

Faculty, students, and residents may not be as different in their use of technology as many of us have assumed.

In this month's letter, Dr. Rick Valachovic, Executive Director of the American Dental Education Association, attempts to size up the digital divide between students and faculty and reconsiders some common assumptions about the generations.



Perhaps Old Dogs Can Learn New Tricks

Earlier this winter, as young people in North Africa used cell phones and social media to mobilize their fellow citizens, I was struck yet again by how profoundly our world has changed in recent years. Indeed, the pace of technological change has accelerated so rapidly that the fax machines that played a prominent role in the 1989 Tiananmen Square protests now seem extremely quaint by comparison.

The technological changes we have witnessed in dental education during this same period have not had the same profound consequences, but they have proven dramatic nonetheless. Most of our schools and programs now have online components, and many have sophisticated simulation labs. We use a range of technologies to support learning in the classroom and electronic records to support patient care in our clinics. Despite this widespread adoption of new technologies in our institutions, a fear persists among members of my generation (I received my D.M.D. degree from UConn in 1977) that we remain out-of-step with our students and residents when it comes to technology use. After all, they are "digital natives," born into a world in which computer technology is an integral part of the landscape, while we have been dubbed "digital immigrants," outsiders who must learn to master technology much as we would a second language.

How pronounced is this digital divide? I first called Evelyn Lucas-Perry, a fourth-year student at the [University of Michigan School of Dentistry](#) (UMSD) who is also ADEA Vice President for Students, Residents, and Fellows. She helped me organize a mini-poll, which revealed a number of tensions around technology use. While admittedly an unscientific sampling of student and resident views, I suspect many of them will sound familiar.

Most of the current students and residents I spoke to believe a gap exists, but that it is narrowing. They all know at least one faculty member who will engage only in face-to-face content delivery, but most faculty are viewed as very willing to do what it takes to get on board with the available technologies.

Students like having access to lecture notes online, and they like access to recorded lectures even better. As one student said, "I pause and I rewind, pause and rewind. I feel like I get so much more out of it, and when learning is comfortable and convenient, I put more of my time into it."

Several students noted tension on campus between students who want to use laptops, smartphones, and tablets in class and faculty members who find them distracting. Another complained that even the adoption of dental institution management software did not stop some professors from insisting that students also record everything on paper and discuss patient charts with them in person.

I was not surprised to learn from our mini-survey that some members of my generation are embracing only some of the technologies available to them, but I was surprised by the extent to which student preferences differ. They are divided on the use of electronic textbooks and concerned about the attendant cost. On one campus, some students are sidestepping a requirement to purchase smartphones with clinical application software, although those who have them like many of the additional uses to which the school puts the devices.

Several of the students and residents I spoke to also stressed their preference for classroom learning. One told me she appreciated the university's effort to make lectures available via WebEx for students who are off site, but said she finds the learning experience less valuable. "I am not as attentive or as engaged as when I am present."

I asked Dr. Lynn Johnson, Assistant Dean for Informatics and Innovation at University of Michigan School of Dentistry, for her views on the digital divide. Having a faculty member in charge of informational technology at an academic dental institution is unusual and seems to contribute to Michigan's ability to support its faculty in the adoption of new technologies. Lynn's strategies include talking with faculty to determine whether available technologies can help them meet specific goals before she encourages their adoption. She also meets with students to gather their perspectives. Michigan's use of [iTunes U](#) and its initial decision to limit its [Facebook page](#) to prospective students grew out of these meetings. After two years, additional meetings have expanded the Facebook audience to include prospective patients.

"What sets us apart is how we are organized," Lynn told me. "We have all the pieces—learning technologies, the clinic information system, the course management system, and the administrative infrastructure—in one unit."

The University of Michigan School of Dentistry is about to adopt a collaboration suite using [Google Apps](#) that will integrate its course management system with email, word processing, and other applications across the entire campus. The dental school at Michigan, and Lynn specifically, have played leading roles on technology issues within the university. She told me that in preparing for this latest technological endeavor, faculty showed an even greater interest in shaping the new system than students did. Could this be a harbinger of a lessening divide in the years ahead?

Dr. Elise Eisenberg, Senior Director of Informatics at [New York University \(NYU\) College of Dentistry](#), has been following developments in digital technology since her student days. As a representative to the American Student Dental Association in 1983-84, she broke new ground by inviting vendors of computer management systems for dental offices to the association's annual gathering.

