COGNITIVISM AND ITS IMPLICATION IN THE SECOND LANGUAGE LEARNING

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Abstract

This paper aims to elaborate cognitivism and its implications to the second language learning. Cognitive theory or approach views the learner as a thinking being and an active processor of information. Thus, learning is a process in which the learner actively tries to analyze the situations where the application of the rule would be appropriate and to make sense of data. In other words, we learn by thinking about and trying to make sense of what we see, hear and feel. In order to get a clear picture of the cognitive theory in relation to second language learning, other related theories were also described briefly from the historical points of view. In general cognitivism can be grouped under the innatist model which is also known as 'nativist'. 'mentalism' (thinking as rule-governed activity), 'rationalism'. The implications of cognitive theories can be revealed in the basic teaching techniques which cover activities such as problem-based solving activity, discovery learning, cognitive strategies, project-based learning, etc.

Keywords : cognitive, second language, acquisition, innatist, problem-solving, behaviorist

1. INTRODUCTION

> Give a man a fish and you feed him for a day.
> Teach a man how to fish and you feed him for a lifetime.
>   (Chinese proverb)

The entry point for all language teaching should be an understanding of how people learn, but as a matter of fact the 'learning factors' are the last to be considered. In the past the research only focused on the language analysis and learning factors were, to a large extent, still ignored; only after the language systemization has been done, learning factors were incorporated in the domain of language teaching and learning. In the sixteenth century Comenius (1592-1670), a Czech theologian and educator, conducted empirical observations in language learning, and some guidelines for the Direct Method at the end of the 19th century (Stern, 1983), but no relevant theory of learning appeared until the establishment of psychology as a notable field of study in scientific enquiry in the early 20th century. (Hutchinson & Waters, 1987: 39)

From a historical point of view there are three major scientific research traditions in the second language acquisition: (1) Behaviorist, (2) Cognitive, and (3) Dialogical. Behaviorist is generally related to the work of Pavlov in the Soviet Union and of Skinner in the United States. This theory emphasizes "a mechanical process of habit formation and proceeds by means of the frequent reinforcement of a stimulus-response sequence". (Hutchinson & Waters 1987: 40) Meanwhile, the term 'cognitive' refers to the course of intellectual development in a child through various stages. (Piaget in Brown, 1994:58), learners as thinking beings (Hutchinson & Waters, 11987:43), and the learner to be an active processor of information. (Ausubel et al, 1978) And the term 'dialogical', the last tradition, can be associated to the following names: discursive (Harree and Gillet 1994), hermeneutic (Young 1999; Markee 1994; Ochsner 1979), hermeneutic-dialectical (Rommetveit 1987), dialogically based social-cognitive (Rommetveit 1992), and cultural (Bruner 1996). (see Johnson 1954:9)

This essay will elaborate the second tradition (Cognitive theory) with its implication in the second language learning. In order to get a clear picture about the two domains, I will also describe briefly some key words such as the terms 'first and second language', 'first and second language acquisition', concepts of language learning, and finally some implications of cognitive theories in the second language learning.

2. FIRST AND SECOND LANGUAGE

When we talk about language teaching or learning, we should be familiar with the terms such as first language, second language, foreign language, mother tongue, bilingual. Those terms are sometimes ambiguous and confusing, even for some language practitioners. In this regard, Stern (1983:9) makes a tabulation of the two sets of terms as follows:

Table 1: First language and Second language

L1	L2
First language	Second language
Native language	Non-native language
Mother tongue	Foreign language
Primary language	Secondary language
Stronger language	Weaker language

The two sets of terms above can be compared to the pair words such 'left and right', 'I/we and you', or 'at home' and 'abroad'. Those terms are always relative to a person or a group of persons. They show a subjective relationship between a language and an individual or a group. For the two sets of terms above, Stern (1983: 11-12) gives illustration as follows:

-   The L1 terms are used to indicate, first of all, that a person has acquired the language in infancy and early childhood (hence 'first' or 'native') and generally within the family (hence 'mother tongue'). For example, the expressions such as 'English is my mother tongue'; 'I am a native speaker of French'; 'His first language was Hungarian' all

> suggest this particular way of acquiring a language at this particular time in life.
>
> - The concept of L2 ('non-native language', 'second language', 'foreign language') implies the prior availability to the individual of an L1; in other words, it is some form of bilingualism. Again, the use of the L2 set of terms has a dual function: it indicates something about the acquisition of the language and something about the nature of the command; for instance: 'We're learning French in school'; 'I'm trying to learn Singhalese'; 'Our Danish 'aur pair' girl has been sent by her parents to England to learn English in our family. She has no lessons.'

