Tell me and I forget, teach me and I may remember, involve me and I learn.

—Benjamin Franklin

How many times in your life have you been thoroughly and unexpectedly delighted? I mean as an adult. It happens to children all the time but these are—sadly—rare events for us older folks. If you are a techie person, perhaps you were amazed the first time you used a Windows-based operating system, printed an image on a laser printer, or accessed a wireless Internet connection. Today, I still smile when I pick up my iPad (Apple Inc, Cupertino, California) and read the news—effortlessly.

In pathology, there are fewer opportunities to experience wonder and curiosity. We love interesting cases, challenging clinical problems, and the remarkable workings of molecular testing and next-generation sequencing. But that childlike delight in the new and remarkable is missing.

The May 2014 issue of the Archives of Pathology & Laboratory Medicine brought a bit of that wonder back. If you have not already read the issue, prepare to be wowed. It’s not often that you get a chance to be a child again. Just whip out your smartphone or tablet and scan the quick response (QR) codes shown below the figures in the article titled “Pulmonary Large Cell Carcinoma Lacking Squamous Differentiation Is Clinopathologically Indistinguishable From Solid-Subtype Adenocarcinoma” by Hwang et al1 by using i-nigma (3GVision Ltd; http://www.i-nigma.com/download-i-nigma-reader.html, accessed February 18, 2014), RedLaser (eBay Inc; http://redlaser.com, accessed February 18, 2014), or any other barcode-reading app. If you have never experienced viewing a whole-slide image on your mobile device, I guarantee you will be thoroughly amazed and delighted. Witness the promise of digital pathology finally matching its hype. This is how pathology journal articles were meant to be read and experienced. You can now access the entire glass slide, not just the authors’ selected points of interest. The case becomes more real, more interactive, and more educational.

Archives is not the first journal to provide access to whole-slide images, but it is the first one to do it right. The International Journal of Surgical Pathology and Diagnostic Pathology were there before us, but the experience feels like an afterthought. There is a single link to the whole-slide image files and your Internet browser must have the Adobe Flash (Adobe, San Jose, California) player installed, so you can’t view the images with an iPad or iPhone.

To expand access across any and all devices, the May 2014 Archives article has figure captions containing URL links that are hyperlinks when the journal article is accessed via the Archives Web site (www.archivesofpathology.org). But most readers of Archives still use the paper edition, so we have added QR codes below the figures that require a simple barcode reader to link to the whole-slide digital images.

I’ve been a big fan of QR codes and blogged about their use in pathology.2,3 These ubiquitous black-and-white icons are not just the purview of overzealous marketers; they really can be useful. The May 2014 Archives issue is, perhaps, the best educational example of how QR codes can be used, but consider attaching them to scientific posters to download a link to a PDF of the poster or, just as with the May 2014 Archives issue, provide whole-slide image links—instant interactivity and engagement.

When you access the images by using the QR codes in the May issue of the Archives, the image viewer is the College of American Pathologists (CAP) DigitalScope software, which arguably provides the best viewing experience in the business.4 If you do view the images with a desktop computer browser, such as Firefox, Internet Explorer, or Safari, DigitalScope uses the Microsoft (Redmond, Washington) Silverlight plugin, which you can download at http://goo.gl/16ED (accessed February 18, 2014). Better yet, try viewing the images on your tablet or smartphone; no plugin is required. The experience is smooth, almost buttery, with easy pinch and zoom manipulation. The case history and captions are all there, along with access to the author’s selected fields of view.

The acquisition of knowledge has been forever transformed by the Internet and digital tools. Often overlooked in the rush to watch the latest cat movie on YouTube or waste time on Facebook is the fact that the Web is a very
efficient and powerful information delivery system—the best ever developed. This change in the exchange of information has spread to pathology in the form of digitized glass slides. There are many advantages to digitalization as noted by other authors. One key value proposition is image sharing for teaching, consultation, remote interpretation, quality assurance, and tumor boards. Whole-slide images are a very compelling instructional and collaborative modality.

In pathology, digital whole-slide images provide a technology that is remarkably close to the real thing—manipulating glass on an analog microscope. Medical schools have quickly adopted this model as a better, more efficient and effective way to learn. Glass slides are a scarce resource when you consider the number of recuts that are needed to teach a large class of students. But a digitized slide, made from the best histologic example, is open for viewing by all. A scarce resource is now widely available, and opportunities for learning more abundant. Students increasingly have the ability to autonomously dip into and out of continuous learning flows, working at their own pace.

The whole point of a journal article is education—the transfer of knowledge, experience, and guidance. It should also be enlightening. Education should anticipate real-life skills but the dichotomy is that its methodologies are often static, such as textbooks and formal 1-way lectures. For traditional peer-reviewed journals, the transfer of knowledge happens through words or a few pictures and graphs, but as you can see, it could be so much more.

The May 2014 issue of Archives embraces a new model of knowledge acquisition. It is a seminal event in mainstream pathology journals. It signals a tectonic shift in learning and a new manifesto for immersive pathology education. It adds an element of curiosity—the vitamin of learning—as well as interactivity to the dry text and static images on a printed page. Journal clubs now become more real as cases are displayed on tablets or projected on a screen for all to comment upon.

How many times have you tried to do wallpaper matching when diagnosing a particularly challenging unknown slide? Sometimes the photos in the textbook or journal are adequate, sometimes they are just not enough. But with whole-slide images, the playing field has expanded exponentially. The digitized slide is open for review and analysis. Need a higher resolution? You’ve got it. Need a sweeping low-power image to understand the silhouette of the inflammatory skin lesion? No problem.

In the future, pathology textbooks will also incorporate links to whole-slide images. What a terrific way to learn. For now, however, in this first Archives foray into digital pathology imaging, we hope you become a child again and experience the wonder of this amazing technology.

References