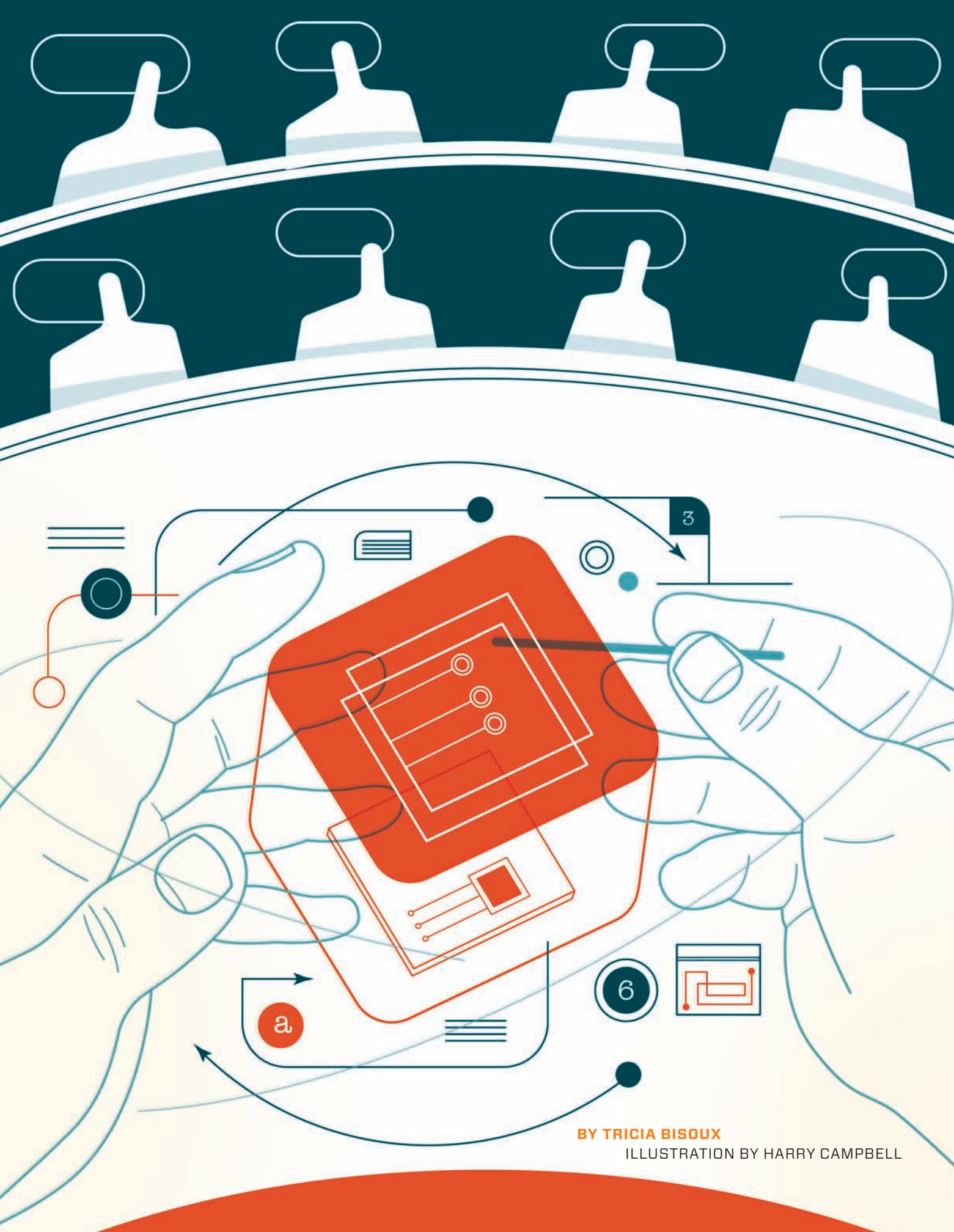
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- #3 Best Part-Time MBA Program for a Public University in NC (*US News* 2017)
- #4 Fashion Merchandising & Design School in the South (*Fashion-Schools.org* 2016)
- #3 in NC - Best for Vets (*Military Times* 2016)



BY TRICIA BISOUX

ILLUSTRATION BY HARRY CAMPBELL

TEACHING TECH TO TEACHERS



Educational technologies have great potential to enhance student learning—but only if faculty use them. Here's how several business schools are helping their faculty stay current in the digital age.

TECHNOLOGICAL INNOVATION in education has gone from a steady stream of individual advances—first email, then the web, then smartphones—to a whirlwind of social media, mobile apps, cloud-based computing, 3-D printing, data analytics, robotics, and the Internet of Things. What distinguishes educators who view that whirlwind as exciting from those who see it as overwhelming? In a phrase, institutional support.

We asked educators at several business schools one question: What do they do to encourage professors to embrace new classroom technologies? We found that by adopting one or more strategies featured in the following pages, these schools empower faculty not just to manage the technological whirlwind—but to harness it to deliver more innovative, enriching, and engaging student learning experiences.

THEY SET CLEAR PRIORITIES.

When it comes to making investments in a digital strategy, all business schools face the same challenge, says Peter O'Connor, professor of information systems, decision sciences, and statistics and dean for academic programs at ESSEC Business School in Cergy-Pontoise, France.

"Our challenges are not with the technology itself, because the technology exists for most things schools want to do. But there are costs associated with each and every one of them. We must figure out how can we do these things reliably and at an acceptable cost," he says. "That means we must prioritize well. Then, we can provide the resources that allow us to achieve our objectives at an acceptable speed."

At ESSEC, administrators and faculty have set three main three objectives: digitizing all of ESSEC's core courses; creating MOOC specializations, each with three MOOCs and one capstone project; and developing training in digital media, including social media, for students. As part of the first objective, ESSEC also added to its curriculum a Digital Disruption Chair, which refers to a concentration in digital innovation.

With those priorities in place, the school created a new business unit for innovation and digital pedagogy in September 2015, as well as a new position, chief digital officer, to manage it. The school's first CDO is professor of marketing Nicolas Gladu. "The idea is to transform our school, not only in our teaching and research, but also in areas such as human resources and administration," says Gladu. "We also have identified ambassadors among the faculty who have success stories that can engage new professors in our activities."

Similarly, IE Business School in Madrid, Spain, has made online and blended programs a priority, investing in tools for learning such as simulations, games, and multimedia—as well

as a new telepresence space it calls its WOW Room. (See "Teaching with Telepresence" on page 37.) With this priority in mind, the school deliberately hires professors who are excited about using new media, explains Martin Boehm, dean of programs.

"We make our commitment to online education and innovation very clear during the recruitment process," says Boehm. "Our new faculty are eager and excited about teaching online. They themselves are digital natives and see online education more as the status quo and less as an innovation."

THEY ESTABLISH HUBS FOR TECHNOLOGY.

The more b-school administrators signal to faculty that they encourage and support technological adoption, the more likely it is that their faculty will experiment with new tech. For many business schools, one of the easiest ways to send that signal is to establish or expand a department where faculty have access to instructional designers, workshops, and the latest technological tools.

Just a few years ago, IE Business School set up its department for learning innovation, says Boehm. The department staffs instructional designers to assist faculty, particularly when it comes to adapting face-to-face courses to online and blended formats.

The Academic Technology Center serves that role at Bentley University in Waltham, Massachusetts. When it was established 15 years ago, its staff worked with faculty primarily to create websites and load content to Blackboard. Today,

the ATC employs 15 staff members and approximately 30 student assistants to help professors master blended and flipped learning formats, in-class polling, digital

"OUR NEW FACULTY ARE DIGITAL NATIVES WHO SEE ONLINE EDUCATION MORE AS THE STATUS QUO AND LESS AS AN INNOVATION."

—MARTIN BOEHM,
IE BUSINESS SCHOOL

media creation, and mobile applications.

"We have a green screen studio, which faculty can use to make video with different backgrounds—or they can use their own spaces," says Gaurav Shah, who is the

ATC's director and an adjunct lecturer in computer information systems. "We provide the microphone and software, so that the quality of the experience will be consistent for everyone."

At ESSEC, faculty can turn to the K-Lab, shorthand for the Knowledge Center, which offers the assistance of instructional designers, as well as facilities where faculty can practice using different digital tools. K-Lab features a 3-D printing lab, virtual reality technology, and two recording studios—one self-service and one staffed with a professional recording and sound team—where faculty can create content for MOOCs and flipped classrooms. These studios are proving especially important to ESSEC's commitment to ongoing MOOC creation, O'Connor notes. Students also can use these spaces for their own projects.

Other business schools can take advantage of university-based resources to train their faculty in new technology. That's the approach at the Willumstad School of Business at Adelphi University in Garden City, New York. Its faculty can go to Adelphi's Faculty Center for Professional Excellence for support in areas such as flipping their classrooms, teaching in blended environments, creating online audio and video, and using digital media. "The center is our faculty's main resource for all types of teaching methodologies," explains associate dean Alan Cooper. The school makes sure to keep faculty informed of upcoming center services and training through its internal newsletter. With the center available, says Cooper, administrators can focus the school's resources on providing faculty with more opportunities to use those skills.

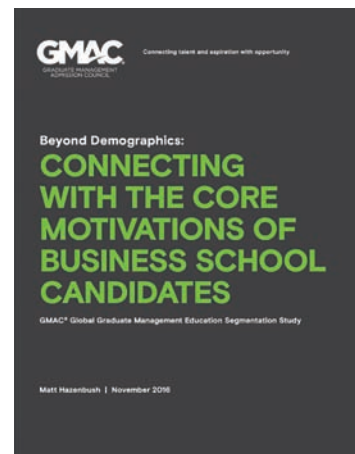


Do You Understand What Motivates Your Candidate Pool?

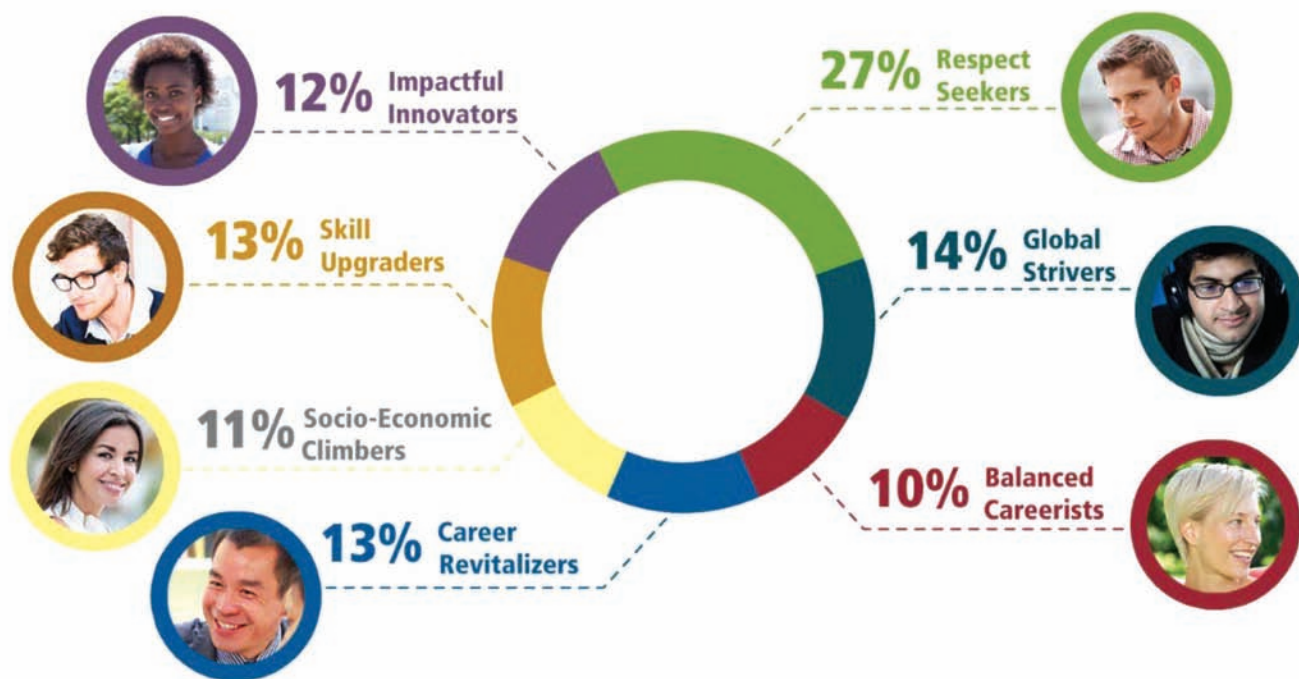


GMAC, the Graduate Management Admission Council, has published the results of a global candidate segmentation study on the motivations of the graduate management education (GME) candidate pipeline.

The GME community is invited to download the study findings with clear implications for business schools on understanding motivations and behaviors, and effectively connecting with each segment.



Download the white paper at www.gmac.com/segmentation



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Bentley's MBA Studio is an active learning space where MBA students spend each day of the program in a single classroom. The room features tech-enabled collaboration tables, large display screens for shared work, lounge seating, and a kitchenette.



“We will never tell a professor, ‘You’re doing this wrong. This is how you should be doing it.’ Faculty all have their own perspectives and ways of doing things. But we can say, **‘Let us show you this newer tool that will make things easier for you.’**”

—GAURAV SHAH, BENTLEY UNIVERSITY

THEY OFFER ONGOING TRAINING.

A routine schedule of workshops in various applications is another common characteristic of tech-ready business schools—some taught by instructional designers, some taught by the faculty themselves. Bentley’s ATC, for example, provides monthly workshops on

new classroom tools; recent sessions have covered video creation platforms, polling software, and new features in Blackboard.

IE Business School’s department of learning innovation worked with

the dean of faculty to create a year-round series of optional workshops, so that faculty can “choose wisely where to focus their improvement efforts,” says Boehm.

Each month, designers at ESSEC’s K-lab deliver two-hour training modules for faculty on tech-related topics, which have included increasing visibility on social media, creating quality video with smartphones, setting up online quizzes, and using video-editing software. At least twice a year, says O’Connor, the school holds special “pedagogical days,” for the purpose of exposing faculty to new facilities and technology and gathering their feedback on new tools under consideration.

The training at all three schools is optional, but Bentley’s Shah says he is always looking for ways to attract more faculty to these sessions. Most recently, the ATC added online workshops, delivered via GoToMeeting, to its schedule to make training even more accessible.

A few schools have taken faculty development even further, such as the School of Economics and Business Administration (SEBA) at St. Mary’s College of California in Moraga. SEBA has designed a 12-hour, six-session teaching certification it calls the Digital Driver’s License (DDL). To earn the certification, faculty must pass an assessment of digital proficiency. (Read more about the DDL in “Creating a Path to Proficiency” on page 27.) The DDL program gives faculty a clear framework for learning and integrating technology, says Barry Eckhouse, SEBA’s director of technology and online programs. He adds that, since the DDL has been in place, the school has seen more of its professors integrate digital media into their teaching.

“Our faculty are gradually expanding their digital capabilities, and it’s becoming more likely that they’ll take that key lecture and export it to a podcast or create a digital video for YouTube,” says Eckhouse. “They’re

moving more into using rich media, such as screen capture and voice grading, for all the right reasons.”

THEY EXPAND OPPORTUNITIES.

If professors are going to invest time in learning new tools, they’ll want to have ample opportunity to use them. For many business schools, that means expanding the number of online and blended courses they offer and designing classroom spaces that rely heavily on online collaboration and active learning.

The Willumstad School now offers a course focused on social media-based marketing, and it is delivering more classes in blended formats, says Cooper. “We’re also exploring the use of mobile platforms for teaching and incorporating more simulations and interactive technologies in our management courses,” he adds. “As a school, we need to create new opportunities for faculty to apply technology to teaching. We know we have to take an integrative approach.”

Faculty at Bentley have been experimenting with its new MBA Studio, an active learning space that supports the Bentley MBA program. Throughout the program, each cohort of 20 students remain in the same classroom all day, every day. There, they spend three-month





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segments taking courses from the same two professors. Every three months, the courses and professors change.

“We needed a pleasant place for the students to be in, with a nice lounge area and kitchen and areas for group activities,” says Shah. The MBA Studio replaces traditional front-facing rows of seating with group tables, lounge chairs, smartboards, LCD screens, and plenty of open space to allow for multiple activities. Faculty and students also use special software to be able to collaborate more effectively, sharing information on their personal devices to a larger screen. (See “Tech to Try” on page 28.)

Faculty have been so pleased with the function of the new space, in use since 2011, they’ve asked the university to convert more traditional classrooms to active learning environments. In response, the ATC retrofitted an additional classroom in 2013; in January it added three more active learning spaces to a new facility, for both graduate and undergraduate courses.

THEY FUND INNOVATION.

For faculty to implement their grandest ideas in the classroom, they’re going to need funding. Many schools are setting aside small amounts of money for faculty to purchase the tools they need to bring their ideas to fruition. At Bentley, for example, faculty can submit requests to the ATC for new software or hardware. After approving a request, the center not only sources and purchases the product, but also helps the professor use it effectively.

At St. Mary’s, Eckhouse is a member of the multidisciplinary Educational Technology Group (ETG), a campuswide committee that provides faculty with grants for projects related to classroom innovation. Faculty submit a simple application describing the project they would like to pursue. “I can’t think of the last time we said ‘No’ to a request,” says Eckhouse. “Once faculty come to us, their

ideas almost always seem to be well-conceived.” After they receive funding, professors must provide the ETG with project reports and share their results at a panel presentation so that their colleagues can learn from their experiences.

So far, the ETG has provided funds to an art professor who wanted to build an “infinity room,” a seamless blue-screen environment where students can work on special video projects; and a voice instructor, who purchased voice grading software so that if her students went off key in their recorded assignments, she could sing the notes correctly in her recorded feedback. The ETG recently received a proposal from a professor who wants to organize a white-hat hackathon to highlight cybersecurity issues.

Eckhouse says he has been “blown away” by ideas that faculty are proposing. Their projects show “what you can do with a grassroots effort, as long as all the stars are lined up,” he emphasizes. “By that, I mean that as long as you have a dean who gets it, program chairs who get it, and a provost who gets it—who see the value of faculty authoring in rich media forms—you can see a truly faculty-led effort toward innovation. Without the support of school leadership, it would be much more difficult for faculty to push these projects through.”

When business schools provide funding for faculty innovation, they show that they recognize that higher education is in an era of experimentation, says Boehm of IE Business School. “Teaching and learning excellence are moving targets,” he notes. “If we felt that we were where we wanted to be, we would be missing the point. Innovation is about constantly pushing the boundaries.”

THEY LET FACULTY LEAD.

If schools want to spark similar grassroots efforts on their campuses, says Eckhouse, they need faculty advocates who have great energy and enthusiasm about technological adoption. Once a school has one or two energized faculty,

“others almost always catch the bug,” he says. “From that point on, it’s mainly a matter of leading by example and promoting collaborative effort.”

