

STRUCTURAL NOTE: Level 1 is the primary/central node, each level is a node and then descriptive information/link, the next level down in the outline in the next node down. For the first few nodes I have identified the level/layer in the structure. This is VERSION 2 which include information from module 2.

Level 1: Epistemology: What is there to know and how can you know it?

- Level 2: Learning – All Things are Knowable Theories: Behaviorism, Cognitivism, Constructivism
 - Learning Theories: Ideas on how knowledge is acquired
 - Pedagogy: Practice of Teaching
 - Learning/Educational Technology: Practical application of science and tools to aid teaching and learning
- Level 3: Behaviorism: Learning is observable behavior based on an observable stimulus
<http://www.edpsycinteractive.org/topics/behavior/behovr.html>
 - Level 4: Theory
 - Level 5: Learning is a response to stimulus:
 - Classical Conditioning, Classical Behaviorists: Pavlov, Watson, Thorndike
 - <http://www.edpsycinteractive.org/topics/behavior/classcnd.html>
 - Level 5: Learning is a designable change in behavior:
 - Instructional Design -
<http://www.usask.ca/education/coursework/802papers/mergel/brenda.htm>
 - Skinner: Operant Conditioning, classroom management
<http://www.simplypsychology.org/operant-conditioning.html>,
<http://www.instructionaldesign.org/theories/operant-conditioning.html>
 - Bloom's Taxonomy (Image): Planning and talking about learning,
<http://www.nwlink.com/~donclark/hrd/bloom.html>
 - Motivation- learning results in resolution of needs so the motivation to learn comes from intrinsic basic needs and develops for OCL this is higher level learning
 - Motivation Theory and Behaviorism
<http://projects.coe.uga.edu/epltt/index.php?title=Motivation>
 - <http://www.edpsycinteractive.org/topics/motivation/motivate.html>

- Maslow's Hierarchy of Needs as a source of motivation for learning
<http://www.simplypsychology.org/maslow.html>
 - Motivation is very important for adult self-regulated/online learners
 - Motivation can be stimulated and encouraged by a teacher for adult and k-12 learners
- Level 4: Pedagogy
 - Reward/Punishment – Positive and Negative
 - Behavioral Instructional Design
 - Bloom's Taxonomy – traditional lesson planning based on learning objectives
- Technology
 - Teaching Machines: review, enforce, and reinforce "right" answers,
<http://www.britannica.com/EBchecked/topic/585201/teaching-machine>
 - Computer Assisted Instruction - <http://www.prel.org/products/products/effect-cai.htm>
 - <http://www.britannica.com/EBchecked/topic/130589/computer-assisted-instruction-CAI>
 - PLATO
 - TICCIT
- Level 4: Cognitivism – Behaviorism with a light on in the black box of the brain
 - Theory
 - CIP: Cognitive Information Processing – Mind as computer,
<http://web.ics.purdue.edu/~smflanag/edtech/cip.htm>
 - Schema: "Tag" memories and learning to fit new information into old boxes in the brain or associate with familiar ideas and principles
 - Gagne': Taxonomy of learning outcomes, conditions for each outcome, events of instruction so that learning is a well-defined process of inputs and outputs – based on CIP - <http://www.slideshare.net/itssmithy/gagnes-theory-of-instruction-revised>
 - Pedagogy
 - Schema Techniques: Semantic maps, causal interaction maps, concept maps, semantic features analysis, cross-classification tables, advance organizers, graphic organizers - <http://iteslj.org/Articles/Stott-Schema.html>
 - Nine events/procedures of instruction (Harasim pg 52-53)
http://education.calumet.purdue.edu/vockell/edPsybook/Edpsy3/edpsy3_instruction.htm

- Technology
 - Intelligent Tutoring Systems
 - Artificial Intelligence-
 - http://www.gslis.utexas.edu/~palmquis/courses/project98/education/DEVA_B~1.HTM
 - Alan Turing, Marvin Minsky, Allen Newell
- Level 3: Constructivism: Brains build understanding,
 - http://www.seasite.niu.edu/Tagalog/Teachers_Page/Language_Learning_Articles/constructivist_learning.htm
 - Theory
 - Piaget: Learning is dependent on developmental stages and the ability to process concrete and/or abstract concepts; the individual puts together the pieces of the world as they experience them (accommodation/assimilation),
 - <http://www.edpsycinteractive.org/topics/cogsys/piaget.html>
 - Stages of Development: <http://www.simplypsychology.org/piaget.html>
 - Schemas
 - Vygotsky: Learning happens through language and social interaction
 - Bruner: brings ideas to the US, including spiral curriculum idea that anyone can learn anything in some form and understanding builds,
 - <http://www.infed.org/thinkers/bruner.htm>
 - Zone of Proximal Development: we learn most in the space between what we know, what we want to know, and what someone else wants us to know
 - Our internal and external monologue is how we order the world through language and learn through communication
 - Bandura: Social Learning Theory – Modeling leads to learning,
 - http://teachnet.edb.utexas.edu/~Lynda_abbot/Social.html
 - Pedagogy
 - Active Learning - <http://www.crlt.umich.edu/tstrategies/tsal.php>
 - Learning by Doing – Papert, <http://www.edutopia.org/seymour-papert-project-based-learning>
 - Scaffolded Learning – Vygotsky – teacher provides information and strategies that enable the student to progress within his or her ZPD
 - Collaborative Learning – Lave, Wenger, Duffy, Cunningham,
 - <http://teaching.berkeley.edu/bgd/collaborative.html>
 - Technology (See Harasim 73-77)

