

A Comprehensive Review on Cognitive Learning

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ABSTRACT

The term 'cognition' is the ability of the brain's mental process to absorb and retain information through experience, senses and thought. In general, cognitive learning is essential for the students to improve their learning, uplift confidence, build up comprehension, and enhance problem solving skills and to grasp new things faster. However, to help students cognitively learn things, teachers need to expose their students to training and cognitive learning. This review aims to provide an overview of the effective fundamental aspects, theories and strategies that can be positively associated with the students cognitive learning. The findings suggest that the theories and strategies help find the cognitive components of learning process which are relevant for students to have high learning efficiency. The cognitive learning approach teaches students the skills that enable them to handle multiple complex tasks productively.

Key words – Cognitive, Confidence, learning.

INTRODUCTION

Cognition according to Hamilton, I (1995:20) in the dictionary of cognitive psychology is 'the understanding, acquisition and processing knowledge, or more loosely thought processes⁽¹⁾. Cognitive learning is an active learning style that focuses and helps one in learning how to maximize own brain's potential.

Cognitive learning is a change in knowledge attributable to experience (Mayer 2011)⁽²⁾. It makes it easier for one to connect the present newer informations with the existing ideas hence deepening memory and retention capacity. The ability of the brain's mental processes to absorb and retain information through experience, senses and thought is known as cognition. It also includes all aspects of how a person acquires and understands knowledge through thinking. There is a young branch of psychology known as 'cognitive psychology' re-emerged in 1960's is the study of one's internal process which are

the things going on in your brain, such as thinking, attention, learning, problem-solving, perception among others. Adults need to be able to impose their own idea of structure on the learning material⁽³⁾.

Cognitive approaches to learning are concerned with how information is processed by learners⁽⁴⁾. Cognitive theories view students as active in "an internal learning process that involves memory, thinking, reflection, abstraction, motivation and metacognition"⁽⁵⁾. Teachers needs to expose their students to training on cognitive learning. There by the well trained and fully engaged students are capable of learning quickly and would likely to have strong cognitive skills and makes them highly productive by able to handling multiple complex tasks without the necessity of a mentor. The students takes a more active role in acquiring knowledge, and demonstrates mental processes by transforming presented material into new knowledge⁽⁶⁾.

Meaningful learning occurs when knowledge stored in long term memory is shifted to short-term memory to integrate new information into the mind. The most important cognitive associations occur when individuals relate stored knowledge to sensory input and consequently encode the stimuli into long-term memory. The concept differs from the behavioral view of association which is based upon external motivation. As Bell Gredles states, "successful learning depends on the learners actions rather than on events in the environment"⁽⁷⁾.

FUNDAMENTAL ASPECTS OF COGNITIVE LEARNING :

1. Comprehension : For cognitive learning to be highly efficient and benefit, initially understand the reason in learning a specific subject at first place.
2. Memory : Cognitive learning helps in creating a deep understanding of a subject thereby improving the ability of relating new knowledge with previous experiences or information.
3. Application : Applying new information or problem solving skills in the life situations.

THEORIES OF COGNITIVE LEARNING ARE AS FOLLOWS:

1. Cognitive Learning Theory

The basic concept of learning is the main viewpoint in theories of cognitive learning as it refers to mental processes, that eventually brings about learning in an individual⁽⁸⁾. While most teachers are skilled in providing opportunities for the progression of children's learning, it is sometimes without fully understanding the theory behind it. With greater insight into what is currently known about the process of learning and about individual learners, teachers are better equipped to provide experiences and situations that are more likely to lead to effective acquisition of knowledge, concepts and skills⁽⁹⁾.

2. Social Cognitive Theory (SCT)

It was started as the social learning theory (SLT) in the 1960's, by Albert Bandura. It was then developed to social cognitive theory (SCT) in the 1986 and posts that learning occurs in a social context with a dynamic and reciprocal interaction of the person, environment and behaviour. The unique feature is the emphasis on social influence and its emphasis on external and internal social reinforcement⁽¹⁰⁾. One of the major component of this theory is learning through observation. That is, 'learning others' desirable and undesirable behaviours through observation.

3. Cognitive Behavioral Theory (CBT)

It helps people identify and change thinking and behaviour patterns that are harmful or ineffective, replacing them with more accurate thoughts and functional behaviours. It can help a person focus on current problems and how to solve them. It often involves practicing new skills in the "real world"⁽¹¹⁾. This theory suggests that our thoughts, emotions, body, sensations and behaviour are all connected, and that we think and do affects the way we feel⁽¹²⁾.

4. The Theory of Latent Learning

This theory was developed by Edward Chance Tolman (1886-1959) who made great contributions to the field of learning and motivation and came up with his own sense of behaviourism. Tolman claimed that learning was related to complex mental process, not simple mechanic conditioning processes⁽⁹⁾.