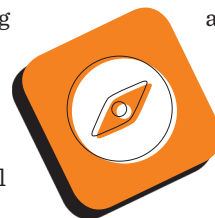
To what extent faculty adopt new technologies depends on how much a school allows them to explore on their own, says O’Connor. “Business schools always will have people who are innovators who push the boundaries, those who are in the mainstream, and those who are laggards resistant to change. The goal is to advance more of the mainstream much more rapidly,” he says. “We won’t achieve that goal by telling faculty, ‘You must do this.’ But we can achieve it by showing them what the options are and how those options can improve the quality of their teaching and make their lives easier.”

Cooper of Willumstad agrees that policies that force faculty to integrate new technologies before they’re ready are unlikely to succeed. “We need to move slowly to manage change effectively. That’s why we do not mandate anything. We tell faculty, ‘Here’s what’s available, feel free to explore it.’ Then, we hope faculty see their colleagues’ success and think that they should try those tools as well.”

Shah agrees that if the resources are available, faculty will take advantage of them, whether to solve a curricular problem or follow up on students’ requests. “We never tell a professor, ‘You’re doing this wrong. This is how you should be doing it,’” says Shah. “Faculty all have their own perspectives and ways of doing things. But when they come to us to ask about a particular feature, we can show them how to use it. And while they’re here, we can say, ‘Let us show you this newer tool that will make things easier for you.’”

THEY REWARD INNOVATION.

Eckhouse believes that many faculty aren’t reluctant to use new technology



CREATING A PATH TO PROFICIENCY

What's one way to get faculty excited about new tech? Design a curriculum that certifies them as skilled users of digital media. That was the approach of the School of Economics and Business Administration (SEBA) at St. Mary's College of California. The school launched its Digital Driver's License (DDL), a teaching certification program for faculty, in 2014. Since then, the DDL has captured the attention of several media outlets, and it was chosen as one of AACSB International's Innovations that Inspire in 2016.

The DDL was created after a 2010 conference SEBA hosted for those interested in business education and educational technology. "A guest speaker from Microsoft explained that the company now requires evidence of digital literacy and proficiency on its job applications," explains Barry Eckhouse, conference chair and creator. "That spurred conversations among conference participants about the digital skills faculty will need in order to teach those same skills to students."

The DDL consists of six two-hour meetings, five of which are held in a small studio that accommodates six faculty plus instructors. In those five meetings, professors develop their skills in video and audio creation, screen capture and voice-based grading, web conferencing, flipped classrooms, and use of electronic resources. During the sixth meeting, faculty must pass a live assessment from a web conferencing room, where they apply what they've learned first from the perspective of online students, then from that of instructors. They also must host an online conference; produce and upload videos to YouTube and iTunes; and complete 12 voice assessments of student work, providing screen capture movies of their feedback.

Finally, faculty who have earned their DDLs must teach their colleagues a digital skill. "They're usually excited about showing their colleagues what they can do," says Eckhouse. By teaching a skill to others, he adds, they enhance their own skills even further.

The provost's office provides faculty with a US\$1,000 stipend as an incentive to complete the DDL. "No one is going to retire on that," Eckhouse jokes. "But faculty development is sometimes done without any financial recognition. Providing this stipend shows

faculty that they have the support of the academic administration."

Schools might be tempted to deliver a program like the DDL in a fully online format, but Eckhouse emphasizes the importance of providing faculty with face-to-face instruction, especially when they are being introduced to new media for the first time. "We conduct face-to-face meetings first, before we gradually work toward our remote assessments," he says. "A school doesn't need an extravagant space to do this—just a small but capable media studio where faculty can work with the technology."

Natasha Munshi, associate professor of management and entrepreneurship, came to SEBA in 2014, just as the DDL was launched. She immediately applied to the first DDL cohort, so she could be more confident teaching in one of the school's hybrid programs.

"As academics, we're experts at teaching in brick-and-mortar classrooms, and we're comfortable in our expertise. But when we start teaching in hybrid environments, we're in front of tech-savvy students who might be working for companies like Airbnb and Tech-Force. Suddenly, we can feel very disadvantaged by comparison," says Munshi. "Going through the DDL made a huge difference in how I taught my course and in the quality of my student evaluations."

Munshi was especially interested in learning how to use Adobe Connect breakout rooms to sort online students into discussion groups, as a way to transfer the case-study method to an online environment. "I could jump from one group to another, listen in on their conversations, and answer questions when necessary, just as I do in a brick-and-mortar classroom," she says.

Munshi and several colleagues are now conducting a study to compare the student evaluations of faculty who have earned their DDL certifications to the evaluations of those who have not. They will break down the data by discipline to see if DDL training affected the evaluations for faculty in some disciplines more than others.

By this fall, 36 SEBA faculty will have earned DDL certifications. SEBA has delivered the program to professors from anthropology, leadership, communication, and modern language; library staff; and even instructional designers from St. Mary's IT group. The business school also has received interest from faculty at other schools.

For that reason, SEBA is considering creating a larger classroom to double the potential number of participants in a cohort from six to 12. Within the next two years, coordinators hope to roll out a similar program for students, perhaps as a digital concentration.

The DDL has been a great way to showcase SEBA's work to others, at St. Mary's and elsewhere, says Eckhouse. "The DDL also has been a perfect vehicle for collaboration, because it crosses disciplines so easily. We're opening our doors and inviting others to walk through. Now that so many faculty have accepted the role of digital media in higher education, it's time to help them take the next step as they work with new forms of content creation."



Barry Eckhouse (left) and a guest expert in discussion-board technology work with faculty in SEBA's Digital Driver's License program.

because they fear trying out new tools. Rather, some might be concerned about the time commitment involved; others might fear that they'll receive negative student evaluations; still others might believe their efforts will not be recognized as academic work. As a former chair of SEBA's rank and tenure committee, Eckhouse often writes to the committee on behalf of faculty members, providing extra explanation of their technological adoption when necessary. "They deserve our advocacy.

We want to show that we support their use of technology as central to their work as teachers."

ESSEC's Glady would like to see more schools show they value a professor's classroom innovation. "One of the biggest challenges is for the academic community to recognize the importance of digital innovation," he says. "It would be great if a professor's successful technology initiative could be seen as being as important as an influential book or paper in a top journal."



No matter what support business schools provide, not all faculty will jump on new digital strategies right away—and that's OK, say these educators. "Most faculty are up for learning new things," says Shah. "They want to know what's out there." [D](#)

To learn how Bentley University exposes students to innovative tech, read about its CIS Learning & Technology Sandbox in "A Social Space for Tech" on page 64.

TECH TO TRY

Because the capabilities of IT for the classroom seem to be advancing by the second, faculty are continuously testing out new classroom solutions. Here are some tools that the educators featured here believe will change the way their faculty teach:

■ **Mobile-based polling software.** Many business schools have used clicker devices to take in-class polls, but many faculty are now testing out polling apps for smartphones. Gaurav Shah of Bentley University uses a tool called **Poll Everywhere** that allows professors to conduct polls via text. "I can set it up to start my class session with a poll on the display," he says. "Students can respond over their cell phones and we can see the results in real time."

■ **Text messaging.** It's no secret that most millennials don't check their email accounts regularly, instead relying primarily on text messaging for communication. That's why Bentley's Shah now uses a web platform called **Remind.com**, which allows faculty to send text messages to students without having to know their phone numbers. The online messaging app provides everyone a greater level of privacy. Once students register their numbers on the site, any messages professors send via the platform reach them more immediately than an email or online post.

■ **Wireless presentation platforms.** Shah also has long been interested in finding a tool that allows professors to annotate common documents with students without being tethered to a podium at the front of the room. "I've dreamed of walking around a classroom freely, annotating on my device while my notes are wirelessly presented to a screen, and I've heard from other faculty here who would like the same capability," says Shah. "So, we've been experimenting with a technology that we found recently that allows us to do presentations from an iPad or laptop."

That platform, called **Solstice**, is a collaboration tool from Mersive that allows multiple users to connect wirelessly to the same shared display so they can see and annotate documents collectively. Shah

notes that Bentley plans to add more Solstice-enabled displays to its newest classrooms.

■ **Face-to-face web conferencing.** Traditional web conferencing platforms like **Adobe Connect** and **GoToMeeting** are usually deployed to allow remote individuals to participate in a class or meeting. However, professors at the School of Economics and Business Administration (SEBA) at St. Mary's College of California are experimenting with using web conferencing technology in a different way—to facilitate greater engagement among students and faculty who are all physically in the same space.

"We've found that web conferencing can help students participate without having to walk up to the board," says Barry Eckhouse. "We're seeing faculty walk more around the room while using a tablet to work on the same screen—everybody can literally be on the same page. It also helps move the traditional teacher from being the 'sage on the stage' to the 'guide on the side.'" Eckhouse is now leading a study on the impact of in-class web conferencing on teaching and learning.

■ **Voice grading.** Instructors are now exploring the use of real-time video screen capture of their voices and notations as they assess student work. These recordings, which students can play back as often as they like, provide a richer, more interactive experience for students and faculty alike, says Eckhouse.

SEBA faculty new to voice grading use **Snagit** by TechSmith, which allows them to do straightforward screen captures of their voice and notations. Once they've mastered Snagit, they can upgrade to TechSmith's **Camtasia**, which provides more sophisticated editing tools.

"We find that with voice grading, faculty are more inclined to give reasons for their notations, improving the quality of their comments," says Eckhouse. "This is a great example of how technology might be employed at a college with a teaching mission."



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BY TRICIA BISOUX

ILLUSTRATION BY HARRY CAMPBELL



One early adopter of mobile telepresence technology explains the impact the technology has had so far in its executive education program.

AND THERE

MOBILE TELEPRESENCE first caught the attention of Peter Hirst at the 2014 Internet of Things World Forum in Chicago. He watched with interest as Cisco demonstrated its mobile telepresence device, the Ava 500. In the demo, a person located in Germany used the device—equipped with a video screen, wheels, and a wireless connection—to attend the conference virtually. The German attendee connected to the device through his own computer, using special software to navigate it freely around the space while interacting with vendors and attendees through the display.

At the time, Hirst, an associate dean of executive education at the Massachusetts Institute of Technology Sloan School of Management in Cambridge, had been looking for ways to allow faculty and staff to work more effectively while traveling, and the potential of mobile telepresence to support that goal was intriguing. “That

demonstration made quite an impact on me,” says Hirst. “But once we discovered how expensive it was, it wasn’t relevant to what we were doing.”

Not too long after, the Sloan School instituted a flexible working strategy for its staff—including a team member based in the U.K. who was struggling to work remotely. “I was trying to find a way for our remote colleague to integrate more fully into our work here, and telepresence robots came back to my mind,” Hirst says. A quick Google search led him to a simple device from Double Robotics. Unlike the Ava 500, which costs tens of thousands of dollars, the Double robot was much more affordable—approximately US\$2,000, or about the price of a high-end laptop. Hirst ordered two of them.

The telepresence robots—essentially iPads mounted to rods on wheels—have become familiar sights among Hirst’s

staff at the Sloan School’s executive department. With three now in use, they have proven surprisingly effective and easy to integrate into the day-to-day operations of the executive program.

“It’s very typical for us to have meetings where some people are in the room, some are dialed in on the telephone, some are projected on screens via video conference, and one or two others are ‘sitting’ at the table using the telepresence robots,” says Hirst. “It all seems to work.”

As business schools see their enrollments in online and blended programs increase, they are looking for ways to offer their remote students a more personalized and engaging experience. According to early adopters of the technology, telepresence could be a boon to online business programs—mobile telepresence, in particular, could offer a much more interactive, face-to-face experience for remote students, faculty, and speakers.

FREE TO ROAM

While traditional video conferencing and fixed telepresence technology restrict remote individuals to interacting with others via wall-mounted television screens, mobile telepresence allows individuals to roam the space much more freely. From their own laptops, tablets, or smartphones, users can maneuver the devices down halls and into classrooms, position themselves at tables with on-campus co-workers and classmates, and even go to lunch with their peers.

“With fixed telepresence, those who connect remotely via video conference have no control over where the display screen is looking—they might be looking at someone who isn’t talking. Their view is at the whim of whoever’s controlling the camera,” says Hirst. “Telepresence robots offer a very instinctive way for people to control which direction they’re looking and where they’re located in the room. It gives people a feeling of being in control over their own experiences. That’s something they don’t really get if they’re just dialing in through more traditional conference methods.”

PROS & CONS

Mobile telepresence robots used at MIT Sloan do not require a dedicated space, as fixed telepresence does, and users require very little training to use them. “If you’ve ever played a video game, you can operate the robot,” Hirst says. “It just takes a few minutes of steering around to get the hang of it.”

But in initial experiments with mobile telepresence, the Sloan School identified five limitations of the technology:

Mobility. More expensive mobile telepresence models—such as Cisco’s

Ava 500—can be programmed with a map of an entire facility, so that a remote user doesn’t have to drive it anywhere. “The user can say, ‘Take me to Peter’s office,’ and the device would be able to navigate that automatically,” says Hirst. But less expensive models, which include the Double and Suitable Tech’s Beam+ (see “In the Experimental Stages” on page 36), rely on the remote user to guide it.

The device’s mobility also can be limited by obstacles. For instance, users must be warned against accidentally sending the devices down staircases or taking them outside over rough terrain. In the case of stairs or trips outside the building, a staff member must transport the device to the desired location.

Battery life. Power management is always a concern with mobile telepresence—support staff must be diligent about keeping mobile telepresence devices charged in their docking stations and to be aware of the duration of each user’s event. “This device is essentially an iPad on a battery with localized wheels,” says Hirst. “You have to keep everything charged for a full day. When you’re taking one on the road, you have to make sure that you have a spare battery.”

Connectivity. Not surprisingly, mobile telepresence robots rely on wireless connectivity to operate. Most college campuses have strong wireless signals, but there can be dead spots. “When users of these devices have to use an elevator,” says Hirst, “it’s good for them to have a buddy with them because that wireless connection can be lost.”

Visual capability. Because they are limited by the zoom capability of the iPad, users of telepresence robots

might not be able to enlarge the view enough to see a presentation clearly from across the room. The Sloan School addresses this problem by providing presentation materials to users in advance.

Cost. The cost of a mobile telepresence device can be an advantage or disadvantage, depending on a business school’s budget and objectives. The high price of more sophisticated telepresence devices such as Cisco’s Ava 500 is largely driven by their ability to operate semi-autonomously—a feature more suited to medical and military environments than business schools. The function and price point of a user-controlled Beam+ or Double device could be a better fit for higher education.

So far, these constraints have not been difficult to overcome at the Sloan School, says Hirst. He notes that the devices make up for their limitations by supporting a number of activities:

Remote work. The telepresence devices have proven valuable in supporting flexible work schedules for faculty and staff. “We use telepresence robots and other technologies, like video conferencing, to enable more effective teamwork and collaboration,” says Hirst. “The robots allow users to interact with others in a more humanlike way and be more spontaneous in their movements.”

Virtual travel. Hirst and his team have shipped the Doubles across the country to events so that faculty members could make presentations and attend conferences virtually, when they couldn’t otherwise make the trip. Staff simply coordinate with someone on-site to receive and set up the devices prior to the event and ship them back at the end. “We recently shipped a couple to a daylong workshop in Denver,” says Hirst. “Our people had a very productive experience at the workshop, one that was much less tiring than it would have been with traveling, courtesy of the robots.”

Accommodation of students with mobility challenges. Hirst says his department recently tested the use of a telepresence robot in the classroom with a single student. That individual,

“Telepresence robots allow users to interact with others in a **more humanlike way** and be more spontaneous in their movements.”

—PETER HIRST, MIT SLOAN



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who uses a wheelchair, attended an executive program from California via the device. “He reported a very positive outcome,” says Hirst. “He would even go to the lunchroom with fellow students and talk with them as they ate. We were very encouraged by his report, and we’re planning to expand our use of mobile telepresence to provide access to people for whom getting physically to the program would be a significant challenge.”

FUTURE PRESENCE

The Sloan School has had a positive experience with mobile telepresence, but Hirst understands why other business school administrators might hesitate to purchase the technology. They might be concerned, for instance, that the devices are sheer novelty or that the technology might be disruptive to other students who are attending a course in person. Hirst admits that those were

concerns for his team as well. But he adds that any worry that faculty had was quickly dispelled during its pilot with the student from California.

“The Double provided some entertainment value for students at the beginning, because it was such a novelty,” says Hirst. “But they got over that quickly, and soon started treating the remote student as if he were actually there.”

Given the success of that pilot, Hirst

DON'T FEAR TELEPRESENCE

IT COULD BE THE WAVE OF EDUCATION'S FUTURE **BY OWEN HALL JR.**

Demand for blended and online business programs has increased significantly, particularly among students who otherwise could not participate in on-campus business education—because of location, workload, or other factors. Telepresence technologies could be a boon to these programs, by allowing students not just to connect to the course material online, but to interact more naturally and spontaneously with each other.

There are two categories of telepresence. *Fixed telepresence* uses high-resolution wall-mounted display screens in the classroom. *Mobile telepresence* uses a Bluetooth-enabled robot equipped with an iPad mounted at eye level. Either approach can allow schools to take blended learning one step further, by offering remote students a way to access course materials and interact with classmates as if they were located in the same classroom or sitting around the same conference table. Telepresence could, in effect, remove a lot of the distance from distance education.

That's particularly true for mobile telepresence. Mobile telepresence robots also offer users a nearly 180-degree field of view, as well as the ability to raise and lower the height of the screen to better interact with others in seated and standing positions. The technology enables face-to-face, one-on-one interactions through both voice and facial expression—in essence, it offers a sense of being physically present. That's a capability that fixed telepresence, traditional video conferencing, and conventionally delivered online learning still lack.

Whether fixed or mobile, telepresence offers a wide range of possibilities for management education:

- It supports sustainable business practices by reducing student and faculty commuting.
- It makes multi-campus courses possible, even when student enrollment numbers on a single campus are modest.

- It expands flexible work options for staff.
- It makes education accessible to those with disabilities.
- It allows more interactive, effective, and personal collaboration among virtual team members.

Some schools are still reluctant to adopt telepresence, often because they view mobile devices, in particular, as potentially disruptive to their classrooms. But far from being disruptive, telepresence offers business schools opportunities to support learning, share knowledge, and encourage collaboration in ways that aren't possible without it. By exposing students to this technology, schools won't just prepare them for tech-enabled workplaces of the future, but also will help them gain global perspective and improve problem-solving skills on virtual teams.

Pepperdine University is in the process of evaluating the use of mobile telepresence for both students and staff. We hope that our community will use the devices to reduce commuting, which is particularly important in Los Angeles. That effort supports the university's commitment to sustainability.

Of all the factors affecting management education—globalization, changing student demographics, an uncertain economy—technology is the one factor business schools can best manage and control. Telepresence technology has tremendous potential to blend the best of face-to-face and Internet-enabled education. Business schools should not hesitate to explore its possibilities.

The future of mobile telepresence is now.

Owen P. Hall Jr. holds the Julian Virtue Professorship and is a professor of decision sciences at Pepperdine University's Graziadio School of Business and Management in Los Angeles, California. He leads a project at Pepperdine focused on creating a virtual learning environment using mobile telepresence robots.

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now is considering whether or not to offer a mobile telepresence option to executive students who don't face mobility challenges, but who might be too busy to travel. On that point, he is still "undecided," he says. "We are concerned that if we provide a telepresence option to too many people, it might affect the experience of those who are attending the programs in person."