A certain language can be grouped as a second language when it is a non-native language which is learnt and used <u>within</u> one country; on the other hand, it can be grouped as a foreign language when it is a non native language which is learnt and used with reference to a speech community <u>outside</u> national or territorial boundaries. In addition, it can be a foreign language when it is undertaken with different purposes of mind, e.g. travel abroad, communication with native speakers, reading of a foreign literature, etc. Other requirements of being a second language are (1) the language becomes the official language or one of two or more recognized languages; (2) the language is needed for "full participation in the political and economic life of the nation" (Paulston 1974:12-13); (3) the language is needed for education. (Mackwardt 1963); and (4) the language has official status or a recognized function within a country which a foreign language has not. (Sterne, 1983: 15-16)

3. FIRST AND SECOND LANGUAGE ACQUISITION

3.1. First language acquisition

Language acquisition which is a multi-faceted and complex phenomenon can be simplified into three major crucial issues by Rice (1986) as follows: (a) The nature of language, (b) The role of the child, and (c) The role of the environment.

3.1.1. The nature of language

Issues of the nature of language is quite abundant to explore and to discuss, especially the aspects which are closely related to the first language acquisition. For instance, language can be seen as a set of grammar or syntactic rules or how these rules are processed internally, and another issue which is equally essential is pragmatic aspects of the language or how the language is used in community. From the illustration above, language basically contains three aspects: form, meaning, and use.

3.1.2. The Role of the Child

To elaborate the issues of the child's role in the first language acquisition covering the questions whether the child becomes active or passive receiver of the 'teaching' from adults, or whether there is an innate linguistic knowledge, I will refer to two influential figures – Jean Piaget and Lev Vygotsky.

3.1.2.1. Piagetian View of Cognitive and Language Development

According to Piaget (1959) cognitive development and language acquisition are closely interrelated processes. During the childhood the abstract knowledge about the world can be gained through seeing objects around them and by observing how the objects function and interact each other. This stage of development lasts from birth to 18 months, called the sensorimotor period. In Piaget's view cognitive knowledge about the world, without cognitive development language acquisition will not take place, even if it does the children will only gain little. This kind of view is often labeled as 'cognitive determinism' - the development of language forms is governed by cognitive growth, i.e. cognitive development before language. In other words, the sequence of development within language learning is governed by the stages of cognitive growth. (See Figure 1)
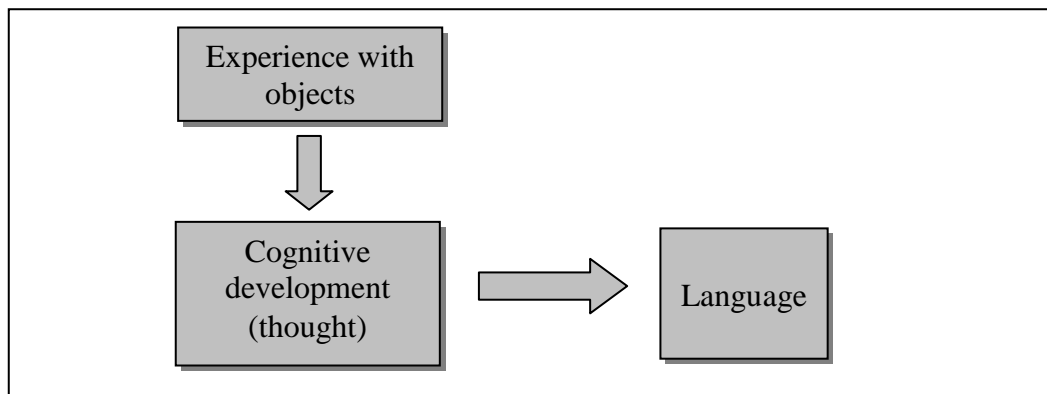

