

IN SUPPORT OF A COGNITIVE APPROACH TO EFL  
 BASED ON PIAGETIAN THEORIES

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This paper is to a certain extent, an attempt to communicate something of what has been happening in a seminar that has been taking place in the Foreign Language Department at the UAM-X. The seminar, coordinated by Luis Eduardo Priero, has been dealing with the theory of knowledge, what knowledge actually is, a seminar in fact on epistemology. The seminar has raised many questions for all the participants and all are involved in the search for the answers. This paper is a part of that process of questioning. The participants have tried to go directly to what Piaget says in answer to the questions which have arisen and not what others say that Piaget says. However, answers to all the questions are still being formulated so really this paper is intended to raise more questions than it answers.

The Villarruel document (UAM - Xochimilco, 1974) states that: "Knowledge -according to Piaget- is not a copy of reality. Knowing an object, or about an event does not just involve looking at it and forming a mental picture... of it ... Knowing involves modifying, changing the object and understanding the process of transformation and thereby understanding how the object is formed. The essence of knowledge is, therefore, an operation, an internalized action which modifies the object of knowledge."

This is one of the basic premises on which is based the Universidad Autónoma Metropolitana's Xochimilco modular programme within which falls the Foreign Language Department's programme of languages for specific purposes. It seems appropriate therefore to look at Piaget's analysis of the processes by which one arrives at "knowledge" and assess whether this theoretical basis does in fact justify the cognitive approach to EFL teaching which has been adopted by the Xochimilco campus.

Piaget apart from being a biologist considers himself more as an epistemologist than a psychologist. He defines epistemology as the theory of knowledge and more specifically scientific knowledge since Epistemology asks how knowledge and science are possible. His studies of children were made, not merely for the purpose of studying children in themselves but in

order to observe the process of acquiring knowledge which is in essence the central concern of epistemology. He states that the best way to deal with these concerns would have been to study man throughout history and in particular prehistoric man. However this obviously isn't possible since, as he points out, what we define as primitive man today has been subjected for centuries to so many social pressures that it is no longer possible to distinguish between which are the psychological elements and which the social ones, nor between individual and collective factors. Piaget believes that the child is the nearest we can come to primitive man and to the origin of the knowledge processes. The child, he claims is initially free from social pressures, since he only imitates what he understands. Influencing environmental factors have to be assimilated and just how this is done is precisely the object of Piaget's vast studies. Let us look then at the stages and processes necessary for the child to pass through in order to be able to assimilate "reality".

According to Piaget psychological development is, like organic development, a constant progression towards a state of equilibrium i.e. development is a continual process from a less balanced state to a more balanced state, a continuous constructive process. He names six stages or developmental periods through which this balancing process takes place:

The first stage is the reflex stage which involves the first instinctive tendencies as well as the first emotions. The next stage involves the first motor habits, the first organized perceptions and differentiated feelings. The third stage is the sensor/motor or practical intelligence stage (which precedes language). The fourth stage is that of intuitive intelligence and of spontaneous interindividual feelings; the fifth one is one of concrete intellectual operations (the beginning of logic) and the final stage, that of abstract intellectual operations.

Piaget maintains that these stages involve certain structures which distinguish them from all previous stages. These structures are precisely what allows the continual progression from a less balanced state to a more balanced state i.e. the structures are what make possible a certain kind of equilibrium through which mental development takes place. According to Piaget all thought or feeling is a response to some kind of need and need he defines as an unbalanced state, caused by internal and external changes. All reactions to such an unbalanced state try not only to restore balance but to establish an even more balanced state than existed previously. He maintains that all human action consists of this continuous and perpetual mechanism of readjustment and balancing. However this in itself obviously does not explain the structure or content of different needs. A child's needs always depend on the total sum of the notions which he has acquired so that point although there are two major general characteristics. The first is that an assimilation takes place between the external world and existing internal structure i.e. a tendency exists which incorporates

objects, that is things and people, into the subject's activities. The second is that a kind of accommodation takes place and this involves readjusting internal structures according to the changes which have been experienced i.e. structures accommodate to external objects. Piaget explains assimilation through analogy. An organism is fed by means of absorbing substances, and then transforming them and integrating them into its own structures. One example he gives is of a rabbit eating lettuce, the rabbit doesn't turn into lettuce but the lettuce into rabbit! The same thing happens, he says with knowledge. Knowledge is not merely a copy but internalized structure which involves assimilation.

In this way, according to Piaget all mental life tends to progressively assimilate the environment by means of internal structures.

Now let us look in rather more detail at some of Piaget's stages. The first three stages cover the period from birth to the beginnings of language. This is the period when intelligence is of a totally practical nature and involves the manipulation of objects. It is a time when movements and gestures are repeated time and time again until the child gains control over objects. The four basic processes which characterize this first period are those of classification of objects, space, cause and time. At this stage these categories are obviously practical ones and not categories of thought as such.