That said, his advice for other schools that haven't yet made the leap to mobile telepresence: Don't be afraid of how faculty and staff might react to the robots. "We were a little nervous about how faculty would respond," he says. "Yes, some users are a little self-conscious at first about using the devices. But we've had

a very positive reaction. It's absolutely worth trying these out."

He also emphasizes that by incorporating mobile telepresence into business programs, business schools can expose faculty and students to next-generation technologies, such as robotics, artificial intelligence, and virtual reality. All three of these technologies could converge in ways that provide realistic experiences of remote locations—from an office on the other side of the world. Some scientists are even looking to the technology to one day provide people on Earth a way to experience the surface of Mars.

"These kinds of autonomous or semi-autonomous remote engagement technologies are quickly evolving," says

Hirst. "Just imagine a mobile robot with the ability to interact with its physical environment even more—even just to, say, get on an elevator and push the button for the floor the user wants."

Such capabilities could generate "pretty interesting consequences" for higher education, he adds. The use of telepresence in education could not only increase access to business education, but also be a reasonable baby step to offering true-to-life, immersive virtual experiences across the board. [▶](#)

[▶ See a video of a mobile telepresence robot in action at MIT Sloan Executive Education at \[www.youtube.com/watch?v=culZoMzrgao\]\(http://www.youtube.com/watch?v=culZoMzrgao\).](#)

IN THE EXPERIMENTAL STAGES

Other schools also have been experimenting with mobile telepresence over the last year to see what the technology can make possible. At this point, most schools are using telepresence robots to allow their staff to work remotely.

■ **Virginia Tech** in Blacksburg, for instance, has deployed three Double robots in its InnovationSpace media lab. For a time, its former manager used one to oversee the lab after he relocated to California, while the lab filled his position. Today, says the lab's current manager Andrew Tweedt, "we routinely loan them out to other units on campus for special events, and we use them in-house for folks who cannot physically attend meetings and other events on campus."

■ **The University of Central Florida** in Gainesville also has been experimenting with a single mobile telepresence device for more than a year. Its Center for Teaching, Learning, and Assessment purchased a Beam+ from Sutable Tech; so far, the device has been used for a handful of events and courses, says Tawnya Means, the center's director. Last spring, for example, the school used the Beam+ to allow recent graduates to attend different events during the school's convocation ceremonies. One instructor has used the device to bring a guest lecturer to class virtually, so that he could better interact with students.

That's also the reason Carolyn Takeda, director of Capital Markets Lab in UCF's Warrington College of Business, checked out the device. "Our special lecturer was teaching sessions on a software program from Denver," she explains. "As he was teaching, he was able to move around the lab and speak to students directly. It also

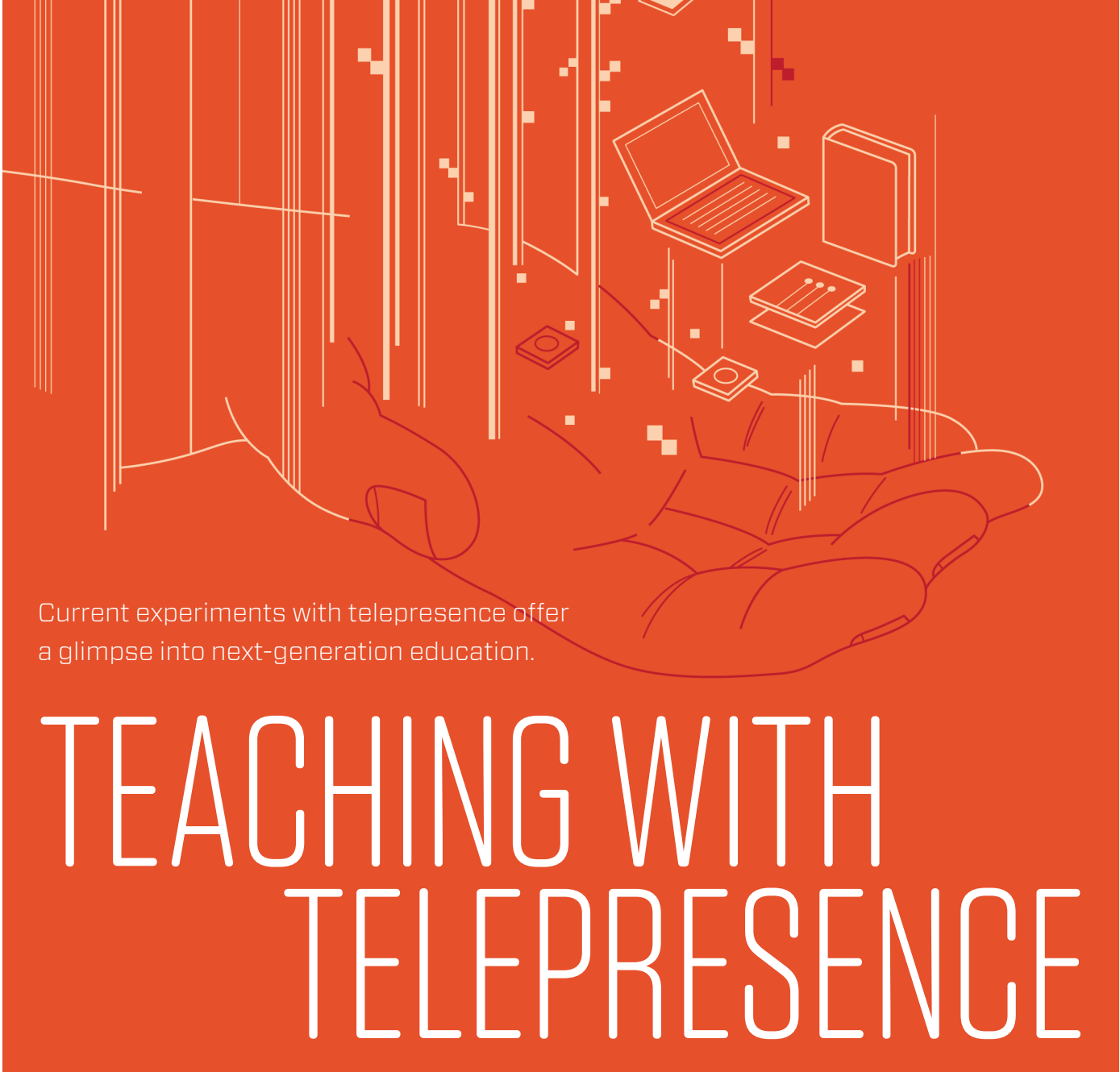
allowed him to see what they were doing on their computers. The students loved it, and it was perfect in a situation when our speaker could not physically be present in the room."

Given the success of these initial experiments, the center now plans to deploy the Beam+ in the university's online programs, says Means. "We want to find opportunities to bring students in our online program into the classroom to meet their classmates, as well as enable them to attend events so they can participate in extra- and co-curricular activities."

■ **The Johnson Graduate School of Management at Cornell University** in Ithaca, New York, has purchased a single Beam+. So far, the device has been used primarily by faculty and staff while they are traveling, explains Jennifer Shipe of the school's Classroom Technologies and Distance Education Services office.

"They use the device to attend important meetings here while they are off campus," she says. "We will get requests about a week or so out informing us of the time and place the Beam will be needed. We'll drive it up to the location and leave it for their use for the duration of the meeting; then we'll pick it up to drive it back down to its docking center." Some have requested to use the Beam to present, monitor, or just sit in on classes, she adds.

All of these schools have yet to use the devices comprehensively in their courses. But as they expand on their initial experiments with mobile telepresence, it's likely that mobile telepresence will become more prevalent as a tool to support blended education environments.



Current experiments with telepresence offer a glimpse into next-generation education.

TEACHING WITH TELEPRESENCE

IN THE PREVIOUS PAGES, several business schools shared the results of their early experiments with mobile telepresence robots. (See “Here and There” on page 30.) But what does it take to teach in fixed telepresence rooms, equipped with wall-mounted screens through which remote students and instructors can interact in real time? These spaces can mitigate distance by allowing more eye-to-eye contact and more seamless conversations in online and blended classrooms.

Here’s a look at how three business schools are integrating the technology to enhance the global reach and interactive nature of their online programs:

■ **The University of South Carolina’s** Darla Moore School of Business in Columbia opened its first telepresence room in 2009 and now has seven telepresence locations statewide. Its multi-location courses link sites in Columbia, Charlotte, Charleston, Greenville, Bluffton, Aiken, and Spartanburg. Each room is equipped with one to two cameras, a 72” display screen, and a control room. Each room accommodates from 20 to 45 students who attend in person, joining students at other sites taking the same course via telepresence. Students who cannot attend in person at one of the seven sites also can log in via the Adobe Connect web conferencing platform.

With Moore’s system, the current speaker’s classroom is displayed large on the 72” television screen. The classrooms of previous speakers are moved to smaller images at the bottom of the screen. The system switches from classroom to classroom in the larger image, depending on who is speaking, allowing students to sustain real conversations with each other. In addition, the system can be set up so that the instructor and students on different campuses can share notes in the shared system.

Robert Lipe, a clinical professor in accounting, has taught telepresence-based courses in the Moore School’s evening professional MBA



Bharat Anand, a professor of business administration at Harvard Business School, teaches in the HBX Live studio.



Martin Boehm, professor and dean of academic programs at IE Business School, works in the school's new WOW Room.

(PMBA) for several years. While he most often delivers the class from the main Columbia location, he occasionally travels to one of the satellite classrooms during the semester, to meet other students face-to-face.

Managing a single class with students at seven different locations has its challenges, Lipe notes. For one, the instructor can't use the ability to move about the classroom as a teaching tool. "In a live class, I can walk around, get animated, and walk up to individual students to get them involved. With telepresence, I'm in one spot, because that's where the camera is pointed. It's not quite the same thing as being there in person. However, I still can use gestures and facial expressions to make my point."

Perhaps a bigger challenge is the extra effort it requires to make sure all students—whether they're connecting through telepresence or web conferencing—stay engaged. Lipe addresses that challenge by teaching from the control booth, rather than in the theater in front of the students who are physically at that location. Because he now is comfortable using the system, he no longer requires the help of a control room crew.

He notes that some professors prefer to teach telepresence courses from the theater space, so they can interact with the students who are there in person. However, Lipe finds it too easy to "focus on the faces in front of you and not treat the camera as a student. I like teaching from the booth, where I have 15 screens in front of me that show students in all of the different rooms. I can see them move,

I can see their expressions. If someone looks puzzled, I can ask, 'What's going on in Charleston?' If I'm teaching from the classroom, all I can see, other than the large image of the person speaking, are thumbnails of each room where I can hardly tell the people are there."

He also makes use of polling technology to track how engaged students are with the material; he uses the breakout "rooms" in Adobe Connect to engage web-conferenced students in debate. "I can ask students at our telepresence sites to break into groups of five, and then I randomly assign our web-conferenced students into breakout rooms," says Lipe. "I flash a message on everybody's screen when it's time to come back."

Despite the challenges this technology represents, Lipe believes telepresence offers advantages to faculty and students alike. For one, telepresence makes it possible for the Moore School to offer an evening MBA program for professionals in the first place. Columbia's population is not concentrated enough to support an evening program, he says, "but with telepresence, we can open it up to the entire region." The PMBA program enrolls around 110 students, with the majority attending in Columbia and Charlotte, in rooms that can accommodate around 40 students each.

The program also offers students maximum flexibility, he adds. "These are working students with jobs that take

them all over the world, and they can come to class via telepresence one week and via Adobe Connect the next week if they have to. We also record the class and they can watch it later. They never have to miss a class due to their schedules."

For Lipe, the combination of telepresence, web conferencing, and in-person teaching makes for an exciting educational environment. "I knew this system was working during one class, when a student from Charleston and a student from Columbia got into a debate. As I watched them go back and forth, as if they were on different sides of the same room, I started getting

goosebumps. I thought, 'This is what the classroom is supposed to be like.'"

■ In August 2015, **Harvard Business School** in Boston, Massachusetts, introduced its telepresence room, called the HBX Live studio, where participants in HBX online courses can interact with faculty and each other in real time.

Faculty will use HBX Live to enhance participants' online experience, says Patrick Mullane, executive director of Harvard's HBX learning initiative. Equipped with its own production studio, the room features fixed and mobile cameras, a video wall capable of displaying up to 60 individuals at once, and a semicircular floor to mimic "in-the-round" seating. Located at WGBH, Boston's public television station, the studio is meant to replicate the intimacy and synchronous interaction of Harvard

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IE IS TESTING AI AND HOLOGRAPHIC TECHNOLOGY.



Business School's case study method in a digital environment, Mullane explains.

Since the studio's opening, no full courses have been hosted in the room, but the school has experimented with its use via smaller, one-time sessions. These include an introduction to the school's new Leading in Finance course; a two-session workshop on leadership for HBS alumni; and several short-term executive education and corporate learning programs. In March 2016, Harvard's political philosopher Michael J. Sandel used the HBX Live studio to host the first episode of BBC Radio's "The Global Philosopher," in which global participants debated on the moral implications of immigrants crossing national borders.

Having conducted these experiments successfully, Harvard Business School now is developing more virtual programming for 2017, says Mullane.

■ In October 2016, **IE Business School** in Madrid, Spain, announced the opening of its WOW Room, a space that uses telepresence in conjunction with other emerging technologies, from simulations to artificial intelligence. According to administrators, the school wants to use the room to "break with traditional on-site, blended, and online education models."

The room is equipped with 48 screens mounted in a curved U-shape configuration, which gives remote students a 200-degree view of the classroom. Other technology includes two touchscreens for faculty to control the room's features, as well as real-time recording and editing technology. Classroom delivery employs low-broadband video so that remote students can participate even if they have slow internet connections.

"We built the WOW Room to bring more collaboration and engagement to our online teaching," says Jolanta Golanowska, the school's director of learning innovation. "We wanted to give the faculty more ways to engage the students, and to do so easily."

IE Business School retrofitted an

older classroom to create its telepresence space. Technicians added soundproofing to the walls, blocked daylight, installed new electrical and broadband infrastructure, and built support structures for display screens, lights, and cameras. The space can accommodate 30 students who attend classes in person and up to 80 students via telepresence. An unlimited number of students can participate via chat.

Golanowska is particularly enthusiastic about the potential of educational technologies to enhance teaching and learning. Designers have incorporated many established technologies—such as instant student polling, multimedia, simulations and games, and the ability to break all students into smaller discussion groups. But this telepresence space also integrates a range of emerging technologies.

For example, the IE Business School will be exploring new artificial intelligence infrastructures that could allow faculty to engage with the WOW Room's system conversationally, rather than by giving specific voice commands. The room also will incorporate hologram technology that would make it possible for professors to appear to walk around the room in 3-D. "We're currently testing a holographic teacher that would allow one professor to teach students on our campuses in Madrid and Segovia," says Golanowska.

In addition, IE faculty currently are pilot testing mobile telepresence robots, to discover whether they offer another way for students to participate meaningfully in WOW Room courses.

The room's underlying software includes emotional recognition coding capable of detecting movements in facial muscles, particularly those correlated with emotional expressions. "We will pass video feeds live through the emotional detection algorithm and record the outcomes," Golanowska explains. "With the resulting data, we can display information on students' emo-

tions and attention level at the faculty's request, and we can match the average result for the class second by second, so that faculty can review the class to see whether students'

attention dropped at any moment, or spiked when faculty intended." That data will provide a feedback mechanism that professors can use to adjust or enhance their teaching.

Although faculty will receive training and the support of instructional designers to use the room effectively, Golanowska emphasizes that the room is a "one-button system" that requires little technical knowledge to operate. The school expects that about 100 professors and more than 1,000 students from 130 countries will participate in courses in the WOW Room in its first year.

The room presented a range of new pedagogical and technological challenges and will continue to do so as technology evolves. This means that the future of learning will require engaging students more deeply, Golanowska notes—and that the role of faculty must change as well. "It's not enough for students to just see and hear a lecture. It's critical that they get to try to do things in the classroom and have faculty coach and guide them through the process, while observing them and providing instantaneous feedback. We also need to provide meaningful feedback to faculty so they can continuously improve their interactions with students," she says.

"Achieving those things is difficult enough in offline programs, but it is particularly challenging online," Golanowska adds. "We have designed this room with those needs in mind." □

■ **To view a video that shows the HBX Live studio in action, visit www.youtube.com/watch?v=W8If9piApe0. To view a video about the WOW Room, visit www.youtube.com/watch?v=AGEknY6FTLU.**