Figure 1: Cognitive Determinism

3.1.2.2. Vygotskyan View of Cognitive and Language Development

Vygotsky's (1962) cognitive view in language development was inspired by Piaget's at least in two ways : (i)) the important relation between cultural and social environment and language learning; (ii) cognition closely related to language is considered not static manner but dynamic one since the children's cognition will improve along with their interaction with the people around (e.g. parents, siblings, neighbors). The child's language acquisition is obtained through daily conversation with adults such as naming objects. In other words, the adult people teach the children about the world around and appropriate behavior. According to Vygotsky, language is a means of influencing later cognitive development. In this context, by getting along with the people around them and practicing their own language, the children will learn to interpret new experiences which will further develop their thinking competence. For an illustration, as the children who have grown bigger and mastered certain aspects of language will be more critical by asking some questions about the things they see and hear. They also start to enjoy listening to stories and describing the characters in the stories. The children's interaction with the world around can be seen in the following figure.
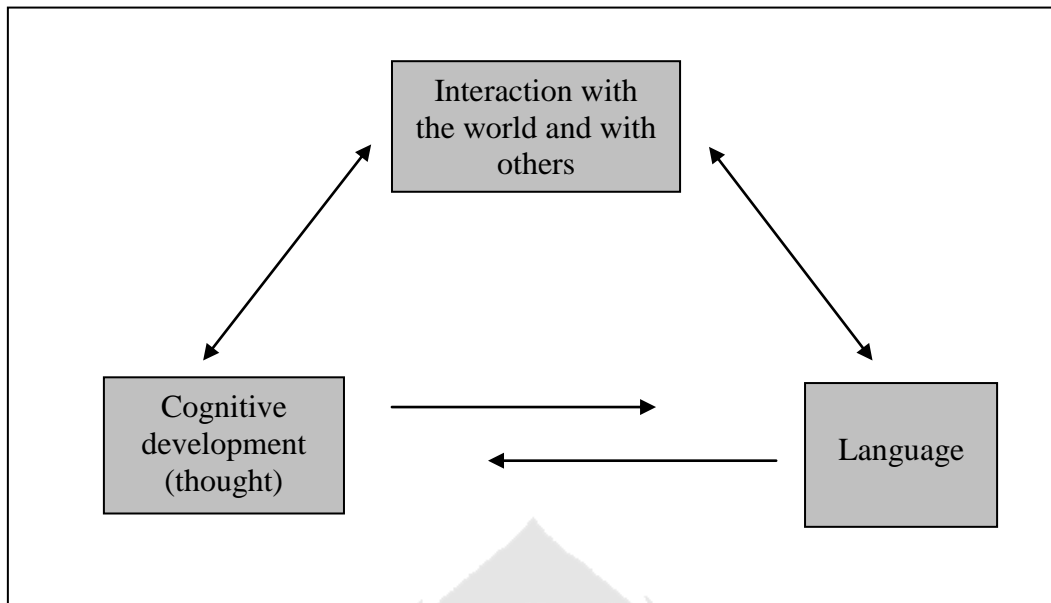
Figure 2: Changing Relationships between Cognitive Development and Language

3.1.2.3. The Role of the Environment

The third component of language acquisition which contributes to the children's cognitive competence is both social and linguistic environment. Social environment is a setting where the children are nurtured and learn things about the world. Whereas linguistic environment is a situation in which the children use language in their interaction with adults. In their interaction, they will get input and direct or indirect feedback on their language use. Special terms referring to the kind of language used by adults to the children are *motherese, caregiver/caretaker language and child-directed language*. Another issue about the environment in relation to adults' behaviors and strategies during play and caregiving are called joint referencing and joint action. Joint referencing refers to an act of communication which often covers naming or describing; whereas joint action is related to a shared action sequence by adult and child, such as rolling a ball, laying peek-a-boo or 'round and round the garden'. (Goh, 2004:14-16)

3.1.2.4. Theoretical Models

There are three theoretical model which are very influential in language acquisition, especially in relation to three main issues: the way language, the child and the environment interact to each other. These models are known as behaviorist, innatist (also nativist) and interactionist. They are broad models which represent different views on and approaches to the understanding of language acquisition.

3.1.2.5. The Behaviorist Model

The model was very popular in the forties and fifties owing to the work of Ivan Pavlov, B. F. Skinner, John Watson, and Edward Thorndike. It is also related to the empiricist school due to its concern with the physical and the observable. In

this view, the main focus in learning is change of behavior through habit formation, and the existence of stimuli and response. For several decades this school of thought was very dominant in various areas of learning, including language learning. In *Verbal Behavior* B.F. Skinner (1957) argued that language acquisition was a form of operant conditioning, directly resulting from adult modeling and reinforcement, imitation, practice and habit formation on the part of the child. Another main feature of the behaviorist view is the existence of reinforcement − both positive and negative. A child will be given praise and physical rewards when he gives a correct utterance. On the other hand, if the utterance is not correct, the reward will be suspended.

