Chapter 3
E-Learning for K–12 Learners and Adult Learners

Lesley Farmer
California State University Long Beach, USA

ABSTRACT
E-learning uses online networks to enable learners to interact meaningfully with their educational environment. E-learning is explained in terms of the communication cycle and its application in a learning cycle. Social and developmental aspects of e-learning are addressed. Strategies to scaffold e-learning are also provided.

INTRODUCTION
The number one goal of education is to help people learn. How does learning occur, and how do conditions of technology-based education impact learning? Does e-learning, in fact, differ from conventional learning? These issues are addressed in this chapter.

THE COMMUNICATION CYCLE AND LEARNING
E-learning is not an isolated process, but occurs within the context of society. At the most elemental stage, e-learning reflects the interaction between an individual and his or her environment, between the internal and external world. When this interaction occurs between two people, it is called a communication cycle. One person externalizes information, and another person receives that information. For the communication to complete the cycle, the receiving party needs to process the information and respond to the sender. If the receiver changes his or her behavior in the process, it can be said that the person learned. Costa (1985) asserted that learning as any stimulus of change for which the response is not readily apparent. If the process is digitally based, usually involving a network (such as a LAN, WAN, or broadcast network), then the term e-learning can be applied.

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The communications cycle adds another layer of complexity when technology is incorporated. For instance, the information may be expressed digitally: as a text file, a podcast, a video, or a jpg image. To create that expression, the originator has to have access to, and be able to use, some kind of hardware and software. To send that information, equipment is also required as a communication channel. The potential or target party needs physical access to compatible communication channel equipment and software to translate that information into a recognizable format. Only then can the receiver sense the information, and process it. The receiver, like the sender, would also need to be able to use technology in order to respond to the information digitally.

The communication cycle can be applied to the teaching process. The teacher has information that s/he wants to communicate to the student with the conscious intent of teaching the student so that the student can learn. For the teacher to know if her/his intent was successful, the student needs to respond in a way that demonstrates learning: a change in behavior. Teachers can incorporate technology into the communication cycle when communicating information as well as communicating about technology explicitly. Each aspect can impact how the student receives the information and responds – or not.

It should be noted that learning can occur without the presence of a teacher. Indeed, a communication cycle itself is not necessary. Theoretically, a learning cycle could begin with a person sensing some stimulus, such as a raindrop. However, the raindrop is not sentient and is not communicating anything. On the other hand, a raindrop is an indicator of rain; it has a meaning, potentially. If the person knows what a raindrop represents, he or she is likely to react to it, perhaps by running inside, opening an umbrella, or waiting for a puddle to form. If that person has no knowledge of a raindrop, the experience of sensing it and seeing how one’s body and clothes become wet, the person will probably learn the meaning of the raindrop, and hopefully will have enough sense to get out of the rain, literally.

Communication implies intelligence on both ends, with a conscious intent to convey information, be it an idea or an emotion, with the expectation that the receiving party will respond. Additionally, when technology is involved, some human is behind it at some point. Mass media, for instance, involves a communications channel and some kind of message that has the intent of influencing the audience, even if a specific individual is not targeted. Thus, for the purposes of discussion in this chapter, elearning can be connected with the communications cycle. The elements of that process are detailed in terms of ways that show how technology impacts learning.

**INTERACTING WITH INFORMATION**

At this point, it is useful to focus on the more generic issues of individual engagement with information: attention, processing, evaluating information, manipulating information, and acting on information. Each step impacts learning. Furthermore, technology impacts each step as well.

**Attention**

Each person has life experiences prior to contact with a specific piece of information within a specific situation of space and time. Concurrently, information has been created by billions of people over time. That information has been expressed and disseminated in myriad ways: from cave drawings and singing to movies and holographic images.

Humans are constantly bombarded by stimuli, even before they are born. They become aware of stimuli through their senses, and make decisions as to whether to ignore the stimuli or deal with them. What causes them to pay attention? Novelty (such as an unknown sound) or impact on themselves (such as a protruding nail). It should be noted that the individual has to be conscious and receptive
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