

MUS 775

Discussion 8 - Even More Learning Theories

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Discuss your understanding and use of the following:

1. Piaget
 - a. <http://www.edpsycinteractive.org/topics/cognition/piaget.html>
2. Bloom's Taxonomy
 - a. <http://cehdclass.gmu.edu/ndabbagh/Resources/IDKB/bloomstax.htm>

Jean Piaget, originally trained in biology and philosophy, became an important developmental psychology researcher and later dubbed himself a "genetic epistemologist." This is a person who studies the development of knowledge in an individual and a group while applying developmental and historical perspectives to existing knowledge. He has made significant contributions to constructivist learning.

Piaget believed that human's ability to do "abstract symbolic reasoning" is what sets us apart from other animals. His main interest lies in the biological reasons for how children think and learn. During his work with Binet's IQ test lab in Paris, Piaget postulated that younger children's answers were different qualitatively not because they were not as smart, but because the older children's thought processes were different. The two major parts of his theory are the process of "coming to know" and the progressive stages as we acquire that ability. Piaget identified 4 stages of cognitive development from infancy on: sensorimotor stage, pre-operational stage, concrete operational stage, and formal operational stage.

In the **sensorimotor stage**, which includes infants to approximately 1-2-year-olds, knowledge is limited and largely based on interactions and experiences. Milestones like object permanence (memory), physical development (motor, walking) and symbolic abilities (language) create a foundation for later learning.

In the **pre-operational** stage, which includes toddler and early childhood, intelligence is shown through use of symbols, improved language use, and development of memory and imagination. However, thinking is often nonlogical, nonreversible, and egocentric.

In the **concrete operational** stage, which includes elementary and early adolescence, intelligence is shown through logical/systematic manipulation of symbols as they are related to concrete objects. Also, reversible thought processes emerge (operational thinking) and egocentric thought diminishes.

In the **formal operational** stage, which includes adolescence and adulthood, intelligence is shown by the logical use of symbols related to abstract concepts. This stage is also accompanied by a return to egocentric thought.

It is important to note that not everyone “graduates” through the four stages of cognitive development. Only 35% of high school graduates in industrialized countries obtain the highest level, and many people do not think formally during adulthood. Piaget believed that passage between cognitive development stages were driven by biological development, which is supported by a large body of cognitive development research.

Bloom’s Taxonomy

<http://cehdclass.gmu.edu/ndabbagh/Resources/IDKB/bloomstax.htm>

In 1956, Benjamin Bloom created Bloom’s Taxonomy, which is a classification of learning outcomes and objectives that has proved helpful for many aspects of developing curriculum and assessments. Bloom identifies six levels of cognitive development ranging from the most basic of recall to the most complex mental levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. They are typically arranged in a pyramidal design with knowledge having the widest base and attainability as the foundation, and evaluation as the narrowest on top due to its complexity. At the end of my discussion, I have pasted a helpful graphic with several verbs listed to describe each domain.

The first level, **knowledge**, entails remembering what a student has already learned, ranging from individual facts to complete theories. This recall skill is the lowest level of learning outcomes in the cognitive domain.

The second level, **comprehension**, moves beyond merely recalling facts to demonstrating the ability to understand the meaning of materials. This can be done through translating material from one form to another (words to numbers), interpreting materials (explaining or summarizing), and by estimating future trends (predicting consequences or effects). This second level represents the lowest level of understanding.







The third level, **application**, demonstrates the ability to use learned material in new situations including rules, methods, concepts, principles, laws, and theories. This level requires a higher cognitive level than comprehension.

The fourth level, **analysis**, is the ability to break the whole into its components to expose its organizational structure including identifying parts, analyzing relationships between parts, and recognizing organized principles involved. This is a higher level of cognitive development because it requires an understanding of the material's content and structural form.

The fifth level, **synthesis**, is the ability to assemble parts to form a new whole including the production of a unique communication (theme, speech), planning operations (research proposal), or creating a set of abstract relations (scheme for classifying information). This higher cognitive level focuses on creative behavior and formation of new patterns or structures.

The sixth and highest level, **evaluation**, is the ability to evaluate the value of material for a specific purpose based on internal criteria (organization) or external criteria (relevance to the purpose). Materials to be judged could include a statement, novel, poem, or research report. This represents the highest cognitive level because, not only does it include components from all the previously listed levels, but it also requires conscious value judgements.

BLOOM'S TAXONOMY DIGITAL PLANNING VERBS

REMEMBERING	UNDERSTANDING	APPLYING	ANALYZING	EVALUATING	CREATING
					
Copying Defining Finding Locating Quoting Listening Googling Repeating Retrieving Outlining Highlighting Memorizing Networking Searching Identifying Selecting Tabulating Duplicating Matching Bookmarking Bullet-pointing	Annotating Tweeting Associating Tagging Summarizing Relating Categorizing Paraphrasing Predicting Comparing Contrasting Commenting Journaling Interpreting Grouping Inferring Estimating Extending Gathering Exemplifying Expressing	Acting out Articulate Reenact Loading Choosing Determining Displaying Judging Executing Examining Implementing Sketching Experimenting Hacking Interviewing Painting Preparing Playing Integrating Presenting Charting	Calculating Categorizing Breaking Down Correlating Deconstructing Linking Mashing Mind-Mapping Organizing Appraising Advertising Dividing Deducing Distinguishing Illustrating Questioning Structuring Integrating Attributing Estimating Explaining	Arguing Validating Testing Scoring Assessing Criticizing Commenting Debating Defending Detecting Experimenting Grading Hypothesizing Measuring Moderating Posting Predicting Rating Reflecting Reviewing Editorializing	Blogging Building Animating Adapting Collaborating Composing Directing Devising Podcasting Wiki Building Writing Filming Programming Simulating Role Playing Solving Mixing Facilitating Managing Negotiating Leading

<https://www.teachthought.com/learning/what-is-blooms-taxonomy-a-definition-for-teachers/>