3.1.2.6.   The Innatist Model

This model is also known as 'nativist', 'mentalism' or 'rationalism'. In this model, language is seen not as a behavior learned through imitation and conditioning, but is rule-based and generative in nature, processed and produced through complicated cognitive processes and mechanism. There are two underlying assumptions in this model. The first assumption proposed by Chomsky, the severest critic of behaviorism, stated that human beings possess an innate mental capacity for language. It is a special language mechanism in which individuals are hard-wired with syntactic principles, or rules about grammar. It is also believed, in this view, that the language has a universal nature so that anyone can learn any language they are exposed to.

The second basic assumption is concerned with the language development which is directed by a biological and chronological program. In this model, Eric Lenneberg (1967) proposed a hypothesis known as 'the Critical Period Hypothesis' − 'a critical point for language acquisition occurs around puberty and beyond this point, people who try to learn a language will not acquire it fully.' This hypothesis was supported by natural experiments in which children fail to acquire a language normally during their childhood. The well known evidences are the wolf boy, Victor, in France and Genie, the girl from California.

Other main features of this model refer to an innate mechanism called the Language Acquisition Device (LAD) which was pre-programmed with syntactic rules or principles about language that enabled the child to generate and understand sentences, and Universal Grammar (UG) which assumes that all languages in the world share common features, such as plurals, signaling, temporal or spatial distinctions and negating a proposition.

3.1.2.7.   The Interactionist Model

This model is closely related to Vygotsky's Zone Proximal Development (ZPD) which is defined as the distance between a child's current state of cognitive capacity and the level of potential development. In other words, it is what the child can manage on his or her own compared with what they can only manage with assistance from adults. The emergence of the interactionist model was also due to the dissatisfaction with Chomsky's transformational grammar which only focuses on the competence of the 'ideal speaker-listener' in a 'homogenous speech community' instead of examining the way language is actually used in

society. Dell Hymes (1971) also proposed a model of communicative competence. This competence will make persons able to express and interpret messages appropriately in specific communicative contexts. (Goh, 2004: 17-22)

The main features of the three models can be seen in the following table (Goh, 2004: 25):

Table 2: Key features of Behaviorist, Innatist and Interactionist Approaches

Behaviorist	Innatist	Interactionist
- Concerned with learning in general - Important linguistic input from the environment - Modeling - Imitation - Practice - Reinforcement - Habit formation	- Concerned with specific aspects of language learning - Degenerate input from the environment - Biological program (CPH) - Special language learning ability - Universal Grammar (UG) - Linguistic rule extraction - Hypothesis testing - Natural order of acquisition	- Concerned with social and psychological aspects of language learning - Meaningful linguistic input from the environment - The importance of communicative contexts - Child's pragmatic intentions - Adult's rich interpretation and feedback - Conversational adjustments - Child's capacity for learning - Interdependence of cognitive and language developments

4. SECOND LANGUAGE ACQUISITION

The description of second language acquisition (SLA) will also refer to the three broad models: behaviorist, innatist, and interactionist. And each model which is applied in the second language acquisition will be elaborated below.

4.1. Behaviorism and SLA

There is no significant difference between the behaviorist model applied in L1 and L2 learning. The same principles are still used in L2 learning such as imitation, practice, reinforcement/feedback and habit formation following a stimulus-response model. This model assumes that all learning is similar; there is no different treatment between L1 and L2. The child, or learner of any age for SLA should imitate, repeat, practice and receive feedback in order to establish 'good habits' and avoid 'bad habits'.

In this model of learning, it is also relevant to mention the Contrastive Analysis Hypothesis (CAH) (Lado (1957) which assumes that all elements in L1

and in L2 which are similar will be easier to learn; on the other hand, any elements which are different in L1 and in L2 will be more difficult to learn.

Implementation of the behaviorist ideas are reflected in the teaching method /approach known as Audiolingualism (coined by Professor Nelson Brooks in 1964) which stresses on the systematic presentation of grammatical forms from the easiest elements to the most difficult ones. The main features in this practice are repetitive drills, no translation, no explanation of grammatical rules, word meaning learned in context, more spoken practices. Accordingly, there is extensive use of dialogue memorization, repetition and drills.

4.2.   Innatism and SLA

Similar to the behaviorist model, the principles of innatist model for first language acquisition and SLA are basically the same. In this model, there is an innate mental capacity for language learning which is different from other learning. Language learning is based on discovering the underlying abstract representations (or rules) of the specific language from among all possible rules of languages universally. According to Chomsky, these universal rules are called Universal Grammar (UG) which provides a kind of blue print that the child is born with.

