

Dial M for Mobile

By Sharon Shinn

Last fall, the University of California, Irvine, announced a \$1.7 million grant from the Bill and Melinda Gates Foundation to found a research institute that investigates how the world's poorest people conduct banking over their cell phones.

In 2007, five of Japan's top ten best-selling novels were originally "cell phone novels," composed in SMS-style sentences on phone keypads and read by fans on their own mobile phones.

Meanwhile, last September, the University of Maryland in College Park began piloting a study to see whether handheld devices such as iPhones can improve the educational experience. This came four years after Maryland's Smith School of Business started handing out BlackBerry phones to its incoming MBA students so they would become familiar with the "always on" technology of today's mobile devices.

What's going on here? Has the ordinary cell phone transformed itself into the single most useful piece of personal technology in the world?

What one device can students use for communication, entertainment, research, and education? The mobile phone. It promises to revolutionize the world—and higher education.



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Liz Kolb, Madonna University

All signs point to *yes*. Today’s cell phones allow users to communicate, collaborate, shop, watch TV, listen to music, take photographs, check the stock market, edit documents, and view PowerPoint presentations—and, in some parts of the world, to bank, vote, and run businesses. Yet in many b-school classrooms, cell phones are banned because teachers find them disruptive, distracting, and wired with technology that allows students to cheat.

But change is coming, says Qusay Mahmoud, director of the Centre for Mobile Education Research (CMER) at the University of Guelph in Ontario, Canada. “The average cell phone today has more computing power than many of the computers of a few years ago, and many are equipped with video recorders, cameras, and other features,” he notes. “All of these could be used to improve the learning experience.”

Currently, cell phones are used on campus in a limited fashion, most often helping teachers and students coordinate schedules and improve access to course materials, says Mahmoud. “However, I believe this is a very limited vision of mobile learning,” he says.

One enthusiastic proponent of cell phones in the classroom is Liz Kolb, who authored *Toys to Tools* to show teachers how cell phones can be used in education. Kolb, an adjunct professor at Madonna University in Livonia, Michigan, also regularly blogs at www.cellphonesinlearning.com/. She says, “It’s important to start looking at the cell phone as the Swiss Army knife of learning, rather than as the most annoying thing in the classroom.”

If business students are going to function effectively in the business world, experts say, they need to be familiar with all the ways cell phones can be used in commerce, in social settings, and in education. Cell phones and mobile devices aren’t just reshaping education; they’re changing the way people live.

Reach and Potential

First, a math lesson. The International Telecommunication Union, a UN agency, expected 4 billion people to be cell phone subscribers by the end of 2008. That compares to just under 1.5 billion people worldwide who have access to the Internet, according to Internet World Stats posted by the Miniwatts Marketing Group. These statistics mean that more people are using cell phones than computers to communicate, compile data, and connect to the world.

That widespread access, Kolb believes, is the first of five reasons that educators should seriously consider the role of cell phones in learning. The second reason, she says, is that anyone who is 25 or younger uses cell phones for—well, everything.

“College-age students use cell phones to call friends, get jobs, create relationships, and schedule and organize their lives,” says Kolb. “If we can take advantage of the interest they already have in that tool, we might be able to create successful teaching in the classroom.”

Third, says Kolb, “students like to learn any time, anywhere, any place, at any pace. They don’t need the four walls of a classroom or a library. If they’re in sub-Saharan Africa with a cell phone, they want to be able to gather data, report information, and network with the world.”

Fourth, today’s students like to learn in collaborative settings, which cell phones can enable. Finally, they prefer their learning to have a real-world connection. “And what’s more real than being able to use the same tool *inside* the classroom as *outside* the classroom?” says Kolb. Whereas students are unlikely to take smart boards and classroom clickers out of the school building and into the office, they *will* hold on to their mobile phones. “They can walk out of school and say, ‘In class, we created a whole mobile campaign with our cell phones, and I can do the same thing when I start my own business,’” says Kolb.

In even broader terms, cell phones can be used in the classroom to improve interactivity, foster relationships, and increase the longevity of the learning process, says Carsten Sørensen, senior lecturer in information systems and innovation in the department of management at the London School of Economics and Political Science. He’s less impressed with the first function, the “simple transaction” of using a cell phone to make a connection via call or text message. But he sees real potential in using phones to mediate relationships—as in social networking sites such as Facebook—which would then contribute to lifelong learning.

People who buy certain software products get a promise of lifelong support, Sørensen points out; why shouldn’t students who graduate from a prestigious institution get the promise of ongoing access to the school’s resources? “We find, with our master’s students in particular, that they’re desperate to continue the discussion once they’ve graduated,” he says. “It would be hugely advantageous if we could find ways to do that in a mediated relationship like a social network.” And, he notes, cell phones offer instant access to those social networks.

