

Teaching the

Our children and youth are immersed in technologies that give them opportunities no previous generation has enjoyed. How will schools respond?

Larry D. Rosen

Some weeks ago, I attended a family reunion where the children ranged from age 10 to 18. As we were all talking, someone asked a question about a specific movie. Immediately, every kid pulled out a smartphone, and within 30 seconds they all had answers. Some went straight to the Internet Movie Database (using a smartphone app, of course); two quickly searched Yahoo! for movie reviews; others went to their favorite sites to sample public opinion.

I've seen adults do something similar and gloat about



iGeneration

how Internet-savvy they are and how fast their smartphones navigate cyberspace. But each and every kid acted like this practice was commonplace.

A few days later, I had another enlightening experience. A colleague's 7-year-old son, Mikey, has his own iPad courtesy of his grandpa. A week ago, he was visiting our lab and wanted to print something from his iPad. His dad said that he would have to wait until he got home because although our new printer had Bluetooth access, nobody had yet figured out how to make it work. Mikey got to work and had his

document printing in 10 minutes.

My colleague told me that when the family decided to upgrade the computer operating system at home, Mikey volunteered to do it. In an hour, all the laptops in the house had the new operating system. I could go on and on about Mikey's prowess, but his dad assures me that he is just like all his friends; although he's smart, his comfort and ease in using technology are nothing special.

One last story, about an even younger child. I was at a restaurant the other night and watched a mom hand her

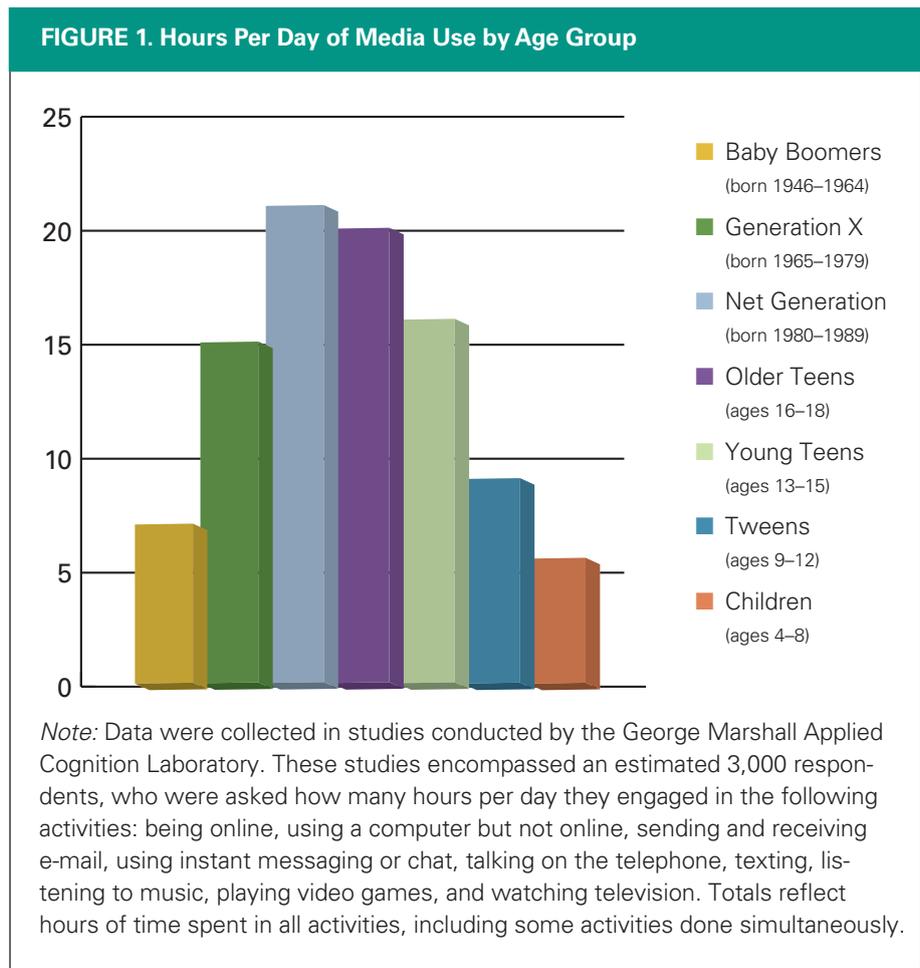
daughter her iPhone to keep her occupied. The mom later told me that she expected 3-year-old Brittani to play one of several built-in games, as she had done a couple of times before. To her surprise, Brittani asked whether she could download a game from the app store. When her mom said yes and showed her the link, she tapped the icon, watched the game load, and without hesitation began playing.

These stories give me hope for our current and future generations of learners. To them, the smartphone, the Internet, and everything technological are not “tools” at all—they simply *are*. Just as we don’t think about the existence of air, they don’t question the existence of technology and media. They expect technology to be there, and they expect it to do whatever they want it to do. Their WWW doesn’t stand for World Wide Web; it stands for Whatever, Whenever, Wherever.