In this kind of learning, there are two major issues which are closely related to SLA. First, it is called an *access issue* which covers three possibilities. First possibility is the learner accesses UG in the same way for both first and second language learning (full access); second possibility is the learner does not access UG directly for second language learning but must go through the first language (no access); and third possibility is the learner has a partial, but incomplete, access to UG for SLA. The mechanism of UG access can be seen in the following figure (Figure 3):
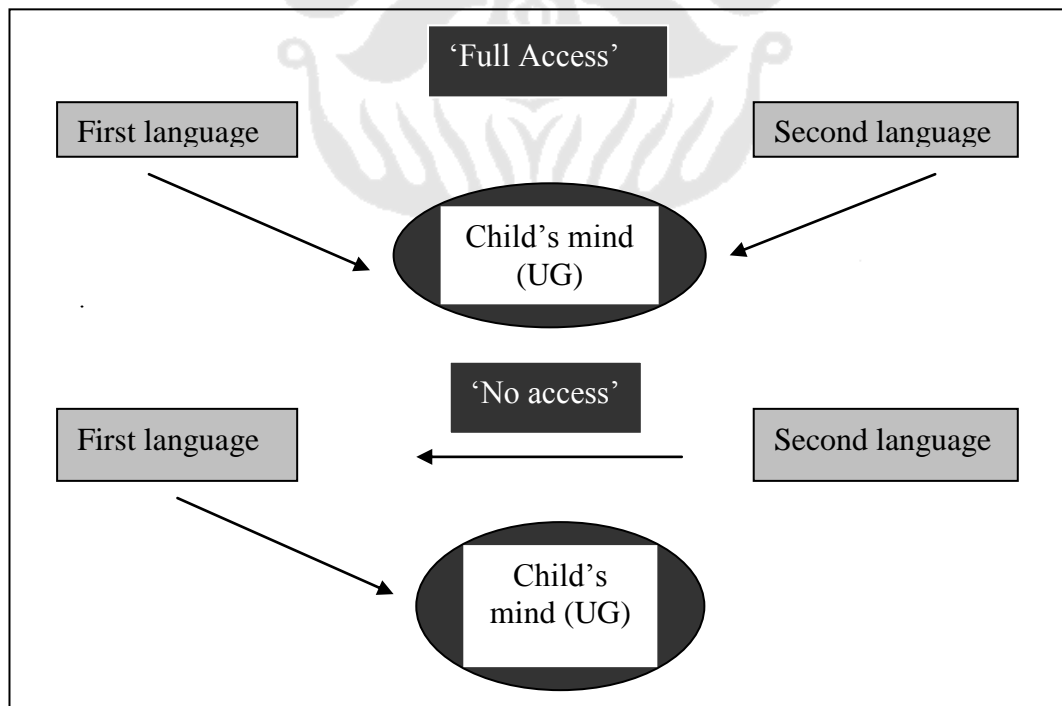

Figure 3: UG Access and SLA

Second issue in the innatist model is concerned with age. With regard to this, some research on learning and age is used to determine whether UG really is a biological attribute. Lennenberg (1967) proposed a learning theory called Critical Period Hypothesis (CPH) which assumes that in fact there is a critical period for language learning. According to CPH, learning second language after puberty is not so efficient as learning before puberty. In other words, the learner will not achieve a complete mastery of second language after puberty. The implications of Innatist model can be seen in the practice of Natural Approach proposed by Terrell (1977), and this approach to classroom teaching is an effort to insert naturalistic learning into classroom situations. (Goh, 2004: 32-35)

4.3.   Interactionism and SLA

Interactionist model is closely related to the views of sociolinguistics and language use for communication. Second language acquisition for adolescents (over 20+ years) pays attention to the interaction between second language learners and native speakers. Preliminary studies of this interaction was largely focused on the comprehensible input (meaning) which was then related to innatist models. However, some other researchers argued that learning process covers not only understanding (comprehensible input) but also communication (language use). Thus, the ideal learning situation is combination of both factors. Such a situation is often connected to the linguistic environment – the way(s) that language is used, with and around the learner. The research has tried to explore possible roles for input, negotiation, output and interactional feedback in second language learning. The implications of Interactionist model can be seen in the practice of Communicative Language Teaching Approaches (CLTAs) which cover various topics or activities such as functional-notional, thematic, content-based, task-based, etc.(Goh, 2004: 41-42)

The following is a summary of Basic Theories and Models for SLA.

