

COGNITIVISM

DEFINITION

In the late 1950's, learning theory began to make a shift away from the use of behavioral models to an approach that relied on learning theories and models from the cognitive sciences. Psychologists and educators began to de-emphasize a concern with overt, observable behavior and stressed instead more complex cognitive processes such as thinking, problem solving, language, concept formation and information processing (Snelbecker, 1983).

Cognitive learning is a way of learning that helps students use their brains more effectively. This method of learning is active, constructive, and long-lasting. It encourages students to fully engage in the learning process so learning, thinking, and remembering get easier.

Cognitive psychology is a field of study that focuses on cognition, or how people use various mental abilities to process information, acquire knowledge, and understand the world around them. Cognitive researchers often study things like memory, attention, problem-solving, and language acquisition. This approach to human behavior and thinking is often called a cognitive perspective. The cognitive view of learning is that it is best understood in terms of the mental abilities that are used to process information.

Cognitive Learning Theory is a more active approach to learning, where learners' answers are not just judged by correctness, but also on how a learner arrives at their answer. This theory is based on a term called "Metacognition", which is pretty much just the idea of thinking about one's thinking. So, if an instructor was applying cognitive learning theory to the classroom – instead of just evaluating whether a student got an answer right or wrong, they would examine how the student came up with their answer.

Cognitive learning theory is vital in today's world because it takes into consideration that everybody thinks differently based on their own memories, experiences, and relevant information they have learned in the past. Understanding how people think differently can help improve learning and professional training for SMBs and corporations in all types of industries.

HISTORY

In the 1920s, Swiss educational psychologist, Jean Piaget, worked at the Binet Institute where he was responsible for translating English intelligence questions to French. During his time at Binet Institute, Piaget became enamored with the reason some children got logical questions wrong, and others got them right.

At the time, behaviorism was the prevailing theory for this; psychologists judged the ability of children to answer these questions from their interactions with their external environments.

In 1936, Piaget argued for a different theory — he posited that the internal workings of a child's brain determine how they perform with logical questions. Piaget's assumptions on intelligence were:

- Children's thinking develops in stages, and their behaviors change to reflect these mental developments.
- Children's intelligence differs from adults' quality-wise (not quantity). This is because children view the world differently than adults.
- Children don't just interact with the world; they also store information about the world mentally, and this influences how they tackle questions that involve logical thinking

Jean Piaget termed his line of thinking as "cognitive learning theory". Over the years, educators worldwide have used cognitive learning strategies to empower their students to become better learners.

HOW DOES LEARNING OCCUR?

Cognitive theories stress the acquisition of knowledge and internal mental structures and, as such, are closer to the rationalist end of the epistemology continuum (Bower & Hilgard, 1981). Learning is equated with discrete changes between states of knowledge rather than with changes in the probability of response. Cognitive theories focus on the conceptualization of students' learning processes and address the issues of how information is received, organized, stored, and retrieved by the mind. Learning is concerned not so much with what learners do but with what they know and how they come to acquire it (Jonassen, 1991b). Knowledge acquisition is described as a mental activity that entails internal coding and structuring by the learner. The learner is viewed as a very active participant in the learning process.

WHICH FACTORS INFLUENCE LEARNING?

Cognitivism, like behaviorism, emphasizes the role that environmental conditions play in facilitating learning. Instructional explanations, demonstrations, illustrative examples and matched non-examples are all considered to be instrumental in guiding student learning. Similarly, emphasis is placed on the role of practice with corrective feedback. Up to this point, little difference can be detected between these two theories. However, the "active" nature of the learner is perceived quite differently. The cognitive approach focuses on the mental activities of the learner that lead up to a response and acknowledges the processes of mental planning, goal-setting, and organizational strategies (Shuell, 1986). Cognitive theories contend that environmental "cues" and instructional components alone cannot account for all the learning that results from an instructional situation. Additional key elements include the way that learners attend to, code, transform, rehearse, store and retrieve information. Learners' thoughts, beliefs, attitudes, and values are also considered to be influential in the learning process (Winne, 1985). The real focus of the cognitive approach is on changing the learner by encouraging him/her to use appropriate learning strategies.

