From the Editor

Growing up virtual

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I have to admit something: I've been skeptical about virtual learning experiences at every turn. My first introduction to the idea of virtual learning was the suggestion from someone on the staff here that we create an annual *BioTechniques* virtual conference to expand methods education. This would be a one-day, 12 speaker, 4 session event open to everyone around the globe. The idea was interesting to me from the perspective of enhancing methods education, but, at the time, I saw more problems than possibilities. Would researchers be willing to present lectures online? How would question and answer sessions work? Would scientists take part in such an event? Would they actually login on the day of the conference to listen to the speakers and see posters? And how interactive would the experience be for the attendees?

These were the questions I had four years ago, and, as I'm sure many of you are now aware, our Virtual Symposium is currently in its third year. In that short period of time, over 8,000 scientists from around the globe have registered to take part in our annual conference, and dozens of leading scientists from a wide variety of disciplines have presented their latest research. The end result has been the development of what I see as an amazing opportunity for researchers at all levels to learn about the latest science, methods, and technologies from the comfort of their own homes, or more likely, their labs. In this age of cost control, the ability to take part in a scientific meeting without the expense of travel represents a huge advantage for many young scientists.

My second leap into the world of virtual learning came this year when my own son took a course online for the first time. Even though I had experience with our virtual conference at *BioTechniques*, I was again skeptical about how this course would go for my son given that he is only 12 and the need to be proactive in soliciting assistance with questions or problems from the instructor. During the course, he had to learn how to use a "virtual chalkboard", how to correspond with his peers through an interactive message board, and how to take his tests and turn in homework assignments completely on a computer. To be honest, I did not know what to expect and was even prepared for this education experiment to be a bust. But something surprising happened. Not only did my son become adept at using that chalkboard and engaging with

"virtual classmates"—to some extent more so even than his "real" school chums—he succeeded in learning the course content at his own pace. I should also mention that at the end of the year, he had become more excited about the course topic than I ever expected.

I don't think I'm alone when it comes to skepticism about the current trends in online learning. Massive open online courses, known as MOOCs, are growing in popularity, fueled in part by the participation of instructors from top universities, as well as funding and resources provided by those institutions. But it is unclear how much the average student learns from a MOOC and, at this stage, very few of these courses qualify for any sort of credit. However, that also indicates that current MOOC participants are motivated primarily by personal interest in a topic and, therefore, have different learning expectations than those merely seeking a degree. It seems fair to raise questions now as to whether these online courses will fundamentally alter the college experience for my son and his friends.

But for me, the experiences with the virtual symposium and my son's class taught me two important lessons. First, it is possible for students to learn required content (and beyond) when working through a virtual classroom. This might not be true in all cases, but if it happens for some students, it has potential to work even more widely. Second, and potentially more important as we consider the future of online learning, my son is nowhere near college age, but he will likely take more online course in the near future. And so too will his friends. Ready or not, young students and future researchers are beginning to become active online learners, and this will create the expectation for more, and better, online courses in the future. MOOCs and other forms of online learning are not going away, if anything this trend will only grow in the years to come—I have a son who can tell you that.

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