

CTL Theory

Several historical and theoretical traditions were thought to converge to create a framework for contextual teaching and learning. Included are elements of situated cognition, constructivism, multiple modalities of learning, and curriculum integration. A later section of this report provides more detail and more “connections” with what has become CTL at UGA. For now, the following is a very brief discussion of these theoretical elements.

Situated Cognition and Communities of Practice. Consistent with, but not the same as, the work of Vygotsky and Dewey, some educational ethnographers and sociologists view learning as more than mental processes.

What ... students come to learn, and how they learn it, cannot be understood solely in terms of what cognitive processes are occurring inside their individual heads – learning occurs effectively, and naturally, in ‘situations’ in which the student is located and actively engaged. (Phillips & Soltis, 1998, p. 63)

Lave & Wenger (1991) have observed unskilled and beginning workers as they mastered complex tasks and skills while serving in legitimate but peripheral roles as apprentices. Learners gradually became more accomplished as a full-fledged member of a community of practice. Wenger (1998) refined these concepts by focusing on the interaction of a) the nature of “meaning” to the learner, b) the learner’s personal and mental identity, c) their role(s) in the community, and d) the practices shared by members of the community.

Learning is promoted through the complementary roles of participation in a community and the practices that actualize the community. For example, teachers find meaning through their participation as a member of the faculty community. Further, the artifacts of their practice, such as the formal and informal curriculum, actualize the teacher's participation in the community of learners.

Constructivism. Many cognitive scientists believe that all of us create cognitive or mental structures. These mental models provide meaning to use and organization to the learners' experiences. In this way, individuals construct new ideas or concepts. The teacher's role is to facilitate the construction of the learners' ideas through self-discovery, inquiry, and critical examination of constructed knowledge. Learners are active participants in building on what they have already learned.

Bruner's constructivist theory (Phillips & Soltis, 1998) is based on the study of cognition and is often linked to Piaget's child development research.

The general instructional implications of Bruner's theory include the following:

1. Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
2. Instruction must be structured so that the student can easily place new knowledge on prior information.
3. Instruction should be designed to facilitate refinement and reflection on the meaning of constructed knowledge.

Multiple Modalities of Learning (Multiple Intelligences). Howard Gardner has challenged the traditional notions of intelligence where a static test score is thought to represent a learner's capacity in the areas of verbal expression and mathematics. Dr. Gardner believes that we are asking the wrong question when we ask "Are you smart?" He states that we should be asking the question "How are you smart?" The expectation is that each of us enjoys special "gifts" that are used as an important modality for learning.

Multiple modalities are believed to incorporate at least eight distinct forms of intelligence. (Other researchers have identified other types of intelligences.) From Gardner's perspective, it is believed that learners often have gifts in the following areas (White, Blythe & Gardner, 1992).

- **Verbal/Linguistic** – involves ease in producing language and sensitivity to the nuances, order and rhythm of words.
- **Logical/Mathematical** – entails the ability to reason deductively or inductively and to recognize and manipulate abstract patterns and relationships.
- **Visual/Spatial** – the ability to create representations of the world and to transfer those either mentally or concretely. Well-developed spatial capacities are needed for the work of architects, sculptors, and engineers.
- **Body/Kinesthetic** – using the body to solve problems, create products, and to convey ideas and emotions.
- **Musical/Rhythmic** – includes sensitivity to pitch, timbre, and rhythm of sounds, as well as responsiveness to the emotional implications of these elements.
- **Interpersonal** – the ability to understand other people, to notice their goals, motivations, intentions, and to work effectively with them.
- **Intrapersonal** – personal knowledge turned inward to the self. This

form of intelligence entails the ability to understand one's own emotions, goals, and intentions.

- **Naturalistic** – the ability to understand the natural world including sensitivity to environmental and natural events.

The use of multiple learning modalities is manifested through multiple ways of teaching, contextualizing instruction, correspondence between environment and assessment techniques, and the examination of knowledge from alternative perspectives (Blythe, White, Blythe, Gardner, 1992, & Gardner, 1995 & Gardner, 1990). Multiple modalities promote teaching that addresses learning other than the traditional verbal and math emphasis. It is also important to utilize many learning environments. This will encourage those modalities in environments where special skills are required.

“Sustained, hands-on practice with the procedures, materials, and problems of such a domain are crucial to achieving deep knowledge within it. Hence, MI theory places an emphasis on learning in context, particularly via apprenticeships” (p. 34).

Assessment should also be conducted in ways that are consistent with the learning modality. Each skill needs to be assessed directly in a specific context. Lastly, learners should be allowed to explore topics in alternative ways. For example, they can study a historical era through the art, music, and literature of the period.

Expertise. From the perspective of theory and research on expertise, outstanding performance must be considered to occur within a given domain of

knowledge and as a result of domain-specific training and practice (Ericsson & Smith, 1991). The assumption underlying this approach is that intelligent, flexible thinking emerges as the individual develops a rich understanding of a domain and the ability to use this knowledge in multiple contexts. For example, an expert physician not only has years of education but has practiced the use of learned knowledge and skills.

Expertise is more than "book learning"; it is the ability to use that knowledge to solve problems within that domain. Outstanding performance within a domain is the outcome of years of study and training in a given field. While situated cognition assumes that learning is tied to the context, an expertise approach assumes that learning is tied to a domain of knowledge. As the student acquires more expertise within a domain, that knowledge becomes more flexible, and the student is more able to deal with novel and complex problems. A new doctor may not be able to deal with an unusual set of symptoms or may be fooled by a common illness that presents an uncommon set of symptoms. Conversely, a more experienced, expert doctor will have had sufficient experience to deal with the novelty of unusual situations.

Expertise is assumed to gradually emerge with experience within a domain. When students are novices, they are unlikely to have a deep understanding of a domain and will focus on surface features of problems. Their problem solving will be more hit-or-miss than planned. As their skills and knowledge emerge with experience in the domain, they begin to have a deeper understanding of a domain and, as a result, are able to create plans of action to

solve problems. This ability comes from both a rich knowledge of a field and experience using that knowledge.