Learning and Living

Professors who are still skeptical about the value of cell phones in education can test the waters in simple ways, says Mahmoud. For instance, he suggests that teachers design multiple choice quizzes that students can take over

their cell phones while they're on the go. The University of Guelph's CMER recently designed a platform to allow instructors to generate multiple choice quizzes for mobile devices through a customizable Web site, <http://mobiq.cis.uoguelph.ca:8080/mobiq>.

Students also can use cell phones outside of the classroom to listen to podcasts, conduct polls, or take photos and transmit data relevant to class projects. (More complicated ideas are detailed in "Killer Apps" on page 39.) Many simpler but useful educational applications for cell phones are already in place from major telecommunications companies that have developed entire programs around three key campus functions: education, safety, and student services.

For instance, Sprint's Campus Connect program offers a range of mobile learning applications: course alerts, which allow students to manage courses and check grades; polling, which lets students use their cell phones like clickers to answer a professor's questions; and flash cards, which give course-related questions and answers through the cell phone screen. In addition, streaming media enables students to take pictures, listen to podcasts, read and post to blogs, and watch video.

Campus Connect also delivers other student-based appli-

cations. To promote safety, it can send alerts to the cell phones of all students at once or it can track a single student who has notified security he's on the way home. In the area of student services, Campus Connect lets students use cell phones to access campus social networking groups, answer administrative polls about what initiatives they'd like the school to invest in, and check shuttle schedules when they're waiting outside on a cold day.

Similarly, Google Apps programs help schools integrate Internet, email, calendar, and collaboration tools across learning platforms. ESC Lille in France, for example, has just adopted the Google Apps program, which allows students to access a wide range of information with one log-in and one password. The school now can send a variety of notices to students' mobile devices, from SMS security alerts to updates on courses. Students who have more sophisticated mobile devices also can watch videos from courses and conferences, and they can use these devices to access the e-learning platform no matter where they are.

Because the e-learning platforms are still quite new, it's not clear yet how they will impact teaching strategies, says ESC Lille's Christophe Bredillet, dean and director of post-

Around the World

While educators in North America and Europe are just beginning to see the potential of cell phones for both business and education, in other parts of the world, mobile devices are inextricably integrated into daily life.

For instance, in many developing countries, and particularly in remote areas, cell phones already are the communication tool of choice—and likely to become even more important. As the University of Guelph's Qusay Mahmoud says, "Cell phones

are much more popular in developing countries simply because there is no wired infrastructure, so the wireless infrastructure is cheaper and faster to deploy. In addition, most people access the Internet through their cell phones because it is very expensive to have Internet connection through a desktop. So the cell phone is the computer of choice for students in those developing nations."

At the same time, in highly developed parts of the world, the cell phone



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Carsten Sørensen, London School of Economics and Political Science

graduate programs and professor of strategy. But some of the advantages are already obvious. “Because the mobile devices are integrated with timetables, students can no longer say they were unaware of an event, which is big progress!” he says with a laugh. “But we think that students working on team projects will have better communication—they will interact with each other, not just in class, but at different times of the day. We’re also expecting a big reduction in paper used for course materials and information sharing.”

Not So Fast

Despite their current versatility and their future potential, cell phones still aren’t always welcome in the classroom or easy to integrate into education. The first barrier is usually faculty resistance.

“Some professors have a concern about putting their intellectual property online in a PowerPoint presentation or a video,” says Bredillet. “Other faculty have concerns about losing face-to-face communication with students.”

Sørensen agrees, noting that online and mobile learning can put too much distance between teachers and students—when what students want is a *closer* connection. He doesn’t

see that desire for connection going away any time soon. “The more fragmented students’ lives become, and the more choices they have about the way they learn, the more they consistently say that what they want is as much access to their teachers as possible,” he says.

At the same time, Sørensen can envision an uncomfortable day in the future when students use cell phone technology to grade teachers while they’re actually in the middle of a classroom presentation. “If people can vote on what video MTV shows, why can’t they vote on what slide I show?” Sørensen asks. “Why can’t they use their mobile phones to rate me while I’m speaking?”

Even if cell phones in the classroom never become that intrusive, Mahmoud concedes that many professors do fear that pervasive use of cell phones will put additional pressure on teachers to answer questions instantly. However, he believes that educating students about proper cell phone use can ease their worries. “I think in a few years, faculty will have no choice but to use cell phone technology, so why not be leaders and start now?” says Mahmoud.