WHAT IS THE ROLE OF MEMORY?

As indicated above, memory is given a prominent role in the learning process. Learning results when information is stored in memory in an organized, meaningful manner. Teachers are responsible for assisting learners in organizing that information in some optimal way. Instructors use techniques such as advance organizers, analogies, hierarchical relationships, and matrices to help learners relate new information to prior knowledge. Forgetting is the inability to retrieve information from memory because of interference, memory loss, or missing or inadequate cues needed to access information.

HOW DOES TRANSFER OCCUR?

According to cognitive theories, transfer is a function of how information is stored in memory (Schunk, 1991). When a learner understands how to apply knowledge in different contexts, then transfer has occurred. Understanding is seen as being composed of a knowledge base in the form of rules, concepts, and discriminations (Duffy & Jonassen, 1991). Prior knowledge is used to establish boundary constraints for identifying the similarities and differences of novel information. Not only must the knowledge itself be stored in memory but the uses of that knowledge as well. Specific instructional or real-world events will trigger particular responses, but the learner must believe that the knowledge is useful in a given situation before he will activate it.

WHAT TYPES OF LEARNING ARE BEST EXPLAINED BY THIS POSITION?

Because of the emphasis on mental structures, cognitive theories are usually considered more appropriate for explaining complex forms of learning (reasoning, problem-solving, information-processing) than are those of a more behavioral perspective (Schunk, 1991). However, it is important to indicate at this point that the actual goal of instruction for both of these viewpoints is often the same: to communicate or transfer knowledge to the students in the most efficient, effective manner possible (Bednar et al., 1991). Two techniques used by both camps in achieving this effectiveness and efficiency of knowledge transfer are simplification and standardization. That is, knowledge can be analyzed, decomposed, and simplified into basic building blocks.

Knowledge transfer is expedited if irrelevant information is eliminated. For example, trainees attending a workshop on effective management skills would be presented with information that is “sized” and “chunked” in such a way that they can assimilate and/or accommodate the new information as quickly and as easily as possible. Behaviorists would focus on the design of the environment to optimize that transfer, while cognitivists would stress efficient processing strategies.

WHAT BASIC ASSUMPTIONS/PRINCIPLES OF THIS THEORY ARE RELEVANT TO TEACHING?

Many of the instructional strategies advocated and utilized by cognitivists are also emphasized by behaviorists, yet usually for different reasons. An obvious commonality is the use of feedback. A behaviorist uses feedback (reinforcement) to modify behavior in the desired direction, while cognitivists make use of feedback (knowledge of results) to guide and support accurate mental connections (Thompson, Simonson, & Hargrave, 1992).

Learner and task analyses are also critical to both cognitivists and behaviorists, but once again, for different reasons. Cognitivists look at the learner to determine his/her predisposition to learning (i.e., How does the learner activate, maintain, and direct his/her learning?) (Thompson et al., 1992). Additionally, cognitivists examine the learner to determine how to design instruction so that it can be readily assimilated (i.e., What are the learner’s existing mental structures?). In contrast, the behaviorists look at learners to determine where the lesson should begin (i.e., At what level are they currently performing successfully?) and which reinforcers should be most effective (i.e., What consequences are most desired by the learner?).

Specific assumptions or principles that have direct relevance to instructional design include the following (possible current instructional applications are listed in italics and brackets following the listed principle):

1. Emphasis on the active involvement of the learner in the learning process [learner control, metacognitive training (e.g., self-planning, monitoring, and revising techniques)]
2. Use of hierarchical analyses to identify and illustrate prerequisite relationships [cognitive task analysis procedures]
3. Emphasis on structuring, organizing, and sequencing information to facilitate optimal processing [use of cognitive strategies such as outlining, summaries, synthesizers, advance organizers, etc.]
4. Creation of learning environments that allow and encourage students to make connections with previously learned material [recall of prerequisite skills; use of relevant examples, analogies]

HOW SHOULD INSTRUCTION BE STRUCTURED?

