What is technology literacy?

Technology literacy is typically framed as Information and Communication Technologies (ICT) Literacy (the hardware and software) combined with Digital Literacy (the processes of using the tools). In 2001 the Education Testing Service convened an international panel to flesh out the meaning of technology literacy and came up with the following definition: “ICT literacy is using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society” (p. 2). Therefore technology literacy is more than hardware and software but also what information is transmitted and how we make sense of and organize that transmission.

Most importantly, technology literacy means different things to different people and in different contexts. In Intelligence Reframed Howard Gardner states "literacies, skills, and disciplines ought to be pursued as tools that allow us to enhance our understanding of important questions, topics, and themes." In support of this idea of literacy, the National Academies identifies the three facets of technology literacy as capabilities, knowledge, and ways of thinking and acting within our work and relationships with others. There is a lot of data and information readily available to us, but how we interpret and draw conclusions is up to the individual. Therefore technology literacy is a function of the individual and his or her construction of knowledge: what you can do, what you know about, and how you construct, act upon, and disseminate your knowledge.

Why is technology literacy important?

Given the exponentially expanding presence of technology in all fields, there is no educated person that does not require a certain level of technology proficiency. Most young people feel unconnected if they don’t have a phone in their hand - constantly. There are approximately 1,966,514,816 Internet users worldwide. In North America it is estimated that 78% of the population uses the Internet, a growth of 146% since 2000. However, there is little evidence to indicate that just because we use technology, we know how to use it to learn and to work.

In 2006 a study of the state of higher education stated that employers report that many graduates they hire are not prepared to work, and lack the critical thinking, writing and problem-solving skills needed in today’s workplaces. Moreover
what is learned in many academic programs is obsolete by the time a student graduates. Therefore, educated professionals must be lifelong learners who are able to learn on their own.

Technology has greatly impacted our capability to think and act strategically. The impact of resources and services offered at little or no charge through the Internet and the decline of printed materials has altered how quickly information can be formatted, reproduced and located in a variety of formats (text, animation, video, and audio). Time is an advantage for most professions and the speed at which we can access, and make use of information makes us more competitive and potentially successful.

Technology now affords us the ability to learn anytime and anywhere and in fact, will continue to be critical if we are to learn throughout our lives. In his book *The Singularity is Near* Ray Kurzweil predicts that the technology advances in the 21st century will allow human beings to transcend their biological limitations, particularly in the area of cognitive intelligence. This forecast suggests that if we don’t understand and utilize the potential power of technology to support our work and learning efforts, we may be left behind in our pursuits of success and in the accomplishments of our goals.

**What are the challenges of technology literacy?**

The rapid development and deployment of new and different hardware and software makes it incredibly challenging to keep up with the newest versions of technologies. We regularly must install updates of operating systems on our computer hard drives, and releases of new versions of mobile phones are annual events. Kurzweil’s Law of Accelerating Returns explains that change in technology development is exponential with a “long tail” rather than by incrementally equal steps. Therefore unless we have a crystal ball it is difficult to predict what technology will be used for anyone one purpose at any given time and, more importantly, how long a technology will be a viable tool. For example, in the 1970s there were two home videotape formats, Betamax™ and VHS™. Betamax™ was the better quality but VHS™ became the home market industry standard because of a better marketing strategy. What new technology will be accepted and adopted? How much time and effort should one put into learning a system or a piece of software when it is likely to be updated or obsolete even within one year’s time?

**What does it mean to be technology literate?**

For an educated professional, technology literacy will mostly depend on your professional standards of performance, so becoming familiar with the skills, abilities, and knowledge required of your chosen career is critical. The O*NET database provides skills sets requires of different careers and can identify those needed by profession. But most important is the ability to stay abreast of changing technologies and delivery systems. For example, it is difficult to grasp today that the Internet was not widely used in 1995, however 10 years later few professions were not dependent upon the Internet. For those who acquired a graduate degree in the mid-to late 1990’s, the Internet had limited graphics and interaction but in the next decade the look, feel, and operation was entirely different. These graduates where totally unprepared for their 21st century expectations for technology literacy, unless they utilized tools and kept informed about emerging and widely used technologies. The next 10 years promises many changes, most of which are difficult to conceive now.