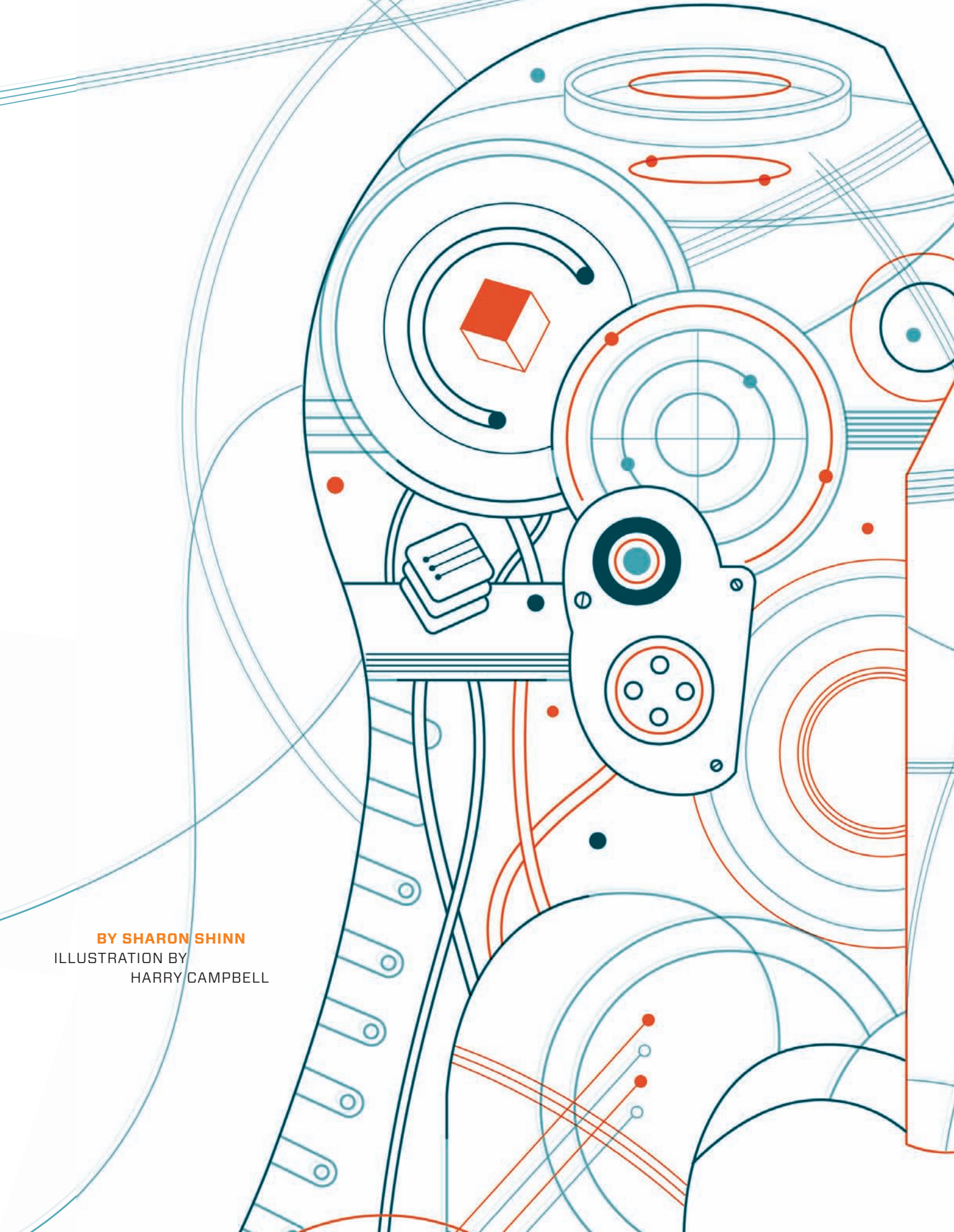
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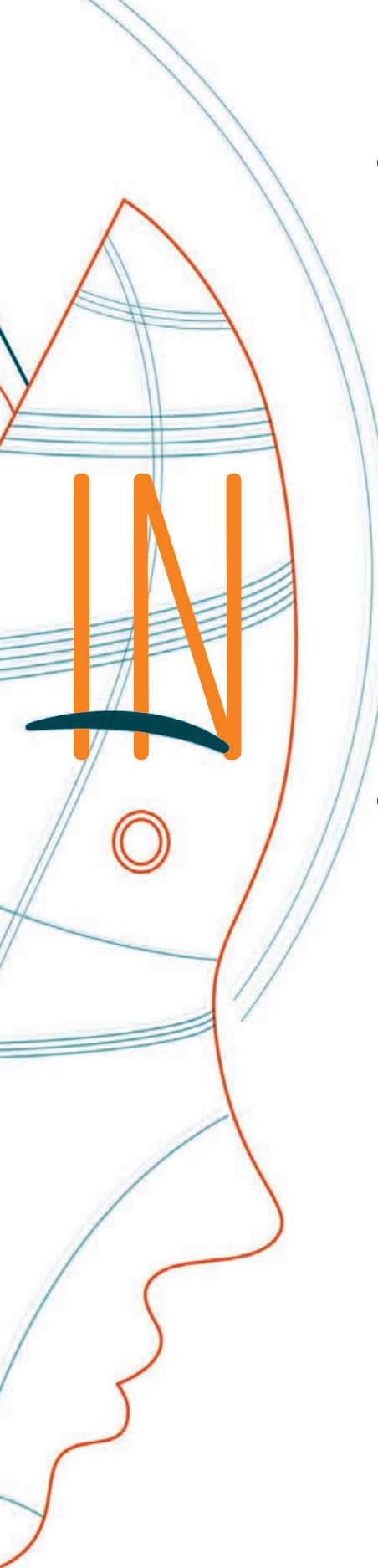


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BY SHARON SHINN
ILLUSTRATION BY
HARRY CAMPBELL



THE HUMAN TOUCH

Artificial intelligence is coming to the business school classroom. What can students learn from the machines?

BIG DATA. ARTIFICIAL INTELLIGENCE. MACHINE LEARNING. Cognitive computing. They're terms that are tossed around in business schools today almost as often as words like finance and marketing—and if they're not quite foundational topics in business schools, they soon will be.

Big data, of course, refers to any massive amount of information that can be gathered, sorted, and analyzed to help managers make smarter decisions. The other terms refer to ways that computers are learning from and adapting to human behavior to make data even more useful.

According to James Pang, a visiting associate professor at the National University of Singapore's School of Computing and Business School, there are four fundamental technologies in big data analytics: artificial intelligence; machine learning; information management; and massively parallel processing, in which multiple processors work on different parts of a program while communicating through an interface. He adds, "Because of recent developments in these fundamental technologies, we are able to deal with big data through the four V's—that is, volume, velocity, variety, and veracity. This allows us to derive business insights from massive data sets."

Until recently, many analytics programs were housed in colleges of engineering and computing, but more and more business schools are either collaborating with those colleges or creating analytics programs of their own. That's because it's important not just to analyze the data, but to use it to drive business decisions.

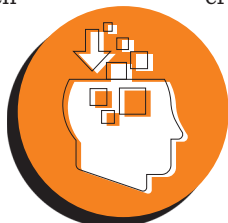
"Data specialists need to be great at managing data, but they also need to understand business issues," says Cheri Speier-Pero, professor of information systems at Michigan State University's Broad College of Business in Lansing. "Ultimately, their decisions will affect a company's marketing strategies and financial outcomes, so they need to be effective in creating and making sense of statistical models."

For business schools, two questions arise, says Speier-Pero. "How do we prepare our students? And how do we create interesting and cutting-edge knowledge by applying these techniques to our research?"

NUS and MSU are among a growing number of schools that have taken those questions seriously. They've both launched partnerships with IBM and other software companies to give their students a head start on using the computing tools that will be so essential in the workplace. (See quick descriptions of their programs on page 46.) And running those programs has given these two educators insights into what the marketplace needs—and what the future holds.

STUDENT PREP

To prepare students to work effectively in the big-data future, one of the first keys is to familiarize them with cutting-edge tools. That's why schools find it essential to partner with big players like IBM and SAS, which can provide access to the most current technology and give instruction on how to use it. Most schools also follow a multidisciplinary approach that often combines



business, computer science, and engineering. But Pang and Speier-Pero both emphasize that schools must do more than teach students about technology.

Pang believes the first step is to train students to embrace the future with open minds; the second step is to encourage their ability to learn quickly, because the world is changing at unprecedented speed. "The third step is to make sure our students understand the fundamentals of business," he adds. Thus, students must learn how to identify and understand "pain points" in business, he says, because these represent chances for innovation. Students also must master essential soft skills such as leadership and communication.

Speier-Pero believes it will be just as important for students to know how to learn on their own. "While tech companies and employers have gotten better at providing training on an as-needed basis, they don't hand-hold students through the process," she says. "We tell students they will never be given sufficient training in a given software, so it will always be partly up to them to figure out the software. At the university level, we need to instill in our students this approach to learning so they will be more successful in the workplace."

MACHINES OF THE FUTURE

Students need this kind of preparation, say Pang and Speier-Pero, because companies already are employing AI techniques to learn human behavior in fields such as banking and finance. To help her students understand how AI is working in the real world, Speier-Pero begins with a topic most of them understand: credit card fraud. One way to avoid fraud is to put chips in the cards, she says—but another is to learn a specific cardholder's shopping behavior and identify aberrations, and that's something machines can help humans do.

"I use my mother as an example," she says. "Every year, she goes on a shopping binge that is

different from her traditional way of shopping. At first when those binges would occur, the company would call the house to see if my mom was the one using the card. Now the company has realized that behavior is normal for my mother, even if it's infrequent, and built it into her profile, so the binges no longer trigger warnings of fraud. To me, that's a cool example of artificial intelligence because the machine is looking uniquely at a single shopper and learning her behavior."

But many other industries potentially can be transformed by artificial intelligence. While Pang warns that it's difficult to make predictions in the rapidly changing world of technology, he looks for AI to have a great impact in four key areas in the next three to five years:

Personal digital assistants. Smartphone assistants such as Apple's Siri and the Google NOW app will learn more and more about our behaviors. "Assistants will provide us with more personalized services, such as recommending movies and products, and will arrange our daily schedules," says Pang.

Transportation. "Autonomous transportation, or driverless cars, soon will be commonplace," says Pang. "For most people, they will be the first experience with physically embodied AI systems, and they will strongly influence the public's perception of AI. Many companies—including Google, Uber, Tesla, and Baidu—already are making significant progress in this area. The world's first driverless taxi already is operating in Singapore, and Uber also has started its first driverless taxi service in Pittsburgh."

Healthcare. "AI has already started to make an impact in this industry," says Pang. "For example, the IBM Watson Oncology Advisor now provides oncology treatment advice to doctors at several hospitals in North America and Asia. The journey of AI in healthcare will not be fast or smooth, but healthcare will be



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TWO APPROACHES TO ANALYTICS

Many schools have recently launched business analytics programs. Here's a look at two.

■ At the **National University of Singapore**, the master of science in business analytics is a collaboration between the NUS Business School and the School of Computing, and it includes a module built around Watson Cognitive Computing. IBM experts come to the NUS campus to deliver technology seminars and hands-on workshops to explore how to apply cognitive computing in real-world business cases.

In addition, students from the business and computing schools form teams to build creative Watson applications for specific industries. In 2015, the school launched an event called Watson Innovation Challenges, receiving 34 student proposals covering 14 sectors, including healthcare, retail, and human resources. "Some of the interesting applications students built included a personalized treatment advisor for rheumatoid arthritis, an online shopping advisor for consumer electronics devices, and a digital recruitment expert for HR professionals to use in hiring," says James Pang.

By the time students leave the class, Pang hopes they've gained three types of knowledge: an excellent grounding in fundamental and state-of-the-art technologies in cognitive computing; an understanding of how to use technology to build solutions to "the pain points" in real businesses; and the ability to work with industry professionals to deliver a successful project.

Pang notes that it's essential for the class to keep evolving because the technology in the area of cognitive computing is changing rapidly. "In the beginning, students developed applications in a dedicated Watson Cloud for NUS, but now Watson capability is available from IBM's new BlueMix platform, which students leverage to develop Watson applications," he says. Bluemix allows organizations to tap into IBM and third-party services for free on a public cloud, or to run private applications behind a firewall. (Learn more at www.ibm.com/cloud-computing/bluemix/.)

■ **Michigan State University's** master of science in business analytics is a three-semester collaboration among the Broad College of Business, the College of Engineering, and the College of Natural Science, which houses the statistics department. The school partners with companies such as IBM and SAS to give students experience with statistical platforms and programming languages.

One of the critical pieces to MSU's program is a co-curricular project that students begin in January before they enter the classroom. All students are assigned to teams; they all work with data that comes from the same real-world company, but each team uses the data to accomplish a different objective. For instance, for a recent project, students considered a company that sells mostly through retail distributors but planned to increase the importance

of its online sales portal; the company's leaders wanted to know what kind of website information and promotions would be more effective. Nine teams of students looked at different types of customers, from millennials to women.

As students progress through their courses, they learn information related directly to the project, says Cherie Speier-Pero. "When we covered marketing in our introductory class, we spent extra time talking about web analytics. In the statistics class, the professor incorporated homework assignments based on the company's data, and students learned increasingly more sophisticated statistics techniques. We orchestrate the course assignments in the first semester to support the learning and activities happening in the project. Students learn quickly what their strengths are, where their gaps are, and how sophisticated their skills will need to be if they're going to pursue data analytics as a career."

Among the tools students learn to use at MSU is IBM's SPSS modeler, a predictive analytics tool that "allows students to take existing data and make predictions about the future in a more robust and meaningful way," says Speier-Pero. They also use the visualization tool Tableau to create visual displays from massive amounts of data.

"Databases and spreadsheets are still the tools of business, but we're saying it's not enough to show a pie chart or bar chart," Speier-Pero says. "Visualization tools allow students and managers to drill down in the data right within the software. They allow users to explore data individually or in a group setting—say, if someone is making a presentation to the VP of marketing and a question comes up about sales. The tool

allows users to explore data in a way that provides a more nuanced understanding and leads to better and faster decision making. I think visualization tools will soon be on every manager's desktop"

Speier-Pero notes that IBM and Tableau have made platforms available to students free of charge, provided training support, and attended academic conferences to help faculty understand how these tools can be incorporated into classes. Company reps come to class not only to provide technical training, she says, but to show students how to think about data using their specific tools.

In the fall, to draw students to the program before its January start, the university hosts an event called The Face of Analytics, in which about 50 companies come to campus to look for interns and full-time employees. Although about 35 students usually are enrolled in the program, about 300 show up for the event because they're curious about job opportunities in the field. Says Speier-Pero, "Many get summer jobs where they learn what it's like to be data scientists. Some go on to follow analytics careers, and some come back to join our program."

THE CLASS MUST KEEP
EVOLVING BECAUSE
THE TECHNOLOGY IN
THE AREA OF COGNITIVE
COMPUTING IS
CHANGING RAPIDLY.

one of the most impactful AI applications in our daily lives.”

Home/service robots. “These already have entered our lives as intelligent vacuum cleaners and servers at restaurants, but we’re going to see more of these,” Pang predicts.

He notes that it’s hard to forecast ten to 15 years out, but in that timeframe he expects AI also to make an impact in areas such as public safety and security, employment and the workplace, education, and entertainment. All of these are fields that will be seeking business graduates trained in the power of analytics.

HUMAN TOUCH

Some observers shudder when they see these lists of industries that are being taken over by tech, fearing that machines will displace even more people from

their jobs, but both Pang and Speier-Pero have more optimistic views of the digital future.

“I don’t think AI machines are threats to humankind. I think they will have profound positive impacts on our society and economy,” says Pang.

Speier-Pero agrees. “I really believe machine learning is making people more valuable,” she says. “In fact, their higher-level skills might be more critical than ever. The machine environment can perform the analysis faster than the human can, but the human can understand nuances better.”

The challenge remains educating students to work with machines so they can leverage both artificial and human intelligence. For most people who are intrigued by AI, says Speier-Pero, the



real obstacle is that technology is being applied to such complex problems.

“These problems are very costly from an organizational standpoint, so they’re worth looking at, but there’s tremendous learning required,” she says. “To me, there are interesting ways that machines can learn to better understand human behavior that will allow us to improve financial results for companies or experiences for customers—ways that don’t require a high level of sophistication. My guess is that, once some of those approaches have proved successful for companies, they’ll start thinking about more sophisticated uses for AI.”

And that’s when business graduates need to be ready to combine their business acumen with their technical savvy to lead their companies to success. ▣

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INTO THE BREACH

As more and more companies suffer data breaches, business schools must know the basics of cybersecurity.

**BY MARK WEISER
AND CAROLYN CONN**
ILLUSTRATION BY HARRY CAMPBELL

YOU DECIDE TO STEP OUT FOR LUNCH with faculty colleagues. You coordinate plans via your Verizon cell phone after first using Windows 10 on your laptop to look up your LinkedIn contacts. You debate going to Wendy's, but decide to try Noodles & Company instead. You stop for cash at the ATM, then settle in at the restaurant to enjoy a steaming bowl of pad thai. You are probably unaware that each company and network you accessed during your outing was a victim of a major data breach announced during one two-week period in 2016.

Almost every day seems to include a news story about a data leak that impacts thousands—sometimes millions—of companies and consumers. Your one lunch excursion could set you up for identity theft for months or years to come. You feel less anxious about the threat because you know that corporations typically offer free credit monitoring to customers whose data is breached, and you know that the big-three credit bureaus would have your account on a security alert. That is, until you realize that Equifax, one of those credit bureaus, also reported a major leak in the same two-week timeframe. One of the other three, Experian, had a breach the year before.

Many people believe identity theft is limited to a small number of unlucky consumers. But 15 million people had their Social Security numbers stolen from Experian, and 40 million Target customers saw their credit information sold on the black market. These days almost any issue of *The Wall Street Journal* or *Bloomberg Businessweek* highlights a security breach and the havoc it has wreaked on a company, nonprofit, or government agency. Antivirus company McAfee estimates that 0.6 percent of the U.S. GDP is attributable to cybercrime alone, and America is nowhere close to being the global leader in this nefarious and burgeoning industry.

No sector is immune to cyber threats. The fallout for a company may include plunging stock prices, distrust of top managers, and news stories about how corporate carelessness led to elderly grandmothers losing all their savings. More repercussions can follow if stakeholders and the media start asking questions about operational data integrity, imperfect cybersecurity, and other vulnerabilities.

And, yet, even though cybersecurity is a growing concern to businesses, it still is not a mainstream subject at business schools. We argue there are three reasons business schools should care about cybersecurity. First, business students themselves may be the targets of cybercrime even before they attend freshman orientation. A study from Carnegie Mellon revealed that roughly 10 percent of children are victims of cybercrime, and that children are 51 times more likely than adults to be victimized.

Second, the exponential growth of hardware and software technology has combined with a seemingly unquenchable demand for mind-boggling amounts of data, and virtually every discipline in the business school is racing to incorporate big data into its curriculum. A great deal of data is being captured even

though we have no current use for it—but storing it comes with increased risk of exposure to cybercrime.

Third and most important, cybercrime might be one of the greatest threats to economic stability around the world. Even so, most company leaders do not seem as worried as they should be. In 2015, the Ponemon Institute, a consultancy firm that focuses on privacy and security, conducted a global impact study that compared the financial risks for tangible and intangible assets. Of the companies in the study, 37 percent had experienced a data security breach in the previous 24 months, with an average total impact of US\$2.1 million. Yet only half the firms indicated they became more concerned about cyber liability.

Along the same lines, a 2016 study by accounting firm PwC found that only 37 percent of firms have created a cyber incident response plan and fewer than 50 percent of board members request information about their firm's cyber-readiness. PwC also compiled a list of the most common economic crimes, and these included asset misappropriation, bribery and corruption, procurement fraud, and accounting fraud. But cybercrime is now No. 2 on PwC's list of the most-reported economic crimes, and all indications are that its cost will increase in coming years.

Technology has been incorporated into a vast new array of products and services, yet companies do not realize how vulnerable they are to cyber threats. Hackers have taken over a talking Barbie doll, a Wi-Fi enabled sniper rifle, and the transmission and braking systems of a 2014 Jeep Cherokee. It is inevitable that, in the future, more and more products and services that have never before utilized network technology will begin to do so.

Who will be overseeing the development, financing, production, marketing, account-

AMBULANCE DRIVERS CAN CHANGE TRAFFIC LIGHT SIGNALS. SO CAN HACKERS.

ing, and risk management of these products? Our business school graduates. They must be prepared to protect their own financial security, as well as everything they are responsible for in their careers—the products they work on, the

cyber assets of their employers, and the information security of their customers.

Just as we have integrated sustainability, ethics, and global responsibility into our curricula, we now must incorporate cybersecurity. Business students do not need to become IT specialists who know how to program computer chips. But they must understand that whether they work in a one-person startup, a regional nonprofit, or a multinational conglomerate, their organization relies on technology, data, and connectivity. And it is vulnerable to cyber threats.

THE ROLE OF B-SCHOOLS

To gain a working knowledge of the risks posed by today's ubiquitous technology, business students must become "cyber savvy." They must understand the pervasive nature of cyber threats; the wide variety of potential attacks; the financial and operational impact of cyber breaches; the basic practices to employ to achieve cybersecurity, both personally and professionally; and the costs and benefits that come with providing robust security—or choosing not to.

Cybersecurity is important enough that it was recognized in AACSB International's 2013 Accounting Standards. In particular, standard A7 calls for schools to develop skills that integrate technology into accounting and business, specifically through creating, sharing, analyzing, mining, reporting, and storing data. Each of these areas implicitly includes a significant cybersecurity component to ensure accuracy, privacy, and value of the outcomes. The standard was established for accounting programs, but it serves as an important guide for all business programs.

