UCD TEACHING AND LEARNING/ RESOURCES

Teaching Toolkit

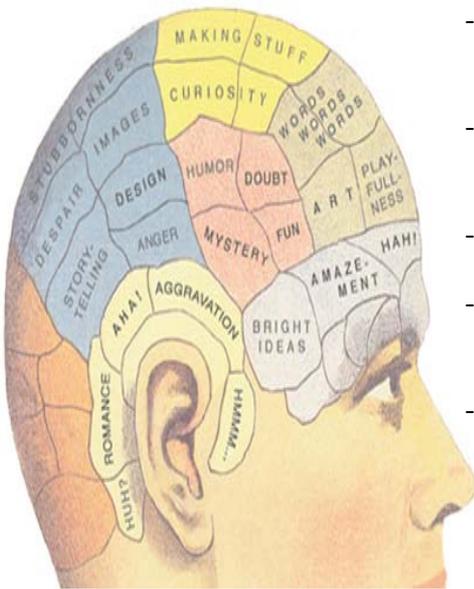## How Students Learn 1

Author: Paul Surgenor

Email: paul.surgenor@ucd.ie

Date: January 2010

www.ucd.ie/teaching

Learning Theories – An Overview

Defining learning

Learning is a latent construct & everyone has their own idea of what it is, how it occurs, and the relationship between teaching and learning:

- I cannot teach anybody anything, I can only make them think – *Socrates*

- Knowing is not enough; we must apply. Willing is not enough we must do – *J. Goethe*

- Learning is not a spectator sport – *D. Blocher*

- I never teach my pupils; I only attempt to provide the conditions in which they can learn – *A. Einstein*

- … education at the University mostly worked by the age-old method of putting a lot of young people in the vicinity of a lot of books and hoping that something would pass from one to the other – *T. Pratchett*

In psychology and education a common definition of learning is a process that brings together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills, values, and world views (Illeris, 2004; Ormrod, 1995).

Education Theory

There is no one, clear, universal explanation of how we learn and subsequent guidebook as to how we should teach. Rather, there are a range of theories, each with their background in a different psychological and epistemological tradition. To understand learning then, we have to understand the theories, and the rationale behind them.

While much learning can be attributed to social imitation or cultural lessons, Bereiter (1990) queries how we acquire more complex knowledge, and states that it is this learning that gives rise to the need for an educational learning theory.

Epistemology & Learning Theories

Epistemology basic is a branch of philosophy that investigates the origin, nature, methods, and limits of human knowledge. Such beliefs influence the development of knowledge because they are considered to be the central values or theories that are functionally connected to most other beliefs and knowledge (Hofer & Pintrich, 1997).

Our own personal epistemology influences our own theories of learning, and consequently, how we approach, design, and delivery our classes. The terms used to describe epistemological positions vary, depending on whether it's describing the origin or the acquisition of knowledge.

Psychological Perspectives

The study of learning itself isn't a discipline, it has been approached by researchers from a variety of disciplinary perspectives which has resulted in a large number of theoretical approaches.

Which perspective?

Shulman (1988) suggests that we should adopt the attitude of the 'disciplined eclectic' – view each theory critically for what it can contribute to solving important instructional problems.

Although the different theoretical positions are often presented separately, we have to look for connections, similarities, overlaps, and ways to synthesize theories to offer new insights on learning. For example, situated cognition, a cognitive approach to learning, has incorporated the idea of communities of practice and the importance of social networks.

Theories into models

Models help us to make sense of our world, offering us a way of comprehending an otherwise incomprehensible problem. They help us to visualize a problem and break it down into discrete, manageable units. Like any other instrument, a model assumes a specific intention of its user (Ryder, 2009)

The broad range of theories that can be identified in, and applied to, learning in the classroom reflects the different ways in which epistemological traditions influence the experiences we have and how we feel they impact on learning. While there are a wide range of different psychological theories that have been applied to learning (see http://tip.psychology.org/theories.html or http://www.learning-theories.com/for a comprehensive overview) this booklet touches very briefly on three: Behaviourism (grounded in Objectivism), Cognitivism (grounded in Pragmatism), and Social

