Assimilation Theory

General

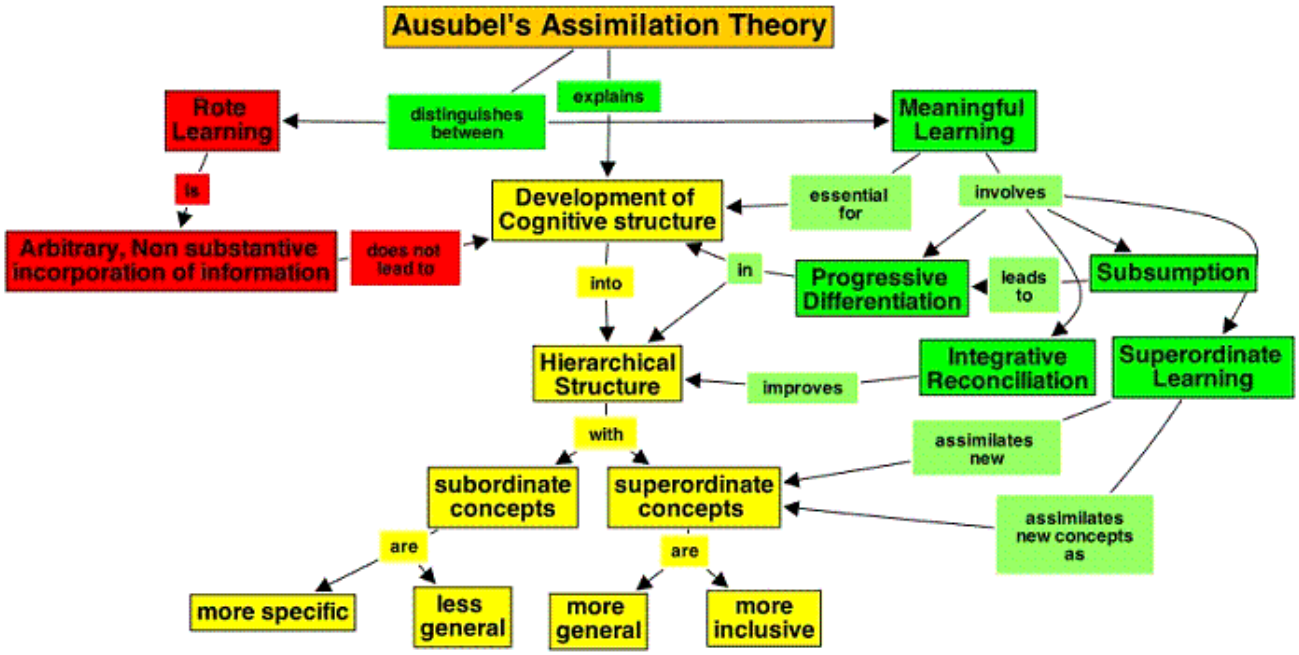
Assimilation theory (sometimes referred to as *subsumption theory* or *theory of advance organizers*) is one of the cognitivist learning theories developed by an American educational psychologist David Ausubel during the 1960s. Ausubel was a cognitivist[1)2)] inspired by works of Jean Piaget (see: Stage Theory of Cognitive Development) and considered at the time still influential neo-behaviorist theories inadequate[3)]. Ausubel is concerned with developing a theory of meaningful verbal reception learning and related methods which will facilitate classroom learning[4)].

What is assimilation theory?

Learning, according to Ausubel's theory, occurs through **development** of **new cognitive structures** that will hold newly acquired information. Cognitive structure, a central term in his theory is defined as the

- "*individual's organization, stability, and clarity of knowledge in a particular subject matter field at any given time*"[5)] and it is "*hierarchically organized in terms of* ***highly inclusive concepts*** *under which are* ***subsumed less inclusive subconcepts*** *and informational data*".[6)]

As mentioned, **knowledge** is in assimilation theory organized hierarchically in a pyramidal shape where more general ideas and concepts appear at the top of the pyramid and get more and more specific to the bottom of it. The closer to the top of the pyramid a concept is, the more general it is and the longer is its life time. New knowledge is **assimilated** in this hierarchy by **anchoring** to already existing more general concepts (so called *anchoring concept* or *anchoring site*). The *anchoring concept* is characterized by its availability, clarity, stability in the cognitive structure, relevance to and discriminability from concepts that are about to be learned.[7)] Characteristics of existing concepts (potential anchoring sites) define the overall characteristics of one's cognitive structure: if well organized, it enables faster learning in terms of adding new ideas and structures to it and therefore is the key aspect of learning. If cognitive structure is unorganized or badly connected, the acquisition of new information will be more difficult.