WEBCAMS CAN BE TURNED ON REMOTELY SO THAT HACKERS CAN SPY ON USERS.

WHO AND HOW MUCH



THE COSTS

US\$1 TRILLION The estimated financial impact on the U.S. if a successful cyber attack shuts down even a portion of the national power grid. The damage would occur over a five-year period and adversely impact both supply chains and infrastructure.

\$12 MILLION The amount that the U.S. retail sector estimates it loses to cybercrime every year per responses to the Ponemon Institute's *2015 Cost of Cyber Crime Study: U.S.* In the same survey, respondents in the financial services sector put their average annualized costs closer to \$28 million; in the technology sector, \$16 million. The institute estimates that, across all sectors, the mean annualized cost of cybercrimes is \$15 million. The

net increase was 82 percent over the most recent six years of the study.

\$62 MILLION The estimated cost to Home Depot (before insurance reimbursement) when its database was hacked in 2014 and thieves stole information for 56 million credit/debit cards and 53 million customer emails.

\$252 MILLION The estimated cost to Target after it experienced a data breach in December 2013 (though insurance reimbursements brought it down to \$162 million). For both Target and Home Depot, those amounts exclude any settlements or judgments against the companies arising from litigation.



THE ATTACKERS

NATION STATES: Governments might hack other governments or corporations to cause turmoil. For instance, it is believed that North Korea's government sponsored the hack against entertainment giant Sony. Most recently, the U.S. government formally accused Russia of stealing and disclosing information from the Democratic National Committee. Very real concerns have been raised about another nation tipping the balance in an election.

INSIDERS: These might be employees or trusted third parties, such as vendors. An HVAC subcontractor was the source of log-in information needed to carry out the Target hack.

HACKTIVISTS: These individuals, often described as "hacking for a cause," either believe in a cause or do not believe in *your* cause; they feel justified in harming a company or its customers. In early 2012, Wikileaks and Anonymous released five gigabytes of email hacked from private intelligence firm Stratfor—reportedly in response to Dow Chemical's reaction to social activists The Yes Men, who criticized Dow's handling of the Bhopal disaster.

THIEVES: These people are looking for money. In February 2016, hackers attacked

Hollywood Presbyterian Medical Center with "ransomware," a malicious software that locks users out of the computer system until payment is made. The hackers put the hospital system back online after they received a \$17,000 ransom. Since then, multiple hospitals and a police force have been targets of similar attacks.

TERRORISTS: Early in 2015, the Pentagon notified retired U.S. Army generals that their names, email addresses, and home addresses had been published online, after hackers claiming to be part of ISIS obtained the information from Twitter and YouTube accounts of the U.S. military's Central Command. One security expert described the incident as a new kind of psychological warfare, designed to create fear and weaken morale in the military.

ORGANIZED CRIME FAMILIES: Today's organized crime leaders are much different from mobsters such as Al Capone. The internet allows criminal organizations to be almost invisible, and cyberfinance makes it harder to follow the money trail. In August 2016, New York prosecutors filed charges against 46 leaders of Sicilian-American Mafia families. They were charged with extortion and racketeering, as well as credit card fraud and healthcare fraud.

While each business school faces pressure to add topics to an already packed curriculum, cybersecurity is too important to ignore. Here are ways to include it in business programs:

■ **Commit to the importance of cybersecurity.** Two important steps are to incorporate cybersecurity into the mission and to appoint a champion.

■ **Examine the core.** The standard business core usually includes a computer competency class, which might cover a suite of office software and include a broad overview of information systems. At least one-third of this class could be redirected toward teaching critical and practical IT security concepts.

■ **Embed relevant cases directly from today's news.** A major technology breach makes the news on at least a weekly basis. These news items will provide ample fodder for real-time discus-

sions about the impact of cyberattacks.

■ **Collaborate with colleagues across all disciplines.** For instance, consider creating a class offered jointly by the MIS and accounting departments. Use it to explore the critical importance of data integrity, how it might be violated, what the resulting impact might be, and how to defend against threats.

■ **Team with career services and recruiters.** Corporations are aware of the importance of IT security and will embrace better-informed graduates entering the workforce. Consider beefing up cybersecurity efforts by finding private funding to support development, scholarships, and faculty training.

In addition to incorporating cybersecurity into the curriculum, schools can heighten awareness of the importance of cybersecurity if they take these actions:

■ **Train the trainers.** Make sure

faculty understand the perils implicit in sharing passwords, overusing social media, and underestimating the vulnerability of technology.

■ **Model good cyberbehavior.** Do not ask students to share registration passwords with advisors just to make the process go more quickly. Do not give administrative assistants your system user credentials so they can process your travel requests. Overtly demonstrate the importance and benefits of following best practices in cybersecurity.

■ **Encourage a cybersecurity mindset.** Today's students share some of their most private moments in publicly accessible places. Universities pride themselves on being bastions of freedom that provide unfettered online access. Make sure students and faculty understand the risks of these attitudes. A recent survey commissioned by Experian showed that 60 percent of companies with a data protection and privacy program believed their employees were not knowledgeable about security risks, and only 35 percent of responding em-

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PROBABILITY OF
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SETTING UP FOR CYBERSECURITY

BY STEPHANIE M. BRYANT

While there are many excellent reasons for business schools to begin offering courses and specializations in cybersecurity, schools that choose to do so will need to consider two primary factors related to resource availability—faculty and curriculum.

■ **Faculty.** Probably the most challenging first step is for schools to have qualified faculty trained in this highly specialized area. Having the right professors will be especially important for schools that want to offer standalone bachelor's or master's degree programs in cybersecurity, because at that level they will need to meet AACSB faculty qualifications standards.

While there is only a small pool of qualified candidates with PhDs in this field, many schools have successfully adopted a "grow your own" strategy. Schools work with current faculty members who have doctoral degrees in foundational disciplines, and the

schools invest in professional development for these individuals to fill gaps in education or experience. Once schools have committed to cybersecurity programs, they must make sure they have enough faculty to deliver the courses. They don't want to risk being unable to sustain these programs if key faculty depart.

Schools can support faculty's ongoing efforts to maintain relevance in the cybersecurity field by providing them opportunities to view webinars, attend conferences and seminars, and keep up with professional reading. Professors can get a good feel for the best professional conferences by visiting Digital Guardian's "Top 50" list (see digitalguardian.com/blog/top-50-must-attend-information-security-conferences). Another source for conferences, webinars, and training is ISACA, a global nonprofit focused on the development of knowledge and practices

TOY MANUFACTURER VTECH WAS BREACHED BY A “GOOD GUY” HACKER TO PROVE THE SYSTEM WAS VULNERABLE. ELEVEN MILLION ACCOUNTS WERE COMPROMISED. THE HACKER OBTAINED THOUSANDS OF CLOSE-UP PHOTOS OF CHILDREN’S FACES, ALONG WITH THE CHILDREN’S PERSONAL INFORMATION.

employees believed that data security was a priority of senior management.

If business schools can help their students understand the importance of cybersecurity while they are on campus, graduates will be much more realistic about cyber threats when they are in the workplace.

NOT OVER YET

No matter how well they are prepared for cyberattacks, business graduates will inevitably find themselves dealing with security issues. They will quickly discover that identifying the breach is only the first step. As executives, they must be prepared for a great deal of scrutiny as investigators from a number of regulatory agencies knock on their doors to ask, “Why did this happen and who is responsible?” In the U.S., these agencies include the FTC, the SEC, the Department of Health and Human Services, the Department of Defense, and the Secret Ser-

vice—all of which, one way or the other, are charged with defending the security and privacy of American citizens. Other regulatory agencies will be involved when data breaches occur in other countries.

Additional stakeholders could come forward if there is a hack. These include investors and customers who might bring civil claims against a company, claiming fraud or abuse resulting from a failure to properly manage information systems. The media also will be quick to get involved, especially if the breach is big and reporters see the incident as a major news story. Business schools must prepare students not only for the breach, but for what comes afterward.

Like many other subjects taught in business school, cybersecurity is very much a bottom-line issue. It is concerned with managing costs, benefits, risks, public image, intellectual property value, customer relations, and equity. We must make sure students understand the

consequences of incorporating technology into their products, services, and processes. The notion of cybersecurity must be integrated so thoroughly into our curricula that students practice it automatically in every aspect of their personal and professional lives. **D**

Mark Weiser is Regents Service Professor and director of the Center for Telecommunications and Network Security and professor of management science and information systems at Oklahoma State University’s Spears School of Business in Stillwater. Carolyn Conn is an accounting professor at the Bill Munday School of Business at St. Edwards University in Austin, Texas; she is also a CPA and certified fraud examiner.

D To take a quiz to test your cyberintelligence, visit www.bizedmagazine.com/archives/2017/1/features/into-the-breach.

for information systems (see isaca.org). Faculty also should cultivate relationships with practicing information security professionals as a way to maintain currency and keep the curriculum relevant.

■ **Curriculum.** Developing a forward-looking, rigorous, current curriculum is no easy task. Deans and school leaders should start by benchmarking against peer schools that have similar resources to get an idea of various structures and curriculum content they could adapt for their own programs.

They also should consider these key questions: Will they deliver all or part of their programs online? What learning facilities, labs, and/or software do they need to support the curriculum? How will they recruit students? What kinds of jobs will they prepare their students to take? How will they place their graduates? School leaders should design their curricula with the answers to these questions already in mind.

At Missouri State University, we have built a master’s in cybersecurity program around what we call the “three pillars of cybersecurity.” The *technical pillar* covers hacking techniques and incident response options, cloud computing, network security, web

application security, and computer forensics. The *policy/compliance pillar* deals with IT legal issues in cybersecurity and includes a seminar course in cybersecurity focusing on policy. The *behavioral pillar* deals with organizational behavior and project leadership; it includes a seminar course in social engineering. Our program includes both seated and online courses. Students in our online courses access tools via the cloud. Students in our seated courses utilize our cybersecurity lab to become familiar with best-of-breed security tools used in the industry.

Developing a first-rate cybersecurity program is a daunting task that requires commitment from both faculty and administration. However, schools that educate their students to be highly competent in the knowledge economy will reap dividends at the reputational level as they produce some of the most sought-after graduates in the market.

Stephanie M. Bryant is the dean and David D. Glass Leadership Chair at the Missouri State University College of Business in Springfield. She is chair of the AACSB Accounting Accreditation Committee.



Students at the University of Louisville learn to master five essential competencies of business communication.



Toward Better Business Communication

BY KRISTEN LUCAS

ILLUSTRATION BY GORDON STUDER

SOMETHING HAD TO CHANGE. Business students at the University of Louisville were developing strong technical ability and business knowledge, but they were consistently demonstrating weaknesses in their communication skills. In 2012, leaders at the College of Business decided to address this problem directly—instead of continuing to require students to take the business writing course taught in the English department, they would develop a new business communication curriculum that would be taught in-house.

This move would give the college greater control over the content of the curriculum and the quality of the instruction. And because the course would be filled entirely with business students, an instructor could draw on their shared educational background to infuse the lessons with a strong focus on business.

Five Competencies

At Louisville, we teach students that business communications must be:

Professional. Business communicators represent themselves and their organizations, so they must exhibit care and attention to detail, use a courteous tone, and follow standard business conventions.

Clear. Business communicators must deliver messages that are easy to decipher and act upon. They should put the bottom line up front, organize points in ways that are easy to follow, and use simple and unambiguous language.

Concise. Business communicators must deliver messages that are as short as possible, without being incomplete. At the big-picture level, they cut out extraneous information. At the detail level, they edit their sentences to reduce wordiness.

Evidence-Driven. Business communicators must select and present compelling evidence to support their points. They explain the credibility of their sources or analyses, clearly describe the supporting data, and use data displays to convey complex information.

Persuasive. Business communicators convince others to support a position or take action. They state strong overarching persuasive positions, create logical sub-points, and adhere to ethical standards in their attempts to influence.

▶ [For more information on development of the core competencies, see “The Competency Pivot: Introducing a Revised Approach to the Business Communication Curriculum” by Kristen Lucas and Jacob D. Rawlins, which appeared in the June 2015 issue of *Business and Professional Communication Quarterly*.](#)

I was hired to lead the development and maintenance of the business communication curriculum, and I was given a blank slate to design it from the ground up. For inspiration, I turned to the approach known as Communication Across the Curriculum/Communication in the Disciplines (CXC/CID).

In a CXC/CID approach, the curriculum is grounded in the needs and expectations of a specific discipline, and instruction is designed to build unique competencies for communicating in that discipline. Those competencies are reinforced across the broader curriculum and integrated into the oral and written assignments students complete for other courses in their majors.

I was particularly influenced by the work of Deanna Dannels, who is a leading expert in CID research and pedagogy. In 2002, she published a study in *Communication Education* about developing communication skills in the engineering field. At a university where I had previously worked, I had applied lessons from that study to build a successful public speaking course for engineering and technology students. I was eager to use the CXC/CID framework in a business context.

FIVE AT THE CORE

Following a systematic investigation, we identified five core competencies of business communication to place at the heart of our BizComm curriculum: We describe those competencies as *professional*, *clear*, *concise*, *evidence-driven*, and *persuasive*. We framed the competencies in language that reflects business practice, rather than using theoretical or academic terms. This way, students will be more likely to connect what they learn in the business communication course to other professional contexts.

We then developed a set of rubrics that outline excellent, good, adequate, and deficient levels of performance for each competency. The rubrics are intentionally broad so that they can be used for all business commu-

nication messages. We did create separate versions for written assignments and presentations so that the rubric for presentations adds a sixth competency of “delivery skills.” Our goal is for students to become proficient—i.e., good or excellent—at each of the core competencies.

Because we focus on discipline-specific communication skills, our assignments all have a strong business focus. We want students to know how to identify and conform to standard conventions in business correspondence, reports, and presentations; use a writing structure that brings the bottom line up front; streamline content and sentences to make documents shorter; design effective data displays and explain statistical analyses; and adapt messages for favorable versus unfavorable audiences.

We evaluate students on how well they demonstrate each of the core competencies—not on how well they conform to cookie-cutter assignment criteria. We don’t evaluate students’ messages on the number of words they use, the number of sources they cite, or the fonts they choose. Sure, some students are uncomfortable without the specifications, but we want to stay true to business expectations. We tell them, “Your boss is never going to say to you, ‘Get me that seven-to-ten-page report, with 12 sources cited in APA format, one-inch margins, and 12-point Times New Roman font!’ But your boss *will* judge you on how professional, clear, concise, evidence-driven, and persuasive you are.”

We are pleased to see that students are indeed noting connections between what they are learning in BizComm classes and what they are learning in their other business courses. One student came to class and excitedly told me, “I got to write a memo in my accounting class!” (How many students are excited about that?) He continued, “And I got to be professional *and* clear *and* concise.” Another student had been called for several interviews, but had never landed an internship. So during her next interview, she decided she would apply the

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five competencies when she answered questions. The strategy worked, and she secured a prestigious internship.

CONSISTENCY ACROSS CLASSES

At Louisville, students take the three-credit business communication course in their sophomore year. The traditional face-to-face course meets twice a week for a full semester. Enrollment in each section is limited to 25 so students may receive sufficient attention from instructors. But smaller class sizes mean that we must offer many sections, which leads to one of our biggest challenges: maintaining consistency throughout the curriculum. We want to ensure that all students take courses of similar difficulty and learn the same baseline set of communication skills, regardless of who is teaching their section.

Schools frequently rely on rules and regulations to impose conformity in multisection courses. They may require common assignments, tests, and quizzes; create day-by-day course schedules; and/or conduct grading consistency checks.

While this sameness may be welcomed by faculty colleagues and students, limits on autonomy can be highly demoralizing and demotivating for instructors who teach the course.

Our approach enables us to create consistency through shared vision and accountability. Instructors have great latitude for crafting their courses, as long as they work within the core competencies framework. They design their own assignments, plan their own lessons, and determine how much time to spend on each competency.

We find that this flexibility sparks classroom innovation. For instance, one of my colleagues has designed a semester-long project in which student teams deliver presentations to a panel of economic development officers and elected city officials on businesses they might want to attract to Louisville. The panel provides

each team with real-world feedback. In my own classes, I have students deliver fast-pitch speeches to persuade me to donate to the nonprofit organizations of their choice. I donate to the organizations that are most persuasively pitched.

In other classes, students have delivered presentations in the PechaKucha style, which is a format that demands conciseness by limiting the presentation to exactly 20 slides that advance at 20-second intervals. They've also practiced their communication skills by engaging in service learning projects, creating infographics, and reporting their analyses of real customer complaints collected on social media.

Because students focus their attention on being professional, clear, concise, evidence-driven, and persuasive—

no matter what specific assignments they complete—they come away having developed the same basic competencies. And because faculty are using a set of common rubrics to evaluate assignments, we gather important and consistent information about the effectiveness of our teaching strategies.

INSIGHTFUL DATA

Assessment of communication skills is inherently challenging. It generally requires instructors to reread papers and/or re-watch a library of recorded speeches to spot qualitative patterns in student performance. The process can be extremely time-consuming. But when schools take shortcuts—for instance, when they use assignment grades as proxies—they gain limited insights.



Coached to Succeed

One of the key features of our BizComm curriculum is our use of coaches, who offer students one-on-one help with writing, speaking, visual aid design, and team communication. Coaching is available to all students in the College of Business, not just those currently enrolled in the business communication course.

Guided by our CXC/CID approach, we strive to deliver consistent messages to students. Therefore, we train BizComm Coaches to use the five competencies to frame their feedback to students. For instance, they might say, "Let's look at strategies for making your writing more concise." Students also are able to request competency-specific help, such as setting an appointment to work on being more evidence-driven.

We recruit coaches from the English department, hiring PhD candidates who have completed their doctoral coursework in rhetoric and composition, taught composition, and worked in the campuswide writing lab. We provide BizComm Coaches with an office at the College of Business, where they meet with students during scheduled appointments and drop-in office hours.

When they're not assisting students, BizComm Coaches are available to help faculty. For instance, they can provide copyediting services or act as resources for teachers who are assigning reports or presentations. The coaches also can deliver guest lectures on topics such as how to write professional memos and how to create evidence-driven data displays.

We believe the BizComm coaches benefit from their efforts as much as the business students do. Because they've worked in a business school, engaged in professional development activities, and mentored faculty, we expect our BizComm Coaches will be prime candidates to become business communication faculty after they graduate.



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THE UNIVERSITY
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However, our competency approach not only is efficient, it also generates useful insights. Because we grade students throughout the semester on their ability to demonstrate competencies rather than fulfill the arbitrary specifics of an assignment, the data we need for assessment already are included in our feedback to students. And because our course management system, Blackboard, allows us to use embedded online tools, we can download data with a simple point and click.

For the purposes of annual course assessment, we use pre-test and post-test assignments that are different, but comparably challenging. In each assignment, students are given a short writing prompt and supporting data. For example, we have used the prompt, “Should your advertising agency recommend that clients purchase a Super Bowl ad?” We evaluate students’ writing by the same

standards in both time periods, meaning that we don’t score them more gently at the beginning of the semester.