New Generations

Studying generational similarities and differences can be tricky; no individual completely fits the profile of a particular generation. But research suggests that the majority of people born between a rough set of dates actually do share many characteristics (see Strauss & Howe, 1991).

Those born between about 1925 and 1946 are often called the *Traditional* or *Silent* generation. Growing up through the Great Depression, World War II, and the Cold War, they are characterized by a belief in common goals and respect for authority. The *Baby Boomer* generation, born between 1946 and 1964, tends to be optimistic, idealistic, and communicative and to value education and consumer goods. The next generation, born between 1965 and 1979, were defined by Douglas Coupland (1991) as *Generation X* in his book of the same name; the label *X*



signifies that, compared with the Baby Boomers, Gen Xers are not as easily categorized.

With the 1980s and the birth of the World Wide Web, the power of cyberspace came to the masses and a new generation of web surfers, very different from their predecessors, was born. The most common label for this generation is *Generation Y*, simply meaning the generation after *X*. Some people stretch this generation past 1999 and refer to its members as *Millennials*. To me, these names are an insult to our first true cybergeneration. This generation should not be defined by the next letter in the alphabet or by the turn of the century. I believe that Don Tapscott’s (1999) term—the *Net Generation*—better

reflects the impact of the Internet on the lives of its members.

On the basis of our research with thousands of teenagers and their parents, my colleagues and I have identified a separate generation, born in the 1990s and beyond, which we label the *iGeneration*. The *i* represents both the types of digital technologies popular with children and adolescents (iPhone, iPod, Wii, iTunes, and so on) and the highly individualized activities that these technologies make possible. Children and youth in this new generation are defined by their technology and media use, their love of electronic communication, and their need to multitask.

Parenthetically, we are just starting

to examine a separate minigeneration of kids like Mikey and Brittani, who not only are facile with individualized mobile technologies, but also have the expectation that if they conceive of something, they should be able to make it happen. If an app doesn't exist for something they want to do on a smartphone, they just assume that nobody has created it yet and that it should be a piece of cake to do so. All in all, a fascinating minigeneration.

Consuming a Massive Media Diet

In our studies of thousands of children and teens at the George Marshall Applied Cognition Laboratory, my colleagues and I have found that the iGeneration consumes massive quantities of media. In anonymous online surveys, we ask young people how much they engage in a variety of activities, including being online, using computers offline, listening to music, playing video games, talking on the telephone, instant messaging, texting, sending and receiving e-mail, and watching television (see fig. 1).

Our work and that of others, including the Kaiser Family Foundation and the Pew Internet and American Life Project (Lenhart, Ling, Campbell,

& Purcell, 2010; Rideout, Foehr, & Roberts, 2010), suggest that both the Net Generation and the iGeneration's older teen group are consuming massive amounts of media. Figure 1 gives the total amount of reported hours of media use for four generations. Even considering the fact that respondents are doing many of these media activities simultaneously, it appears that many children and teens spend nearly all their waking hours using media and technology.

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Our studies have also found clear differences in what each generation does with its technology. Baby Boomers, in general, prefer face-to-face or telephone communication, although many use e-mail regularly. Gen Xers—being the ambiguous, transitional generation that they are—seem to embrace both cell phones and e-mail, with a bit of instant messaging thrown in. The Net Gen-

eration began to carve out a new communication era, using many available technologies, including social networks like Facebook, instant messages, Skype, and texting.

Then we have the iGeneration, which redefined communication. According to the Nielsen company, which tracks a large sample of teens on a quarterly basis, the typical teenager sends and receives an incredible 3,339 texts a month (which translates into more than 6 messages every hour that he

or she is not sleeping) while making and receiving only 191 phone calls during that same period. Two years ago, teens sent and received about the same number of texts as phone calls (Nielsen Wire, 2010).

To members of the iGeneration, a phone is not a phone. It is a portable computer that they use to tweet, surf the web, and, of course, text, text, text.



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How Schools Need to Respond

Watch typical teens or preteens at home, and you will see them constantly switching between their laptop, cell phone, television, MP3 player, and video game console with apparent ease. In school, we require them to unitask by listening to the teacher, completing worksheets, writing with pen and paper, or engaging in other solitary activities. There are better ways of teaching our students.

Of course, using technology to enhance education doesn't mean that we should move classes totally online. Students need face-to-face social interaction, especially in the primary and middle school grades. It doesn't mean that teachers should simply assign

work on computers and let students find their own way. It doesn't mean providing technology in the classroom for technology's sake. Interactive whiteboards and desktop computers often sit unused by teachers who did not want them and who were not trained to use them.

Nor should teachers feel responsible for finding educational technologies to use in their classrooms. Teachers are required to teach specific content. The point is not to "teach with technology" but to use technology to convey content more powerfully and efficiently.

Teachers can access an enormous amount of curriculum content online in a variety of formats, including audio and video pieces that can help bring the material to life for students. These materials are often free. Helpful sites include

- DiscoveryEducation's Lesson Plan Library (<http://school.discoveryeducation.com/lessonplans>).

- Teachers Helping Teachers (www.pacificnet.net/~mandel/index.html).