Table 3: Basic Theories and Models for SLA

Behaviorist	Modeling, practice and reinforcement from proficient L2 language user.
	Habits formed in first language can interfere with L2 learning
	Instructional approach: Audiolingualism.
Innatist	UG is accessible for first and second language acquisition or UG is only available for first language learning or UG is partially available for second language learning – an unresolved question.
	If UG is biological, there may be an optimal time period for second language acquisition (prior to puberty) because the adult mind learns language differently.
	Instructional approach: The Natural Approach
Interactionist	Input, negotiation, output and international feedback may be necessary for L2 learning.
	Other sociocultural aspects may also need to be considered.
	Instruction approach : CLTAs

5. CONCEPTS OF LANGUAGE LEARNING

If we talk about the concept of second language learning, it is unavoidable to use psychological concepts since our thinking on learning is influenced by the psychological knowledge that is part of the common on understanding of human behavior in our culture. The psychological terms such as 'remembering', 'forgetting', 'skill', 'motivation', 'frustration', 'inhibition', etc. are adopted in the process of second language learning. In this section, the two key concepts for a language teaching theory, i.e. language and learning will be reviewed in terms of general psychology so that we can have a clear picture about the underpinning of second language learning.

5.1.   Language in psychology

Language has always played a certain role in the history of psychology. According to Stern (1983: 291) psychology can be defined as the science of the mental life and behavior of the individual. Psychology studies the behavior, activities, conduct, and mental processes. Since speech is one of the features that distinguishes man most clearly from other species, it becomes an object of psychological enquiry. From about 1900 the objects of psychological studies paid attention to not only the learning, memory, thinking and intelligence (the higher mental processes), but also to the emotions, personality, psychological growth of the child, and the measurement of individual differences.

Wundt (1877), the founder of modern scientific psychology, included a study of language in the first volume of his monumental study of "ethnic psychology". Word association experiments which showed the subjects' instant response to the verbal stimuli was done by Galton (1883). While in the area of emotions, some research has been undertaken by Freud with his treatment of slips of the tongue or the pen (the emotional dynamics of verbal behavior), by Jung's (1918) verbal associations as a diagnostic tool to uncover emotional complexes. In this regard, Jung theorized that someone with emotional problems will easily deviate from the common verbal associations of his speech community.

In the studies of mental development of the child, 'nature or nurture' became hotly debated issues. Some experts tended to support 'nature' meaning the mental development of the child obtained by maturation (biological and nativistic), while some others favored 'nurture' meaning the mental development was mainly gained through social or environmental interaction. Such a debate had finally come to a compromise in 1940s, called "biosocial" compromise: the division between the two points of view became less rigid. In other words, there was no a clear-cut solution, and the question was on the proportion for each view: how much biological growth, heredity, innate disposition, and maturation could contribute to the child's mental development; and, similarly, what proportion of environmental influences could increase its mental development. In this issue, intelligence as 'bio' component was considered stronger than 'social' aspect.

Another major issue about language in psychology for many decades was the relationship between language and thought. The Swiss psychologist Piaget, in his major work on language and thought in childhood (1923) proposed the thesis that language development and functional use of language in childhood reflect the

mental development of the child. Later, such thesis led to the theory, for instance by Cameron (1947) who stated that the individual's view of the world and his entire cognitive system were shaped by the verbal symbols given to each one of us by society as we learn our native language. (Stern, 1983: 291-294)

5.2.   The psychology of learning

Learning has been approached in two main ways: (a) through theoretical and experimental studies and (b) through empirical studies in education setting. The two together constitute the psychology of learning.

5.2.1.   The theoretical and experimental study of learning

This school of thought can be divided into two groups. The first, deriving from the British associationist school of philosophy (Hobbes, Locke, Berkeley, and Hume), refers a largely environmentalist view of man. A further development of this school can be found in Pavlov's studies of conditioning, Watson's behaviorism, Thorndike's connectionism, and Skinner's operant conditioning. Theories in this school of thought, so-called S-R theories, focus on externally observable responses (R) to specific stimuli (S), an empirical and experimental approach, and the avoidance of subjective or 'mentalist' concepts. What they agree in this tradition is they disregard the mental process of the learners. In other words, they do not pay attention to the intentions, the thinking, the conscious planning, and internal processes of the learner.

The second group, so-called cognitive approaches to learning, was initially represented by Gestalt psychology. It emphasizes on innate organizing principles in human perception, cognition, sensorimotor skills, learning, and even in social conduct. Gestalt theory ignores repetition or practice, the mechanical 'stamping in' or Thorndike's laws of learning or Skinner's 'shaping', as characteristic of human learning. Other features of Gestalt psychology also cover concepts such as 'whole and part', 'integration and differentiation', 'figure and ground', 'field', 'structure', and 'organization'. (Stern, 1983: 307)

Other figures who advocated a cognitive theory of learning are Ausubel (1967:10) who stresses on 'meaningful learning', meaning being understood not as a behavioral response, but as 'a clearly articulated and precisely differentiated conscious experience that emerges when potentially meaningful signs, symbols, concepts, or propositions are related to and incorporated within a given individual's cognitive structure… .'