We then have assessment data that show what percentage of the class performed at excellent, good, adequate, and deficient levels for each competency, and we can compare differences between the start and end of the semester. (See “Assessment at a Glance” below.) These comparisons can help us identify specific competencies where our students need improvement and provide the baseline data for determining if we are on the right track with interventions.

For example, we were troubled by a trend indicating that students are not gaining sufficient competence at creating evidence-driven communication. To remedy this problem, this year we’ll be incorporating new in-class activities and adjusting homework assignments throughout the semester

to give students more opportunities to work with evidence in their reports and presentations. Our assessment data at the end of this year will let us know if these adjustments were effective or if more work needs to be done.

Additionally, we are able to use assessment data to do more fine-grained analyses. For instance, we can evaluate the effectiveness of individual instructors or spot patterns in student performance. We also can gauge the effectiveness of various assignments by comparing student performance across semesters or sections.

BIZCOMM AND BEYOND

In the CXC/CID approach, it’s essential that what students learn in the communication course is reinforced throughout the rest of the curriculum. One of our colleagues described our challenge best when he said, “We need to make

students realize that what happens in BizComm shouldn’t stay in BizComm.”

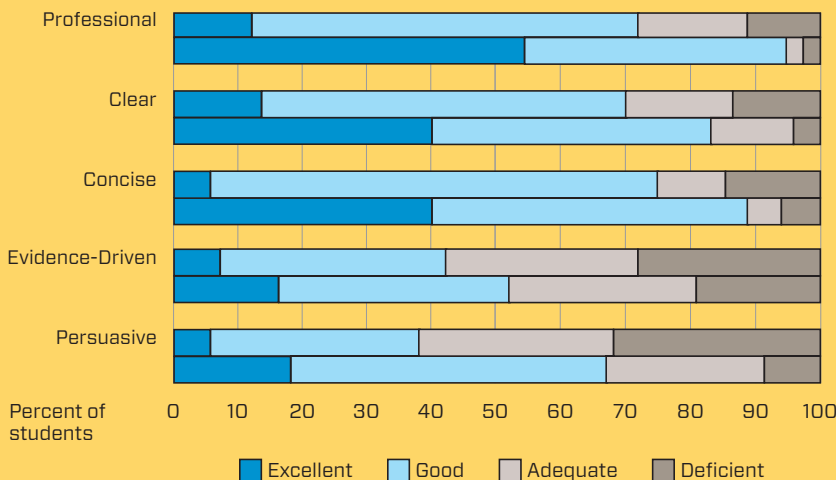


To this end, we have made our rubrics available to other faculty in the college. Although the rubrics are not universally adopted, faculty in CIS, economics, finance, marketing, management,

and accounting have used them to grade written assignments. When students see that their reports and presentations are being evaluated by the same criteria they were introduced to in the business communication course, they have a better understanding of the importance of the core competencies. Some students have expressed a strong desire for the rubrics to be adopted more universally so that they always will know what to expect in terms of being graded. We hope our rubrics eventually will be used for consistent assessment of writing and speaking across the College of Business.

We also have shared our BizComm curriculum with faculty at other universities. So far, four schools have adopt-

Assessment at a Glance



Each semester we use our core competency rubrics to assess students’ communication skills at the beginning (top bars) and end (bottom bars) of the semester. We then summarize competency data to detect meaningful patterns. For example, data from the previous year show that students have improved across all competencies, but many are still deficient in the evidence-driven category. We now are targeting that competency for special curricular attention.

ed our curriculum in their programs, and six more have at least one faculty member using our rubrics. Another 12 universities have requested the rubrics and additional information from us, and faculty from 24 universities have attended one of the pre-conference workshops we've taught at the Association for Business Communication. Some of the interest has come from Canada, the U.K., Singapore, New Zealand, and Nigeria, and we are hopeful that our rubrics can be adapted to many different programs around the world.

Although we are still in the relatively early stages of our rollout, we are pleased with our progress. We are getting positive feedback from students, faculty, and alumni who appreciate the course's strong business focus, and our business

communication faculty are staying engaged in teaching and innovation.

Of course, we have much work ahead of us. As we move forward, our priority will be launching advanced communication modules that apply the core competencies to specific business challenges—such as communicating about financial information, communicating with employees and customers, and storytelling with data. Other possibilities we are exploring include offering an online version of the course, using adaptive learning technologies to provide a more customized educational experience, and providing badges or microcredentials that can be shared on social media or in professional portfolios.

Building business communication competence is a lifelong endeavor. We

hope that the changes we're implementing at the University of Louisville will help our students get a jump start on that process and that the skills they develop will help them launch successful careers in business. **D**

Kristen Lucas is an associate professor of management and communication at the University of Louisville's College of Business in Kentucky. For more information on the competency approach, visit bizcomm.louisville.edu or email kristen.lucas@louisville.edu.

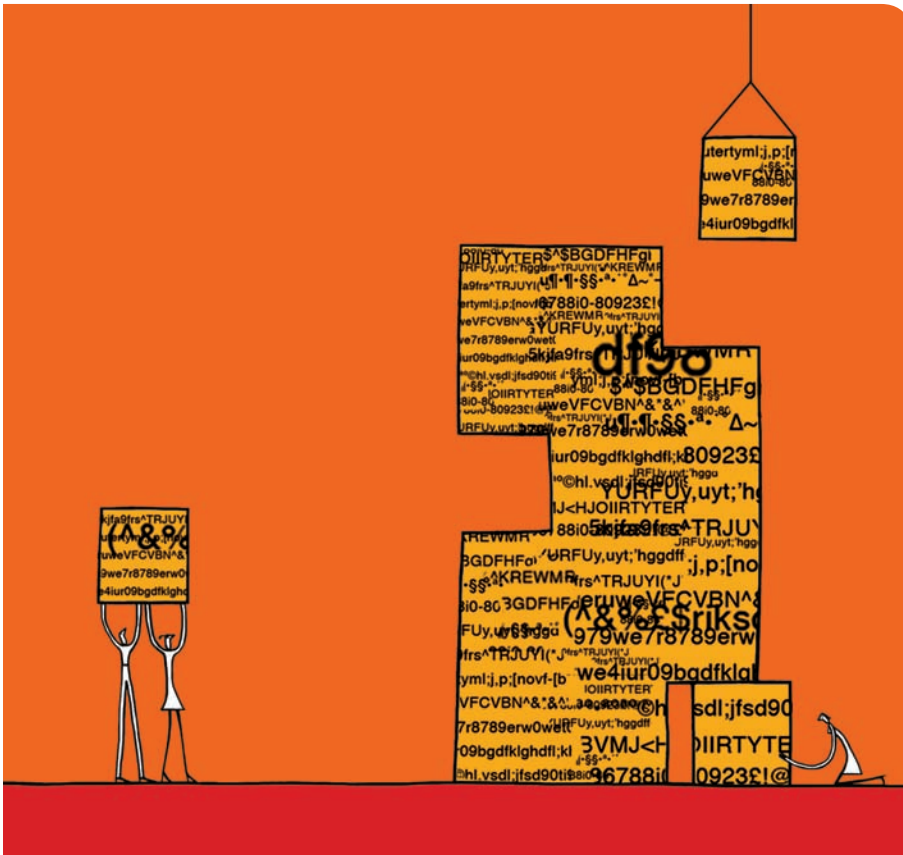
D For a sample of how one student's work improved after he took the course, see www.bizedmagazine.com/archives/2017/1/features/toward-better-business-communication.

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Why B-Schools Must Teach Tech

DIGITIZATION IS CHANGING EVERYTHING BY PETER ROSSBACH

SELF-DRIVING CARS. Computer programs capable of beating Go masters. Digital assistants built into smartphones to help people deal with their increasingly complex lives. A few years ago, we regarded some of these things as flat-out impossible, and now we take them more or less for granted.

Three converging developments have enabled the realization of these phenomena: the ready availability of high computer processing capacity; the collection, storage, and compilation of data that is comprehensive, detailed, and personalized; and the development of

methods for processing this data and turning it into relevant information.

Moreover, this information is being used not just to create new products and services, but also to predict human decisions ever more accurately. No longer are we analyzing and processing data retrospectively; increasingly, we are responding to data that has just been captured—sometimes in real time—from sources that include social media, point-of-sale systems, financial markets, and meteorological measurements. Indeed, as we respond at speeds that were previously almost unthinkable, we are identifying hitherto hidden relationships and patterns, and we're putting them to use in sports, society, politics—and business.

And as far as the potential applications of data are concerned, this is just the start. While tech companies like Facebook, PayPal, and Google already are driven primarily by data, in the future *every* company will rely more heavily on generating and processing information.

This means that managers and employees in every industry need to understand the challenges and opportunities that technology entails. This is why today's business schools absolutely must equip their students—future company leaders and data specialists—with a basic knowledge of how these technologies work and what they potentially can do.

A FEW EXAMPLES

Business students will need to understand the way digitization is increasingly driving change and growth for every business. They will need to see that it can open new markets and provide access to new client segments—or shut out whole business sectors.

For instance, they might study the business of retailing books. Because established book retailers were too slow to make use of new online sales tools, they lost market share; some completely lost their businesses. Amazon easily grew to become the dominant player as it offered new services such as home delivery.

Amazon also added features such as personalized recommendations based on previous shopping behavior and the chance for customers to review books online. These features revolutionized the whole shopping experience. Customers didn't even miss their chats with the local bookseller.

And Amazon isn't done yet. Today it has expanded its portfolio across almost all product categories as it challenges supermarkets, drugstores, and fashion retailers. It's not too much to say that Amazon's presence as an online retailer has altered social life and behavior—or, indeed, all patterns of urban society.

Those are trends today's business graduates must understand as they enter the working world. No matter what field these graduates enter, they will see that their industries are facing similar challenges as disruptive new players enter their markets. These players rely on data and data analysis to provide tips to individuals and engage with clients.

For instance, students interested in entering the banking industry will find that it is on the verge of being completely reshaped by technology. Even though the finance field has always been IT-driven, agile new players have been challenging the longtime leaders by developing tech-enabled products and services that are flexible, value-added, self-explanatory, and always available.

In the past, one barrier that kept new entrants out of the banking field was the bond of loyalty and trust that existed between a bank and its clients. The main points of contact between banks and customers were bank branches, where staff members advised customers and sold them products. Interestingly, today's customers don't seem to require that personal interaction from their banking institutions. They find it more convenient to use online banking than to show up at their bank branches in person. In the future, they probably will do more and more of their banking through apps on mobile devices.

A number of schools have recognized this trend by offering courses on “fin-tech,” or financial technology. Fintech startups already have been hugely disruptive to the banking industry, and that trend is poised to continue. Even though most fintechs only offer one or two products, they are generating great momentum. In some parts of the world, fintechs have been awarded full banking licenses, as is the case for the Berlin-based startup Number 26 in Germany. A recent article from *Business Insider* notes that six out of ten banks worldwide would consider partnering with a fintech, either by collaborating with one or acquiring one. This is an industry that will continue to see upheaval—and it is an industry our students need to understand.

Another phenomenon that has been driven by technology is the so-called “sharing economy.” Companies like Uber and Airbnb are prominent examples that illustrate how the relationships have changed between customers and service providers. While Uber and Airbnb are essentially facilitators—they provide a platform that allows others to conduct transactions—they have turned their respective industries upside-down.

THE ESSENTIAL NEW SKILL SET

As all of these industries are transformed by technology, there's a growing need for the data scientists who collect, monitor, analyze, and manage the data that makes the technology so valuable. In their jobs, they must combine domain expertise with skills in mathematics, statistics, and computer science. They must determine which types of data are relevant to the business, such as changes in customer behavior. They also must produce the information that enables core business units to adjust product portfolios and communications channels. Finally, they must serve as sparring partners for the decision makers on the management team who use that data to set company strategy.

For these reasons, today's busi-

ness graduates must have an additional skill set over and above the traditional business disciplines. Whether they're in sales, marketing, or product development, they must understand new technologies and know how to use them for the benefit of the business. They don't necessarily need to be able to code software or apps. But they will need to understand the basic principles of those jobs so they can evaluate and assess the development of new technology. Only then will they be able to fulfill their primary roles.

Business schools need to incorporate technology into their curricula. Traditional master of finance or MBA programs need to include lessons on digital innovation and new technologies. In addition, schools need to develop specializations and programs tailored to the new demands of the working world.

For instance, students in the BBA program at the Frankfurt School of Finance & Management now can choose a concentration in digital innovation and management. This specialization includes modules on information systems engineering, app development, and digital entrepreneurship. Students spend half their time at the business school and the other half working with one of the school's partners, such as a bank or a fintech company.

Whether or not students choose a more technology-focused program, business schools must help them refine their skill sets so they are prepared for the demands of the working world. In my view, that means business schools must enable all their students to understand technology so they can use it to benefit themselves and their employers. **D**

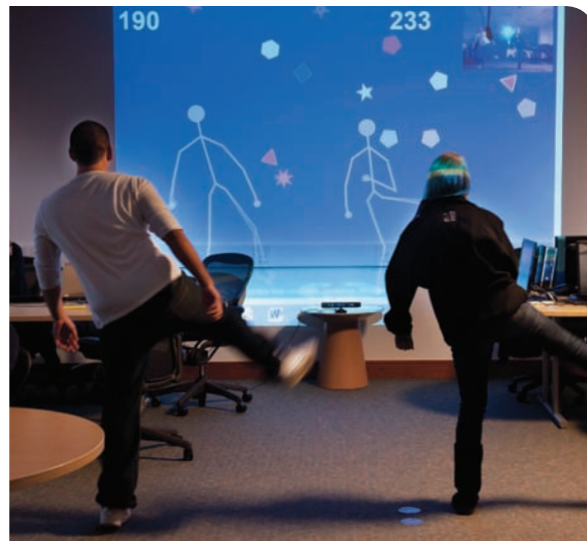
Peter Rossbach is professor of general business administration with an emphasis on applied business informatics and information technology at the Frankfurt School of Finance & Management in Germany.



ideas in action



At left, students meet in Bentley University's CIS Sandbox to work on a project; at right, they test a new body-tracking technology.



A Social Space for Tech

LAB IS DESIGNED FOR THE FUTURE OF LEARNING

AS FAR AS MARK FRYDENBERG IS CONCERNED, learning new technology should be a shared, not solitary, experience. That belief inspired Frydenberg to spearhead the creation of the computer information systems department's Learning & Technology Sandbox (or "CIS Sandbox") at Bentley University in Waltham, Massachusetts, in 2011.

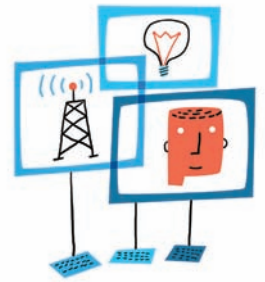
The CIS Sandbox replaced the school's old computer lab, a traditional space with 40 computer stations, gray carpeting, gray furniture, and no windows. "When I was asked to take over the lab in 2010, I was reluctant because it wasn't a place where I wanted to spend my time," says Frydenberg. "But then I started thinking about what the future of computer learning could be." The university funded a complete renovation, giving the room a more inviting color scheme and replacing the computer stations with six U-shaped tables with monitors for group work, wall-mounted display monitors, and soft chairs for lounging.

In 2017, he says, students have their own laptops, so they no longer need a place to connect to the internet or write papers. Instead, they need spaces where they can experiment with new technologies. "That's why we call it the Sandbox," Frydenberg explains. "I wanted a name that was more playful and that encouraged experimentation."

The Sandbox serves Bentley's community in a variety of ways: **It provides IT tutoring.** The lab employs 20 to 25 undergraduates and graduate students as tutors to help support students enrolled in

the university's IT courses. Tutors must be majors, minors, or graduate students in a CIS program. In addition to providing face-to-face tutoring, these students also regularly create online tutorial videos on frequently asked questions. "We tell faculty to let their students know about these videos," says Frydenberg. "We have some students come in to ask for a particular tutor they saw online. It's a great way to introduce ourselves to those who haven't been here yet."

Sandbox tutors also provide faculty with online reports about questions students ask most. Once faculty see what questions their students are asking, they can gauge whether they should spend more class time on a particular topic. That feedback, says Frydenberg, helps ensure that the Sandbox's activities are closely linked to what students are learning in the classroom.



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OpenStax, a publisher of free electronic textbooks based at Rice University in Houston, Texas, is partnering with the digital public library OER Commons to provide online communities where instructors can share and modify syllabi, homework, study guides and other open-copy-right course materials made specifically for the 25 textbooks in the OpenStax catalog. Visit www.oercommons.org/hubs/OpenStax.

It exposes students to new tech.

The Sandbox draws on an annual budget of US\$5,000 to purchase the latest software and tech gadgets. These have included new Android tablets; Google Glass; a wireless beacon that can push information to smartphones; and a Raspberry Pi, a computer the size of a deck of cards. Students can come to the Sandbox to see what the new tech can do or create new programming that takes advantage of its features.

Students also can submit requests for the Sandbox to purchase specific devices. Last year, for example, a student wanted to program an application for the MYO armband, a device that can detect movement in the arm of the wearer. "So we bought one," says Frydenberg. "The armband comes with a programming interface, so the student wrote code that would allow him to control his music on his smartphone by moving his arm."

Capital improvements for the Sandbox, such as new display monitors or furniture, are purchased by the campus Academic Technology Center.

It hosts speakers, workshops, and other programming. In November, for example, the Sandbox brought in a guest speaker to talk about self-driving cars. The speaker brought two vehicles from Tesla to show students the technology in action.

Many programs at the Sandbox are student-driven—something that Frydenberg is particularly proud of. For instance, students on staff help maintain the Sandbox's website, and each student must post something to the lab's blog at least once a semester. In addition, two years ago, tutors decided to develop a review session to help first-year students prepare for their final exam in the school's mandatory introduction to technology course. The tutors now deliver this session each semester in person and stream it online, promoting it to first-years via social media. "Faculty had no part of this," says Frydenberg.

The Sandbox's newest offering is a session at the start of each semester to help first-year students prepare their computers for the same introductory course. Staff members work with students in groups of six for 90 minutes each, helping them install necessary software on their laptops and getting them accustomed to using it. Last year, the staff delivered this session to more than 700 students in about five days.

It provides space to study and socialize. Students view the Sandbox much like a library, where they can study, work on projects, meet with faculty, or simply hang out between classes. "Some people live in here," Frydenberg says, laughing. "But that's good, because it shows they feel welcome, that there's a place where they feel comfortable and a part of what we're doing."

When Frydenberg first started this project in 2010, he remembers asking the admissions office why the computer lab wasn't on the campus tour given to prospective students. "I was told that every school has a computer lab, so no one's going to come to Bentley because of that space," he says.

Today, the admissions office hasn't just put the Sandbox on the tour. It also recently asked Frydenberg if his staff could deliver a 90-minute interactive program to 30 prospective students. During that session, staff taught participants to create and upload a simple web page about the school. "Now, those students can pull that site up on their phones and show it to people who ask what they did at Bentley," he says.

Each semester, more than 3,000 students spend time at the Sandbox, which Frydenberg views as a sign of its value to the Bentley community. "Our mission at the Sandbox is to create a space where students can explore technology in a social way," he says. "Giving them the ability to play with the next up-and-coming technological tools or program an app—it's a pretty powerful thing."