Kolb thinks professors also can calm their fears by creating a social contract with students, determining how the phones

is rapidly becoming an essential multitasking tool. That’s particularly true in the Asia Pacific region, where mobile phone penetration is close to 40 percent, according to the International Telecommunication Union. And people aren’t just talking on their phones: The ITU notes that nonvoice applications for mobile phones in the Asia Pacific region account for more than a fourth of the revenue for mobile phone operators.

One application that has huge potential in busi-

ness, believes author Liz Kolb, is QR code, or quick response code. This is a square image that looks something like a bar code and can be imbedded in a product or included on a billboard. If a consumer uses his cell phone to take a picture of a QR code, the cell phone will immediately display information about the product, which might include a Web address, a number to call, or additional details about how to buy it. Japan, China, and Korea are already doing business through QR

codes, says Kolb, though few U.S. phones work with them.

“I predict that eventually cell phones will be like credit cards,” says Kolb. “People will be able to bank through them, purchase through them, use them as personal IDs.” In fact, cell phone makers already have started experimenting with cell phones that act as credit cards, using RFID technology to read electronic codes on products and send financial information to a banking partner.

“In the future, cell phones won’t be tied to any local area code,” Kolb adds. “They’ll be more like Social Security numbers. People might be able to use them as driver’s licenses or passports. There’s a lot of potential ground to cover if the cell phone is going to become the all-in-one.”

She adds, “For the U.S. and other developed nations to be competitive with the rest of the world, we need to be conscious of how cell phones are being used for business—and we’re behind.”

can be used in class, what rules should govern their use, and what consequences should follow if the rules are broken. But even if faculty are persuaded to integrate cell phones into their learning plans, some obstacles remain.

For instance, if students are using a wide range of devices, there can be compatibility issues, though these can be overcome easily if all students are using the same mobile browser. Nonetheless, Mahmoud says, if schools try to use custom-made applications on cell phones, there could be some incompatibility unless schools require students to have a particular mobile phone—or provide them that phone when they arrive on campus.

One proponent of standardization of devices is Ed Davalos, national director for the education and utility vertical markets for Sprint. If schools mandate which devices students should possess before they come to campus as freshmen, the adoption rate is much higher, he points out.

But even with standardized devices, once students step off campus, they might encounter problems. “Mobiles are limited by the speed of the Internet connection as well as the cost of communication,” Bredillet says. “When students go abroad for exchanges or internships or company projects, and they don’t have access to a local Internet connection, using the mobile device can be costly.” However, many of these problems will disappear as services improve and more sophisticated phones are brought to market.

A Look Ahead

That time isn’t far off. In fact, today’s cell phones are so versatile that they’re really minilaptops. New applications turn them into LCD projectors; new accessories allow users to input data via wireless keyboards. A day might come when cell phones replace computers, at least for any function that requires mobility.

The big drawback for Bredillet, and many others, is the small size of the cell phone screen. “But if my mobile device



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connected to a big screen with something like Bluetooth technology, I could use my mobile device like a computer,” he says. “When my phone will enable me to have all my data on my mobile device and allow me to travel all over the world, I will be more than happy.”


Sprint’s Davalos thinks it’s inevitable that additional functions will be incorporated to upgrade the current generation of “smartphones,” the word for multifunction mobile devices. Their cost already hovers at about one-tenth of that for a laptop, he points out, and prices are likely to drop as technology improves. Already, he says, more people are likely to buy smartphones than cell phones.

And the future won’t just bring devices with more abilities, it will bring networks that offer more capability. The next evolution of connectivity will be WiMAX—short for *worldwide interoperability for microwave access*—which will allow broadband speed without the necessity of cables and over a much greater distance than current wireless technology. It’s already available in a few markets, and Davalos expects WiMAX chips soon will be integrated into cell phones and laptops. “This will make faster, more secure devices less expensive,” he says.

The next big change Davalos expects is *fixed mobile convergence*, in which all the applications and data streams come together and allow for simultaneous use. “Right now, if you’re talking on your cell phone, you can’t see a text message that’s being sent to you. With fixed mobile convergence, five people collaborating on the same project can be using the same device to talk to each other while they’re looking at a video,” he says.

Continuing Evolution

As technology evolves—and as companies like Sprint, Google, and Microsoft heavily promote integration of cell phones into the classroom—cell phones inevitably will become fixtures in the university setting. Experts hope that feedback from both educators and students will influence the next generation of mobile devices used for education. Institutions such as the University of Guelph’s Centre for Mobile Education and Research will track these innovations while also developing tools that will make it easier for teachers to integrate mobile devices into the curriculum.

As mobile devices evolve, they will become more versatile, more useful, and more essential—which means business students and faculty will need to understand their immense social and financial potential. Bloggers and pundits refer to cell phones as “the world in your pocket.” If that’s true, the world needs to be in the b-school classroom, too. 