Ausubel distinguishes between *meaningful* and *rote learning*.

- **Meaningful learning** is learning that is well **anchored and integrated** in the cognitive structure. It occurs when learner can find meaning in the information presented. Meaningful learning won't occur unless the new ideas are presented in a clear way that enables their relating with other ideas, unless the learner already possesses those other ideas he can relate the new ones with and unless the learner actually makes an conscious attempt to do so.
- **Rote learning** on the other hand represents knowledge that remains **unrelated** and unanchored to existing concepts and is therefore easily forgotten.

As a result of meaningful learning, the new idea will remain anchored to a so called **subsumer** (*anchoring site* of the idea). That of course doesn't mean that the learned idea can't be forgotten: this process, referred to as *obliterative subsumption*, happens as more specific idea becomes less and less distinctive from its subsumer until it is finally forgotten.

Defined concept of meaningful learning leads to another key aspect of Ausubel's theory: **prior knowledge**. Since relating old and new knowledge is crucial for meaningful learning, prior knowledge or the existing ideas are the key enabler or restraint of what can be learned next.

- *"If I had to reduce all of educational psychology to just one principle, I would say this: The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly."*[8)]

Another important and rather controversial part of Ausubel's theory are the ***advance organizers***: introductory material presented before the learning material "*at a higher level of abstraction, generality, and inclusiveness*"[9)] than the learning material. Purpose of advance organizers is to help replace the missing concepts and bridge new material to learner's established cognitive structure.[10)] They help the learner realize where the new material fits in relation to the prior knowledge about the material and should not be confused with summaries or overviews which usually present key ideas of the material.

Advance organizers should be of greater help to students with less organized cognitive structures, since organized cognitive structures already possess developed anchoring ideas. Organizers can be most productive when closely related topics or unitary topics need to be learned and when learners prior knowledge can be assessed. Advanced organizer can include various types of material like pictures, verbal descriptions, prequestioning techniques, and cultural background knowledge[11]. So far no significant differences in effects of this types of organizers have been reported[12].

Ausubel's ideas of human cognitive structures also served as a motivation for introducing concept mapping and similar instructional materials.[13]

What is the practical meaning of assimilation theory?

Meaningful learning suggested by Ausubel's assimilation theory presents a valuable concept for educational process, in which rote learning examples can today be found more frequently. Foreign language learning often requires learning by heart numerous exceptions or grammatical structures (like German strong verbs). This rote learning would be easier and longer lasting in case of connecting new material with already learned language concepts.

The concept of meaningful learning in context of Ausubel's theory has a few important implications for the instructional process:

- A successful instructional process is **dependent both on learner and teacher**. Ausubel referred to the process of teaching as *expository teaching* (teacher centered approach, the teacher presents the concepts and ideas a student should learn) and to learning as *reception learning* (the teacher “places” new ideas in context of learners cognitive structure), yet he notices that learning won't occur unless the student makes an **active attempt** to relate new material to the already acquired knowledge.
- **Prior knowledge** is the key to what will be learned next. In order to fulfill meaningful learning requirements learner has to have crucial higher level concepts (prior knowledge) that will serve as **anchoring sites** (subsumers) for new knowledge or he has to be provided with appropriate organizers.
- After assuring student has required prior knowledge, the teacher has to **present learning material in an organized and structured manner** (starting from more general concepts and then going to more details), cross reference old and new ideas using different teaching aids or charts, continue with sufficient amount of practice in form of applications of learned material in order to facilitate its assimilation.
- **Advanced organizers**. For examples and advice on creating graphical organizers see Baxendell's The 3 C's of Graphic Organizers. The study of effects of advanced organizers is ongoing with a number of studies showing their positive effects.[14][15][16][17][18]

Criticisms

Critics of Ausubel's theory often reflect the fact that he doesn't describe construction of organizers so different researches provide different results of their efficiency[19]. Ausubel's theory is also in most of its claims quite opposite of Jerome Bruner's discovery learning.