Ausebel gives two significant contributions in the development of language learning since his theories have been developed from research in main stream cognitive psychology. His firs contribution is the notion of 'advance organizer' – a device or a mental learning aid to help us 'get a grip on the new information'. His second contribution is the active nature of reception learning. He distinguishes between rote and meaningful learning. The point here is how to make reception learning as meaningful as possible. In this approach, the students need to be active in learning by underlining, by completing missing words, by rewording   sentences,   or   by   giving   additional   examples. (http://teachnet.edb.utexas.edu/lynda-abbott/cognitive.html)

Different from Ausubel who absolutely rejected the behaviorism, Bruner and Gagne have tried to be more moderate, that is trying to combine both schools. In their view certain kinds of learning can be appropriately achieved by a behaviorist stimulus-response theory, but conceptual learning or the learning of principles require a cognitive theory. Bruner's cognitive theory (1960/1977, 1966) gave a significant contribution to the curriculum development in the sixties, especially in the natural sciences, social sciences, and mathematics, but its relevance to language teaching was delayed until much later. As an advocate of discovery learning, Bruner was more popular, at least schools, than Ausubel and Gagne since his ideas about learning were more acceptable. In his work "Toward a Theory of Instruction", Bruner elaborated how his ideas can be easily translated into teaching practice in the classroom. The key point of his teaching principles is the word 'structure'. When we teach a subject, we should also pay attention to its structure. He introduced a real process of a particular subject to the students. For instance, when learning history, the student should examine a bridge, a building, or a head stone in a cemetery, then using the information acquired to trace records of various kinds in order to answer the questions generated about the origins, purposes, and history of that structure, or the life of the person concerned. The three stages in Bruner's theory of intellectual development are:

- *Enactive* where a person learns about the world through actions on objects.
- *Iconic* where learning occurs through using models and pictures.
- *Symbolic* which describes the capacity to think in abstract terms.

Bruner's three stages can be explained as follows: underlying principle for teaching and learning is that a combination of concrete, pictorial then symbolic activities will lead to more effective learning. The progression is: start with a concrete experience then move to pictures and finally use symbolic representation. (http://teachnet.edb.utexas.edu/lynda-abbott/cognitive.html)

Meanwhile Robert Gagne, who spent early time as an instructional psychologist for training airforce personnel, proposed the importance of task analysis and the correct sequencing of instruction. In addition, he argued that learning is like to a building process which utilizes a hierarchy of skills that increase in complexity. Gagné's theory of learning hierarchies could be said to be a teaching theory, which is easy to apply in some circumstances, but is not easily applied in other circumstances. Many of his ideas are readily transferable to computer-assisted instruction and no doubt at least some readers will be familiar with his ideas, even if not with Gagné himself as their advocate. The concept of Gagné's knowledge hierarchy leads to the assumption that it is important to present all the necessary lower-level facts before proceeding to teach at higher levels. Related to this is the concept that people can reason with higher-level concepts if they have learned all of the prerequisite lower-level information. (http://teachnet.edb.utexas.edu/lynda-abbott/cognitive.html)

Gagne (1977) in his latest interpretation of varieties of learning distinguishes five types: learning intellectual skills, concepts, and rules; learning problem solving or cognitive strategies; verbal information learning; motor skill learning, and the learning of attitudes. According to Gagne, in order to be

successful in learning, both behavioral (S-R) and cognitive concepts should be applied in learning. In short, any concrete learning task, such as learning a language, might involve several kinds of learning. (Sterne, 1983: 308)

5.2.2. The empirical study of learning in education settings.

Besides theoretical and experimental study of learning, learning problems from the applied side in practical learning situation have also been investigated. For instance, the learning school subjects, especially reading and mathematics; the learning problems of children with educational or emotional difficulties; questions of work training in industry; problems of rehabilitation and re-education of individuals requiring remedial treatment; and the theory of 'programmed instruction'.

Some critics regretted the wide gap that has developed between 'classroom learning theory' and the theoretical and laboratory study of learning. In this regard, Cage (1963) states that research on teaching would fill the gap between learning theory and educational practice. Others tend to disregard all the debates about the psychology of the learning and teaching process. And some others indicated that due to the uncritical acceptance of learning theory the development of useful psychology of learning has been in disorder.