- Learning Environments
 - Jonassen
 - CSTILE
 - Multiple examples and explanations listed at http://sites.wiki.ubc.ca/etec510/Constructivist_Learning_Environments
- Construction Kits/Microworlds
- Learning Networks
 - iearn, learning with the world at <http://www.iearn.org/>
 - JASON
- Online Learning – Some overlap with Online Collaborative Learning theory
- Level 2: Learning- knowledge is socially and individually created and infinite
- Level 3: New Theories of Learning – shared/similar pedagogies/andragogies and technologies
 - Level 4: Online Collaborative Learning Theory
 - Beyond Constructivism focuses on discourse, collaboration, and knowledge-building, takes advantage of several other theories of learning
 - Harasim
 - Adult Learning Theory-
 - Learner centered, learning designed for adults , can incorporate aspects of other theories and teaching techniques
 - Habermas: Technical, Practical, and Emancipatory Knowledge
 - Mezirow: Instrumental, Communicative, Emancipatory Learning
 - Theorists: Cross, Daloz, Merriam, Caffarella, Knowles,
 - http://www.southalabama.edu/oll/mobile/theory_workbook/adult_learning_theory.htm
 - Cognitive Theory of Multimedia Learning (CTML)
 - Recognizes limits on short term memory and processing, but not on knowledge
 - http://sites.wiki.ubc.ca/etec510/Cognitive_Theory_of_Multimedia_Learning
 - e-learning courses should be constructed in light of how the mind learns and experimental evidence concerning e-learning features that promote best learning

- Multimedia allows for multiple inputs which can improve retention of material and understanding
- Cognitive Load Theory – managing working memory and making connections
 - http://www.southalabama.edu/oll/mobile/theory_workbook/cognitive_load_theory.htm
 - Instructional designers need to find ways to help optimize the working memory which is limited and get information and understanding into the nearly unlimited long-term memory
 - using worked examples or goal-free questions creates more connections to and within long-term memory
- Level 3: Pedagogy/Andragogy
 - Graphical Visual Design
 - Utilizes dual code and multimedia effects to enhance learning, guided by graphic design principles such as Gestalt
 - Gestalt principles of perception - <http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprincip.htm> and <http://www.usask.ca/education/coursework/skaalid/theory/gestalt/gestalt.htm>
 - <http://web.media.mit.edu/~lieber/Lieberary/Graphic-Design/Expert-Design/Expert-Design.html>
 - Universal Design for Learning
 - Making learning accessible to all learners (has constructivist and CTML pedagogies) <http://www.udlcenter.org/aboutudl/udlguidelines>
 - Multiple means of representation
 - Multiple means of action and expression
 - Multiple means of engagement
 - Applications/Benefits- http://ada.osu.edu/resources/fastfacts/Universal_Design.htm
 - Designing Learning Interfaces (Human/Computer) <http://www.usask.ca/education/coursework/skaalid/theory/interface.htm>
 - Science of Instruction: using research to inform pedagogy and environmental design
 - 25 Principles available online at <http://www.bgsu.edu/downloads/provost/file47947.pdf>
 - First Principles
 - Managing cognitive load – (CTML research-based)

- Contiguity (Graphic/visual/instructional design principles)
 - Perceptual-motor grounding (UDL, constructivist, and Gardener influence)
 - ZPD/Desirable difficulties (Vygotsky, CLT, CMTL)
 - Examples/modeling (Bandura)
 - Metacognition
- Level 3: Technology
 - Traditional text, and all other technologies listed for other theories
 - Internet
 - Examples include Blackboard – an online learning environment for adult learners and <http://Moodle.org>
 - Online Learning tools and programs for all grade levels and learners
 - Can support behaviorist, constructivist, or OCL learning theories
 - Web 2.0
 - Wikis
 - Wikispaces – <http://wikispaces.com> - individual or group information creation and distribution
 - Wikipedia – <http://wikipedia.com> - group/cloud sourced information source and distribution model
 - Apps
 - tools that increase the functionality of other technologies
 - information and knowledge creation tools for individuals and groups
 - Users create sites to share developed understandings or develop new understandings
 - Example: <http://spicynodes.org>
 - Networking-
 - a basis for collaborative learning experiences
 - Social networks build social knowledge, connect users, and are a basis for interaction that leads to informal and emotional learning
 - Social and instructional networks can hybridize and exist online and in person

- Professional networks can provide experienced-based learning and influence perception