

# Cognition and Learning

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Cognition, in this article, is used to refer to any kind of knowledge and awareness of man about the universe. Learning, however, concerns the process of acquiring knowledge. The hypothesis of this study is that, "There is some kind of relationship between cognition and learning." And the questions to be investigated are, "Which one of them is subordinated to or the result of the other?" And "Which one intrigues the implementation of the other?" To provide the answers to the questions, the researcher draws on the findings of the empiricists, rationalists and the Islamic ideologists by making a comparison between the two processes. The study finally concludes that "mind" or "prior knowledge" of each individual is the main asset of learning and of the cognition of man.

## Introduction

The topic of this discussion is twofold: *cognition and learning*. *Cognition*, in this paper, is used to refer to any knowledge or awareness of man about his environment, about the physical world around him or, generally speaking, about the universe. Chastain (1988), however, specifically considers cognition as a human faculty and maintains, "Cognition involves all types of mental processing, such as perception, comprehension, rehearsal, elaboration, problem solving and thinking" (p. 43).

*Learning* is concerned with the process or the nature of attainment and acquiring this knowledge. In as much as cognition and learning are somehow interdependent on knowledge, cognition and learning are then inevitably interrelated and their interaction and interplay raise some pertinent questions to be investigated. These questions, though queer and whimsical are as follows:

- Is cognition subordinated to or the result of learning?
- Can cognition be realized before learning or it is separated from learning?

Proc. of the Conference on Language, Cognition, and Interpretation, Oct. 12-13, 1997, Isfahan, Iran

- Which one, cognition or learning, intrigues the implementation of the other?

### **Objective of the Study**

The purpose of this study is to find out answers to the foregoing questions. To achieve this goal, the term *cognition* and *learning* will be evaluated through the viewpoints presented by *empiricism*, *rationalism* and the *Islamic ideology* to see how they are dealt with in each of these disciplines and how they are comparable.

### **Cognition and Empiricists**

Although the issue of cognition can be traced back to the fifth century BC, we start from the 17th century, the theories and viewpoints of which underlie the theories of the present century. In the 17th century, the fascinated issue of cognition and ration was the subject of hot and controversial debates between the *empiricists* and the *rationalists*.

John Locke (1632-1704), the English philosopher and the founder of "Empiricism," in his famous work entitled *An Essay Concerning Human Understanding*, claims, "All knowledge comes from experience through five senses, so that our understanding of the world is limited and must be helped by faith" (Oxford Advanced Learner's Dictionary; Encyclopedic Edition, 1992, p. 529).

Locke and his proponents believe that when a child is born, its mind is empty of any knowledge about the environment, and its mind is such as a "*tabula rasa*", or a blank tablet which is like a clean slate. "*Tabula rasa*", then is the mind, as they considered it, to be unscratched, and not any impression is recorded upon it by any experience.

Empiricists postulate that it is only after the birth that the child starts to

interact with the surrounding situations, and thus learning takes place; consequently, the child's mind is impressed. So, to John Locke and his followers cognition of the world is obtainable as a result of learning, and it is subordinate to learning.

### **Cognition and Rationalists**

On the other hand, Rene Descartes (1596-1650), a French philosopher and biologist, contends that the world is composed of *mind* and *matter*. He believes that man is gifted and that, "Gracious God Has bestowed man with mind." By this, Descartes means that when a child is born, his mind is not an empty box or a blank tablet, but the general rules of learning is genetically and naturally in-built in it. In other words, the background knowledge of cognition and the universal rules of learning are innately brought to the world with the child at the time of birth.

### **Cognition in Islam**

We have some explicit hints in the glorious Quran concerning the prior knowledge or the general rules of cognition which God has bestowed on man before his birth.

