

## **How do we embrace educational technology?**

As our knowledge improves about how people learn, we are finding traditional methods of teaching to be inadequate. One could venture to say they have always been inadequate and limited to the technology of the time. More demand is placed on students to be able to embrace the exponentially changing technological environment. If we continue to rely on traditional teaching methods as our world becomes more dependent on technology, the digital divide will consume us (McConnaughey, Nila, & Sloan, 1995). We have to be aware of who educators are and who educators are educating. We not only need to implement and have access to technology, but we also have to comprehend how technology is used and understood by the students, the teachers, and education itself.

### **Who are we educating?**

Not all people are indigenous to the realm of technology. In order to digitally naturalize our population we need to understand how students are introduced to technology and how they perceive it. This understanding will provide insight into how they adapt to the digital world. Some people are digitally reclusive and simply refuse to use any type of technology. This could be due to a lack of understanding or fear or it could be based on the desire for simplicity. A digital addict would be on the other end of the spectrum. This is someone who is so dependent on technology that their world would dissolve if deprived of an electronic device for more than a few minutes (Digital Denizens. n.d.). Educating students who fall on either end of the spectrum is a challenge. Fortunately, most people fall in between these two extremes and are usually either digital immigrants or digital natives (Prensky, 2001).

Today's kindergarten through college students are the first generations to grow up with computers, video games, cell phones, digital cameras, email, instant messaging, and the Internet as the source of communication and information. These digital natives are quick to adapt to technology and it is argued their brains have even developed differently than the preceding generations (Bennett, Maton, & Kervin, 2008). Education of digital immigrants involves more stimulating content and conveyance methods in order to keep them engaged. This generation readily responds to emerging learning styles such as fluency in multimedia, virtual environments, experiential learning, collective reflection, and nonlinear personalized learning experiences (Dede, 2005).

In contrast, the digital immigrants are the people who have learned technology, but kept one foot in the past. They are the people who likely learned to type using a typewriter or remember the switch from rotary to digital phones. Digital immigrants were socialized differently from the recent generation and have learned to adapt to the digital age (Prensky, 2001). Some have adapted more quickly than others likened to learning a new language. Others, while open to change, struggle to keep up.

Another population has most recently become predominant as the world's economy has forced an otherwise content workforce back to school for retraining. These digital refugees have unwillingly had technology thrust upon them (Digital Denizens. n.d.). While a few may be digital natives, most are of the digital immigrant generations. In many cases, these students tend to be unmotivated to learn. This makes their academic success less dependent on their generation, and more dependent on their desire to learn something new.

**Who are the educators?**

It is important to point out most educators are digital immigrants and are struggling to teach a growing population of natives. Are educators prepared to keep pace with technology? Increases in network bandwidth, adoption of object orientation software engineering, and accessibility of wireless technologies have occurred over the last twenty years. Even though our capabilities have increased, the gains in learning and instruction have not increased at the same rate. Translating our technological advancements into education has been curtailed by oversimplification and by too few adopters (Spector, 2001).

The process of integrating technology and learning is often ignored. There is a misinterpreted belief people are resistant to technology. In reality, people could simply resist the change, impersonalization, and the loss of control technology may represent (Siemens, n.d.). As stated before, there are different kinds of students. There are also different kinds of educators. Larry Baker (2009) offered his opinion that faculty are divided into four stereotypes when it comes to embracing technology.

The first category is the "Pathfinders." These are educators who have embraced technology. This group is curious and open to the experimentation and implementation of new technologies (Baker, 2009). They are typically not the digital immigrants, but some are. They are passionate about education and the few digital innovators and explorers are leading the way.

The next category is the "Jumpstarts." This group is willing to consider change, but they are sincerely concerned about striking the right balance between technology and traditional education. This group is typically curious and eager, but may lack the motivation for taking the plunge. "Jumpstarts" probably lack confidence the time they invest in IT will pay dividends. The skepticism may be substantiated by previous failed attempts of technology integration. The

reluctance could also stem from the uncertainty of stepping outside of their comfort zone (Baker, 2009).