During the second stage from approximately two to seven years the child is capable, by means of language, of recreating past actions and anticipating future ones which, according to Piaget plays a major part in mental development. Language means that the child not only has to face the physical world, but also the world of social relationships and one whereby internal representation is possible (e.g. nightmares). In this period one still finds "practical" intelligence but there is also "thought" although this still tends to be in the experimental field.

Until 7 years of age the child is still in a prelogical phase, using intuition rather than logic. Intuition is defined in this case merely as a sensorimotor framework transferred to a thought act, but which is initially always irreversible i.e. the child can't as yet anticipate or reconstruct certain actions.

It is when describing this stage in particular that Piaget places great emphasis on the parallel development of affectivity and the intellect since he maintains that these are two inseparable aspects of any action. A purely intellectual action never takes place, because sentimental factors are always involved in some way; and in the same way purely affective acts never take place since love presupposes some kind of understanding which in turn of course involves the intellect.

The third stage is from seven to twelve years of age, and seven, in Piagetian terms, is the great turning point. It is only now that the child can begin to distinguish between his point of view and that of others so that discussion now becomes a feasible possibility. And if discussion is to take place, then the child must be able to defend his own point of view. Explanations develop now in the mind and not just through processes, i.e. he can go back to the starting point and correct erroneous intuitions. He is now capable of dealing with the concepts of time, velocity and space other than in a casual manner and he can now also deal with notions of conservation.

How does the child go from intuitive actions and thought acts to concrete or formal operations? This step is taken when systems can be built up i.e. actions become operations when two actions of the same type can be formed into a third action, still belonging to the same type and also being reversible. Logical thought begins therefore through the organization of operational systems which obey the same laws. Thus the step from intuition to logic is taken when the child can see the relation between groups and sets of groups. In other words notions and relationships cannot be built up in isolation, but must be built up globally and organized on the basis of groups in which all elements are balanced between themselves.

The final stage is that of adolescence and starts at around twelve years of age. It is during this stage that the adolescent begins to be capable of constructing systems and theories. Previously, thought processes were "concrete" and if the child had to reason on a simple hypothesis on some verbal communication, then he fell down, i.e. he was capable of manipulating objects and thereby reasoning without difficulty but the same tasks verbalized presented far more difficulties. One example is of a child being asked about the varying shades of hair of three people. Seeing them he can say that Lilia and Susan have darker hair than Frank, etc., etc. But being given the information without seeing Lilia, Susan and Frank and then being asked to compare hair shades proves to be a virtually impossible task. Why? According to Piaget because these processes are related with simple hypotheses but with no effective reality. However after eleven or twelve years of age the child is capable of formal thought processes or hypothetical-deductive processes. This means that he can deduce conclusions which result from simple hypotheses and not just from actual observation in the physical world. The child can now begin to reason operations independently from the objects themselves and objects can now be substituted by simple propositions. Therefore, it is the beginning of formal thought processes at 11 or 12 years which allow the construction of systems so characteristic of adolescence and which provide the actual take off point of thought as such.

Piaget maintains that in the first stages of adolescence there is a kind of intellectual egocentrism which believes in the ultimate power of thought as if the world should adapt to systems and not systems to reality,

These then, very broadly, are the stages which lead up to formal thought processes.

They are clearly marked formative stages which can be shown to follow a specific and determined order. Piaget maintains that even if these stages are studied in different cultures, the same order always exists albeit at earlier or later points but the order is always the same. There are also different levels in the development of affectivity but these are much less precise and do not have a fixed order. Whereas intelligence is having the capacity to adapt to new situations, to understand and create, affectivity is the driving force behind it. Affectivity as such does not change the structures of intelligence. A practical universe is first built up through sensorimotor intelligence which then allows the building up of a world through hypothetic-deductive thought. Then it is experience which reconciles formal thought to the reality of things. The building up of new structures which are generated through assimilation and accommodation to existing structures, often comes about in a complex and unexpected way. The building up of the series of the whole numbers is an example used by Piaget to illustrate this point. He says that among mathematicians there are two hypotheses as to the origin of this concept. One hypothesis that of Poincaré, Brouwer, etc. states that numbers are constructed independently of logical structures and are the result of some kind of primitive intuitive operation, for example the intuition of  $n + 1$ . The other hypothesis, that of Russell and Whitehead in particular, claims that numerical structures derive from logical structures. However according to Piaget, psychological facts don't confirm either of these hypotheses. He says that there is no intuition of  $n + 1$  before conservation of groups based on classification i.e. before the building up of these logical structures. The concept of whole numbers is a synthesis between classification and serialization which become one once abstraction takes place. Perhaps I should mention that Charles Brainerd in his article "The Origin of Number Concepts" disputed this concept. However I imagine that this particular dispute would be better left to the mathematicians!