If you remember the first five verses of the holy chapter of "*Arrahman*," you will induce this message by Allah, as He states: "*Oh merciful! I taught the Quran to man, then I brought him to life, then I taught him speech.*"

الرَّحْمَنُ، عَلَّمَ الْقُرْآنَ، خَلَقَ الْإِنْسَانَ، عَلَّمَهُ الْبَيَانَ، ... (٥٥: ٤-١)

In various commentaries of the holy Quran, the holy Book is considered the general rules, instructions or guidelines of the whole life of mankind as well as his cognition of the world. God informs man of his endowment or the rules of right path before man is born. Then man is born, and soon after, he has the capacity or the asset of learning the speech (or *bayân*). When man masters the language, he can get access to the cognition of the world, in the same way that "Helen Keller" recognized "water" after she learned the word "water". When God selected *Adam*, first He taught him all the words (or *?asma?*) which were required to understand the reality of the universe, as the holy Quran explains, "...and He taught Adam the names, all of them" (2:31).

... وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا... (٢ : ٣١)

Then, Adam could learn all the mysterious facts about the creation and the universe and became the superior creature of God.

Chomsky has referred to this innate capacity or knowledge as L.A.D. (Language Acquisition Device). Other philosophers and scholars have given different names to it, such as mind (ذهن), ration (خرد), reason (عقل), faculty of communication (قوه ناطقه), logic (منطق), core of sense (مركز احساس), etc.

Recent scholars in applied linguistics have referred to a kind of background knowledge of man and have formulated it in the theory of "*schema*".

### The Theory of Schema

Anderson (1980, p. 129) defines schema as, "Large complex units of knowledge that organize much of what we know about general categories of

objects, classes of events and types of people" (quoted in Chastain 1988, p. 42).

Furthermore, Anderson (1980) defines another type of schema which he names "*scripts*". In the description of the scripts, he states " Schemata that reflect typical sequences of actions are referred to as 'scripts'. ... Scripts account for the ability of individuals to predict what may happen in familiar situations, and they are an asset in the comprehension process in such situations as reading a story or understanding a listening passage" (Chastain, 1988, p.42).

There is no hint in any writings of mental or cognitive theoreticians that "*schema*" is a pure acquired knowledge, on the contrary, it is implicitly ascribed to the mind and is known as the previous knowledge, but it can be developed after the birth.

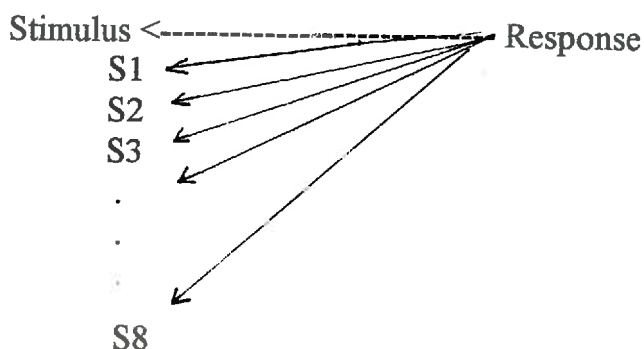
## Learning

According to the ideas expounded by empiricists, the center of learning is the brain, and learning takes place from the experiences of the environment through the five senses. Empiricists believed in the fact that learning takes place in the framework of stimulus-response relationship by setting up a conditioning situation. This is illustrated in the following diagram:



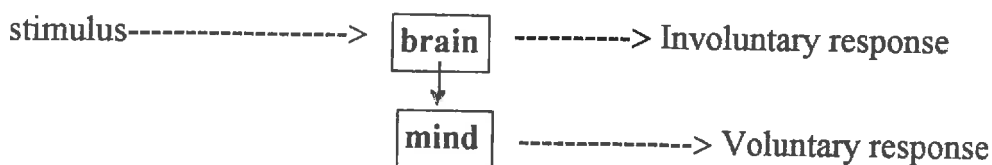
When the relationship of stimulus-response is repeated 8 to 12 times, a new habit is formed in the learner which can cause a change in his behavior; this change in behavior, according to empiricists is the result of learning. This process is shown below:

### Learning conditioning to form a new habit



In rationalists' viewpoints, however, it is believed that man is a dual being as far as the center of learning and cognition is concerned. One part of learning which controls primitive and physical activities take place in the brain through the five senses as empiricists have claimed, but much of leaning is supreme and dependent on spiritual bases which takes place in the mind. So the center of leaning and cognition of man, as proposed by the rationalists of the 17th century, is composed of the brain and the mind. It is depicted in the following diagram:

### The dual center of learning



Rationalists of the 17th century, who are also named dualists, believe that learning is a process in which the potential knowledge in the mind is activated to be used appropriately to any new situation. This activation is fulfilled by the interaction of the mind with the environment. So learning, according to rationalists, was actually the activation of the potential knowledge to practical realization.

