CHAPTER 14

TRANSFORMATIVE!

All books, learning materials, and assessments should be digital and interactive, tailored to each student and providing feedback in real time.

—STEVE JOBS

As technology continues to evolve, education must be prepared to evolve along with it, and we should continuously raise our expectations for what it can do. And it’s capable of doing so much more than we’re letting it. To change this, let’s stop viewing it as something that’s working against us and do what it takes to start making it work for us. And I don’t just mean in ways that make our lives easier as teachers and parents,
but also in ways that can completely transform the learning experience. Rewiring education is just as much about how a specific technology is being used as it is about what technology is being used. For example, an iPad, in and of itself, may not seem very transformative, but using it in certain ways can motivate, engage, and jumpstart extraordinary amounts of creativity and learning. So, which transformative technologies have the most potential to rewire education? Here are some of the most promising.

**ARTIFICIAL INTELLIGENCE**

Artificial intelligence, commonly referred to as AI, is of utmost importance due to its ability to personalize the user experiences of other technologies. As personalization is the key to effective learning, it makes sense then to begin our look at transformative educational technology with a brief look at AI.

Artificial intelligence is computer software with the ability to do things that can typically only be done through human intelligence, such as problem solving, decision making, and complex voice and visual translations. In short, AIs are computers that think like people. Because of the advancements made in what’s referred to as machine learning, AI now has the ability to analyze so-called big data, learn from patterns that it finds within that data, and then adapt the way it thinks about things based on this new information—all without human intervention.

If there’s one technology with unlimited potential, it’s AI, because as computers begin to learn, think, and adapt by themselves, there really will be no more ceiling on possibility. Many high-profile people in the tech industry, like Facebook CEO Mark Zuckerberg, are
extremely passionate about the possibilities that AI provides, while others, like Tesla and SpaceX CEO Elon Musk, are terrified of what AI could become, going so far as to warn about the danger of it being so ridiculously powerful that it’s one of the biggest threats to the human race. The 2001 sci-fi film *A.I. Artificial Intelligence*, and the 2004 film *I, Robot*, starring Will Smith, both went a long way toward painting this darker look at what AI might one day become, but for now anyway, AI is helping to boost educational technology in extraordinary ways. Rather than delving into how AI works, I think it would more beneficial to explain AI by taking a look at other transformative technologies that AI makes possible.

**ADAPTIVE LEARNING**

Adaptive learning refers to software that uses AI to change the difficulty level of content being taught, automatically and in real time, based on previous answers and actions made by its users (i.e., the learner). One benefit is that adaptive learning prevents students from moving on to more difficult lessons before mastering current, simpler ones. This is especially helpful in subject areas like math and science, where each thing being taught depends on the learner’s knowledge of and familiarity with something that was previously taught. For example, it would be nearly impossible for a student to get the correct answer on math *order of operations* lessons that include exponents and fractions, if the student does not yet have a firm grasp of how exponents and/or fractions work.

In a traditional lesson, given via worksheets or even on a computer, this student would simply get all of the questions wrong. But that doesn’t help us, as that student’s teacher or parent, figure