The psychology of learning in the textbooks of educational psychology are usually taken from two sources: the theoretical and experimental studies of learning and the applied investigations of specific learning problems. Categories of the psychology of learning refer to (a) characteristics of the learner and individual differences among learners (abilities, personality, attitudes, and motivation, (b) different kinds of learning, (c) the learning process, and (d) outcomes of learning. (Sterne, 1983: 308-9).

6. SOME IMPLICATIONS OF THE COGNITIVE THEORIES

Whereas the behaviorist theory of learning portrayed the learner as passive receiver of information, the cognitive view takes the learner to be an active processor of information (see Ausubel *et al*., 1978). Learning and using a rule require learners to think, that is, to apply their mental powers in order to distil a workable generative rule from the mass of data presented, and then to analyze the situations where the application of the rule would be useful or appropriate. Learning, then, is a process in which the learner actively tries to make sense of data, and learning can be said to have taken place when the learner has managed to impose some sort of meaningful interpretation or pattern on the data. This may sound complex, but in simple terms what it means is that we learn by thinking about and trying to make sense of what we see, feel and hear. (Hutchinson & Waters, 1987: 43)

The basic teaching techniques associated with a cognitive theory of language learning may cover the following activities: (1) problem based learning (problem solving), (2) discovery learning, (3) cognitive strategies, (4) project based learning, etc.

6.1. Problem based learning

This activity is based on the problem exposure. The student conducts the research based on theories, concepts, various scientific principles. First, he/she identifies the problem, collects the data, and analyzes the data. Finally, he/she should draw a conclusion or conclusions. The following tables (1 and 2) show the difference between the problem-based learning and the traditional learning as well as its strengths and weaknesses of the problem-based learning.

Table 4 : Traditional and Problem-based Learning

Traditional Learning	Problem-based Learning
o The lecturer decides the problem o The lecturers presents the information and prepares the materials.	o The students decide their own problem. o The students look for information and relevant materials.

Table 5 : Strengths and Weaknesses of the Problem-based learning

Strengths	Weaknesses
o It focuses on the meaningfulness, not the facts. o It can improve the students' initiative. o It can develop the students' skill in applying the science. o It can develop the students' skills of interpersonal relationships and group dynamic. o It can improve the relationship between the students and the facilitator. o It can improve the students' learning achievement.	o The students' basic academic competence is different from each other. o It is time-consuming for its implementation o The change of role for the students and the lecturer will take time. o In general it is not easy to formulate the problem. o The lecturer should be able to design an appropriate instrument for the students' assessment.

6.2. Discovery learning

This activity is aimed to develop a research competence and to improve the learner's appreciation toward science. It would rather focus on the learning process than the learning product; in addition, discovery learning is designed to increase the student's learning skills, including how to ask questions and how to evaluate strategies.

6.3. Cognitive strategies

Cognitive strategies are one type of learning strategy that learners use in order to learn more successfully. These include repetition, organizing new language,

summarizing meaning, guessing meaning from context, using imagery for memorization. All of these strategies involve deliberate manipulation of language to improve learning. Classifications of learning strategies distinguish between cognitive strategies and two other types; metacognitive strategies (organizing learning), and social/ affective strategies (which enable interaction). For example, a learner remembers new words by visualizing them represented in a memorable or ridiculous situation. This makes it easier and faster to recall these words. Activities in the classroom which can be described as cognitive strategies include making mind maps, visualization, association, mnemonics, using clues in reading comprehension, underlining key words, scanning and self-testing and monitoring.

Cognitive strategy is an organized internal competence which can lead the students in their learning process, i.e. thinking process, problem solving, and decision making. It enables the students to think systematically and critically. In other words, it will make their thinking process unique. This uniqueness is called executive control – high level control (consciousness). (Dandan Supratman's Lecture Handouts).

7. CONCLUSION

From the elaboration in the previous sections, I can draw some points to consider when using cognitive approach or theory in the second language learning :

1. Cognitive theory or approach can be grouped in the innatist model which focuses on the role of mental or psycholinguistic processes. This tradition is also known as 'mentalism' (thinking as rule-governed activity), 'nativist', 'rationalism'.
2. Cognitive code or approach which views the learner as a thinking being and an active processor of information can be applied to improve the learner's intelligence. In other words, the type of activities will make the learner to think more critically towards certain topics.
3. The teaching or learning process which is based on the cognitive approach may cover activities such as problem solving, discovery learning, project based learning, etc.
4. Apart from its strengths, cognitive approach (through problem solving activity) has some limitations (time consuming, the learners' unequal basic academic competence, the difficulty of problem formulation).

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