Behavioral theories imply that teachers ought to arrange environmental conditions so that students respond properly to presented stimuli. Cognitive theories emphasize making knowledge meaningful and helping learners organize and relate new information to existing knowledge in memory. Instruction must be based on a student’s existing mental structures, or schema, to be effective. It should organize information in such a manner that learners are able to connect new information with existing knowledge in some meaningful way. Analogies and metaphors are examples of this type of cognitive strategy. For example, instructional design textbooks frequently draw an analogy between the familiar architect’s profession and the unfamiliar instructional design profession to help the novice learner conceptualize, organize and retain the major duties and functions of an instructional designer (e.g. Reigeluth, 1983, p. 7). Other cognitive strategies may include the use of framing, outlining, mnemonics, concept mapping, advance organizers and so forth (West, Farmer, & Wolff, 1991).

Such cognitive emphases imply that major tasks of the teacher include (1) understanding that individuals bring various learning experiences to the learning situation which can impact learning outcomes; (2) determining the most effective manner in which to organize and structure new information to tap the learners’ previously acquired knowledge, abilities, and experiences; and (3) arranging practice with feedback so that the new

information is effectively and efficiently assimilated and/or accommodated within the learner's cognitive structure (Stepich & Newby, 1988).

LOOK FOR A RELEVANT EXAMPLE: Consider the following example of a learning situation utilizing a cognitive approach: A manager in the training department of a large corporation had been asked to teach a new intern to complete a cost-benefit analysis for an upcoming development project. In this case, it is assumed that the intern has no previous experience with cost-benefit analysis in a business setting. However, by relating this new task to highly similar procedures with which the intern has had more experience, the manager can facilitate a smooth and efficient assimilation of this new procedure into memory. These familiar procedures may include the process by which the individual allocates his monthly paycheck, how (s)he makes a buy/no-buy decision regarding the purchase of a luxury item, or even how one's weekend spending activities might be determined and prioritized. The procedures for such activities may not exactly match those of the cost-benefit analysis, but the similarity between the activities allows for the unfamiliar information to be put within a familiar context. Thus processing requirements are reduced and the potential effectiveness of recall cues is increased.

******* THINGS TO ADDRESS IF TIME ALLOWS *******

OBJECTIVES OF COGNITIVE LEARNING ACTIVITIES

All cognitive learning activities are geared towards pushing students to work through different problems and stimuli. The goal is to get them thinking and applying problem-solving strategies without the use of preparation or steps that lead to an answer. You want to craft activities that will make your student apply logic, creativity, and close examination on the spot to produce an answer. Cognitive learning essentially relies on five principles: remembering, understanding, applying, evaluating, and creating. Below is a breakdown of each principle and some activities students can do that correspond to each.

Remembering: Activities that rely on remembering ask for the student to recall previously learned information to complete the task at hand. This might be a great review for the beginning of class to see if students are comprehending previous lessons. A couple of activities might be:

- Creating a timeline of important events from memory
- Make a game of reciting poetry or important writings
- Writing a paragraph or blurb detailing what they remember from last class

Understanding: Understanding activities directly engage students to see how they interpret information. This is a particularly broad category that draws on students being able to analyze information from different angles and to recognize, interpret, and classify it. Here are a few activity ideas:

- Defending a point of view, or debate
- Creating a list of examples
- Classifying types of processes or events

Applying: Part of problem-solving has to do with applying specific skills and knowledge to produce the proper result. Push your students to rely on what they've learned and figure out ways to succeed through fun activities:

- Have the students create an effective learning game themselves
- Solve problems or answer questions listed on the board
- Have students demonstrate procedures in front of class

Evaluating: This principle focuses on analyzing information and making judgments based on it. Students will weigh information based on criteria previously learned. A few activities for your students can include:

- Constructing a graph to illustrate certain information

- Having students develop a questionnaire to group or gather information at hand
- Creating a pros and cons list

Creating: Cognitive learning is centered on adapting to new stimuli and constructing methods to solve problems or address needs. Creative activities rely on students to produce original ideas to address prompts, organize thoughts, and devise a means of their own invention that will help them answer problems. These are just a few creating activities:

- Write an original poem
- Perform or write a scenario demonstrating themes or illustrating specific ideas
- Write a manual or guidebook demonstrating important information

EXAMPLES OF COGNITIVE LEARNING

There are different types of cognitive learning. Below are 10 of them.