5. Gestalt Theory

The first Gestalt principles were devised in the 1920's by german psychologist Max Wertheimer, Kurt Koffka and Wolfgang Kohler who aimed to understand how humans typically gain meaningful perceptions from the chaotic stimuli around them. According to gestalt theorists, an individual perceives the whole as a meaningful and organized whole, not through separating the whole into parts. Moreover, relations of simplicity, similarity, proximity and continuity, shape-base are important in perception. In this case the teacher should give the basic framework of the lesson as an organised and meaningful whole to the students at the beginning of the term, and then should go into the details. Thus, the teacher can help

students to understand the function of the lesson and relations between the units as a whole.

6. Information Processing Theory

This theory have made especially good progress in providing explanation of the process for solving relatively well-structured, puzzle like problems of the sorts that have been most commonly studied in the psychological laboratory. The 3 components : information processing system, task environment, and problem space-establish the framework for the problem solving behaviour.

7. Social Constructivism

It is a collaborative form of learning based on interaction, discussion and knowledge sharing among students. The teacher's role is to employ teaching methods that are learner centered and collaborative in nature. The underlying factor is that learners work together in groups sharing ideas, finding answers to problems or just creating something new to add to existing knowledge. This learning theory de-emphasizes teacher monotony in the classroom, but encourages active interactions among learners, the teachers and other components of the teaching learning process⁽¹³⁾.

BENEFITS OF COGNITIVE LEARNING

1. Improves learning:

Students can develop life long learning by building upon previous ideas and applying novel concepts to the already existing knowledge.

2. Uplifts confidence:

Students can uplift their confidence while approaching tasks thereby getting a deeper understanding of new topics and acquires new skills.

3. Build up comprehension:

Students can build up comprehension of acquiring new information.

4. Enhances problem solving skills:

Students can develop problem solving skills and can apply under challenging tasks.

6. Grasps new things faster:

Student grasps new things a lot faster as they know what to do when it comes to obtaining new knowledge. It also makes them to recycle and apply

the same learning methods that previously worked for them.

7. Design and Construct Concept Formation:

Students can design and develop a variety of approaches that would boost their creativity and lead to advancements at the institute.

COGNITIVE LEARNING STRATEGIES

Psychologist came up with theories and learning strategies that have moulded the concept of cognitive learning and also shaped educational practice. Students must practice a variety of learning strategies before they can understand why particular ones are most effective or be helped to improve their efficiency in using them⁽¹⁴⁾.

1. Learner-centered strategy: It is an approach to teaching that is increasingly being encouraged in education and emphasizes a variety of different types of methods that shifts the role of the teachers from givers of information to facilitators in students learning⁽¹⁵⁾.

Piaget suggested 3 vital components of learning:

- Accommodation:- restructure or modify what we already know so that new information can fit in better.
- Assimilation:- it keeps the new information or experience and adds to what already exists in our mind.
- Equilibration:- balancing between what we already know with the new information you are trying to acquire.

To attain above, one should concentrate on following points:

- a) Establish programs based, on pre-existing knowledge.
- b) Classify learning materials into portions and maintain a proper flow of lessons thought.
- c) Furnish more details to connect new

knowledge with fore knowledge.

d) Newly acquired information and pre-existing knowledge are connected with examples and experimental tasks.

e) Motivate students for questions and comments.

2. Meaningful experience strategy

The learner grants a particular meaning to the set of recognised learning experiences achieved throughout the day, beyond the bounds of context and place where the learning experiences occur. It also means that “those the learner selects and chooses from his/her prior learning experiences, for their positive or negative impact. These experiences are the most relevant from the learners point of view, for whatever reason, and are connected to their needs or interests. A qualitative approach was used in the consideration of the identification and analysis of the subjectivity as a proposal for the generation of knowledge.

3. Learning through discovery strategy

Real learning occurs when learners are immersed in authentic situations and are allowed to figure out the situations and discover critical knowledge themselves⁽¹⁶⁾. Discovery learning was introduced by Jerome Bruner, and is a method of inquiry based instruction. The discovery learning model integrates the 5 principles which include problem solving, learner management, interacting and connecting, information analysis and interpretation and finally failure and feedback.

The discovery learning educational sessions should be well designed, highly experiential and interactive. The techniques utilised can vary, but the goal is always the same, and that is the learners to reach the end result on their own. By exploring and manipulating situations, struggling with questions and controversies, or by performing experiments, learners are more likely to remember concepts and

newly acquired knowledge.

4. Personalized learning strategy

Learning is a personalized experience that allows one to expand their knowledge, perspective skills, and understanding. It also helps to meet individual needs and goals and furthermore, technology integration can also play a crucial role⁽¹⁷⁾. Each student is distinctive and have personal experience, knowledge and approach which can greatly control and influence the way they explicate and consume new information.

CONCLUSION

Cognitive learning is an approach to learning that focuses on empowering students to employ their brains productively. It aids students to ameliorate learning, elevate confidence, stimulate problem solving skills and to grasp novel ideas quickly. This method is being overlooked or is obscure by the instructors due to their confusions or absence of information. Educators ought to take conscious efforts in supplying them effective trainings on cognitive learning. A wide variety of cognitive learning theories are applicable in terms of how human mind works while people learn. Cognitive learning strategies have moulded students ability to know what to learn and how to go about learning it. As a result, teachers should educate their students in agreement with cognitive learning theories and strategies. This illuminates and promotes students learning and help attain their goals.

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