How then is all this related to or fulfilled through a cognitive approach to EFL teaching? We have seen how, according to Piaget a concept is progressively formed. A concept does not form through explanations only. We're probably all familiar with what John Holt said about this "Explanations. We teachers -perhaps all human beings- are in the grip of an astonishing delusion. We think that we can take a picture, a structure, a working model of something constructed in our minds out of long experience and familiarity and by turning that model into a string of words transplant it whole into the mind of someone else... Most of the time explaining does not increase understanding and may even lessen it." Neither Piaget nor John Holt are of course claiming that every subject (in this case the student) has to discover for himself every concept which has ever been discovered i.e. he's not expected to retrace the history of human discovery.

But does it mean that we must be aware of just how concepts are formed and not deceive ourselves into believing that we (as subjects) can write on the empty states of our students (in this case the object). We have to realize that it is our students who as active participants or subjects in the knowledge process arrive at the object of knowledge through their interrelationship with it. Also, for Piaget, elements cannot exist in isolation since in all areas of life one finds "totalities" qualitatively different from the parts from which they are formed. The relationship between the whole and its parts can vary. It can be that of the whole on itself, the whole on its parts, the parts on themselves and finally that of the parts on the whole. These different actions balance out into a total structure which can lead to three different kinds of equilibrium - that where the predominating force is of the whole modifying the parts, that where predominating force is of the parts on themselves and finally that of reciprocal conservation between the parts and the whole. It is the last one which is the only stable form of equilibrium in Piagetian terms. This kind of equilibrium means that there is a balance between the different parts themselves and between the whole and the parts. This then would seem to mean that we should start with the whole and work towards its elements and not, as has happened in language teaching from the parts to the whole. Maybe an appropriate example of this would be the way we try to deal with vocabulary problems in Nahuatl. We do not teach vocabulary as such and in fact have found this to be counterproductive. What we want is for the student to arrive in some way at the meanings (albeit in a very general sense) of unknown lexical items. The object of the way we deal with lexis is to try and make him realize that a large proportion of the times when he finds himself confronted with seemingly meaningless words, he can in fact very often get quite close to the information being conveyed by the word without ever even having to know exactly what the word is in his own language. In other words we try and train him to look at the totality of information being presented to him and through this totality, get to the parts. We don't give him the vocabulary i.e. the parts and expect him in this way to reach the totality.

It has also been maintained in the past that thought merely consists of the building up of images of an object, and that language itself can adequately build up a description of what these images are. In this concept of language learning the only activity in which the subject (or learner) is involved is in the construction of images which conform to the original. In Piagetian terms we have seen that it is the function of thought, built up through action, to modify reality not to imitate it. In other words accepting the concept of operations and structures means accepting that the subject can transform reality. The core problem, and one of the basic problems of epistemology is that of the relationship between a subject capable of knowledge i.e. a cognizant subject and an object which is to be known. Empiricism on which was based much of language teaching in the past focuses on the object and concludes that knowledge is merely a copy of the object i.e. all knowledge is derived from experience, with the object merely leaving its mark on the subject (as wax, slate)

Piagetian studies in contrast to this show that it is precisely activity on the part of the subject which adds relationships and coordination to the object. Intelligence then is obviously more than mere representation alone. Intelligence primarily involves understanding and inventing. So whenever we try to teach something without the participation of the subject, without giving him the chance to discover for himself and impose relationships and coordinations, then we are doomed to failure. It might seem very odd but now to talk about letting students acquire and discover concepts for themselves but the fact is that objects are still presented for the subject to repeat and reproduce. So maybe we should look at what we have been asking our students to do in EFL. Maybe we've been asking them to do things which are cognitively beyond their reach. And if intelligence means both understanding and creating maybe we've failed to stress both these aspects. It would seem that we shouldn't be looking for copies or reproductions of models which we provide. We should presumably want to reinforce the creative, the innovative and it is precisely for this reason, in the materials we use at Xochimilco, that we do not look for right or wrong answers but for justifications of a certain answer being given. We're trying to make conscious the students' ability to abstract i.e. his formal operational thought. Ours is specifically a reading programme and we're trying to design materials which will help the student abstract, help him to tolerate ambiguity, to organize information and to formalize ideas as well as information into principles and theories. We want to help him to be able to deduce and get at implicit information. It is beyond the scope of this paper to give specific examples of exercises designed to do the above, since the idea was principally to give the why rather than the how of a cognitive approach to EFL. And perhaps we should bear in mind something which Piaget quotes Eduard Claparède as saying which is that when we try and train an animal and fail we blame ourselves, but when we try and educate a child and fail we blame the child.

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