Staying current is key to being technological literate. At the start of the 21st century there began a shift in the nature of technology from what Tim O’Reilly describes as a station-on-a-desk ball-and-chain to Internet as “platform” typified by
what we call Web 2.0. The proliferation of Web 2.0 tools has introduced us to Internet as application; applications that are web-based, typically free to the user, support collaboration and interaction, and are highly responsive to the user. These tools can allow the user to make, take, share, create, exchange, document, record, edit, push information, and receive information passively. Most significantly Web 2.0 introduces the idea of “microcontent” or small bits of information that are reduced to manageable bites, such as blog posts, podcasts, or video shorts.

This shift from physical desktop tool to resources available from any hardware at any location is the most significant change that impacts current technology literacy. While the basic functions of traditional software (cut, paste, copy, search, save, send, enter, move, etc.) are the same, the location, access, and dissemination have dramatically changed. For most of us file attachments, backup hard drives, and one-point access are becoming a thing of the past. We can and will be able to access anything we produce from any location using any tool. Therefore technology literacy requires that we do more that create and save, but also share, co-construct, publish, and critique and do all of these openly.

Why do I need to be technology literate?

First and foremost, keep in mind that knowing how to use a piece of hardware is less important that having a reason for using it that will assist you in achieving a goal.

Second, focus on the requirement and expectations of your current or future profession. What skills and abilities are held by in your field who are successful, effective, and proficient?

Third, keep abreast of trends in technology. You don’t have to be an expert but you should know the difference between an iPad™ and an iPhone™. Several current trends include:

- **Personalization of content and processes.** Technology is much more personal, given the affordances of Web 2.0, because an individual can create, share, construct, and save content in a unique way under an one’s own control. In education we see this trend manifested in electronic portfolios, personal blogs, and even personal YouTube™ channels that carry presentations documenting course learning.

- **Changing definitions of intellectual property.** Shifting from individually produced works to shared, modifiable open property that represents distributed intelligence is a challenging because university work measures the degree of one person’s learning. However, sharing class notes through Notemesh™ or creating collections of user-generated resources in a wiki can increase one person’s learning through collaboration with others. In the workplace, intellectual property is defined by organizational policy. For example, some organizations may use crowdsourcing (having many often anonymous individuals pose ideas) to develop new products, solve problems, or inform new strategies. In this case intellectual property is open and shared. For your personal or professional intellectual property, Creative Commons™ allows variations of intellectual property descriptions that allow use and re-use according to the originator’s intentions.

- **Learning anywhere anytime.** Given the requirement of lifelong learning and the every expanding freely available knowledge and instructional resources, learning on one’s own is easy, accessible, and popular. To illustrate, within one year of MIT’s public release of university courses through OpenCourseWare™, students around the world were purchasing textbooks on their own and forming study groups to teach themselves the MIT courses,
without an MIT professor or paying MIT tuition. While no credit is given for such self-study, the value of the curriculum is just as valuable for many students.

What will come next? We can’t be sure but one thing is guaranteed: technology will continue to change, be critical for every educated person, and will be waiting for each of us to use it to our own advantage.

Resources

Creative Commons™ – http://creativecommons.org/


Information and Communication Technologies (ICT) Literacy and Digital Literacy. - http://www.ictliteracy.info/index.htm


Kurzweil’s The Law of Accelerating Returns -http://www.kurzweilai.net/articles/art0134.html?printable=1

MIT OpenCourseWare - http://ocw.mit.edu/index.htm

O*NET Online: Career Database – http://online.onetcenter.org/

Online Research Toolkit - http://disedlibrarian.edublogs.org/