## **Types of Learning**

"Learning" has traditionally been divided into two types:(i) inductive learning which is performed from the particular examples of realia and ends up in generalizations, and (ii) deductive learning in which the general rules in the mind are applied to individual exponents for practical purposes.

In recent research, learning is distinguished as (i) top-down learning and (ii) bottom-up learning. Madden and Nebes (1980) have defined two types of learning as (i) data-driven processing, and (ii) conceptually driven processing. Their definition is as follows:

In the data-driven approach, the brain begins with externally received stimuli and analyzes that information to arrive at its final interpretation. In a conceptually driven approach, the brain initiates processing with a general knowledge of the subject and proceeds to relate the information it already has, to the new data it receives. (quoted in Chastain, 1988, p.36)

Hund (1982), in this regard, maintains:

Data-driven processing is often referred to as bottom-up processing and conceptually driven as top-down processing to reflect the direction of thought. In the first approach meaning resides in the reading passage, in the second, meaning is derived by readers activating their prior knowledge to recreate the author's meaning.(Hund, p.36)

## **Conclusion**

So far, we have had numerous views on mind, cognition and learning which postulated a kind of prior knowledge or capacity in the process of learning

without which learning may not be possible, but the nature of this previous knowledge is not exactly determined to us.

Chastain (1988 ) rejects any connection of mind with the framework of stimulus-response. In this regard, he states, "The mind is not a sponge absorbing information, nor a connection to be conditioned by external forces, but an active processor of information" (p. 38).

Wittrock (1980 ) takes a very crucial position on language learning when he asserts, "The researches on the brain and its cognitive processes emphasizes the generative nature of learning and reciprocal interplay between environmental events and the learner's generative cognitive processes" (p. 398).

All these opinions and findings of recent research lead us to this view of the Cartesian linguists of the 17th century that *man is gifted, and he is the superior creature because of the previous knowledge or mind that God Has bestowed on him in his birth.*

This knowledge may per se be the main and the basic asset of the cognition of the universe which is potentially existed in the mind of each individual and can be activated by his continuous learning activities in his lifetime. It would be a blue-print of the whole knowledge about the world which can be gradually and, to some extent, activated as a result of learning processes.

The following verse of the holy Quran is a very crucial and explicit piece of information about the previous knowledge on the universe that God has bestowed on man. In this verse God states, "I didn't bestow you of knowledge save a little bit."

... وما أوتيتم من العلم إلا قليلاً (١٧ : ٨٥)



Although this little bit of knowledge is potentially about the whole universe and whatever can be found in it, and it is a capacity for learning as much as a man can grasp, however, it is by no means sufficient for man to recognize the Creator Himself by that. In this regard Molana Jalaladdin Rumi, begs Allah to increase his knowledge to enable him to accomplish his cognition about his God. The couplet by Molavi which conveys his longing is thus:

قطره دانش که بخشیدی ز پیش      باز گردانش به دریا های خویش

Sa'adi, another poet and literary character of Iran, accepting his weakness of recognizing the greatness and the glory of Allah, confesses frankly:

ای برتر از خیال و قیاس و گمان و وهم      از آنچه گفته اند و شنیدیم و خوانده ایم  
منزل تمام گشت و به آخر رسید عمر      ما همچنان در اول وصف تو مانده ایم

And Ferdowsi, the most prominent epic poet of Iran, also reveals the similar idea when he says:

به نام خداوند جان و خرد      کزو برتر اندیشه بر نگذرد

In closing up the discussion, it is worth reciting the holy verse from the glorious Quran and praise God for the precious knowledge or capacity He has bestowed on us in birth:

...سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا... (۲: ۳۲)

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