“We have a killer environment—the wireless network and the smartphone—so anything is possible.”

Qusay Mahmoud, University of Guelph

Killer Apps

Interested in integrating cell phone technology into your classroom, but not sure where to start? More than enough information is available online.

“There are 200 to 300 free Web resources that couple with mobile phones,” says author and educator Liz Kolb. “They do everything from allowing you to post reports on the Internet to helping you create text message campaigns like the one Barack Obama used.” Both [simplespark.com](#) and [Listio.com](#) have compiled dozens of Web resources designed for mobile phones, and Kolb constantly reports about new ones on her blog. These are among the applications she likes best:

■ [Polleverywhere.com](#) allows individuals or organizations to pose questions to a group of respondents. When the respondents send a text message to a specified number, the site instantly tracks them online through a text messaging board. In an entrepreneurship classroom, for example, this might allow students to get consumer

feedback on a potential new product.

The professor first could have students brainstorm ideas in class through the site. Then he could give them a week to solicit input from friends and family, who send messages to the same number. “When they come back to class a week later, they’ll have a whole board full of ideas on how to develop this product,” says Kolb.

■ [Textmarks.com](#) allows users to create a catchy keyword about any product or topic they desire. Anyone who texts that keyword to 41411 gets the response the user has specified. The site even allows users to print T-shirts bearing that keyword.

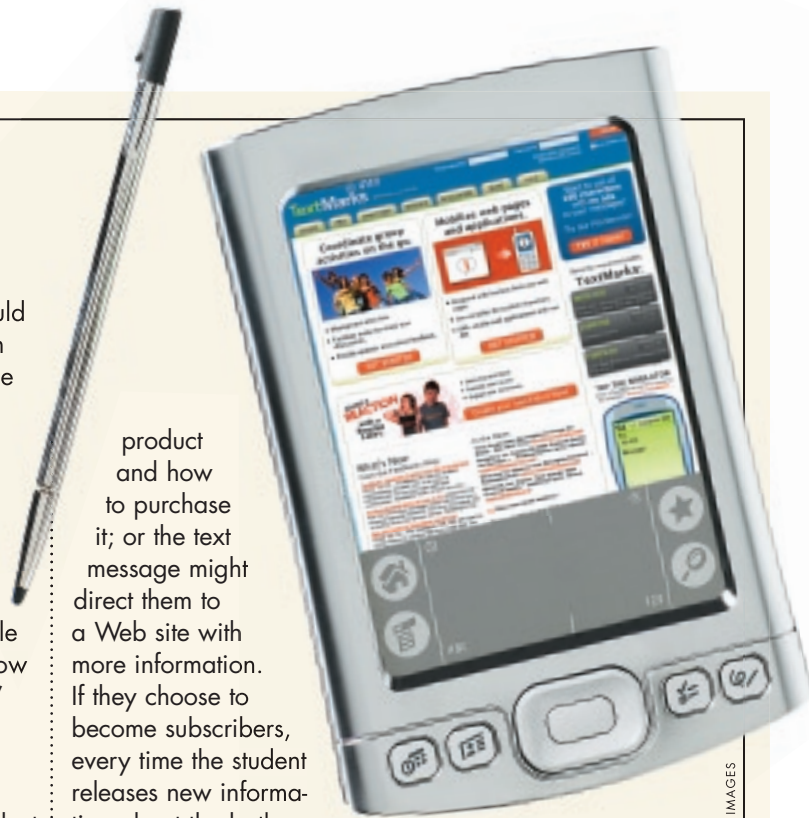
So, says Kolb, if a student has launched a new business to sell bath products, she might designate the keyword “bubbles.” She puts up posters, sends e-mails to her friends, and wears a T-shirt, and each medium encourages people to text the word “bubbles” to 41411. When they do, they might receive back a text message describing the

product and how to purchase it; or the text message might direct them to a Web site with more information. If they choose to become subscribers, every time the student releases new information about the bath product, the subscribers will get a text alert giving them the latest details. While the student gets a crash course in product marketing, the professor who signs up as a “subscriber” can gauge how well the student is performing in her product launch.

■ [Mobileactive.org](#) is an activist’s dream site, an organization that shows how cell phones are being used in worldwide applications among the poorest people in the world. Students can learn about cutting-edge applications for banking or about com-

petitions such as last fall’s “Calling All Innovators,” a contest run by Forum Nokia which invited participants to create mobile applications that would improve the world.

The other possibilities for cell phone applications seem limitless. Says Qusay Mahmoud of the University of Guelph, “In short, there is not one killer application for mobile learning. We have a killer environment—the wireless network and the smartphone—so anything is possible.”



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