In 1990, Elise returned to NYU to join the faculty. She remembers that "at that point, a lot of faculty were not familiar with computers. They were still expensive, and typically only used by those who had a research grant or an interest in technology."

Today it is hard to imagine a faculty member, resident, or student without access to a personal computer. Elise, who organized the annual [ADEA TechExpo](#) at our Annual Sessions up until this year, teaches new students a course in health care informatics. It used to focus on the basics, such as word processing and using Windows software. Today her time is spent introducing them to electronic textbooks and to podcasting with iTunes U, teaching them to conduct online searches for scientific literature, and explaining the use of technology in evidence-based health care.

I asked Elise if she shares my concerns about digital immigrant faculty members struggling to keep up with their digital native students. Elise is not convinced that the digital divide between faculty and students is as wide as many of us have assumed. "I see faculty using the same devices their students employ," she told me. "They are exploring the Web, file sharing, using Twitter, and the like with equal enthusiasm."

Yesterday here at our Annual Session in San Diego, Elise and Dr. Heiko Spallek, Associate Dean for Faculty Development and Associate Professor at the Center for Informatics at the [University of Pittsburgh School of Dental Medicine](#), led a session that challenged a number of assumptions about technology use, especially among students and residents.

Heiko takes issue with the notion that all young people are digital natives. He acknowledges that students and residents are indeed comfortable with technology, but he points out that it is dangerous to assume that students are technology experts. Digital comfort does not equal technological expertise or the ability to process information. For instance, many students equate using Google with research, when the ability to collect information from a variety of sources is only the first step in a process that also involves evaluating and using that information. As Heiko put it, "The information literacy of young people has not improved with the widening access to technology. In fact, their apparent facility with computers disguises some worrying problems."

Heiko cites research showing that the speed of young people's Web searching means they spend little time in evaluating information for relevance, accuracy, or authority. He says they also have a poor understanding of their information needs and thus find it difficult to develop effective search strategies. He pointed me to a 2008 study in a [British journal](#) whose authors concluded that "the widespread revision of curricula to accommodate the so-called Digital Natives does not seem warranted" because "we cannot assume that being a member of the Net Generation is synonymous with knowing how to employ technology strategically to optimise the

learning experience in university settings."

This year's ADEA TechExpo is being coordinated by Dr. Muhammad Walji, an informaticist at the [University of Texas Health Science Center at Houston Dental Branch](#). When I asked him about the trends he saw in reviewing submissions for the ADEA TechExpo, he told me they were consistent with prevailing trends in consumer technology. "In some cases, dental education is on the leading edge, but most schools are looking at existing technologies and adopting those that best meet their needs. It's a sensible approach."

Muhammad pointed out that most dental schools are far ahead of private practices when it comes to electronic health records. These have the potential to improve patient care and, as Muhammad noted, they can also be used to improve education by tracking what procedures students are doing and how well they are performing them. [The Horizon Report](#), which examines key trends driving educational technology adoption, predicts that such learning analytics will be widely used in four to five years. Dental education is ripe for this practice.

Dr. Todd Watkins, Assistant Dean for Dental Education and Informatics at [East Carolina University School of Dental Medicine](#), recently conducted a survey that looked at differences between faculty and student technology use in dental schools with the aim of "closing the chasm" between students and faculty. The results show very different attitudes toward trust in technology between the two groups. Todd and other members of the ADEA Section on Dental Informatics are presenting these findings this morning at a session being cosponsored by the ADEA Council of Faculties and the ADEA Council of Students, Residents, and Fellows here at our 2011 ADEA Annual Session & Exhibition.

The digital revolution has spread throughout the globe and touches almost every aspect of life. The younger generation may be better positioned to grasp its potential and put it to use in ways unforeseen by its creators, but that does not mean that they alone have this ability. As the faculty members I spoke with amply illustrate, older dogs (no matter their age) can and do learn new tricks. We should also not mistake the superficial ease with which younger folks adopt new technologies for expertise or mastery. Fortunately, in dental education we have an environment that is receptive to new technologies, with faculty and students partnering as drivers of change.

To quote Muhammad Walji, "If technology is effective in helping students achieve their goals, most faculty will be eager to jump on board, especially if the technology is easy to use."

I agree. Faculty may have a steeper learning curve when it comes to digital technology, but with more and more of them signaling their readiness for the climb, the digital divide will soon become a thing of the past.



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