

Introduction

I am doing some research and ordering a book from Amazon.com that contains a review of several studies I need for my project. I am tempted to check the box for one-day shipping so I can have the material in my hands by tomorrow evening. I think to myself, “What the heck! Another \$3.99 and I can continue my work in 24 hours.” I willingly decide to spend the extra money on shipping, enter my credit card information, and hit the “Place my order” button. Without delay, I am sent to a “Thank you for your order” page that presents me with a confirmation number and assures me that I will receive an order confirmation via e-mail within 24 hours. (In fact, in seconds I hear a click, and a “You’ve got mail!” message comes through my speakers loud and clear.) I decide I do not need to print this page as my e-mail confirmation has arrived and will contain the information I need to trace my order. In reality, I have an account with Amazon, as many of you do, and with my handy screen name and password I can track all of my orders, print out receipts, and keep track of my expenditures with the company. Isn’t technology great?

I am about to leave this page when I notice an interesting option. If I am interested in reading this book *right now*, I can read the book online for a mere \$7.95. It will be

in a format that makes it impossible for me to print, but I can get a jump start on my research. How clever of them to offer this to me *after* I have paid \$40 for the paperback book! However, I am always in a hurry, curious about the research, and obviously not very prudent about expenditures, so I eagerly press the purchase button again. Within seconds, my credit card is charged and I am reading current information on a topic I will soon be presenting at a conference.

Cool! I have paid extra money to get my hands on . . . well, not really my hands; and this part makes me uncomfortable with my resource. I love books. I love to read. I greet and handle my books in a loving way. I'm one of those crazy people who love to look at the cover, the spine, and the back of a book. I check out the index before the table of contents. I sometimes peruse a book from back to front. I smell my books. This is not a fetish, nor am I kinky in any way. Some of you, like me, are baby boomers; we remember the smell of freshly printed books. They aren't quite the same anymore with the new processes printers use, but old habits are hard to break.

So here I am, looking at my book on a screen. I can't smell it or feel the cover beneath my fingers, nor can I get out my highlighter and mark the essentials I am seeking. As my eyes scan the print on the screen and I scroll from page to page, thoughts are quickly entering my memory and leaving just as fast. "Oh, that's important; I'll remember to find that tomorrow when the real book arrives. Shall I take notes? Too much trouble when it will all be at my beck and call tomorrow. What interesting information! I need to underline something. I need to stick a sticky note here and there. I'd even fold a corner down if I could." (Book lovers, I know this is a sacrilege, but I am feeling desperate.)

My brain tries hard to fit in to the techno era. I can use my laptop like a pro in many ways. I own two iPods. I use a Smartphone, which, by the way, is much smarter than I am! I gave up my paper calendar years ago. But a book . . . a book is another story altogether. A book comes alive when I hold it in my hands, when I smell it and mark in it. I get to write my name in it. I doodle, draw arrows, make stars, and I take notes in the backs of my books. Is there something wrong with my brain that I so dislike this process of reading a book on a screen?

My students and my children have no problem reading books on their computers or on their Kindles, the digital reader offered by Amazon. They can highlight on their

- Children in this age group are no longer learning to read, but are reading to learn (Healy, 2004).

Ages 11 Through 13

- By age 11, children begin to manipulate abstract ideas.
- By age 12, growth of the cognitive control center allows children to learn from negative feedback—that is, to learn from their mistakes (van Duijvenvoorde et al., 2008).
- While the first 10 years of life are dedicated to the development of sensory lobes, the second 10 years show great development of executive functions in the frontal lobe.

Ages 14 Through 18

- More pruning of frontal lobes occurs as students “design” their own brain; as the brain matures, it is capable of better abstract reasoning.
- Working memory increases throughout the teen years.

Technology and Brain Development

The American Association of Pediatrics announced in 2001 that children under the age of 2 should spend no time before a computer or television screen. Their time should be spent interacting with others as they move more and listen to and participate in conversation. From ages 3 to 5, it is recommended that television be limited to no more than two hours per day (Committee on Public Education, 2001).

The Net Generation of young adults with children is not necessarily following these suggestions. Babies are sitting on laps learning how to hit keys and move a mouse to become computer literate. Two experts, Jane Healy (1998) and Susan Greenfield (2008), agree that children should not be exposed to technology until they are older. Healy suggests children should be at least 7 years old before they use computers.

We must remember that brain growth occurs through movement and play. We should also remind ourselves that interaction with others is necessary for brain

swinging footrests. John Medina also has information about exercise on his Web site, www.brainrules.net.

INSTANT MESSAGE



Climate control can contribute to having a healthy place to learn. Although installing climate control devices may involve making expensive changes in some schools, the research suggests that students learn best when the temperature is between 68°F and 72°F degrees.

Providing a Safe and Intellectually Challenging Environment

Every student deserves to feel safe and secure in school. Feeling safe and secure lowers stress levels and opens up the brain's filters—the reticular activating system, located in the brain stem; and the amygdala, found in the limbic area of the brain (Willis, 2006). Information processing cannot take place unless incoming information is allowed to enter the brain and eventually enter the neocortex for higher-level thinking and for storage.

A total absence of stress is unlikely in any environment, but a brain-compatible teacher provides a classroom where stress is low and threat is almost nonexistent. As discussed in Chapter 3, things teachers can do to reduce stress include establishing and posting frequently used procedures, posting lesson previews or agendas, establishing and modeling consistent rules and consequences, and posting and discussing clear targets for lessons.

Engaging in Learning and Connecting to the School and Broader Community

Actively engaging students in their learning depends on arousing their interest, and interest, in turn, often depends on the choices they are given and how meaningful the curriculum is to them. In addition, formative assessments and informational feedback,

Social Networking Through Teams



Most of your students are part of a group of friends. We used to call that a “social network.” That term, however, now refers to the social networking that we do by connecting via the Internet. Susan Greenfield, a neuroscientist in Britain, warns people about the possible changes in the brain as a result of social networking, playing video games, and even watching some television programs. Her concern is about a lack of communication skills seen in some students, as well as shorter attention spans. She feels that until more studies are complete, students should be creating relationships with real people (Derbyshire, 2009).

Some of our students use social networking tools such as Twitter, blogs, wikis, texting, instant messaging, and e-mail to bond with others. With appropriate adult guidance, these interactions can be a positive experience. But our students also need face-to-face contact with peers. Those who feel socially inept on a face-to-face level may need encouragement in the classroom to join a group and interact. For these and other reasons, using flexible grouping and teams plays a critical role in educating the whole child.