Constructivist Teaching and Learning in a Web-Based Environment

Valerie N. Morphew
Fairmont State University, USA

INTRODUCTION

Web-based teaching and learning is on the rise in education and industry, challenging teachers and trainers to deliver instruction in new ways with the same or better results. To maximize the potential of Web-based delivery, instructors can avail themselves of the rich body of research that supports constructivist teaching and learning in the traditional setting. Applying the constructivist approach to Web-based teaching and learning can help instructors establish learning environments and practices that encourage growth and development in their students.

Constructivist teaching and learning recognizes both teacher and student as important, contributing members in a teaching-learning relationship. Other students in the learning environment also hold such qualities. The constructivist approach acknowledges that teacher and student alike bring prior knowledge and experiences with them into the learning environment. By capitalizing on familiar concepts and experiences, the student is able to connect new knowledge with prior and *construct* new meaning. This approach to teaching and learning differs markedly from the long-held notion that students are empty vessels (*tabula rasa*) waiting to be filled by a knowledgeable teacher. Although constructivism is widely accepted in theory, the teaching practices of many instructors do not support this approach.

To help teachers and trainers create a constructivist teaching and learning environment within a Web mode of delivery, the following issues will be addressed:

1. the roots of constructivist thought
2. constructivist teaching and learning in the traditional setting
3 constructivist teaching and learning in the Web-based environment.

BACKGROUND: THE ROOTS OF CONSTRUCTIVIST THOUGHT

Constructivism dominates contemporary learning theory. Constructivists view knowledge as something that is actively constructed in a learning environment comprised of meaningful experiences and interaction with others. Using prior knowledge to make sense of new knowledge, connections arise that join related pieces of construction. Over time, a student's cumulative construction is uniquely erected and represents the whole of his or her experiences and interactions.

Constructivist thought draws from a variety of disciplines, including education, psychology and philosophy. John Dewey, Jean Piaget and Edmund Husserl represent some profound thinkers whose work contributes to contemporary constructivist thought (Morphew, 2002).

Dewey emphasized the role of experience in the learning environment:

When we experience something we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return: such is the peculiar combination. The connection of these two phases of experience measures the fruitfulness or value of the experience. ... Experience as trying involves change, but change is meaningless transition unless it is consciously connected with the return wave of consequences which flow from it. When an activity is continued into the undergoing of consequences, when the change made by action is reflected back into a change made in us, the mere flux is loaded with significance. We learn something. (Dewey, 1944, p. 139)

Piaget believed that thought develops by growing from one state of equilibrium to another. A thinker's encounter with an experience that is consistent with

prior beliefs is simply added to his store of information. In the face of inconsistency, however, the thinker either ignores the new experience, modifies the experience in his mind to fit, or modifies his thinking to fit the experiences. When the latter process is engaged, that is when thinking occurs (Baker & Piburn, 1997).

Husserl's phenomenology similarly relates the construction of knowledge. Husserl, born in Czechoslovakia in 1859, first studied mathematics and science. He earned a PhD in mathematics in 1883, but later studied philosophy and psychology. Phenomenology, as presented here, is a philosophy that looks to perception of phenomena as a key to greater understanding (Morphew, 1994). In phenomenology, the subject's perceptions involve the transaction between the subject and the subject's field, where things outside the subject are transformed into meaningful entities (in Morphew, 1994, from Tiryakian, 1973). When a subject experiences phenomena and perceives, meaning is possible (Morphew, 1994).

Husserl distinguished two types of meaning: meaning-intention and meaning-fulfillment. Meaning-intention corresponds to the ability of an expression to be meaningful. For example, "lw;jdlsk" is meaningless and devoid of meaning-intention. Meaning-fulfillment corresponds to the possibility or impossibility of meaning being carried to fulfillment. For example, "The dodo bird flying in the sky" has meaning-intention but lacks meaning-fulfillment because dodos are extinct. "The cardinal flying in the sky" has meaning-intention and meaning-fulfillment because of the possibility of fulfillment.

Husserl would assert that thinking consists in the meaning-intending act, and knowing consists in the appropriate fulfillment of the meaning-intention. The possibility of fulfillment is requisite for the prospect of knowledge (Mohanty, 1969). Meaning, according to Husserl's phenomenology, is defined as the co-created sense one makes of phenomena through the interaction of the subject and the subject's field (Morphew, 1994). Husserl's phenomenology, then, informs constructivist thought by examining the *construction (creation)* of meaning by a learner (subject) through *experiences* of phenomena.

Collectively, Dewey, Piaget and Husserl contribute to contemporary constructivist thought that emphasizes the construction of *meaning* in the learning environment through *experiences* and *interactions* with others.

Table 1. Elements that contribute to a constructivist learning environment

Elements that Contribute to a Constructivist Learning Environment
Meaningful Experiences Experiences must be meaningful for knowledge acquisition
Interactions Through interaction, students can co-create meaning with others, as all share prior and new knowledge
Prior Knowledge Students bring prior knowledge into the learning experience and can relate familiar concepts to new ones through connections

CONSTRUCTIVIST TEACHING AND LEARNING IN THE TRADITIONAL SETTING

Applying the constructivist approach requires teachers to create learning environments that provide meaningful experiences and interactions. Constructivist teachers must also recognize and celebrate the existence of prior knowledge in learners. In the traditional setting, constructivist teachers use a variety of approaches to maximize the learning potential of students.

For experiences to be meaningful, they must make sense to the learner. An experience perceived by the student as meaningless, much like the expression "lw;jdlsk," renders the learning process impotent. Instructing students to wander aimlessly in a meadow without providing any contextual basis approximates the nonsensical expression, "lw;jdlsk." However, using the experience as a metaphor or analogy taps into students' prior knowledge, elevating the experience to one of meaning.

Providing opportunities for interactions with others is also characteristic of the constructivist approach. Because each student is believed to bring prior knowledge to the learning environment, each has the potential for sharing the unfamiliar with others. This interaction allows collective construction of meaning. Teacher and students alike contribute to the learning process.