

Learning Theories, Models of Teaching, and Technology Tools

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| | Learning Theories | Models of Teaching | Instructional Technology Theorists | E-Learning Environments |
|-------------------------------|--|---|--|---|
| Behavioral Theories | Classical Conditioning (Pavlov) Connectionism (Thordike 1913) law of effect & law of exercise Operant Conditioning (Skinner 1953) reinforcements & punishments schedule of reinforcement | Mastery Learning Model (Carroll 1963) | Patrick Suppes (1960s) practice and drill Presentation Structured Practice Guided Practice | CCC (Computer Curriculum Corporation, now Successmaker) Tutorials Math Blaster NASA's Virtual Skies |
| Cognitive Theories | Cognitive Development (Piaget 1952) reconstruct knowledge & active reflection schema, assimilation, accommodation, equilibrium Stages of Development (Piaget 1954) sensorimotor – birth-2 pre-operational – 2-7 yrs concrete operation – 7 to adolescence formal operation – adolescence to adult Ausubel (1968) advance organizers Bruner (1966) scaffolding Flavell (1983) combinational reasoning propositional reasoning hypothetical-deductive reasoning | Constructivism Movement based on Piaget's concept that individuals construct their knowledge of the world Inquiry-Training (Suchmann 1962) Discovery Learning (Bruner 1961) | Seymour Papert (1960s) LOGO project MicroWorlds Robert Davis (1960s) Plato project HyperCard HyperStudio Director, Authorware Duffy & Jonassen (1991) Technology is the way students construct their cognitive representation of the world. | Exploratorium Institute for Inquiry The Big6 Eisenberg and Berkowitz Online inquiry training with NASA's Astro-Venture Discovery Learning and Simulation: SimCity, SimEarth and NASA's Solar System Simulator (concept vs procedural simulations) |
| Social Theories | Sociocognitive Theory (Vygotsky 1978, 1992) zone of proximal development internalization of external activities external and internal speech | Social Inquiry Teaching Model (Gillani, 1994) Cognitive Apprenticeship (Collins, Brown & Newman 1989) Situated Cognition (Collins, Brown & Newman 1989) | | NASA's Planetary Flight Socio-cognitive theory in online learning for 2nd language adult learners |
| Psychological Theories | Systems Thinking (Senge 1990) Theory/Stages of Psychological Development (Erikson 1950) O'Keefe and Nadal (1978) Human Memory and Integrated Structure of Knowledge | Kovalik (1994) teaching models resembling the philosophy of systems theory Thematic Interdisciplinary Teaching Model Problem Based Learning (Finkle and Torp 1995) | | The Great Ocean Rescue by Tom Snyder Center for Problem Based Learning Jason Project NASA SCIENCE Files |

Reference: Gillani, B. B. (2003). *Learning theories and the design of e-learning environments*. Lanham, MD: University Press of America.