- TeachersFirst.com (www.teachersfirst.com/index.cfm).

- Thinkfinity (www.thinkfinity.org/lesson-plans).

When I talk to teachers, the first comment I often hear is, "How can I find time to locate and organize all these online sources?" One answer is to use a *knowledge broker*—someone who helps you identify online resources. Your knowledge broker can be a tech-savvy older student, a local community college student, or even a parent. Give the knowledge broker the task of identifying possible

resources that you can use to support your curriculum.

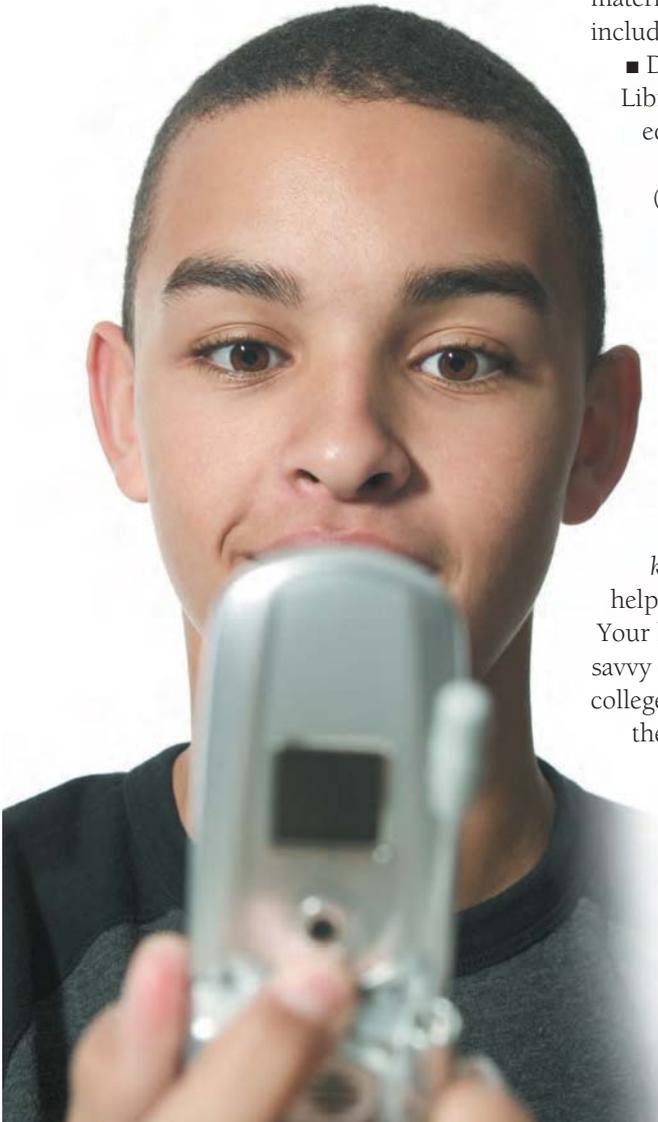
Recently, for example, I worked

with a high school history teacher who wanted to locate content that would help her teach a unit on the last year of World War II. We identified an honors student who had already taken the course and asked him to find a collection of audio files, videos, websites, and any other online material related to this topic. A week later, the student returned with links to several YouTube videos with original wartime footage, photo collections, podcasts, and other multimedia presentations on events that occurred during that year. He worked with the teacher to help her become

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proficient at using each of the content tools. When the teacher assigned her class to watch and listen to several of those videos and other multimedia presentations, the knowledge broker stood by to help make sure that the class (and the teacher) could access the resources effectively.

The resources included videos for those who learned by more kinesthetic and auditory modalities, written newspaper reports for those who learned best by visual modalities, and even interactive websites for those with a more tactile and kinesthetic learning style. Providing information through a variety of modalities and sources helped students develop a richer, more complex mental representation of the material.



Demonstration projects around the United States have found that once teachers relegate much of the content dissemination to technology, they can spend class time more productively—helping students analyze, synthesize, and assimilate material (Johnson, Smith, Levine, & Haywood, 2010; Project Tomorrow, 2010). After all, isn't this the most effective use of class time and teacher talent?

For example, suppose you want your students to watch and discuss Act I of *Hamlet*. Instead of showing the video in class, you might have them watch it on YouTube as a homework assignment. Not only will they be engaged in a modality they use constantly, but they will also be able to access the video 24/7—they can watch and rewatch it on their own schedule. After they view the video once, you can use class time to help them deconstruct Act I and then send them back to watch it again—which they are more likely to do than if you send them back to reread the text.

Leading Education into the Future

Technology is all about engagement. Watching the intense looks on our children's and teens' faces as they play video games, text all day long, Skype, Facebook, watch YouTube videos, and juggle a dozen websites at a time, we can clearly see that they are engaged.

The iGeneration is immersed in technology. Their tech world is open 24/7. Now, we need to take advantage of their love of technology to refocus education. In doing so, we'll not only get students more involved in learning, but also free up classroom time to help them make meaning of the wealth of information that surrounds them. 



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