Constructivism (grounded in Interpretivism). Each of these approaches and their main theories)
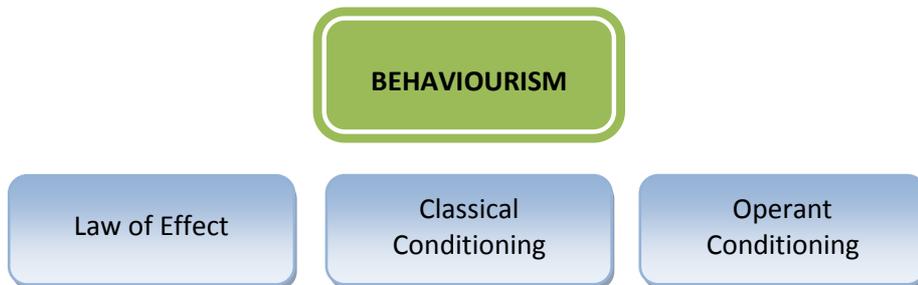
BEHAVIOURISM

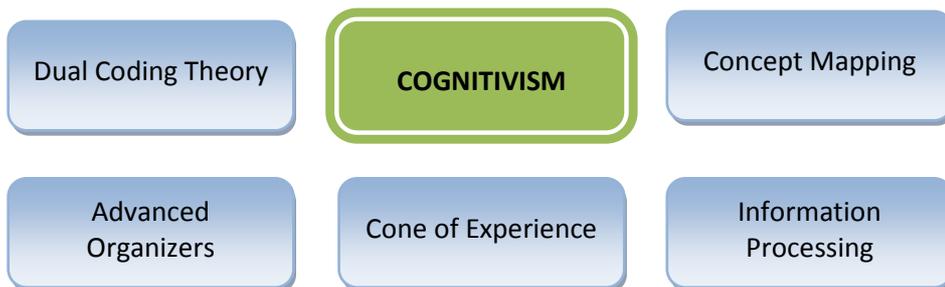| Law of Effect | Classical Conditioning | Operant Conditioning |

