Learning Theory in Cyberspace
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The discipline of education rests on a myriad of learning theories and concepts. Dozens of learning theories and principles can be considered, but a select few are appropriate for distance learning done in an online environment. In particular, the learning theories of didactic instruction, reflection, metacognition, cognitivist learning, critical thinking, conversation theory, and Socratic dialogue seem to have the closest fit to the design and implementation process used to deliver this learning experiences in cyberspace.

Didactic Instruction

Didactic instruction entails the delivery of factual, concrete knowledge. A traditional learning strategy, didactic instruction is most often offered via lecture, demonstration, video viewing, and readings. The motivation in using this direct form of instruction has a long tradition in post secondary education, one that is useful for introducing important content, especially when combined with other more student centered teaching and learning strategies (Smith & Blankinship, 2000).

Reflection

The concept of reflection or the ability to critique one's own knowledge and capabilities is a critical component of learning (Baldwin, 2000). Reflection is both a concept and a process, and is a conscious act within the learning experience. It helps to strengthen self-awareness as well as encourage learner responsibility and accountability for their own learning. Schon (1987) expanded the view of reflection by describing reflection-in-action, where the learner makes sense of complex and sometimes ambiguous concepts or situations through interactive and interpretative group or teacher-student reflective activities. As the name implies, reflection and action are combined to test and frame knowledge, problems, solutions, processes and conclusions.

Metacognition

Metacognition is a central component of the cognitive view of knowing and learning (Greeno, Collins, & Resnick, 1996). When students can elaborate the phenomena they are studying, metacognition is exercised to create richer meaning and understanding for the learner. They demonstrate the capacity to reflect on their own thoughts, which enables them to "monitor and manage" (p. 19) them. The study of philosophy and especially, epistemology demands that students develop their reflective, self-monitoring abilities and apply them to their studies. They need to be able to, "elaborate what they read and construct explanations for themselves," (p. 19). Metacognition incorporates an internal dialogue that helps the learner process their own learning and knowledge through cognitive mediation (Moallem, 1997).

Cognitivist Learning

Cognitivist theory describes how learners think and process content and learning experiences. Following an information processing model of instruction, cognitivism centers on concepts like attention, cognitive load, encoding and schemata (Cates, 1993). "Cognitivism seeks to identify ways to minimize the cognitive load of learners and assist them in encoding (converting to memorable units) what they study," (p. 133). Content is presented in chunks which facilitates comprehension and memorization. In Cognitivist theory, learners are encouraged to apply principles of the content to real world examples, and to critique relevant viewpoints, principles and tenets (Bates & Poole, 2002).

Critical Thinking

Critical thinking, a high level cognitive function, "…is a purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference, as well as explanations of the evidential, conceptual, methodological, or contextual considerations upon which the judgement is based," (Astleitner, 2002, p. 53). The mental exercise provides a fertile soil for developing beliefs and values about the content and applying them to other contexts. Visible evidence of critical thinking can be gleaned from a learner's ability to critically participate in discussions and dialogues about important concepts and issues (Nussbaum, 2002). This includes the ability to engage in argumentation and to actively be involved in intellectual, probing discourse and debate within a socially constructed learning environment.

Conversation Theory

G. Pask (1975) developed this theory and has transposed the dynamics onto both education and computer system development. In this theory, learning occurs through conversation about particular subjects which serves to make knowledge explicit. Pask theorized that within this conversational context, three unique yet related "languages" could be used. Natural language was suitable for general discussion; object language suited subject matter discussions; and meta language, which described dialogue about learning and about language. As well, five levels of conversation could be achieved: task, explanatory, manipulative, purposive and meta-cognitive levels (Boyd, 1993). Through the lens of conversation theory, the learning environment is one of social and internal relation, (Laurillard, 1999) where content and process are interdependent.

Socratic Dialogue

Grounded in the dialogues of Socrates, Socratic dialogue has been championed by two theorists, Leonard Nelson and Gustav Heckmann. "It uses the technical strategy of "regressive abstraction" and develops a syllogistic structure of thought as a method of rigorous inquiry into the ideas, concepts, and values that we hold," (Van Hooft, 1998). Socratic Dialogue is a unique collaborative philosophical discourse that evolves between the teacher and student(s). The process of Socratic dialogue begins with a thought - provoking question from the teacher followed by philosophical answers and reasoning from the students. The ideal conclusion to this exercise is group consensus on the answer to the initial philosophical question, such as, "What can we know?" Richard Paul (1993) classified Socratic questions into categories: questions of clarification, questions that probe assumptions, questions that probe reason and evidence, questions about viewpoints and perspectives, questions that probe implications and consequences, and questions about the question (metadialogue).

Van Hooft (1998) described Socratic Dialogue as the heart of philosophy. "It is an experience of what philosophy at its best can be." In-depth collective inquiry stimulates intellectual discussion and brings deeper insights into both the content and the learner's internal value systems. It affords richer understanding of the concepts being discussed which leads to reflection both during and after the dialogue are concluded.

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