Implicit learning: Have you ever learned something new without actually meaning to? If yes, then you've experienced implicit learning. With implicit learning, you're usually not aware of the entire learning process until you suddenly realize that you possess a new ability/knowledge that you didn't have before.

Examples of things you can learn implicitly include walking, talking, and even typing fast without looking at your keyboard.

Explicit learning: Explicit learning happens when you intentionally seek knowledge. Unlike implicit learning, explicit learning requires you to continually pay attention and put in the time to be proficient at what you're learning. Examples of explicit learning include taking an online course to learn content marketing or going back to college to get a new degree.

Collaborative or cooperative learning: As the name implies, collaborative learning happens when you learn as a group or team. Learning in groups — whether in a traditional classroom or through a cohort-based course — helps bring out the best skills and improves the interpersonal skills of each individual.

This type of learning comprises four components, including:

Individual responsibility: Although people are working together in a group, each person should have duties they are personally responsible for.

Simultaneous interaction: All members of the group should be able to have discussions about the topic they're learning and how they're each applying their knowledge.

Positive interdependence: While each person in the group should have their own unique responsibility, they should also be able to get help from one another when they need it.

Equal participation: In collaborative learning, every member of the group is equal. No one holds more status or ranks above other members.

Discovery learning: When you actively seek new knowledge by doing research on new concepts, ideas, or topics, you're engaging in discovery learning. For example, if you write an article and you need to use a tool like Hemingway Editor to edit and proofread, you'll end up learning more about the editing tool itself through discovery.

Meaningful learning : Meaningful learning happens when a person can relate new information to past experiences. This often leads to transferable skills that can be applied in other areas of life, including school

and work. An example of meaningful learning is when you work in marketing and you take a marketing strategy course to deepen your understanding of the topic.

Emotional learning : Emotional learning involves people learning how to control their emotions, understand other people's emotions, and improve their emotional intelligence. No matter what you do for work, high emotional intelligence plays an important role in how you exhibit empathy, communicate with others, and handle interpersonal and professional relationships.

For example, emotional learning can help you interact favorably with both introverts and extroverts, regardless of the situations you're in. And if you work in customer service, knowing how to handle your emotions and understand other people's feelings will help you navigate customer interactions.

Experiential learning: Experience, they say, is the best teacher. Learning through experience allows you to identify and inculcate valuable life lessons from your interactions with other people. However, what you learn through those interactions depends on how you interpret them.

This means that two people can have the same experience, but learn different lessons from it. For example, if you shadow your CEO at work, you may learn the importance of leading by example. But someone else in your position may learn how to hold a productive board meeting instead.

The value you get from your experience depends on how well you reflect on it and relate it to present/past situations.

Observational learning: Observational learning involves imitating people who have skills and traits you want to have. While this type of learning is commonly found in children (as they imitate adults), adults can also use it in certain settings. For example, you can improve your leadership qualities by imitating your boss at the office. You can also learn to be a better team player by mimicking the habits of great team players you collaborate with.

Receptive learning : If you learn during lectures where a teacher stands at the front of the class and explains a topic while you listen, then you're practicing receptive learning. This type of learning requires you to actively participate by asking questions and taking down notes.

An example of receptive learning is when your school or job invites experts to train your class or team in a classroom, hall, or workshop setting.

Non-associative learning : Non-associative learning involves adapting to a new thing or situation by facing it repeatedly. This type of learning is divided into two categories: habituation and sensitization.

Habituation means learning by habit. This means that your reaction to a stimulus (or situation) reduces the longer you're exposed to it. For example, if you newly move into a house near a train station, you might be bothered by the sound of trains passing by at first. But the longer you live there, the sound won't bother you as much because you'd learn to ignore it.

Sensitization, on the other hand, means that your reaction to a stimulus (or situation) increases with repeated exposure to it. For instance, if you newly take a job as a receptionist, you may notice immediately when the office telephone rings. But as you stay longer at your job, you become more attuned to the sound of the telephone.