HANDS-ON AND SOCIALLY MINDED

EXPERIENTIAL LEARNING is an imperative in most business programs today. At the same time, many schools want to teach their students early on that business can be a force for good in the global community. Thus, a growing number of business schools are developing experiential learning initiatives that show students how their skills and knowledge can be used to save lives and transform neighborhoods—close to home or across the globe. As the following three examples show, schools can take many approaches to introducing their students to the notion of business as a force for good:

Tackling food insecurity. During the Impact Challenge at the University of Michigan’s Ross School of Business in Ann Arbor, all incoming MBA students spend four days planning sustainable community-based business solutions. In 2016, during the sixth Impact Challenge, students focused on reducing food waste and improving access to healthy, affordable food in Detroit’s struggling communities.

Teams of MBA students partnered with 20 early-stage Detroit-based food enterprises to help them improve their businesses. In addition, the students experienced a daylong immersion in local neighborhoods, touring locations such as Detroit’s Eastern Market, Whole Foods Detroit, and more than ten businesses ranging from bakeries and breweries to farmers markets and food banks. They met with representatives of FoodPlus Detroit to learn more about the state of food waste and food access.

As a new addition to the Impact Challenge, the students launched crowdfunding campaigns to raise money to support the local healthy food community. They

raised US\$14,891 altogether, with half the money going to help FoodPlus Detroit build a new learning facility and the other half supporting the continuing education of participating food entrepreneurs.

At week’s end, five student teams pitched their solutions to Ross faculty and community leaders. Their ideas included a program that links urban farms with food vendors; a system that collects excess food from local markets and delivers it to low-income neighborhoods; and a “mobile meal” service that sells and delivers meals to residents and businesses and uses proceeds to buy food for those in need.

The winning team’s idea was “Missed Fit Foods,” which would source cosmetically damaged produce from farmers, and then use that produce to prepare packaged meals to be sold in high-end grocery stores. Their solution will be adopted by participating food entrepreneurs, with continuing support from the students and centers at Ross.

Challenge partners included General Motors, Deloitte, and PNC Bank, as well as local organizations such as FoodLab, a consortium of locally owned food entrepreneurs. Devita Davison, FoodLab’s co-director, points out that the university’s socially driven collaborations with local organizations help students connect the dots among resources, ideas, opportunities, and people. The Impact Challenge, she says, shows students and food entrepreneurs that “by collaborating, they can make a positive difference on both small and large scales.”

■ **To read about last year’s Impact Challenge at Ross, see “A Positive Force for Good” in the May/June 2016 issue of BizEd: www.bizedmagazine.com/archives/2016/3/features/positive-force-for-good.**

Showcasing social enterprise.

For much of 2016, the Miller Center for Social Entrepreneurship at Santa Clara University in California partnered with 14 social entrepreneurs from countries such as Egypt, India, Kenya, Mexico, Myanmar, and Rwanda as part of its fourth annual Global Social Benefit Institute (GSBI) Accelerator. In that time, the participants worked with Silicon Valley executive mentors to develop their social enterprise business plans. In August, the entrepreneurs presented their business plans to impact investors during the invitation-only GSBI Investor Showcase.

The Miller Center has placed special emphasis on social enterprises focusing on empowering women and girls—especially those in rural areas affected by climate change. Of the 14 social enterprises in this year’s GSBI Accelerator cohort, eight are women-led or benefit women, and six focus on helping communities become resilient to climate change. Among the founders of these organizations were Fermín Reygadas Robles Gil who created Cántaro Azul, an organization focused on water quality and hygiene in Mexico; Tania Laden of Livelyhoods, which helps youth in Kenya find jobs; Alloysius Attah of Farmerline, which provides mobile technology to small farmers; and Katy Ashe, a Stanford grad who co-founded Noora Health to help poor families in India and the U.S. take control of their health.

“The goal of impact investing is to balance social, environmental, and financial goals,” says John Kohler, an impact-investing expert at the Miller Center. “Impact investment dovetails with our GSBI programs, which help social entrepreneurs apply proven business solutions to the problems of poverty, so that their



enterprises can become more successful and affect exponentially more people.”

► **View entrepreneurs’ presentations at www.scu.edu/investor-showcase. To read more about GSBI, see “Ethics & Enterprise” in the July/August 2014 issue of *BizEd*: www.bizedmagazine.com/archives/2014/4/features/ethics-and-enterprise.**

Developing the community. In September 2016, more than 500 MBA students from INSEAD completed two charity projects near the school’s campuses in Fontainebleau, France, and Singapore. The school partnered with Splash Projects, a U.K. firm that delivers



experiential learning programs through real-life community projects.

Students had only a few days to complete each project, kept secret until just before they started.

In Singapore, 210 INSEAD students developed a piece of land at the Onesimus Ministry, which supports people from disadvantaged circumstances. Students created a garden for Onesimus clients, as well as a store where clients can sell fresh products to the public.

In France, 300 students created a special sensory trail, a small farm, and a garden for IME Villa Marie-Louise, a nonprofit that supports children with

disabilities. Groups of about 70 students worked for one day and then created a virtual handover to the students who were continuing the work the next day.

The projects require steep learning curves but do a great deal to hone students’ leadership and managerial skills, says Simon Poole, the managing director of Splash Projects. “They are taken out of their comfort zone completely. There are no designated leaders, so they must work well together to get their parts completed. Communication is key. They have an additional incentive in that they are creating something which will make a difference to other peoples’ lives.”

► **For information, visit splashprojects.com/client/insead-mba/.**



**ACCELERATING
TRANSFORMATION**

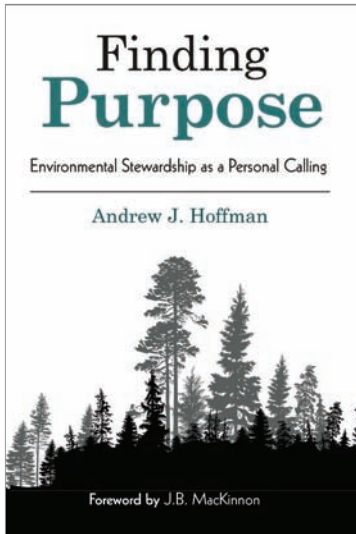


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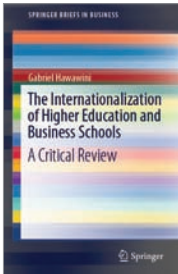
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FINDING PURPOSE

The University of Michigan's Andrew Hoffman has crafted a series of heartfelt essays that explore why anyone connected with business should be concerned about climate change, sustainability, and the fate of the world. Some are directed at students and generally full of encouragement: "I challenge you to look beyond those problems to a future that is optimistic and attractive, one that includes a life of meaning, security, prosperity, and happiness for ourselves, our children, all of humankind, and all of nature." Some are directed at executives and sound a call to action: "Reducing unsustainability is completely different from creating sustainability, and we have to move from the former to the latter." And some are aimed at academics and offer a stern critique: "Academics find themselves...publishing in journals that no one outside the discipline reads, and asking questions the public doesn't care about. ... We need a more socially literate scientific community and a more scientifically literate public." Thoughtful and powerful. (Greenleaf Publishing, US\$30)

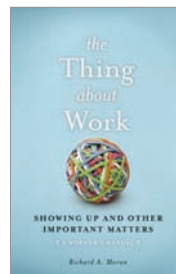
THE INTERNATIONALIZATION OF HIGHER EDUCATION AND BUSINESS SCHOOLS



While business schools have been globalizing their programs for years, INSEAD's Gabriel Hawawini argues that true internationalization is a difficult goal that most b-schools can't achieve. He defines internationalization as "an ongoing process of change whose objective is to integrate the institution and its key stakeholders (its students and faculty) into the emerging global knowledge economy." Schools have a hard time meeting this standard, he notes, because most are dealing with countervailing forces such as missions that require them to focus on domestic students or regulatory barriers that make radical change impossible. "The truly global higher education institution will have to either evolve from an existing institution that was born international or be created from the ground up," he writes, calling such an institution "metanational." But, he adds, "The world is still waiting for the emergence of an institution of this type." Until then, he suggests that schools focus on adding international elements to their programs while simultaneously keeping their focus closer to home. (Springer, US\$39.99)

THE THING ABOUT WORK

Even though hundreds of business books are published every year, Menlo College's Richard Moran points out that you probably already got your best career advice from your mother: "Work hard and do the right thing. Everything else is a bonus." Nonetheless, he offers his own insights on the best ways to nav-



igate the workplace, crafting short, punchy essays that cover everything from creating an effective strategy to simply showing up at the office. His comments are filled with both common sense and humor, as when he warns against going after low-hanging fruit, which implies doing the easiest things first. "Bad approach. Most often, the first things that must be done are the most difficult." A light-hearted approach to a serious topic. (Bibliomotion, US\$22.95)

THE SUSTAINABILITY EDGE



"The next great competency that businesses will need to pursue and fully integrate to gain a sustainable and consistent competitive advantage will be sustainability itself," write Suhas Apte of the Blue Earth Network consulting firm and Jagdish Sheth of Emory. In their view, this means maximizing benefits for all stakeholders, including consumers, customers, employees, suppliers, investors, communities, NGOs, governments, and the media. A company must engage with each stakeholder group in a slightly different way—for instance, it must motivate consumers to care about sustainability and believe that its own products are sustainable. This means understanding exactly how "green" specific customer groups are and how to appeal to them. "Consumers in the developing world tend to feel more emotionally and intellectually connected to the planet's ability to cope with the resource needs of humanity," they write. U.S. consumers are



We protect it. We get *it*.

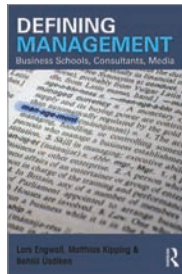
At UConn, we are improving ways to map flood zones to show the growing impact of climate change.

UConn professor of civil and environmental engineering Manos Anagnostou and his team have been working on a model that can predict inland flooding along creeks and rivers, as well as flooding along the coastline and harbors. Eventually, the model should be able to simulate flood risk down to the scale of individual neighborhoods. We are collaborating with government agencies to develop smart, effective solutions to understand and deal with flood hazards and risks. This is just one way UConn is unleashing the solutions of tomorrow.

Discover more at [WeGetIt.uconn.edu](https://www.getit.uconn.edu).

less swayed by environmental concerns, but millennials across the planet care about sustainability. Businesses can use this information to adapt their messages to consumer groups, create competitive advantage—and protect the world. (University of Toronto Press, US\$32.95)

DEFINING MANAGEMENT



How did business schools, business consultants, and the business press gain credibility and authority during the past century, shaping every part of what we now call management, from the language we employ to the commonly accepted practices we use? The evolution and interaction of those three entities are closely examined by Matthias Kipping of York University, Lars Engvall of Uppsala University, and Behlül Üsdiken of Sabanci University. They trace historical contexts, such as the rising influence of the U.S. after World War II, and international differences in attitudes toward both education and commerce. But they express some caution when they note, “To be sure, having such authority does not mean that these sets of actors provide the ‘best’ education, advice, or guidance, leading to superior decisions and better practices. It only means that they have become taken-for-granted, even indispensable in these roles.” And they ask, “Should these actors be so ubiquitous and powerful?” They supply some reasons why the answer should be “no,” but they also make it clear how we arrived at the point where we are now. (Routledge, US\$59.95)

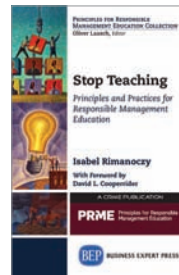
INNOVATION IN EMERGING MARKETS



While developed nations continue to lead the way in global innovation, emerging economies are producing some of the most successful, practical, low-cost innovations in the world. Jerry Haar of Florida International University and Ricardo Ernst of Georgetown have gathered essays by nearly 30 contributors who examine everything from reverse innovation to social media innovation, all from the perspective of what’s happening in emerging markets. It’s a rich field of study—in part, because the huge numbers of low-income consumers represent a vast untapped economic market. “In emerging markets, there is a high demand for products and services that are affordable, flexible, and functional,” write the editors. “Innovation to the price point is essential—creating a good enough product/service at an accessible price.” But there are other reasons to watch the innovations created for the developing world. They often can be adapted for the developed world, where they can upend traditional markets. Finally, innovation creates prosperity for everyone. The authors

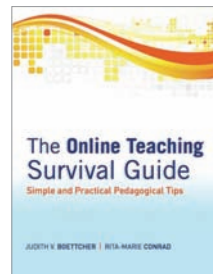
write, “Innovation is the single most powerful force for driving economic evolution and progress globally, but particularly in the emerging market context, where it is critical in driving job creation and income growth.” (Palgrave MacMillan, US\$95)

STOP TEACHING



If business schools are going to prepare today’s students to be tomorrow’s leaders, they’ll need a new classroom approach, says Isabel Rimanoczy, a strategic sustainability advisor. Rimanoczy is particularly interested in teaching strategies that will lead to responsible leaders working for a sustainable world. She focuses on an educational style called Action Reflection Learning, which is built around relevance, tacit knowledge, reflection, self-awareness, social learning, and other pillars. For instance, when students are able to link a classroom topic to their own lives and interests—when it is relevant to them—they’re more deeply engaged, she points out. When students are allowed to draw on their own stores of tacit knowledge, instead of merely having information handed to them by a professor, they develop a sense of ownership of the learning process. Students who are given such opportunities, she writes, are more likely to define “what they would like to see in a better world ... and what new behaviors would be needed to support that change.” This self-knowledge, she believes, would make them responsible leaders, indeed. (Business Expert Press, US\$34.95)

THE ONLINE TEACHING SURVIVAL GUIDE



This expanded second edition looks at best practices in online teaching from every vantage point, from constructing the class to choosing the technology. Judith Boettcher, a consultant on distance learning, and UC Berkeley’s Rita-Marie Conrad provide overarching tips about how to approach the online classroom, as well as detailed advice about topics such as managing discussions and assessing student performance. For instance, their five general guidelines about choosing technology tools are deeply practical: Aim for pedagogy first, technology second; keep it simple; involve learners in your choices of digital tools; have backups planned for when the cloud inevitably disappears; and review your tech tools every few terms. They list more than a dozen best practices for online teaching, including “think digital for all course content.” Today’s students want to learn anywhere, anytime, which has a profound impact, they point out. “If course content is not digital, it is as if it does not exist.” A useful book for anyone providing any part of a course online. (Wiley, US\$40) [D](#)

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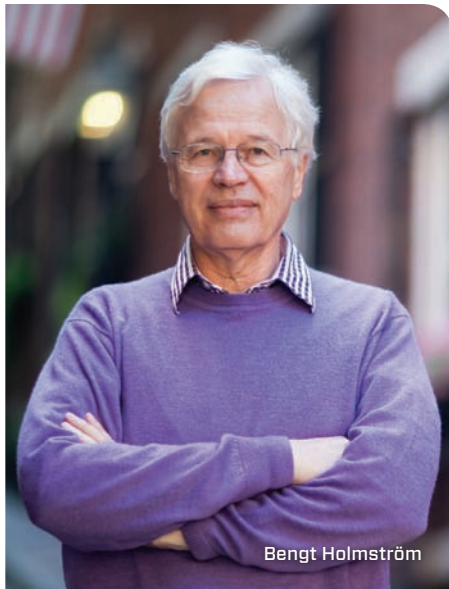
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Oliver Hart



Bengt Holmström

U.S. Economists Win Nobel Prize

PROFESSORS SPECIALIZE IN CONTRACT LAW

THE ROYAL SWEDISH ACADEMY OF SCIENCES has awarded its 2016 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel to **Oliver Hart**, Andrew E. Furer Professor of Economics at Harvard University in Cambridge, Massachusetts, and **Bengt Holmström**, the Paul A. Samuelson Professor of Economics at the Massachusetts Institute of Technology, also in Cambridge.

The laureates were recognized for their individual study of the complex ways contractual relationships drive the economy. In the 1970s and '80s, Hart and Holmström each contributed to a framework for a then new branch of contract theory. They analyzed the diverse factors affecting contractual design, from performance-based executive pay and contractual incentives to mergers, insurance policies, and privatization of public-sector activities.

For instance, in his early research, Holmström studied the ideal design of a contract between a company's shareholders and its CEO and found that a CEO's compensation should be linked to perfor-

mance; he also examined how risk should be weighed against incentives. Hart's work looked at how contracts should be designed to account for unforeseen eventualities not addressed in the contracts' original language—for instance, by spelling out which party makes decisions in what circumstances. His findings on so-called “incomplete” contracts—particularly those related to ownership and control—have influenced the fields of economics, political science, and law.

Their research has implications on how incentives are used in organizations for all stakeholders affected by a company's actions. “One of the important lessons of contract theory is that whatever contract you write, you always have to think about the other parties involved as well,” said Holmström, by phone at the press conference announcing this year's winners. “In economics, we are trying to maximize the total pie, meaning we're trying to make it a win-win situation for everybody.”

According to the Nobel Prize committee, Hart's and Holmström's work on optimal contractual arrangements “lays an intellectual foundation for designing policies and institutions in many areas, from bankruptcy legislation to political constitutions.”

Hart and Holmström will share a monetary prize equivalent to approximately US\$900,000.

Hispanic PhDs Recognized

In September, eight professors in the U.S. were recognized as part of the White House Initiative on Educational Excellence for Hispanics. Five of them are business professors, including **Alberto Rubio-Sanchez** of the University of the Incarnate Word in San Antonio, Texas; **Rowena Ortiz-**

EDX PARTNERS LAUNCH MICROMASTERS PROGRAMS

NINETEEN NEW MicroMasters programs have been announced by MOOC provider edX, founded by Harvard and the Massachusetts Institute of Technology. Students who complete courses in the modular MicroMasters programs will have opportunities to earn verified credentials and college credit, as well as to follow an accelerated path to completion of full master's degrees.

The new MicroMasters have been created by 14 edX university partners. These include several courses of study that cover topics in business, including supply chain management in the pilot MicroMasters program from MIT; international business management from Thunderbird School of Global Management, a unit of the Arizona State University Knowledge Enterprise; entrepreneurship and business management, both from the Indian Institute of Management, Bangalore; international hospitality management from The Hong Kong Polytechnic University; and leadership and teamwork from Universitat Politècnica de València, among others.

In most cases, a MicroMasters certificate is equivalent to 25 percent to 50 percent of the courseload of a full master's degree. Each student can choose to pursue a full master's degree, with the MicroMasters credential counting for credit, thereby reducing the tuition expense. To do so, the student must be accepted into either the university offering the MicroMasters program or another university that acknowledges the MicroMasters certificate. Universities can take each student's online performance into account in admissions decisions.

Global education company Pearson will provide students with local learning centers where they can take MicroMasters courses in blended formats. The company also will provide students with regional in-person support, access to dedicated cohorts, and learning resources.

► **For information, visit www.edx.org/micromasters.**

Walters of the School of Business and Economics at the State University of New York in Plattsburgh; **Cynthia B. Saturnino** of Northeastern University in Boston, Massachusetts; **Rebeca Perren** of the California State University in San Marcos; and **José Antonio Rosa** of Iowa State University in Ames.