The third category is the "Too Old/Too Late." This group responds to technology with amazement and express wonder and admiration at even the slightest technological advancements made by others. They profess they are too old or too far behind to take part in innovation. These are the people who often worry computers create impersonal classrooms and pose grave threats to personal privacy. They seem to accept a changing world, but are running out the clock until retirement or until someone magically provides them with a 21st century command center.

The fourth category is the "Naysayers." These educators can also be described as the "Resisters" or "Saboteurs" (Creighton, n.d.). This group is made up of the ones who are actually committed to stopping new ideas such as the implementation of technology. They are the deeper, angrier version of "Too Old/Too Late." We all know the type who constantly shows disdain through body language and calculated utterances of discontent (Baker, 2009). For one reason or another, they feel threatened by technology or anyone who promotes it. Some speculate these educators feel they do not have the skills to implement technology and are embarrassed to admit their feelings of inadequacy. Other may believe technology may eventually replace them (Creighton, n.d.).

One could argue the attitudes and actions of educators in the last three categories are learned rather than inherent. An optimist would believe all educators chose the field with the intention of providing quality education to those who need it. One could also speculate all educators initially made an open minded commitment to utilize the most appropriate means of teaching available.

## **What does education think in general?**

Educational leaders share a general consensus technology is increasingly transforming teaching and learning. Many see the potential for technology to improve student employment prospects by incorporating it into core curriculum and making more learning available through distance education programs. This will help students prepare to compete in a global economy by making them ready to engage in a job market that requires them to understand how to use technology effectively ("Cisco announces results," 2011).

Technology also has the potential to improve student engagement and reduce attrition by developing teamwork and project-based learning. It enables study groups through improved communication and collaboration tools such as private chat rooms, social media sites, and school web portals with live discussion forums and video chats. Some colleges are even providing smart phones and tablet devices to their students to help facilitate digital learning ("ACU first university," 2008). Technology improves research capabilities by providing portals to the seemingly limitless Internet. In addition, technology can improve critical thinking and problem solving skills through interactive learning environments and an expanded knowledge base.

In K-12, educators find most students appear to enjoy using technology. Multimedia learning can incorporate words, images, games, and movies to enhance classroom instruction. Teachers can also use technology to their advantage by tailoring lessons to the needs of each student allowing students to learn at their own pace. For instance, the Los Altos school district in California is finding success using the Khan Academy, a non-profit online learning organization, to heavily supplement their current traditional methods of teaching math and science. The Khan Academy also incorporates an intelligent learning system that tracks student

progress and reports potential trouble areas. The concept enables teachers to “flip” their classrooms. Students use the time they would normally spend doing homework to review video lessons. In turn, teachers can spend classroom time helping students work on trouble areas. Teachers can spend more time focusing on the learning process and give extra help to the students who need it. Each student is engaged and receives the appropriate support from the teacher without getting left behind.

## **Conclusion**

There is no doubt technology is necessary to improve and sustain effective education. It is the educators’ responsibility to recognize who their students are and to understand how they adapt to technology. This critical understanding should be considered when implementing new technology. Additionally, appropriate attention should be given to how educators react differently to change. Regardless of their stereotypical traits, educators need to be kept informed of new technology news and events. The use of Really Simple Syndication (RSS), blogs, and technology newsletters is a good way to keep faculty aware. Educational leaders should also be giving constant updates on how other educators are adopting technology and provide appropriate professional development opportunities. They should also encourage faculty to join technology focus groups and become users of social-networking sites so they can experience the buzz of innovation. People have an inherent tendency to follow the practices of many rather than that of the few. Instead of avoiding new technologies either because of misinformation or fear of change, educators should embrace change to provide the best education possible.

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