Figure 1: Approaches within Behaviourism

Dual Coding Theory | **COGNITIVISM** | Concept Mapping

Advanced Organizers | Cone of Experience | Information Processing

Figure 2: Approaches within Cognitivism

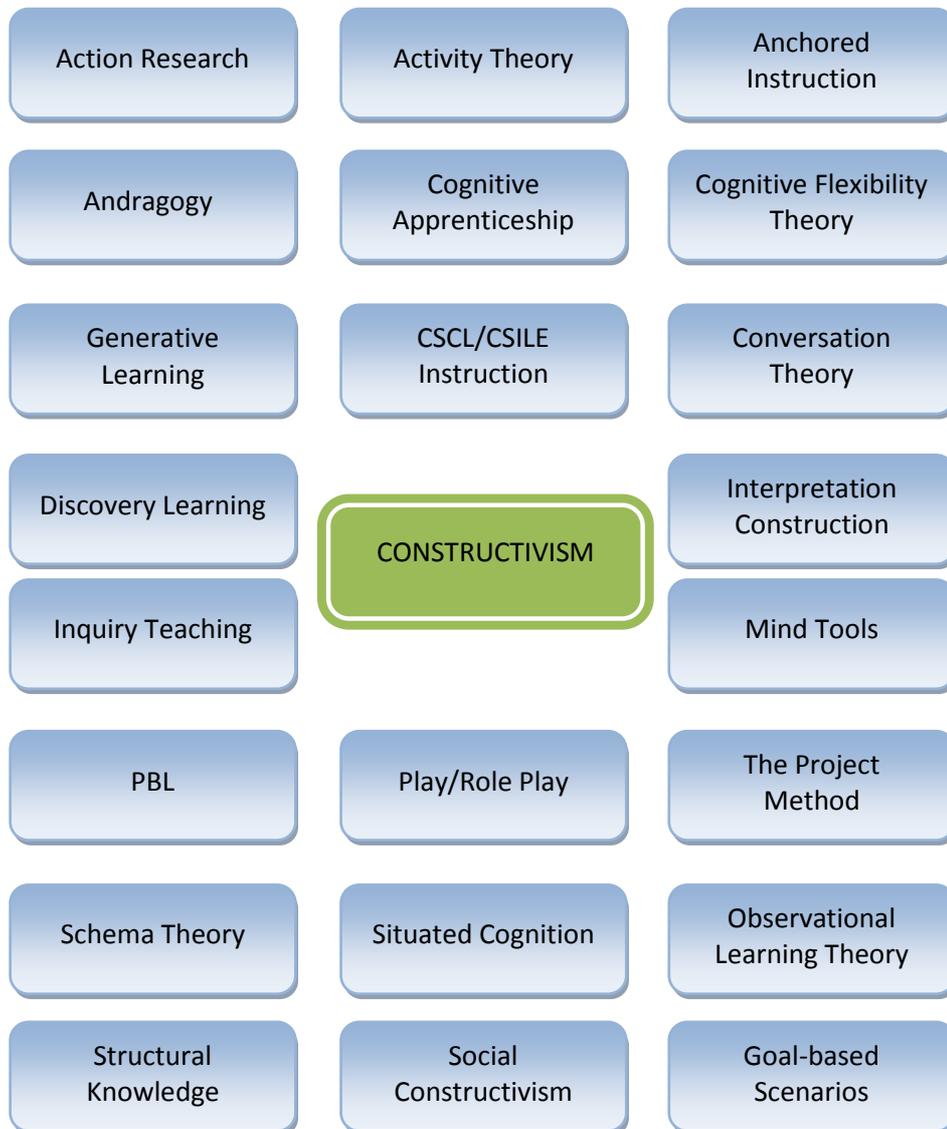|		
Action Research	Activity Theory	Anchored Instruction
Andragogy	Cognitive Apprenticeship	Cognitive Flexibility Theory
Generative Learning	CSCL/CSILE Instruction	Conversation Theory
Discovery Learning	CONSTRUCTIVISM	Interpretation Construction
Inquiry Teaching		Mind Tools
PBL	Play/Role Play	The Project Method
Schema Theory	Situated Cognition	Observational Learning Theory
Structural Knowledge	Social Constructivism	Goal-based Scenarios

Figure 3: Approaches within Constructivism

Overview of main theories

The table below outlines the main aspects of the dominant three learning theories:

	Behaviourism	Cognitivism	(Social) Constructivism
Epistemological basis	Objectivism: knowledge is absolute and true, and is independent from and outside of the individual	Pragmatism: Refers to the acquisition of knowledge and involves active processing where no single truth exists (Brownlee, Boulton-Lewis, & Berthelsen, 2008)	Interpretivism: Knowledge is not uniform, it's constructed at an individual level and exists in multiple formats and varies from person to person (Gill, Ashton, & Algina, 2004)
View of the learning process	Involves the transfer of information from teacher to learner	Focus on transfer of information to learner and how this is incorporated with existing information	Information is subjectively interpreted by learner based on personal experience
Learning theorists	Thorndike, Watson, Skinner	Paiget, Kohler, Gagne	Bruner, Vygotsky
Learner fostered	Surface learning and basic skills	Any deep processing: exploring/organizing content	Collaborative learning
Key considerations	**Climate for learning**: does the environment have the right stimuli to promote learning?	**Readiness**: students will learn concepts that are maturing. **Learners customize their learning**: provide a range of learning activities and concepts for core course objectives.	**Prior knowledge**: design learning to assist students to build on what they know. **Opportunity**: ZPD = area between what a learner can do individually vs. assisted by peer interaction and teaching. **Inquiry learning**: teachers are not the sole possessors of knowledge and perspective but co-learners and guides.
Role of student	Largely passive, responding to stimuli	Actively process, store, and retrieve information for use.	Learners create their own unique education because learning is based on prior knowledge.
Role of teacher	Instructor designs the learning environment.	Instructor manages problem solving and structured search activities, especially with group learning strategies.	Instructor mentors peer interaction and continuity of building on known concepts.