Keywords and most important names

- **Association learning theory**, **cognitive structure**, **concepts**, **subconcepts**, **hierarchy**, **anchoring**, **obliterative subsumption**, **meaningful learning**, **rote learning**, **subsumer**, **organizer**
- David Ausubel

Bibliography

Ivie, Stanley D. Ausubel's Learning Theory: An Approach To Teaching Higher Order Thinking Skills.(educational psychologist David Paul Ausubel). High School Journal 82.1: 35(1). Expanded Academic ASAP. Thomson Gale. CSU Sacramento University Library. 13 October 2006.

Mohan, Radha. Innovative Science Teaching: For Physical Science Teachers 3Rd Ed. PHI Learning Pvt. Ltd., 2007.

Read more

Ausubel, D. P. Learning theory and classroom practice. Toronto: Ontario Institute for Studies in Education. 1967.

Ausubel, D. P. In defense of advance organizers: A reply to the critics. Review of Educational Research, 48, p251-257. 1978.

Ausubel, D. P. Schemata, cognitive structure, and advance organizers: A reply to Anderson, Spiro, and Anderson. American Educational Research Journal, 17, p400-404. 1980.

1)
Leonard, David C. Learning theories, A to Z. Greenwood Publishing Group, 2002.
2)
Royer, James M. The cognitive revolution in educational psychology. IAP, 2005.
3)
Cooper, S. Theories of Learning in Educational Psychology: David Ausubel. Meaningful Verbal Learning & Subsumption Theory.
4) , 7) , 19)
Rossner, Vivian F. A description and critique of David P. Ausubel’s model of learning. Thesis (M.A. (Ed.)), Simon Fraser University, 1982.
5)
Ausubel, David P., and Donald Fitzgerald. Chapter V: Meaningful Learning and Retention: Intrapersonal Cognitive Variables. Review of Educational Research 31, no. 5: p500 -510. December 1, 1961.
6)
Ausubel, Robbins, & Blake. Retroactive inhibition and facilitation in the learning of school materials. Journal of Educational Psychology, 48, p267, 1957.
8)
Ausubel, David P. Educational Psychology: A cognitive view. London: Holt, Reinhart, & Winston, 1968. p. 18.

9)
Ausubel, D. The Psychology of Meaningful Verbal Learning. New York: Grune & Stratton. 1963.
10)
Joyce, Bruce R., Marsha Weil, and Emily Calhoun. Models of teaching. Allyn and Bacon, 2000.
11)
Herron, C. An investigation of the effectiveness of using an advance organizer to introduce video in the foreign language classroom. Modern language Journal, 78, 190-197. 1994.
12)
Togo, Dennis F. Topical sequencing of questions and advance organizers impacting students examination performance. Accounting Education, 11(3), 203-216. 2002.
13)
Leonard, David C. Learning theories, A to Z. Greenwood Publishing Group, 2002.
14)
Mohammadi, M., M. Moenikia, and A. Zahed-Babelan. “The role of advance organizer on English language learning as a second language.” Procedia-Social and Behavioral Sciences 2, no. 2: 4667–4671. 2010.
15)
Lin, H., and T. Chen. Reading authentic EFL text using visualization and advance organizers in a multimedia learning environment. Language Learning & Technology 11, no. 3: 83–106. 2007.
16)
Kiewra, Kenneth A., Richard E. Mayer, Nelson F. Dubois, Maribeth Christensen, Sung-Il Kim, and Nancy Risch. Effects of Advance Organizers and Repeated Presentations on Students’ Learning. The Journal of Experimental Education 65, no. 2, 1997.
17)
Mayer, Richard E. Twenty years of research on advance organizers: Assimilation theory is still the best predictor of results. Instructional Science 8, no. 2: 133-167. April 1979.
18)
Shihusa, H., and F. N Keraro. Using Advance Organizers to Enhance Students’ Motivation in Learning Biology. Eurasia Journal of Mathematics, Science & Technology Education 5, no. 4: 413–420. 2009.

From:
https://www.learning-theories.org/ - **Learning Theories**

Permanent link:
https://www.learning-theories.org/doku.php?id=learning_theories:assimilation_theory&rev=1310045629

Last update: **2023/06/19 17:49**