The latter four professors were participants in The PhD Project, which

works to create diversity in management education.

The White House Initiative, which includes an online campaign called #LatinosTeach, seeks to demonstrate that Hispanics are dedicating themselves to serving their communities through teaching. For more information, visit sites.ed.gov/hispanic-initiative/.

Honoring Innovators

The Aspen Institute Business and Society program has announced its Faculty Pioneer Award recipients for 2016. This year's winners are business professors teaching about the pressing "grand challenges" faced by the world today, including climate change, inequality, global health, financial inclusion, human rights, resource scarcity, and economic development.

Among the honorees are two who received special award distinctions. **Ted London**, vice president and senior research fellow of the Scaling Impact Initiative at the William Davidson Institute of the University of Michigan's Ross School of Business, received the Special Award Distinction for Field-Building. **Peter Tufano**, Peter Moores Dean and professor of finance at the Saïd Business School at the University of Oxford in the U.K., received the Special Award Distinction for Institutional Leadership.

The other winners were **Gaurab Bhardwaj**, associate professor of strategy and management at Babson College; **Andrew J. Hoffman**, Holcim Professor of Sustainable Enterprise at the Ross School of Business at the University of Michigan; **Nora Silver**, adjunct professor and faculty director of the Center for Social Sector Leadership at the Haas School of Business at the University of California, Berkeley; and a faculty team from the Gordon Institute of Business Science at the University of Pretoria, which included **Anthony Wilson-Prangley, Ngao Motsei, Jonathan Cook, Margie Sutherland**, and **Morris Mthombeni**.

The Faculty Pioneer Awards were established in 1999 to celebrate educators who help develop curricula that deeply examine the relationships between capital markets, firms, and the public good.

► **For information about the winners and their teaching approaches, visit www.FPAwards.aspeninstitute.org.**

AACSB Reveals 2016 Influential Leaders

LAST FALL, AACSB INTERNATIONAL

announced its 2016 list of Influential Leaders. The annual initiative recognizes business school alumni who “apply their leadership, knowledge, and skills to address some of society’s toughest global challenges,” says Thomas R. Robinson, the association’s president and CEO.

The 2016 cohort of Influential Leaders includes 30 individuals from 11 countries and more than 15 industry sectors. Those chosen have made their marks on the world in a variety of ways. Here are just a few examples:

■ **Jonathan Mildenhall**, Airbnb’s chief marketing officer, earned his BA in business and finance in 1990 from Manchester Metropolitan University’s Faculty of Business and Law in England. Named one of the *Financial Times*’ top 100 Upstanding Leaders and one of the most influential LGBT leaders in the U.K., Mildenhall created Airbnb’s “Never a Stranger” campaign to ease users’ fears about staying at a stranger’s house. As chair of the Institute of Practitioners in Advertising (IPA) Diversity Community in the mid-2000s, Mildenhall worked to increase the representation of African Americans in advertising.

■ **Nashwa Taher**, chairman of real estate firm Al Hassaniah and a special assistant to the chairman at her family’s company Al Taher Group, earned her bachelor’s degree in accounting in the 1980s from King Abdulaziz University in Jeddah, Saudi Arabia, before studying business for three years in the U.S. Ranked eighth on *Forbes*’ Most Influential Arab Women in Family Business in 2013, Taher has become a pioneer in the specialty foods market in Saudi Arabia. She also became the first woman to win elected office in Saudi Arabia when she became a board member of the Jeddah Chamber of Commerce and Industry.

■ **Analjit Singh** graduated with his bachelor’s degree in business from Boston University’s Questrom School of Business in Massachusetts in 1977, followed by his MBA in 1979. In the 1980s, Singh founded Max India group, one of India’s first private health insurance companies. His company now runs 12 hospitals and advocates for affordable quality healthcare.

■ **Zibu Mthiyane** finished the management development program at the University of South Africa in Pretoria in 2009, before earning her MBA in 2013 from the University of Stellenbosch Business School in Cape Town. She then founded the Zoluhle Group, a supplier for South Africa’s Rail Agency, before starting MMC SA, a member-led women’s development club that provides entrepreneurial training to rural women.

■ **H.E. Caitlin Wilson** earned a bachelor of business management from the Queensland University of Technology in Australia, a bachelor of arts from the University of Queensland, and a master’s in international development from Deakin University in Burwood, Australia. Wilson worked to re-establish the court system in the Solomon Islands and improve education in Papua New Guinea. As deputy head of mission for the Australian Permanent Mission to the United Nations in New York, Wilson now works on the U.N.’s Sustainable Development Goals.

The accomplishments of the 30 Influential Leaders fell into several broad categories: harnessing innovation, advancing education and employment through entrepreneurship, fostering diversity, creating a more sustainable future, and ensuring healthy lives.

■ **To read more about the 30 honorees and the Influential Leaders challenge, visit www.aacsb.edu/influential-leaders.**

TRANSITIONS

Ajay Vinzé has been named the new dean of the Robert J. Trulaske Sr. College of Business at the University of Missouri in Columbia. He was previously the Earl and Gladys Davis Distinguished Professor in the W.P. Carey School of Business at Arizona State University in Tempe. His appointment is effective January 1, when he succeeds interim dean **Stephen Ferris**.

Mark Gabbott, new dean of Adelaide Business School at the University of Adelaide in Australia, recently began his role at the school part time and will transition to full time in January. Gabbott comes to Adelaide most recently from Macquarie University, where he was executive dean of the Faculty of Business and Economics and pro vice-chancellor, international. Prior to his posts at Macquarie he served Monash Business School for nearly 12 years as a professor and head of marketing and deputy dean.

At the conclusion of the 2016-2017 academic year, **Hugh Courtney** will step down as dean of Northeastern University’s D’Amore-McKim School of Business in Boston, Massachusetts. Courtney will remain at the school as a member of the tenured faculty. During his tenure as dean, which began in 2012, the school launched new full-time and online master’s programs, increased its undergraduate student body by 16 percent, and secured donor gifts that resulted in the naming of the school.

Richard Kolbe has been named the new dean of the Leighton School of Business & Economics at Indiana University South Bend. Kolbe most recently was dean of the Haile/US Bank College of Business at Northern Kentucky University, and he has also

held roles at Kent State University, Washington State University, and the University of Missouri. He starts his new job January 1.

Last July, **D. Scott DeRue** became the new Edward J. Frey Dean of the University of Michigan Stephen M. Ross School of Business in Ann Arbor. He previously held positions as the Gilbert and Ruth Whitaker Professor of Business Administration, associate dean for executive education, and professor of management and organizations at the Ross School. He replaced **Alison Davis-Blake**, who stepped down after five years of service and returned to the faculty.

John Percival has been appointed dean of the College of Business at the Minerva Schools at Keck Graduate Institute in San Francisco, California. Percival, who previously taught finance at the Wharton School, is also the founder of J.R.P. Associates, which provides executive education and finance consulting.

Andrea Grove, professor of political science at California State University–Channel Islands, was named chief editor of the *International Journal of Social Business* by Nobel peace laureate Muhammad Yunus.

NEW PROGRAMS

ESSEC Business School is launching a redesigned one-year Global MBA program that will be offered on the school's campuses in Cergy, France, and Singapore. The new program, which includes six majors, takes a multidisciplinary approach to core areas of business from a digital perspective. The global program will feature diverse participants, cross-cultural case studies, study and field trips abroad, an international consulting project, and campus exchanges.

In the fall of 2017, the College of Business Administration at **San Diego State University** in

California will launch a fully online bachelor of science in business administration, the first undergraduate online degree program offered at the university.

The Stern School of Business at **New York University** has created a program for U.S. military veterans and active-duty students enrolled in next year's full-time MBA program. Those accepted to the Fertitta Veterans Program—which the school estimates will be 20 students—will receive scholarships that reduce their tuition to US\$30,000 per year. The program also will provide these students with academic and professional support, including a summer session to provide them with a head start on coursework, career development, and access to alumni mentors who are also veterans. The program is named for alumnus Lorenzo Fertitta and his brother Frank J. Fertitta III, who funded it with a \$15 million endowment.

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COLLABORATIONS

Lehigh University in Bethlehem, Pennsylvania, and the Nasdaq Entrepreneurial Center in San Francisco, California, have partnered to create the Lehigh@NasdaqCenter campus extension. The center will offer entrepreneurship courses to Lehigh students based in the San Francisco Bay Area.

The **Maastricht School of Management** in the Netherlands and **RWTH Aachen University** have launched a joint doctor of business administration (DBA) in managing innovation, technology, and corporate change. Students in the four-year degree program will complete one year of coursework from both schools before spending the final two years writing theses under the supervision of faculty from both institutions.

Audencia Business School in Nantes, France, has partnered with Glasgow School of Art in Scotland to launch an MSc in management and entrepreneurship in the creative economy. The program has a core foundation of management courses complemented by classes in the cultural and creative sectors. Students will take classes taught by faculty from both schools, spending most of their time in Nantes and two weeks in Scotland.

The **University of Arizona** in Tucson, through its invention commercialization unit Tech Launch Arizona (TLA), is partnering with TechCode, a global

network of startup incubators and entrepreneurial ecosystems. TechCode—which has incubators in locations such as Silicon Valley, Beijing, Shanghai, Seoul, Berlin, and Tel Aviv—will provide networking resources to increase the reach and effectiveness of the startups created through TLA. TechCode's network also will speed up the commercialization for TLA companies and help them test their entry in the global market.

The **University of Northern Colorado's** Monfort College of Business in Greeley has joined forces with MBA Research's High School of Business program to bring expanded services to students participating in the organization's accelerated high school business program. Through the agreement, students who complete the program will be able to earn three hours of college credit at UNC.

Weill Cornell Medicine in New York City and the Samuel Curtis Johnson Graduate School of Management at **Cornell University** in Ithaca, New York, have announced a new dual-degree program for healthcare providers. Students will receive an MS from the Weill Cornell Graduate School of Medical Sciences and an MBA from the Johnson School. Students will meet in Weill Cornell Medicine facilities and will participate in two weeklong residential sessions during each of the program's two years—one in the spring in the New York City area and one in the summer on Cornell's campus in Ithaca.

GIFTS AND DONATIONS

The Farmer School of Business at **Miami University** in Oxford, Ohio, received a US\$40 million gift from Richard T. "Dick" and Joyce Farmer and the Farmer Family Foundation. The gift, which is the largest in the university's history, will support all elements of the Farmer School of Business.

San Diego State University has announced the largest philanthropic gift in the history of the university from San Diego Padres executive chairman Ron Fowler and his wife, Alexis. Their pledge of a US\$25 million endowment gift to SDSU's College of Business Administration will provide scholarships and professorships, support a lecture series, and provide international experiences and expanded programming for business students. Established as a matching gift, this endowment challenges the university and its supporters to raise an additional \$25 million. The college has been renamed the Fowler College of Business Administration, marking the first time a college at SDSU has been named.

A US\$5 million gift from Timothy Johnson, founder of Johnson Investment Counsel, will establish the Johnson Investment Counsel Institute at the **University of Cincinnati's** Carl H. Lindner College of Business in Ohio. The 225,000-square-foot building, slated to open in fall 2019, will house a simulated trading floor. The gift further will support a dedicated director for the institute, a lab manager, and undergraduate and graduate scholarships.

The **University of Toronto's** Rotman School of Management in Canada has received a CAN\$1.75 million gift from Scotiabank to create the Scotiabank Disruptive Technologies Venture. In part, the money will provide funding for Rotman's Creative Destruction Lab, a seed-stage program for massively scalable, science-based technology ventures. The money also will support research in the areas of machine learning and artificial intelligence, the creation of a design thinking internship, other initiatives related to design thinking, and the school's artificial intelligence conference.

NEW CENTERS AND FACILITIES

The Ross School of Business at the **University of Michigan** in Ann Arbor has celebrated the opening of Jeff T. Blau Hall. The 104,000-square-foot, US\$135 million building received part of its funding

Data-Driven Accountants

KPMG LLP has partnered with **Ohio State University's** Fisher College of Business in Columbus and the **Villanova University** School of Business in Pennsylvania to develop master's degree programs emphasizing data analytics in accounting.

The KPMG program will pay the full tuition and room and board for 50 students who will enter the universities' graduate programs in the fall of 2017. KPMG also will work with the universities to integrate the latest audit technology into the classroom. Students will work between semesters as KPMG audit interns; upon graduation, students will join KPMG's audit practice through an advanced entry program.

"Strong partnerships between leading companies and top academic institutions are essential to building an agile workforce equipped to meet today's business challenges," says Anil Makhija, dean and John W. Berry Sr. Chair in Business at Fisher College.

The firm plans to expand its KPMG Master of Accounting with Data and Analytics program to other schools in the future. Visit www.kpmgmasters.com/.

from Blau, CEO of real estate firm The Related Companies, and a longtime benefactor of Ross.

The **University of Illinois** College of Business has launched the University of Illinois-Deloitte Foundation Center for Business Analytics at Urbana-Champaign. The center is funded by a US\$5 million gift from the Deloitte Foundation and Deloitte's retired and current partners, principals, managing directors, and employees. The center will create a business analytics curriculum that will be made available to other colleges and higher education institutions.

In September, **Bryant University** in Smithfield, Rhode Island, opened its 48,000-square-foot Academic Innovation Center. The building's flexible work spaces will support group work, simulations, rapid prototyping, social entrepreneurship, and service learning projects.


OTHER NEWS

Publisher **Elsevier** has launched an online Brexit Resource Centre that provides free access to data, metrics, and other information to help institutions monitor the effects of Brexit on the U.K.'s research community. Visit www.elsevier.com/connect/brexit-resource-centre.

Last fall, **Rutgers Business School** of Newark and New Brunswick in New Jersey debuted its first academic research journal, *Rutgers Business Review*. The inaugural issue contains articles on topics such as business education and research, migrants and the foreign expansion of firms, and the tax-avoidance techniques of multinationals.

The **Florida International University** College of Business in Miami has created a financial literacy center, with the help of a US\$600,000 grant from

the SunTrust Foundation. The bilingual curriculum for the SunTrust FIU Financial Wellness Clinic includes workshops and seminars, guest speakers, mentoring, and consulting. It will target its services to FIU students and their parents, as well as eventually to local high school students.

The social enterprise **eLearnAfrica** has launched an online marketplace to make it easier for students throughout Africa to search for and enroll in hundreds of online courses, degree programs, and professional certification programs offered by universities worldwide. To create the marketplace, eLearnAfrica partnered with two MOOC platforms: edX in the U.S. and FutureLearn in the U.K. The organization also partnered with itSM Mentor, which offers video training for professionals, and the University of the People, a tuition-free online university. Visit www.elearnafrica.com. 



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MOVING ONLINE

“Faculty will find that students are more engaged with classroom technology when they use platforms that are practical, applicable, and familiar,” writes Sean Stein Smith of Rutgers University’s School of Business in Camden, New Jersey. “For instance, students are already sharing information through social media such as Facebook, Twitter, Snapchat, so why not leverage them for education?”

▶ READ “CREATING A RICH ONLINE LEARNING EXPERIENCE” IN THE “YOUR TURN” SECTION OF BIZEDMAGAZINE.COM.

DISCOMFORT ZONE

“Teaching and learning excellence is a moving target,” says Martin Boehm of IE Business School in Madrid. “If we felt that we were where we wanted to be, we would be missing the point. Innovation is about constantly pushing the boundaries.”

READ “TEACHING TECH TO TEACHERS” ON PAGE 20.

137 The number of nations that have adopted significant business reforms in the last year, according to the World Bank’s “Doing Business 2017” report.

READ “REFORMS BOOST ENTREPRENEURSHIP” ON PAGE 18.

V IS FOR VITAL

“We deal with big data through the four V’s—that is, volume, velocity, variety, and veracity,” explains James Pang of the National University of Singapore’s School of Computing and Business School. “This allows us to derive business insights from massive data sets.”

READ “THE INHUMAN TOUCH” ON PAGE 42.



29.7 The percentage of women enrolled in EMBA programs, according to the Executive MBA Council.

READ “EMBA SNAPSHOT” ON PAGE 16.

US\$2,000

The estimated cost of a mobile telepresence robot for education.

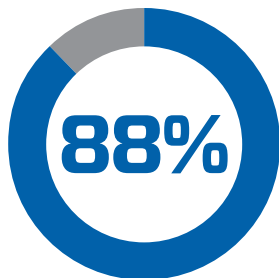
READ “HERE AND THERE” ON PAGE 30.



LINKED INTO LEARNING

“Linking ... LinkedIn recruitment services with a professional learning video library could soon become a gold standard for professional development programmers in companies,” writes Stefan Michel of IMD in Lausanne, Switzerland. “The market for the bulk of functional training courses will experience a seismic change as quick and big as when digital formats revolutionized the music media industry and the printed press.”

▶ READ MICHEL’S OP-ED “LINKEDIN LEARNING: LOADING EDUCATION 4.0?” IN THE “YOUR TURN” SECTION OF WWW.BIZEDMAGAZINE.COM.



That’s how many students would recommend an e-textbook to a friend. Among those who used e-textbooks most often, 98 percent would recommend them. Statistics are drawn from a survey of more than 800 students in the U.K.

READ “LEARNING ONLINE” ON PAGE 12.

US\$1 trillion

The estimated financial impact on the U.S. if a successful cyber attack shuts down even a portion of the national power grid.

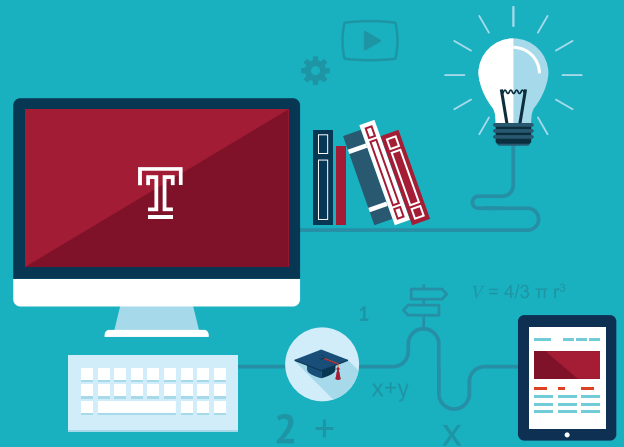
READ “INTO THE BREACH” ON PAGE 48.

EXPERT COMMUNICATORS

Business students at the University of Louisville’s College of Business in Kentucky learn the five competencies of business communication: It must be *professional, clear, concise, evidence-driven, and persuasive*.

READ “TOWARD BETTER BUSINESS COMMUNICATION” ON PAGE 54.

5 TIPS FOR ENHANCING YOUR ONLINE MBA



Technology has reinvented education, and today everyone is trying to figure out how to run an effective online MBA program. While there have been challenges along the way, Temple University's Fox School of Business has mastered the art of building the nation's No. 1-ranked Online MBA program (*U.S. News & World Report*).

Whether you want to start an online graduate program, or are evaluating your existing one, read five timeless tips from Dr. Darin Kapanjie of the Fox School to help you navigate this ever-changing market.



Read the 5 tips at
[FOX.TEMPLE.EDU/OMBASUCCESS](https://fox.temple.edu/ombasuccess)



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